Preferably, the second fluid outlet is arranged to emit fluid into the fluid flow path thus, the first and primary fluid flow paths are combined within the body as this enables even mixing of the hot fluid from the primary fluid flow path with the entrained fluid from the fluid flow path. Preferably, the fluid flow paths merge within the hairdryer

It is preferred that the second fluid outlet extends about the first fluid outlet i.e. the fluid flow path is nested or embedded in the primary fluid flow path. Preferably, fluid is emitted from the hairdryer through each of the fluid outlet of the fluid flow path and the fluid outlet of the second fluid flow path thus, both the fluid outlet of the fluid flow path and the second fluid outlet of the primary fluid flow path ace arranged to emit fluid from the hairdryer. It is preferred that the first fluid outlet and the second fluid outlet are co-planar.

Preferably, the fluid flow path is defined by a bore extending through the body.

It is preferred that the bore is an external wall of the body of the hairdryer. Preferably, the bore is within the hairdryer body and it defines an external surface along which fluid is entrained. The bore is inside the body and defines a hole through the body. The perimeter of the hole is defined by the body duct. The bore is a single piece or comprises two or more parts which together define the first fluid flow path.

The flow path and the primary flow path upstream of the fan assembly act as heat sinks or thermal exchangers for the primary flow path in the vicinity of the heater. It also results in all the fluid flowing through the body being heated whether actively or passively

The provision of two flow paths enables fluid that flows through each flow path to be treated differently within the hairdryer.

It is preferred that the means for acting on fluid flow acts indirectly on fluid in the first flow path i.e. on entrained fluid. Thus the first fluid flow path is in thermal communication with or adjacent to the heater and the primary fluid flow path passes through the heater. Likewise, as the fan and motor (the fan assembly) process or act directly on fluid in the primary fluid flow path, fluid in the fluid flow path is indirectly acted upon as it is entrained into the hairdryer by the action of the fan assembly.

The provision of partly drawn in and partly entrained fluid flow through the hairdryer is advantageous for a number of reasons including, as less fluid is drawn in the motor of the fan assembly can be smaller and lighter in weight, the noise produced by the fan assembly can be reduced as there is less flow through the fan, this can result in a smaller and/or more compact hairdryer and an hairdryer which uses less power as the motor and/or heater are only processing part of the flow through the hairdryer.

This means that the fan assembly processes a portion of the fluid that is output from the body and the rest of the fluid that flows through the body through the first fluid flow path passes through the body without being processed by the fan assembly. Thus the drawn or processed flow is augmented or supplemented by the entrained flow.

The hairdryer can be considered to comprise a fluid amplifier whereby fluid that is processed by a processor (fan assembly and/or heater) is amplified by an entrained flow.

The noise of the hairdryer is reduced by having a long fluid flow path, a coiled/looped/curved/s-shaped/zigzagged fluid flow path and frequency attenuating lining material. However, the use of these features introduces some drawbacks, for example drag in the fluid flow path which can choke the flow and the appliance size is increased. To counteract these drawbacks, the use of partially drawn and partially entrained flow, a fan that only processes around half of the flow is used.

The fluid flow path is preferably nested or embedded in the primary fluid flow path. The primary fluid flow path can be concentric or non-concentric to the fluid flow path.

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The fluid flow paths are preferably substantially circular in shape; alternatively they are elliptical, oval, rectangular or square. In fact each flow path may be a different shape or configuration.

Preferably, the fluid flow path is accessible to a user.

The invention also provides a hairdryer where the heater is inaccessible from one or more of the inlet and outlet of the body as it is surrounded by the external wall. Preferably, the heater is inaccessible from the second fluid inlet. The provision of a heater which is inaccessible from the inlet and/or outlet is useful from a safety aspect. If something is inserted into the appliance, it cannot contact the heater directly. An inaccessible heater is also one without direct line of sight from the inlet and/or outlet.

Preferably, the heater outlet is at least 20 mm, preferably 30mm, more preferably 40mm, preferably 50mm or most preferably at least 56mm from the inlet and/or outlet end of the body of the hairdryer.

Due to the fact that around half the flow is processed by the heater i.e. passes through the heater and is heated directly by the heater, the heater can be made more compact with less losses and less flow through it.

Preferably around half of the fluid that flows from the outlet of the hairdryer is drawn through the motor. The rest of the fluid that is admitted out of the outlet of the hairdryer is entrained or induced by the fluid that is processed. The approximately 50% split of drawn to entrained fluid is not essential and can be less or more; the relative fluid flow rates are a function of losses within the duct pathways for each flow path and the configuration e.g. the diameter and cross-sectional areas of the duct pathways.

Preferably, the primary fluid flow path is non-linear.

Traditional hairdryers are essentially and open tube with a fan for drawing fluid into the tube. This makes them noisy unless a big and slow fan is used but then a big motor is required which increases weight. The provision of a long fluid flow path through the body and ducting arrangement reduces the noise produced; the provision of a curved, zigzagged, s-shaped or looped fluid flow path (as provided by the two body portions and ducting therebetween) further reduces the noise produced by the appliance.

It is preferred that there is provided a duct connected to the body, and the primary fluid flow path extends through the duct.

Preferably, the duct comprises a handle portion of the hairdryer. It is preferred that, the primary fluid flow path extends at least partially through each of the handle portion and the body. It is preferred that the fan unit is located inside the duct. The fan unit is for drawing fluid through the second fluid inlet into the primary fluid flow path.

In this embodiment, the fan assembly only processes part, around half, of the fluid flow through the hairdryer so a handle portion of the duct can be of an acceptable diameter for holding comfortably.

The ducts may be circular, however it is preferred that the ducts are non circular i.e. oblate, oval or race track shaped in cross-section. There are advantages to using non circular ducts, the first is that when the duct is used as a handle it can be easier for a user to grip as the oblate or oval shape mimics the shape made by curled figures more precisely than a circular grip, the second is that the non circular shape can be used to impart directionality to the ducts or handles. This directionality can make the hairdryer easier to use. A third advantage is that for a grippable handle, the non circular shape gives a larger cross-sectional area than the circular handle meaning that a greater flow of fluid can pass through the oval handle. This can reduce one or more of the noise produced by the hairdryer in operation, power consumed by the hairdryer and pressure or duct losses within the hairdryer.

Preferably, the duct is lined with a material. Preferably, the material is a foam or a felt. It is preferred that, the material is a sound absorbing material. Alternatively or additionally, the material is a vibration absorbing material and/or an insulator for example a thermal insulator or a noise insulator. The absorbing properties of the material will at least mitigate the property is question and may be tuned specifically to an appliance either by material density or lining thickness for example. The material can additionally be chosen or tuned based on resonant frequencies of the appliance. In this way the appliance can be silenced, or manipulated tonally to improve noise characteristics to a user. The material is preferably around 3 mm thick

Preferably, the handle portion of the duct is lined with said material. It is preferred that the lining is continuous around the duct / handle portion. Preferably, the duct comprises a first handle portion and a portion of the hairdryer, and wherein each handle portion is lined with said material.

The fan unit is preferably located fluidly between the first handle portion and the second handle portion thus the handle means comprises at least one duct for conveying fluid towards and away from the fan unit.

A further advantage to having a fan assembly which process some of the fluid flow through the hairdryer and having a fluid flow which is partially drawn and partially entrained is that the ducts through which the processed fluid flows can be of a relatively small diameter. For example for an outflow from the body of around 25l/s, something like 10 to 12l/s passes through the ducts and this flow has a maximum velocity of around 25m/s. As the ducting has a smaller diameter than would be required for full processing of the fluid, silencing of noise produced by the fluid flow through the primary fluid flow path is effective over a larger range of frequencies than for a larger diameter duct. Thus, airborne noise is attenuated to a higher frequency. This is because a duct diameter of less than around half a wavelength promotes planar wave behaviour.

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It is preferred that a filter is provided for filtering one of the two fluid flow paths. Preferably, the filter filters the primary fluid flow path. This has the advantage that less filter material is used than if the whole body inlet were covered. In addition, it provides a line of sight through the central aperture of the hairdryer that is not obscured by filter material. A filter includes one or both of a grill and a mesh material positioned across the primary fluid flow path before fluid flows into the fan assembly.

Preferably, the filter is located upstream of the fan unit. It is preferred that the fan unit comprises a motor, and the filter is located upstream of the motor. Thus, the filter filters fluid before it reaches the motor and preferably before the fluid reaches the fan unit i.e. a fan and a motor, thus the filter is a pre-motor filter. This means the filter protects the motor from the ingress of foreign objects into the fluid flow path which may be detrimental to the motor examples of such objects are hair, dirt and other lightweight objects than may be sucked into the fluid flow path by the action of the fan.

Preferably, the filter is located upstream of the heater.

Preferably, the filter is located at, or adjacent, the second fluid inlet.

Preferably, the handle portion comprises a first handle portion comprising a first duct for conveying fluid towards the fan unit, and a second handle portion comprising a second duct for conveying fluid away from the fan unit.

Preferably, the body comprises a first external wall and a second external wall extending about the first external wall, and wherein the first external wall defines a bore extending through the body, and wherein the fluid flow path extends through the bore.

Preferably, the fluid flow paths are isolated within the hairdryer.

A second aspect of the invention provides a hand held appliance comprising a body, a fluid flow path extending through the body in an axial direction from a first fluid inlet

through which a first fluid flow enters the appliance to a first fluid outlet for emitting the first fluid flow from the appliance, a primary fluid flow path extending from a second fluid inlet through which a primary fluid flow enters the appliance to a second fluid outlet, a section of the primary fluid flow path extending through the body in the axial direction and surrounding the fluid flow path, and a heater located within the section of the primary fluid flow path for heating fluid passing through the primary fluid flow path, and wherein the heater has a length extending in the axial direction.

The invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows a rear end perspective view of an appliance according to the invention;

Figure 2 shows a front end perspective view of an appliance according to the invention;

Figure 3 shows a side view of an appliance according to the invention;

Figure 4 shows a top view of an appliance according to the invention;

Figures 5a and 5b show sectional views along line J-J of Figure 4;

Figure 5c is an enlargement of area P of Figure 5a;

Figure 6 shows a sectional view along line K-K of Figure 3;

Figure 7 shows a sectional view along line L-L of Figure 3;

Figure 8 shows a sectional view along line M-M of Figure 4;

Figure 9 shows a 3D sectional view along line H-H of Figure 4;

Figure 10 shows a side view of a second appliance according to the invention;

Figure 11 shows a sectional view along line N-N of Figure 10;

Figure 12 shows a sectional view through the body of an appliance according to the invention;

Figure 13 shows a sectional view through the body of a further appliance according to the invention;

Figure 14 shows a sectional view through the body of another appliance according to the invention;

Figure 15 shows a sectional view through the body of yet another appliance according to the invention;

Figure 16 shows sectional view through the body of an appliance according to the invention;

Figure 17 shows an alternative sectional view through the body of the appliance of Figure 16;

Figure 18 shows sectional view through the body of an appliance according to the invention;

Figure 19 shows an alternative sectional view through the body of the appliance of Figure 18;

Figure 20 shows a rear end perspective of a further appliance according to the invention;

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Figure 21 shows a rear end perspective of an alternative appliance according to the invention;

Figures 22a and 22b show rear end views of the appliance shown in Figure 21;

Figure 23 shows a cross section through another appliance;

Figures 24a and 24b show rear end views of the appliance shown in Figure 23;

Figure 25 shows a cross section through an appliance;

Figure 26 shows a cross section through another appliance;

Figure 27 shows a cross section through another appliance;

Figure 28 shows a rear end perspective of a one handled appliance according to the invention;

Figure 29 shows a side view of the appliance of Figure 28;

Figure 30 shows a sectional view of a two handled appliance;

Figure 31 shows a sectional view of a one handled appliance;

Figure 32 shows a sectional view across line S-S of Figure 26;

Figure 33 shows a sectional view of another one handled appliance;

Figure 34 shows a sectional view of the appliance of Figure 30;

Figure 35 shows a rear end perspective of the appliance of Figures 30 and 31;

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Figure 36 shows a cross section through an appliance according to the invention;

Figure 37 shows a sectional view across line T-T of Figure 36;

Figure 38 shows a 3D sectional view of a one handled two bodied appliance according to the invention;

Figure 39 shows a cross section through the appliance shown in Figure 38;

Figure 40 shows a 3D sectional view of a one handled appliance according to the invention; and

Figure 41 shows a cross section through the appliance shown in Figure 40.

Figures 1 to 4 show various views of an appliance 10 having a first body 12 which defines a fluid flow path 20 through the appliance and a pair of ducts 14 which extend from the first body 12 to a second body 16. The fluid flows through the appliance from an inlet or upstream end to an outlet or downstream end.

With reference to Figures 5a, 5b, 5c and 6, the fluid flow path 20 has a fluid intake 20a at a rear end 12a of the body 12 and a fluid outflow 20b at a front end 12b of the body 12. Thus, fluid can flow along the whole length of the body 12. The fluid flow path 20 is a central flow path for the body 12 and for at least a part of the length of the body 12 the fluid flow path is surrounded and defined by a tubular housing 18. The tubular housing 18 is a bore, pipe or conduit that the generally longer that it is wide and preferably has a substantially circular cross section, however, it may be oval, square, rectangular or another shape. The first body is tubular in shape.

With reference to Figures 6, 8 and 9 in particular, a primary fluid flow path 30 will now be described. The primary fluid flow path 30 is generally annular to the fluid flow path

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20 at the fluid intake end 12a of the body 12. In this particular embodiment, the primary fluid flow path 30 passes down the fist tiered section along the inner skin 112a of the outer wall 112 of the body 12 and from there down a duct 14a through the second body 16 and up the other duct 14b back into the body 12 and into a second tiered section or outlet section of the primary flow path 40. The outlet section of the primary flow path 40 is generally annular to the fluid flow path 20 and is nested between the first tier of the primary fluid flow path and the fluid flow path in the body 12. Thus for at least a portion of the length of the body 12, there is a three tiered flow path 20, 30, 40. The primary fluid flow path 30 has an inlet end, a loop and an outlet end.

There is a single opening at the inlet end 12a of the body 12 which is split into a first inlet 20a through which fluid enters the fluid flow path 20, and a second fluid inlet 30a through which fluid enters the primary fluid flow path 30. In this embodiment, the first inlet and the second fluid inlet are co-planar and are divided into two inlets by the bore 18.

The second tiered section located downstream from the first tiered section and the tiered sections are arranged in series. In this example, fluid flows in substantially the same direction through the tiered sections. The first tiered section is isolated from the second tiered section by inner tubular walls 42 and 44 and an annular wall 48 which connects between the inner walls. Both the first and second tiered sections are annular and the first tiered annular section defined by walls 112a and 44 extends about the second annular tiered section defined by walls 44 and 42..

The second body 16 houses a fan unit 160 which includes a fan and motor for driving the fan. Power is supplied to the fan unit 160 via an electric cable 18 and internal electronics 162. The cable 18 is connected to the second body 16 and has a standard household plug (not shown) at its' distal end. Thus, fluid that flows through the primary fluid flow path 30 is drawn in to an inlet section by the action of the fan unit 160. When the primary flow path 30 returns to the body 12, it becomes an outlet section of the primary flow path or second tiered section 40 which flows between two inner tubular

walls 42,44 of the body 12 which are located external to tubular housing 18 and internal to the outer wall 112 of the body. Housed within the two inner walls 42,44 of the body in the outlet section of the primary fluid flow path 40 is an at least partially annular heater 46 which can heat the fluid that flows through. Thus the second tier or outlet section of the primary fluid flow path 40 is, in this embodiment the directly heated flow.

The second body 16 is tubular in shape and the longitudinal axes of the first and second bodies are parallel. The fluid flow path 20 extends through the body 12 in an axial direction. An outlet section of the primary fluid flow path 40 extends through the body 12 in an axial direction and surrounds the fluid flow path 20, and a heater 46 located within the section of the primary fluid flow path 40 for heating fluid passing through the primary fluid flow path, and the heater 46 has a length extending in the axial direction.

The tubular housing 18 is also a bore that extends through the body 12; a conduit that extends between the first fluid inlet 20a and the first fluid outlet 20b; a first external surface of the body 12 that is also an inner surface of body.

The heater 46 is preferably annular and can be of the convention type of heater generally used in hairdryers i.e. comprising a former of a heat resistant material such as mica around which a heating element, for example and nichrome wire, is wound. The former provides a scaffold for the element enabling fluid to pass around and between the element for efficient heating.

When the fan unit is operated, fluid is drawn into the primary fluid flow path 30 at the fluid inlet end 12a by the direct action of the fan unit 160. This fluid then flows through an inlet section of the primary fluid flow path along the inside 112a of the outer wall 112 of the body 12 down a first duct14a, through the fan unit 160 and returns to an outlet section of the primary fluid flow path 40 of the body 12 via the second duct 14b. The outlet section of the primary fluid flow 40 passes around a heater 46 and when the heater is switched on fluid in the outlet section of the primary fluid flow path 40 is heated by the heater 46. Once the fluid in the outlet section of the primary fluid flow

path 40 has passed the heater 46 it exits from the front end 12b of the body 12 of the appliance.

The fluid flows is a generally circular motion through the primary fluid flow path; the handle means are generally U-shaped i.e. along the body in a first direction down one duct in a second direction along the second body in a third direction and up the second duct in a fourth direction which is the opposite direction to the first duct. The handles are spaced apart

When the fan unit 160 is switched on, air is drawn into the intake 30a of the primary flow path 30, through the outlet section of the primary fluid flow path 40 and out of the fluid outflow 12b of the body 12. The action of this air being drawn in at one end 12a of the body and out of the other end 12b of the body causes fluid to be entrained or induced to flow along the fluid flow path 20. Thus there is one fluid flow (the primary flow path 30) which is actively drawn in by the fan unit and another fluid flow which is created by the fluidic movement caused by the action of the fan unit 160. This means that the fan unit 160 processes a portion of the fluid that is output from the body 12 and the rest of the fluid that flows through the body through the fluid flow path 20 passes through the body 12 without being processed by the fan unit.

The entrained fluid that passes through the fluid flow path 20 exits from a downstream end 18b of the tubular housing and combines with the fluid that exits the outlet section of the primary fluid flow path 40 near the fluid outlet 12b of the body 12. Thus the drawn flow is augmented or supplemented by the entrained flow. The second fluid outlet is annular and emits into the fluid flow path so the fluid flow paths merge within the hairdryer.

A filter 50 is provided at the fluid inlet 12a of the body 12. This filter 50 is provided to stop foreign objects such as hair and dirt particles from entering at least the primary fluid flow path 20 and travelling along the primary fluid flow path 20 to the fan unit

160 and potentially causing damage to the fan unit and/or reducing the life of the fan unit 160.

The filter 50 is preferably an annular filter that only covers the fluid flow intake of the primary fluid flow path 30, thus only the fluid that flows through the primary fluid flow path 30 is filtered by the filter 50. This has the advantage that the amount of filter material required compared to a conventional appliance is reduced as only approximately half of the cross-sectional area at the fluid intake end 12a is filtered – obviously, the exact proportions of filtered and non-filtered flow depend on the relative cross-sections of the first and primary fluid flow paths 20, 30 as well as any funnelling action due to the design of the fluid intake end of the body 12. Another advantage is that a line of sight is provided through the central or first flow path 20 of the body 12 so a person using the appliance can see through it whilst using the appliance.

In addition, where no filter or an annular filter 50 is provided, the internal surface 100 of the tubular housing is accessible from outside the appliance. In fact, the internal surface 100 of the bore or tubular housing defines a hole (the first flow path 20) through the appliance 10 and the inner surface 100 of the tubular housing is both an inner wall and a first external wall of the appliance 10.

The ducts 14 are used for conveying fluid flow around the appliance. In addition one or both of the ducts 14a, 14b additionally comprises a handle for a user to hold whilst using the appliance. The duct 14a, 14b may comprise a grippable portion on at least a part of the duct that acts as a handle to assist a user holding the appliance. The ducts are spaced apart with one duct 14a being located near the front end 12b of the body 12 and the other duct 14b being located near the rear end 12a of the body12.

The use of two body parts separated by a handle means that the appliance can be balanced, in this case by the heater being provided in one part of the body and the fan unit being provided in the second body part so their weights are offset.

Referring now to Figure 7, in this embodiment the ducts 14 are generally circular in cross section and are preferably lined with a material 140. This material 140 is for example a foam or felt for example that is used for one or more of the following: to mitigate noise from the primary fluid flow; vibrations from the fan unit 160; or as an insulator to retain heat within the fluid flow system of the appliance. The absorbing properties of the material will at least mitigate the property is question and may be tuned specifically to an appliance either by material density or lining thickness for example. The material can additionally be chosen based on resonant frequencies of the appliance. The material can additionally be chosen or tuned based on resonant frequencies of the appliance. In this way the appliance can be silenced, or manipulated tonally to improve noise characteristics to a user.

The lining material 140 is preferably flared, rounded or chamfered at one or both of the upstream 140a and downstream 140b end of the lining. This can reduce pressure losses in the ducts and assist in reducing the noise generated as a less turbulent flow into/out of the lined portion is provided.

Important features of the invention herein described include the fact that the fan unit 160 only processes a portion, preferably around half of the fluid that flows from the fluid outflow 20b of the appliance 10 for example, the total fluid flow through the appliance is 23 l/s with around 11 l/s being drawn through the motor. The approximately 50% split of drawn to entrained fluid is not essential and can be less or more; the relative fluid flow rates are a function of losses within the duct pathways for each flow path and the configuration e.g. the diameter and cross-sectional areas of the duct pathways.

The use of a tiered flow path through the body 12 the appliance 10 is also advantageous as one or more of the fluid flow paths can be used to insulate one or more of the walls of the body. The inlet section of the primary fluid flow path and the fluid flow path act as heat sinks or thermal exchangers for the outlet section of the primary fluid flow path i.e.

fluid in the centre of the body. It also results in all the fluid flowing through the body being heated whether actively or passively.

The fluid that is processed or drawn in by the fan unit 160 flows through the inlet section of the primary fluid flow path 30 and for a least a part of the flow path through the body, this fluid flows through a duct or conduit that is external to the heater 46 i.e. this primary fluid flow path 30 is between the heater 46 and an outer wall 112 of the body 12 and so provides a moving fluid insulator for the outer wall 112 of the body 12. The fluid flow will extract heat from the walls 42, 44, 112 that form the conduit or duct for the primary fluid flow 30 and therefore be heated as it passes near the heater 46. Once this pre-heated or pre-warmed fluid is drawn through the fan it exits the duct 14b into an outlet section of the primary fluid flow path or heated flow path 40. Thus, the fluid insulator is subsequently heated by the heater 46 so less heat energy is lost by the system to ambient. Heat that may have been lost to the outer body 112 is recovered thus a higher percentage of the heat energy input to the system remains in the primary or second tier 40 of the flow.

A second embodiment is described with respect to Figures 10 and 11. In this embodiment, the appliance 200 has ducts 114 which are oval in cross-section and extend parallel to each other. There are advantages to using oval instead of circular ducts, the first is that when the duct is used as a handle it can be easier for a user to grip as the oval shape mimics the shape made by curled figures more precisely than a circular grip, the second is that the oval shape can be used to impart directionality to the ducts or handles. This feature is shown in Figure 11 where a first duct/handle 114a is oriented at right angles to a second duct/handle 114b. This directionality can make the appliance easier to use.

A third advantage is that for a grippable handle, the oval shape gives a larger cross-sectional area than the circular handle meaning that a greater flow of fluid can pass through the oval handle. This can reduce one or more of the noise produced by the

appliance in operation, power consumed by the appliance and pressure or duct losses within the appliance.

Various arrangements of ducting within the body 12 are possible, some of which will now be described. Referring to Figure 12, the heater 46 is supported directly on the outer surface 18a of tubular housing 18 which is a single walled housing. The fluid that flows through the fluid flow path 20 along the inside of the tubular housing 18 provides a cooling action and will be heated slightly as it extracts heat from the housing 18. In addition, fluid that flows along the inlet section of the primary flow path 30 will also extract heat from inner wall 44 that separates the inlet section of the primary fluid flow path 30 from the heated outlet section of the primary fluid flow path 40 and isolates the inlet and outlet sections of the primary fluid flow path. Thus, the fluid that is processed or drawn in by the fan unit is pre-warmed or heated passively prior to being heated directly and provides a cooling flow for the second external or outer wall 112 of the body 12 of the appliance.

Figure 6 shows an alternative configuration having a ducted inner wall coolant path 118 between the tubular housing 18 and inner wall 42 of the outlet section of the primary fluid flow path 40 producing a third section of the primary fluid flow path which is parallel to the outlet section of the primary fluid flow path and surrounded by the outlet section of the primary fluid flow path which contains heater 46. This ducted inner wall coolant path 118 is a closed path i.e. it does not vent out. Some of the fluid which is drawn into the primary fluid flow path 30 will pass along the ducted inner wall 118 and provide a layer of fluid insulation between the heater 46 and the outer wall of the tubular housing 18. A combination of conduction and convection through the fluid in the ducted inner wall coolant path 118 provides a cooling effect for the tubular housing 18. The third section of the primary fluid flow path is annular and the second annular section extends about the third section and is in parallel with the third section.

Figure 13 shows an arrangement having a ducted outer wall cooling path 212 providing a third section of the primary fluid flow path in parallel with the outlet section of the

primary fluid flow path in combination with a closed ducted inner wall coolant path 118. In the embodiments described so far, fluid that is drawn into the body 12 flows down the ducts and back through a outlet section of the primary fluid flow path before joining entrained fluid. As a result, a portion of the body 12 near the outflow end 12b will be in direct contact with the heated fluid and may become hot. To mitigate this heating effect a ducted outer wall cooling path 212 is provided which enables fluid that is drawn into the primary fluid flow path 30 to continue within a double walled body to near the outflow end 12b of the body 12. In this example this outer wall cooling path 212 is closed so provides a cooling effect by a combination of conduction and convection through the fluid in the duct.

Figure 14 shows an alternative arrangement having a ducted outer wall cooling path 212 in combination with an open or vented ducted inner wall coolant path 218 between the tubular housing 18 and inner wall 42 of the outlet section of the primary fluid flow path 40. This ducted inner wall coolant path 218 again is located within the primary fluid flow path 30 so some of the drawn in fluid will pass along the duct, however at the distal end, the duct vents 220 into the entrained air stream the flows through the fluid flow path 20. This combined vented and entrained fluid then combines with the drawn fluid for exit at the outflow of the body 12. As there is a constant fluid flow through this cooling duct 218 in use, it provides a constant replenishment of fluid for heat exchange with inner wall 42.

Figure 15 shows an alternative arrangement having a ducted inner wall coolant path 318 which enables some of the drawn in fluid to flow along the radially inner side of the heater 46, between the heater 46 and the tubular housing 18, before being ducted 320 into the drawn in flow path 30 at duct 14a. This has the advantage that the ducting and inner wall arrangements not only provide cooling for the outer body of the appliance but also for the inner wall which is accessible from the fluid inlet end 12a. Thus all the fluid that is used to provide cooling for the heater is subsequently drawn through the fan unit 160 and into the outlet section of the primary fluid flow path 40 to be heated by heater 46.

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Figures 16 and 17 show an appliance with an alternate internal ducting arrangement. In this embodiment, the heater 46 is spaced apart from the walls 44, 18 that define the outlet section of the primary fluid flow path 40 to provide a fluid flow around as well as through the heater. An inner wall or support 142 is provided spaced from tubular housing 18 by a spacer 242 thus, fluid entering the third or heated flow path 40 can pass through the heater 46, around the outer edges of the heater between the heater and inner wall or support 44 which separates the second 30 and third 40 fluid flow paths and in a flow path 40a created between the heater 46 and the tubular housing 18 by the wall 142. At the downstream end of the heater, wall 142 ends allows the two fluid flow paths 40 and 40a to recombine 40b prior to the first and primary fluid flow paths combining at the downstream end 18b of the tubular housing 18.

By having the air gap between the heater 46 and the tubular housing 18 which is defined by inner wall 142, the tubular housing is not directly heated by the heater thus, the inner surface of the tubular wall remains relatively cool. In addition, a cooling effect is provided to the tubular housing 18 by entrained fluid that passes through the fluid flow path 20 which is defined by the tubular housing 18 as the fluid extracts heat from the tubular housing. The wall 142 need not be a solid wall, and may include slots or perforations which enables fluid to flow between the two fluid flow paths 40 and 40a.

Figures 18 and 19 show an appliance where the entrained and drawn fluids do not combine prior to exiting the body 12 at the outlet end 12b.

The inner ducting of the outlet section of the primary fluid flow path 240 may be any one of those described with respect to other embodiments of the invention. In this example, the outlet section of the primary fluid flow path 240 is similar to that described with respect to Figure 6 i.e. a configuration having a ducted inner wall coolant path 118 between the tubular housing 18 and inner wall 42 of the outlet section of the primary fluid flow path 240 which contains heater 46. This ducted inner wall coolant path 118 is a closed path i.e. it does not vent out. Some of the fluid which is drawn into the

primary fluid flow path 30 will pass along the ducted inner wall 118 and provide a layer of fluid insulation between the heater 46 and the outer wall of the tubular housing 218.

The bore or tubular housing 218 begins as in the other examples herein described at the inlet end 12a of the body 12. However, the tubular housing 218 continues for the whole length of the body 12 to the outlet end 12b of the body. In this manner an annular outflow 242 of the outlet section of the primary fluid flow path or heated fluid flow path 240 is provided at the outlet end 12b of the body. The annular outflow 242 extends about the outlet of the fluid flow path. Thus, the entrained and drawn in fluids do not combine within the body of the appliance they combine at the outflow or downstream exit of the appliance. This provides a high velocity jet or free jet of heated fluid at the outflow which is annular and surrounds the entrained and only partially heated flow which exits from the fluid flow path 20.

The primary fluid flow path 230 is as described with respect to other examples and has a ducted outer wall cooling path 212 to provide cooling to the outer surface of the body 12 towards the outflow end 12b of the body.

Figure 20 shows an appliance 300 having a filter 350 which is a grill like filter which covers the primary fluid flow path 30, leaving the majority if not all of the central fluid flow path (the fluid flow path) 20 open and unfiltered. The filter 350 may additionally comprise a mesh of material which is disposed between the grills of the filter.

Figures 21, 22a and 22b show an appliance having an oval shaped body 62. The fluid flow path 70 is defined by a tubular housing having an oval cross section 68. An annular and oval shaped primary fluid flow path 80 surrounds the fluid flow path 70 at the inlet end 62a of the body 62. Fluid is drawn into the primary fluid flow path 80, down first duct 74a into a second body 66 by the action of a fan unit 160 located in the second body 66 as has been previously described. The fluid then flows through the second duct 74b to an outlet section of the primary fluid flow path 90. This outlet

section of the primary fluid flow path 90 is also oval in cross section and contains an oval heater 96.

In this example the major and minor axes X-X and Y-Y respectively of the first, second and outlet section of the primary fluid flow paths all have the same centre Z i.e. are concentric however, this is not essential. In addition, the second body 66 is shown as being generally circular but it may match the external shape of the first body 62. The ducts 74a and 74b are shown as being generally circular but may be oval and one or both of the ducts 74a, 74b may comprise handles that are capable of being gripped by a user of the appliance.

Figures 23, 24a and 24b show an appliance 250 having substantially circular flow paths which are non-concentric.

The first 270 and third 290 fluid flow paths are concentric i.e. have a common centre 292 within the body 272 of the appliance. Thus, the heater 296 is also substantially concentric within the outlet section of the primary fluid flow path 290 and this has the advantage that fluid is heated evenly around the cross section of the outlet section of the primary fluid flow path so there are no hot spots in the fluid the exits the body at the outflow end 272a of the body 272. The first 270 fluid flow path is defined by tubular housing 274 and the first 270 and third 290 fluid flow paths are enclosed within inner wall or duct 294. This inner wall 294 is offset with respect to the outer wall 262 of the body 272 so is non-concentric to the outer wall 262 of the body 272.

The outer wall 262 has a centre 298 which is therefore offset from the centre 292 of the inner wall 294 and features of the appliance including 270, 274, 294, 290 and 296. A filter 278 is provided at the fluid inlet of the primary fluid flow path 280 and so is a ring shaped filter with a substantially constant outer diameter defined by outer wall 262 of the body 272. The inner diameter varies around the ring as the inner surface of the filer 278a is defined by the tubular housing 274.

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Alternatively, an inner wall 268, 294 is non-concentric to the external wall 262 for only part of the flow path. For example, the middle or third flow path 290 is defined by walls 294, 268 which are non-concentric to the tubular housing 274, heater 296 and external wall 262 in the region where the primary flow path passes 280 into the third flow path 290. In other words, the walls 268, 294 which define the third flow path 290 where duct flow 298 enters the third flow path 290 are non-concentric to improve the aerodynamics of fluid flow where the direction of the fluid flow changes. The skilled person will appreciate that a number of different configurations are possible.

Figure 25 shows an appliance 360 having a having a first body 362 which defines a fluid flow path 364 through the appliance and a pair of ducts 366 which extend from the first body 362 to a second body 368. The fluid flows through the appliance from an inlet or upstream end 362a to an outlet or downstream end 362b.

The fluid flow path 364 has a fluid intake 364a at a rear end 362a of the body 362 and a fluid outlet 364b at a front end 362b if the body 362. The fluid flow path 364 is a central flow path of the body 362 and is surrounded and defined by a generally tubular housing 370.

A primary fluid flow path 372 is provided at the fluid inlet end 362a of the body and is generally annular to the fluid flow path 364. A filter 374 is provided to filter fluid that flows into the primary fluid flow path 372. The primary fluid flow path 372 passes into the first body 362 then through a first duct 366a to the second body 368 and up the other duct 366b back into the body 362. In this embodiment, the first duct 366a of the primary fluid flow path 372 is that nearest the fluid intake end 362a of the body. The flow path through the ducts is thus the reverse of previous examples.

The second body 368 houses a fan unit 74 and fluid is drawn into the primary fluid flow path by the action of the fan unit. This induces or entrains fluid into the fluid flow path 364.

When the primary fluid flow path 372 returns to the first body 362 a fluid chamber 376 is provided. The outer wall 378 of the chamber is a part of an outer wall of the first body 362. Radially inward of the outer wall 378 is a perforated inner wall 380 which provides fluid communication to a heater 382. After flowing through the heater 382, heated fluid combines with the entrained fluid of the fluid flow path 364 at an upstream end 370b of the tubular housing 370.

The flow path from the chamber to mixing of the heated fluid can be considered to be an inlet section of the primary fluid flow path and thus for a portion of the length of the body 362, a three tiered flow path is provided. Fluid in the chamber 376 cools the outer wall 378 and is pre-heated by heat radiating from the inner perforated wall 380. Thus, the chamber provides a thermally insulating barrier between the heater 382 and the external wall 362. The chamber 376 extends about a periphery of the heater 382.

An alternative arrangement of the primary fluid flow path is shown in Figure 26. In this arrangement, the chamber 376 is provided with a solid inner wall 386 that forces fluid to flow along a part of the first body 362 in the reverse direction or the direction opposite 384 to that of the entrained fluid of the fluid flow path 364. The primary fluid flow path is zigzagged. The reverse direction 384 of the flow path is turned to flow towards the outlet end 362b of the body, flows through the heater 388 and joins entrained fluid at the end 370b of the tubular housing 370. The fluid from the chamber 376 thus encounters the heater somewhere in the middle of the length of the first body 362.

In Figure 27, another arrangement is shown where the combining of the heated and entrained fluid flows occurs in the middle of the first body 362 rather than near or at the downstream end 362b. The chamber is provided with a solid inner wall 390 and fluid flows from the second duct 366b into the chamber 376 and then along a part of the first body 362 in the reverse direction 384 to that of the entrained fluid of the fluid flow path 364. The heater 392 is provided within this reverse flow section. Once fluid has been heated by the heater 392 it is turned by internal ducting 396 to face the downstream end

362b of the body and joins the entrained fluid of the fluid flow path 364 at the downstream end 394b of a inlet section of the tubular housing 394.

In these embodiments, the chamber 376 comprises two parallel sections, and a first one of the parallel sections extends through the fluid chamber 378a and a second one of the parallel sections extends through the heater 378b.

In this embodiment, the tubular housing 394 that defines the fluid flow path is split into two sections 394, 394a. A gap between the two sections 394, 394a enables the heated fluid to mixing with the entrained fluid flow at the downstream end 394b of the inlet section of the tubular housing 394. Thus, mixing of the two fluid flow paths occurs around the downstream end of the heater 392 or the middle of the first body 262. Once the two fluid flow paths have mixed, the second section 394a of the tubular housing guides the fluid flow to the outlet end 362b of the body 362.

The embodiments of Figures 25 to 27 all include a ducted outer wall cooling path 398 which enables some of the fluid that is drawn into the chamber 376 to flow within a double walled body to or near to the outflow end 362b of the body 362. This provides a cooling effect by a combination of conduction and convection through the fluid in the duct 398. Thus, the chamber in effect extends about the first fluid outlet 364b via the ducted outer wall cooling path 398.

Figures 28 to 35 show alternative embodiments according to the invention where fluid does not flow through the ducts or handle(s) 414 of the appliance 400. The air flow design is more conventional and has fluid flow through the body 412 of the appliance 400 in both inner or first 420 and outer or second 430 flow paths.

In a first example, referring to Figures 28 to 32 in particular, a hubless fan 460 is provided within the primary fluid flow path 430. Fluid is drawn into the body 412 at an inlet end 412a by the action of the hubless fan 460. The fluid then flows straight along the body to the heater 446 before exiting at the fluid outlet end 412b of the body 412.

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Fluid is entrained through a central fluid flow path 420 and mixes with the heated fluid 40b at the outflow 412b.

The hubless fan 460 is mounted on a circular bearing 466 and powered by a motor 462 which, in this embodiment is housed within the primary fluid flow path 430, but could alternatively be located within the duct 414. Power from the motor 462 is provided to the fan using for example, a magnetic coupling or gear or belt mechanism 464. A filter 450 may be provided at the fluid inlet end 412a to protect the fan and motor from ingress of hair and dirt.

The bearing need not be circular, and can comprise a non-continuous surface.

In this embodiment, there is line of sight through the first or central fluid flow and the fan could be provided in a transparent form.

Referring now to Figures 33 to 35, a fan 560 is provided within the primary fluid flow path 530. Fluid is drawn into the body 512 at an inlet end 512a by the action of the fan 560. The fluid then flows straight along the body to the heater 546 before exiting at the fluid outlet end 512b of the body 512. In this embodiment the fan 560 has a hub 570 which fits over the tubular housing 518. The hub 570 has a central aperture 580 through which fluid can flow in a fluid path 520. Thus, in this embodiment when the motor is switched on the fan draws are into the primary fluid flow path 530 and fluid is entrained or induced within the fluid flow path 520.

The fan 560 is mounted on a circular bearing 566 and powered by a motor 562 which, in this embodiment is housed within the primary fluid flow path 530, but could alternatively be located within a duct 514. Thus, as the motor is not concentric with the fan which is generally the case with conventional appliances of this type, it can be located is a position that is advantageous to handling of the appliance. Therefore, the motor can be positioned so as to balance the weight of the appliance as the motor is not

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directly attached to the fan and can be remote thereto and also to the heater which is another weight source for the appliance.

Power from the motor 562 is provided to the fan using a magnetic coupling, gear or belt mechanism 564. A filter may be provided at the fluid inlet end 512a to protect the fan and motor from ingress of hair and dirt.

In the embodiments described with respect to Figures 28 to 35, where the fan blades are of reduced length as they are mounted around the tubular housing 418, 518 that defines the fluid flow path 430, 530, there is a reduction in the amount of fluid that can be drawn in by the fan 460, 560 however, as most of the work is done by the outer part of the fan blades the reduction is not significant. This reduced fan blade length has the advantage that weight of the appliance is reduced.

Figures 36 and 37 show an alternate appliance 600 according to the invention. In this example, there is a first body 612 which defines a fluid flow path 620 through the appliance and a pair of ducts 614 which extend from the first body 612 to a second body 616.

The fluid flow path 620 has a fluid intake 620a at a rear end 612a of the body 612 and a fluid outflow 620b at a front end 612b of the body 612. Thus, fluid can flow along the whole length of the body 612. The fluid flow path 620 is a central flow path for the body 612 and for at least a part of the length of the body 612 the fluid flow path is surrounded and defined by a tubular housing 618. The tubular housing 618 is a duct, pipe or conduit that the generally longer that it is wide and preferably has a substantially circular cross section, however, it may be oval, square, rectangular or another shape.

A primary fluid flow path 630 is provided having an inlet 632 provided in body 612 spaced apart from the rear end 612a of the body. In this example, the inlet 632 is generally annular and comprises a plurality of apertures 632a. The apertures 632a are spaced and sized so as to act as a filter to dirt and hair ingress. The primary fluid flow

path 630 flows from the inlet 632 into the body 612 of the appliance and from there down a duct 614a, through the second body 616 and up the other duct 614b back into the body 612 and into a third or outlet section of the primary fluid flow path 640. The outlet section of the primary fluid flow path 640 is generally annular to the fluid flow path 620 and is nested between the first and primary fluid flow paths for at least a part of the length of body 612. Thus for at least a portion of the length of the body 612, there is a three tiered flow path 620, 630, 640.

The second body 616 houses a fan unit 660 which includes a fan and motor for driving the fan. Thus, fluid that flows through the primary fluid flow path 630 is drawn in by the action of the fan unit 660. When the primary flow path 630 returns to the body 612, it becomes a outlet section of the primary fluid flow path 640 which flows between two inner walls 618,644 of the body 612. Housed within the two inner walls 618, 644 of the body is an at least partially annular heater 646 which can heat the fluid that flows through the outlet section of the primary fluid flow path 640. Thus the third or outlet section of the primary fluid flow path 640 is, in this embodiment the directly heated flow.

The heater 646 is preferably annular and is offset from tubular housing 618 by an inner duct 642. The outlet section of the primary fluid flow path has a first flow path 630 through and around the heater 640 and a flow path 640a created between the heater 646 and tubular wall 618 by inner wall 642.

When the fan unit is operated, fluid is drawn into the primary fluid flow path 630 at the inlet 632 by the direct action of the fan unit 660. This fluid then flows around a space created between the inlet 632 and inner wall 644 i.e. around the inner wall that surrounds the heater 646 down a first duct 614a, through the fan unit 660 and returns to a outlet section of the primary fluid flow path 640 of the body 612 via the second duct 614b. The outlet section of the primary fluid flow 640 passes around a heater 646 and when the heater is switched on fluid in the outlet section of the primary fluid flow path 640 is heated by the heater 646. Once the fluid in the outlet section of the primary fluid

flow path 640 has passed the heater 646 it exits from the front end 612b of the body 612 of the appliance.

When the fan unit 660 is switched on, air is drawn into the intake 632 of the primary flow path 630, through the outlet section of the primary fluid flow path 640 and out of the fluid outflow 612b of the body 612. The action of this air being drawn into and out of the body causes fluid to be entrained or induced to flow along the fluid flow path 620. Thus there is one fluid flow (the primary flow path 630) which is actively drawn in by the fan unit and another fluid flow which is created by the fluidic movement caused by the action of the fan unit 660. This means that the fan unit 660 processes a portion of the fluid that is output from the body 612 and the rest of the fluid that flows through the body through the fluid flow path 620 passes through the body 612 without being processed by the fan unit.

The entrained fluid that passes through the fluid flow path 620 exits from a downstream end 618b of the tubular housing and combines with the fluid that exits the outlet section of the primary fluid flow path 640a near the fluid outlet 612b of the body 612. Thus the drawn flow is augmented or supplemented by the entrained flow. In addition, this entrained fluid acts as a moving insulator, or a cooling flow for the tubular housing 618 which is accessible from the rear end 612a of the body.

The ducts 614 are used for conveying fluid flow around the appliance. In addition one or both of the ducts 614a, 614b additionally comprises a handle for a user to hold whilst using the appliance. The duct 614a, 614b may comprise a grippable portion on at least a part of the duct that acts as a handle to assist a user holding the appliance.

The outlet section of the primary fluid flow path 640 is surrounded and defined by a wall 644, 644a. For part of the outlet section of the primary fluid flow path the surrounding wall is the outer wall 644a of the body, however in the region of the heater 646, this surrounding wall is an internal wall 644 and the outer wall of the body is the inlet 632 of the primary fluid flow path 630. Thus fluid that is drawn into the primary

fluid flow path 630 provides a cooling flow for the wall 644, 644a which surrounds the heater 646 and outlet section of the primary fluid flow path 640. In addition, this results in fluid that flows along the primary fluid flow path 630 being pre-warmed by the heater before it is processed by the fan unit 660 and directly heated by the heater 646 i.e. it is fluid that is processed or drawn in by the fan unit 660 which is directly heated by the heater. Also, fluid that flows along the primary fluid flow path 630 acts as a moving fluid insulator for the outer wall 644, 632 of the body 612.

Figures 38 and 39 show a one handled two bodied appliance 700 having a first body 712 which defines a fluid flow path 720 through the appliance and a duct 714 which extends from the first body 712 to a second body 716.

The fluid flow path 720 has a fluid intake 720a at a rear end 712a of the body 712 and a fluid outflow 720b at a front end 712b of the body 712. Thus, fluid can flow along the whole length of the body 712. The fluid flow path 720 is a central flow path for the body 712 and for at least a part of the length of the body 712 the fluid flow path is surrounded and defined by a tubular housing 718.

A primary fluid flow path 730 is provided. The primary fluid flow path 730 has a filter covered inlet 730a in the second body portion 716. A fan assembly 760 which includes a fan and a motor is also provided in the second body portion 716 and fluid is drawn into the primary fluid flow path 730 by the fan assembly 760. Fluid that enters the inlet 730a is drawn in by the fan assembly 760, through the second body portion 716 into duct 714. The inlet 730a is covered by a filter which filters fluid before it reaches the fan assembly i.e. it is a pre-motor filter. Where duct 714 meets the body 712, the primary fluid flow path 730 is defined by the outer wall 780 of the body 712 and the tubular housing 718. Housed within this primary flow path between the two walls 780, 718 of the body is an at least partially annular heater 746 which can heat the fluid that flows through the primary flow path 730. Thus fluid which is drawn into the appliance is subsequently directly heated by the heater.

The entrained fluid that passes through the fluid flow path 720 exits from a downstream end 718b of the tubular housing and combines with the fluid that exits the primary fluid flow path 730 near the fluid outlet 712b of the body 712. Thus the drawn flow is augmented or supplemented by the entrained flow.

Figures 40 and 41 show a one handled appliance 800 having a body 812 which defines a fluid flow path 820 through the appliance and a duct 814 which extends from the first body 812.

The fluid flow path 820 has a fluid intake 820a at a rear end 812a of the body 712 and a fluid outflow 820b at a front end 812b of the body 812. Thus, fluid can flow along the whole length of the body 812. The fluid flow path 820 is a central flow path for the body 812 and for at least a part of the length of the body 812 the fluid flow path is surrounded and defined by a tubular housing 818.

A primary fluid flow path 830 is provided. The primary fluid flow path 830 has a filtered inlet 830a in the duct 814. A fan assembly 860 which includes a fan and a motor is also provided in the duct 814 and fluid is drawn into the primary fluid flow path 830 by the fan assembly 860. Fluid that enters the inlet 830a is drawn in by the fan assembly 860, through the duct 814 and into the body 812. The inlet 830a is covered by a filter which filters fluid before it reaches the fan assembly i.e. it is a pre-motor filter. In the body 812, the primary fluid flow path 830 is defined by the outer wall 880 of the body 812 and the tubular housing 818. Housed within this primary flow path between the two walls 880, 818 of the body is an at least partially annular heater 846 which can heat the fluid that flows through the primary flow path 830. Thus fluid which is drawn into the appliance is subsequently directly heated by the heater.

The entrained fluid that passes through the fluid flow path 820 exits from a downstream end 818b of the tubular housing and combines with the fluid that exits the primary fluid flow path 830 near the fluid outlet 812b of the body 812. Thus the drawn flow is augmented or supplemented by the entrained flow.

For all the embodiments described, the inner opening at one or other end of the appliance can be used to store the appliance for example, by hooking the inner opening onto a retainer such as a hook or nail for convenient storage and retrieval as required.

In all the embodiments described herein, the heater 46, 96, 296, 382, 388, 392, 446, 546, 646, 746, 846 is inaccessible from one or more of the inlet and outlet of the appliance. Referring to Figure 12 for simplicity, at the inlet end 12a of the body 12 the tubular housing 18 surrounds the internal surface of the heater 46, thus any foreign object that enters the inlet will not directly contact the heater. In fact, when the fan unit is switched on, anything loose that enters the inlet will be drawn in and through the body by the entrained fluid.

At the outlet 12b, depending on the configuration of the internal ducting, there may be a small indirect passage to the heater but as the downstream end 18b of the tubular housing 18 is further downstream that the heater 46 anything inserted would not have a direct line of sight to the heater and would have to be thinner and longer than say a child's finger to reach the heater. In addition when the appliance is switched on entrained fluid will be blowing the other way, accidental ingress of objects at this end 12b is unlikely. Obviously, the downstream end 18b of the tubular housing will be hot when the heater is on but not as hot as the heater. This is useful from a safety aspect. If something is inserted into the appliance, it cannot contact the heater directly.

In the embodiments shown in Figures 18,19, 27, 28 to 35 as the tubular housing 218, 394, 418, 518 extends for the whole length of the body 12, there is only a small annular opening for access to the heater.

The invention has been described in detail with respect to a hairdryer however, it is applicable to any appliance that draws in a fluid and directs the outflow of that fluid from the appliance.

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The appliance can be used with or without a heater; the action of the outflow of fluid at high velocity has a drying effect.

The fluid that flows through the appliance is generally air, but may be a different combination of gases or gas and can include additives to improve performance of the appliance or the impact the appliance has on an object the output is directed at for example, hair and the styling of that hair.

The invention is not limited to the detailed description given above. Variations will be apparent to the person skilled in the art.

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CLAIMS

1. A hairdryer comprising a body, a fluid flow path extending through the body in an axial direction from a first fluid inlet through which a first fluid flow enters the hairdryer to a first fluid outlet for emitting the first fluid flow from the hairdryer, a primary fluid flow path extending from a second fluid inlet through which a primary fluid flow enters the hairdryer to a second fluid outlet, a section of the primary fluid flow path extending through the body in the axial direction and surrounding the fluid flow path, and a heater located within the section of the primary fluid flow path for heating fluid passing through the primary fluid flow path, and wherein the heater has a length extending in the axial direction.

2. A hairdryer according to claim 1, wherein the heater is annular in shape.

3. A hairdryer according to claim 1 or claim 2, wherein the heater is tubular in shape.

4. A hairdryer according to any preceding claim, wherein the body comprises a duct extending between the first fluid inlet and the first fluid outlet, and wherein the heater extends about the duct.

5. A hairdryer according to claim 4, wherein the duct partially defines at least one of the second fluid inlet and the second fluid outlet.

6. A hairdryer according to any preceding claim, wherein the primary fluid flow path comprises an inlet section and an outlet section, and wherein the heater is located in the outlet section.

7. A hairdryer according to claim 6, comprising a duct for conveying fluid from the inlet section to the outlet section.

8. A hairdryer according to claim 7, wherein the duct for conveying fluid from the inlet section to the outlet section comprises a handle of the hairdryer.

9. A hairdryer according to claim 7 or claim 8, wherein the duct for conveying fluid from the inlet section to the outlet section comprises a fan unit.

10. A hairdryer according to any preceding claim, wherein fluid is drawn through the fluid flow path by the emission of fluid from the primary fluid flow path.

11. A hairdryer according to any preceding claim, wherein the second fluid outlet extends about the fluid flow path.

12. A hairdryer according to any preceding claim, wherein the second fluid outlet is annular.

13. A hairdryer according to any preceding claim, wherein the second fluid outlet is arranged to emit fluid into the fluid flow path.

14. A hairdryer according to any of claims 1 to 19, wherein the second fluid outlet extends about the first fluid outlet.

15. A hairdryer according to claim 6, wherein, within the body, the outlet section is isolated from the inlet section by at least one wall.

16. A hairdryer according to claim 15, wherein said at least one wall is located adjacent to the second fluid inlet.

17. A hairdryer according to claim 15 or claim 16, wherein said at least one wall comprises at least two tubular walls located in the body, and an annular wall extending between the tubular walls, and wherein the heater is located between the tubular walls.

18. A hairdryer according to any of claims 15 to 17, wherein each of the inlet section and the outlet section is annular in shape.

19. A hairdryer according to claim 18, wherein at least part of the inlet section is located behind the outlet section.

20. A hairdryer according to claim 18 or claim 19, wherein at least part of the inlet section is located between the outlet section and the fluid flow path.

21 A hand held appliance comprising a body, a fluid flow path extending through the body in an axial direction from a first fluid inlet through which a first fluid flow enters the appliance to a first fluid outlet for emitting the first fluid flow from the appliance, a primary fluid flow path extending from a second fluid inlet through which a primary fluid flow enters the appliance to a second fluid outlet, a section of the primary fluid flow path extending through the body in the axial direction and surrounding the fluid flow path, and a heater located within the section of the primary fluid flow path for heating fluid passing through the primary fluid flow path, and wherein the heater has a length extending in the axial direction.

22. An appliance according to claim 21, wherein the heater is annular in shape.

23. An appliance according to claim 21 or claim 22, wherein the heater is tubular in shape.

24. An appliance according to any of claims 21 to 23, wherein the body comprises a duct extending between the first fluid inlet and the first fluid outlet, and wherein the heater extends about the duct.

25. An appliance according to claim 24, wherein the duct partially defines at least one of the second fluid inlet and the second fluid outlet.

26. An appliance according to any of claims 21 to 25, wherein the primary fluid flow path comprises an inlet section and an outlet section, and wherein the heater is located in the outlet section.

27. An appliance according to claim 26, comprising a duct for conveying fluid from the inlet section to the outlet section.

28. An appliance according to claim 27, wherein the duct for conveying fluid from the inlet section to the outlet section comprises a handle of the appliance.

29. An appliance according to claim 27 or claim 28, wherein the duct for conveying fluid from the inlet section to the outlet section comprises a fan unit.

30. An appliance according to any of claims 21 to 29, wherein fluid is drawn through the fluid flow path by the emission of fluid from the primary fluid flow path.

31. An appliance according to any of claims 21 to 20, wherein the second fluid outlet extends about the fluid flow path.

32. An appliance according to any of claims 21 to 31, wherein the second fluid outlet is annular.

33. An appliance according to any of claims 21 to 32, wherein the second fluid outlet is arranged to emit fluid into the fluid flow path.

34. An appliance according to any of claims 21 to 33, wherein the second fluid outlet extends about the first fluid outlet.

35. An appliance according to claim 28, wherein, within the body, the outlet section is isolated from the inlet section by at least one wall.

36. An appliance according to claim 35, wherein said at least one wall is located adjacent to the second fluid inlet.

37. An appliance according to claim 35 or claim 36, wherein said at least one wall comprises at least two tubular walls located in the body, and an annular wall extending between the tubular walls, and wherein the heater is located between the tubular walls.

38. An appliance according to any of claims 35 to 37, wherein each of the inlet section and the outlet section is annular in shape.

39. An appliance according to claim 38, wherein at least part of the inlet section is located behind the outlet section.

40. An appliance according to claim 38 or claim 39, wherein at least part of the inlet section is located between the outlet section and the fluid flow path.

41. A hairdryer substantially as herein described, with reference to the Figures.

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Claims searched:	1-41	**Date of search:**	17 July 2013

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1, 2, 3, 11, 12, 13, 14, 21, 22, 23, 31, 32, 33, 34	US2007/0294909 A (ABDI et al.) see paragraphs 0026-0027
X	21, 30, 31, 32, 33	GB2482548 A (DYSON) see page 17, line 18 - page 18, line 6
A	1, 21	CN202146022 U (YU) see English abstract and figures

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[X] :

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(56) Documents Cited:
EP 0970633 A1
JP 2010274050 A
WO 2012/059709 A2
US 20050229422 A1

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(54) Title of the Invention: **Attachment for a hand held appliance**
Abstract Title: **A nozzle for a hairdryer**

(57) A hairdryer comprises a handle 204, a body 202 comprising a fluid flow path 280 extending from a fluid inlet 270 to the fluid outlet 290, and a primary heated fluid flow path 260 extending from a primary fluid inlet 222 to the primary fluid outlet 230. A nozzle 300 is attachable to the body 202, the nozzle comprising a primary nozzle fluid inlet 320 for receiving the primary fluid flow from the primary fluid outlet 230, and a primary nozzle fluid outlet 330 for emitting the primary fluid flow from the nozzle 300. A further nozzle fluid inlet 370 is also provided for receiving the fluid flow from the fluid outlet 290, a further nozzle fluid outlet 390 also being provided in the nozzle for emitting the fluid flow. Within the nozzle 300 the fluid flow is isolated from the primary fluid flow.

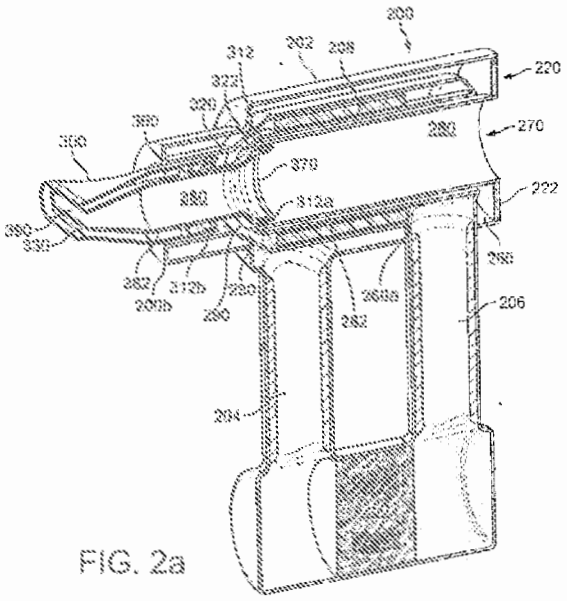


FIG. 2a

GB 2503684 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

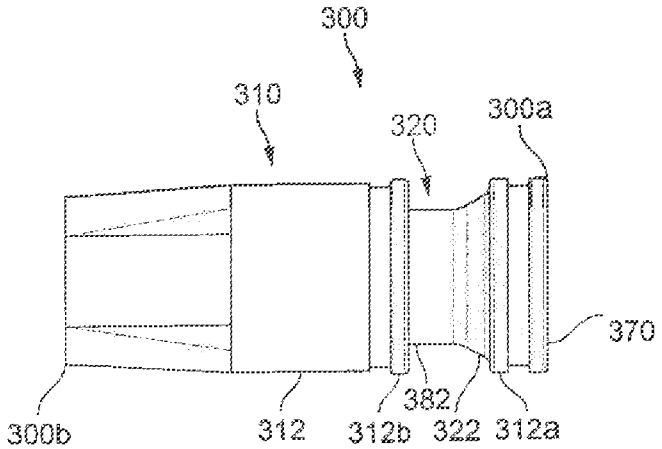


FIG. 1a

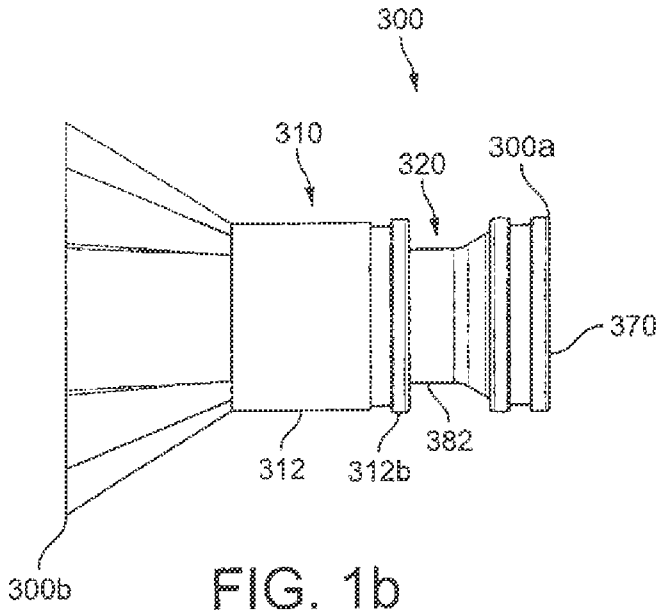


FIG. 1b

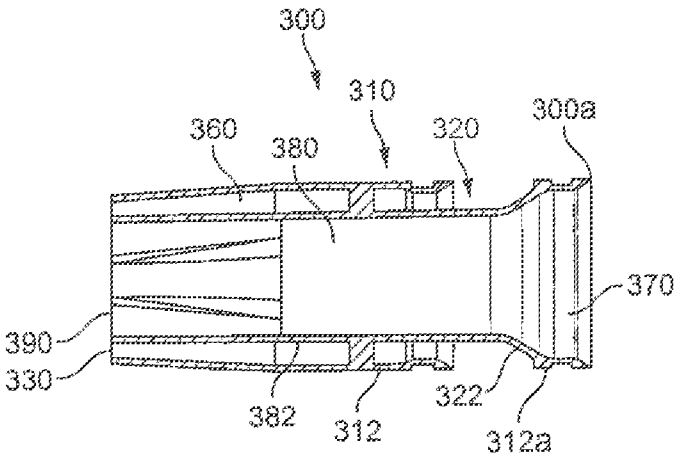


FIG. 1c

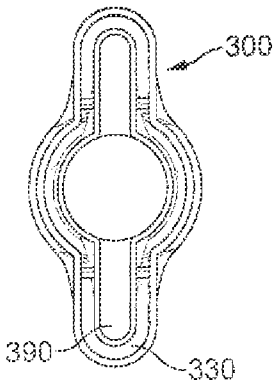


FIG. 1d

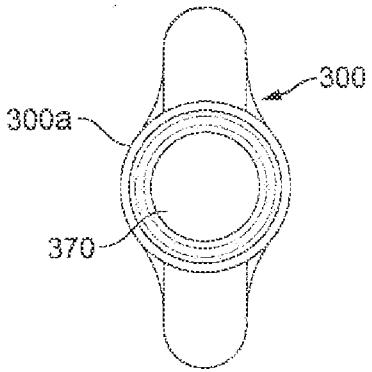


FIG. 1e

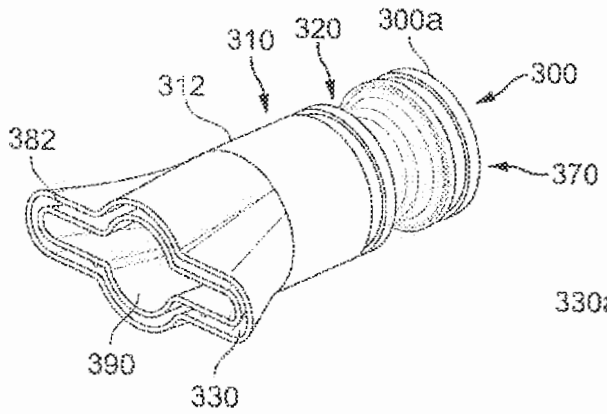


FIG. 1f

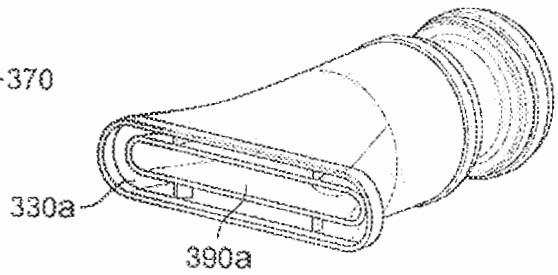


FIG. 1g

13 06 13

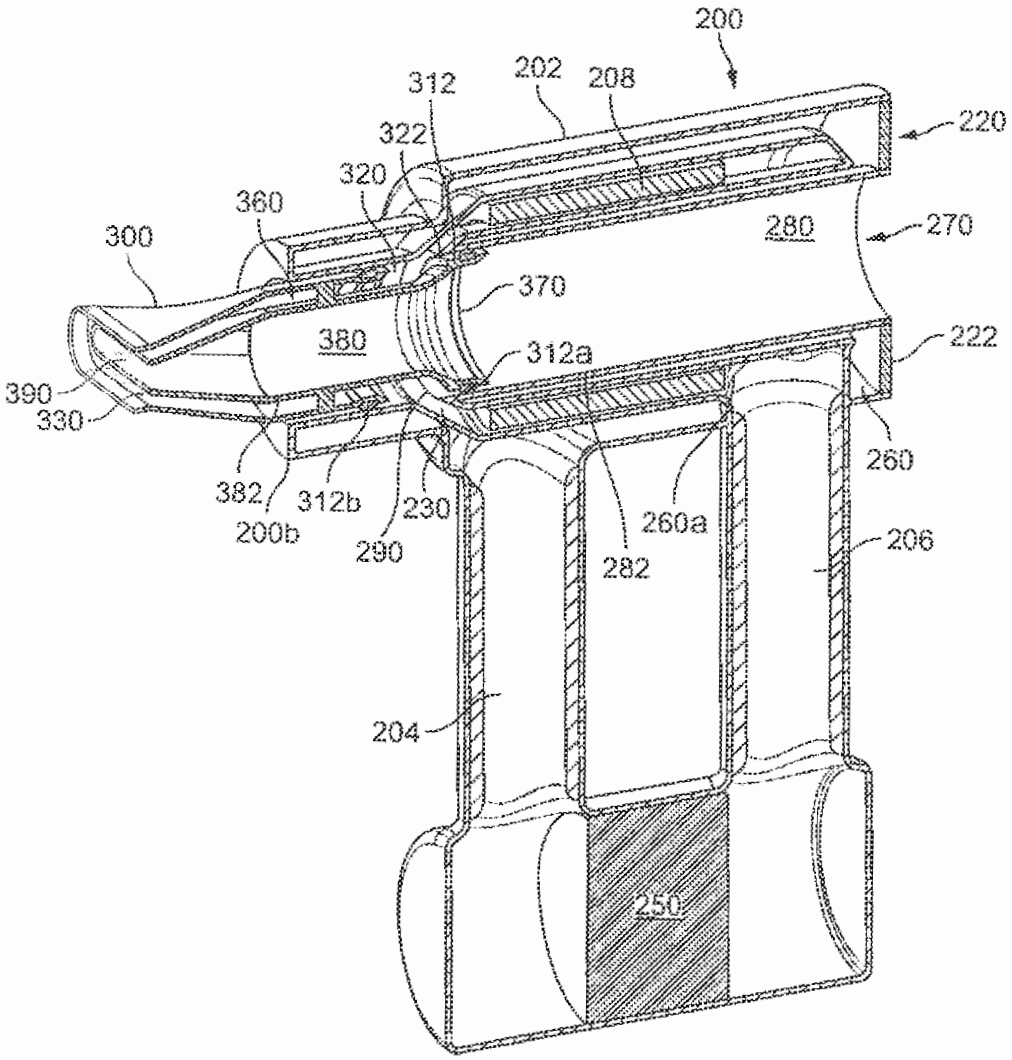


FIG. 2a

13 06 13

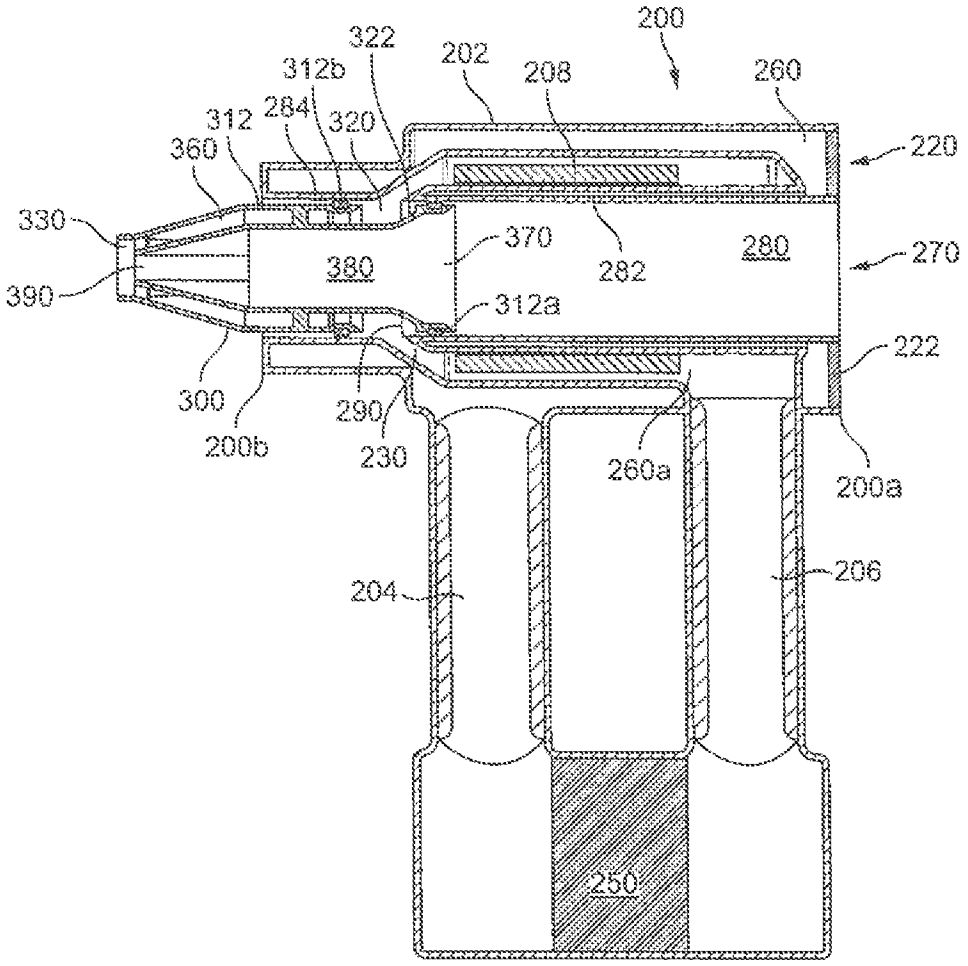


FIG. 2b

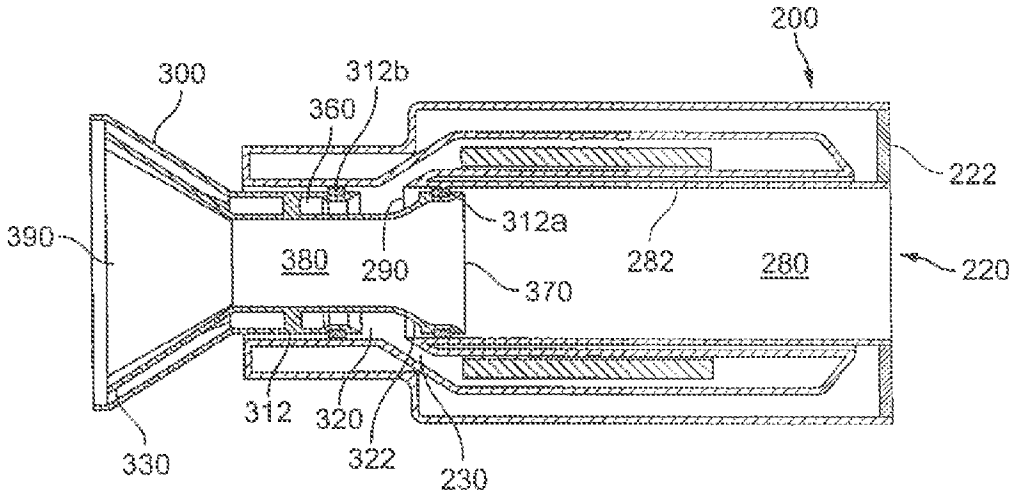


FIG. 2c

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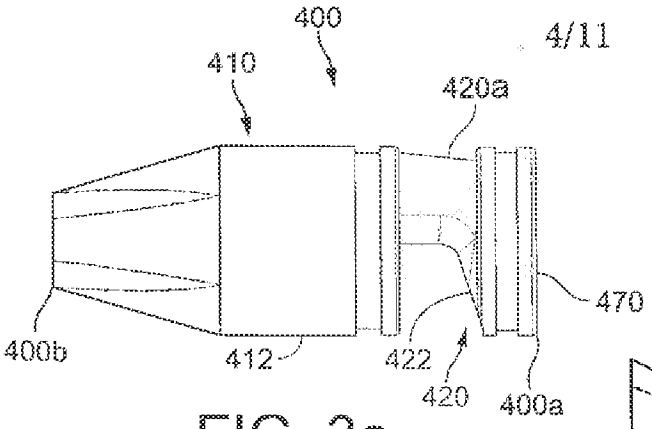


FIG. 3a

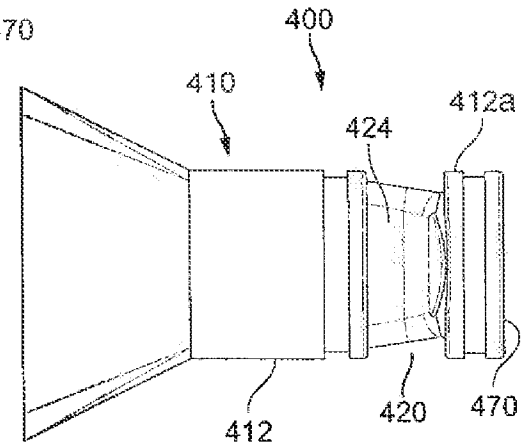


FIG. 3b

13 06 13

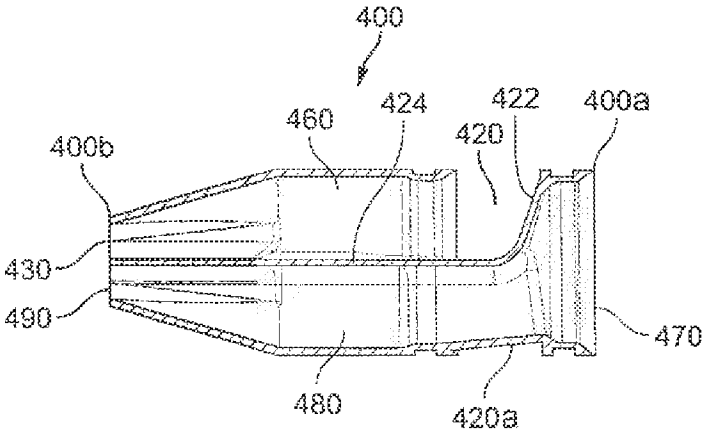


FIG. 3c

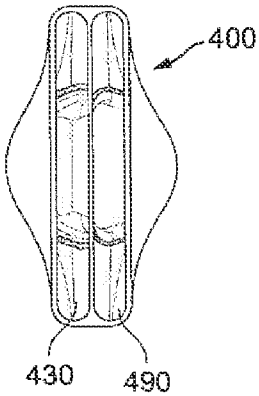


FIG. 3d

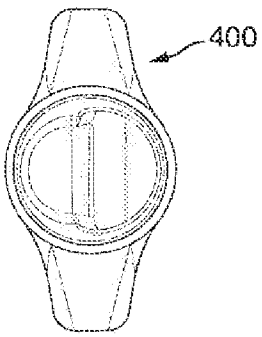


FIG. 3e

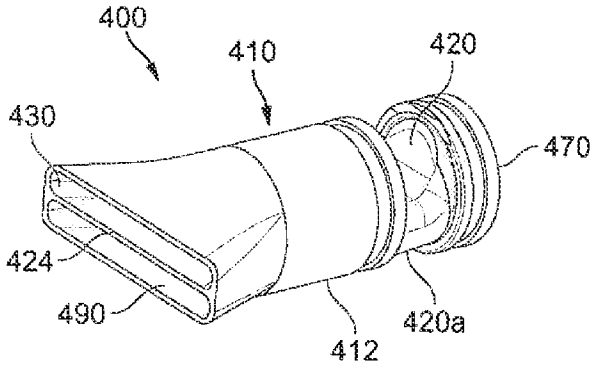


FIG. 3f

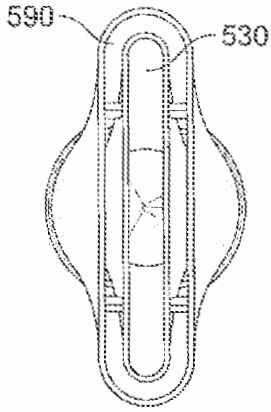


FIG. 4a

13 06 13

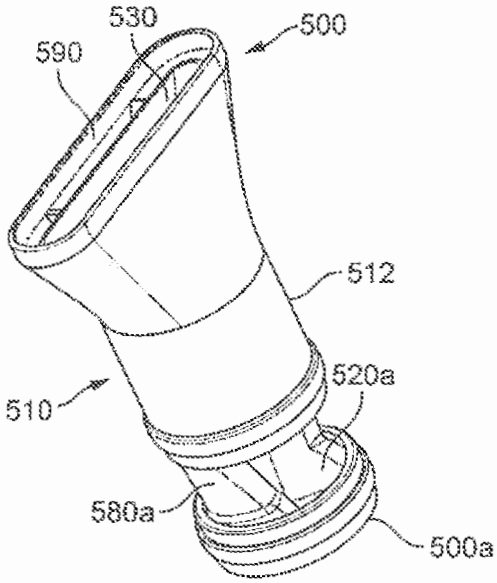


FIG. 4b

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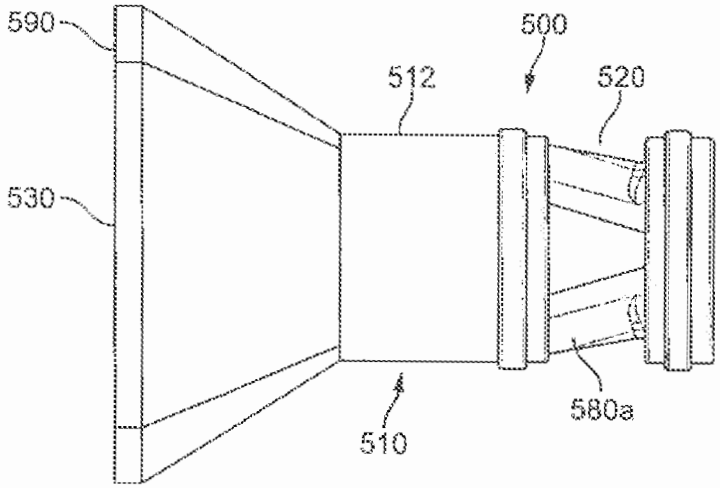


FIG. 4c

13 06 13

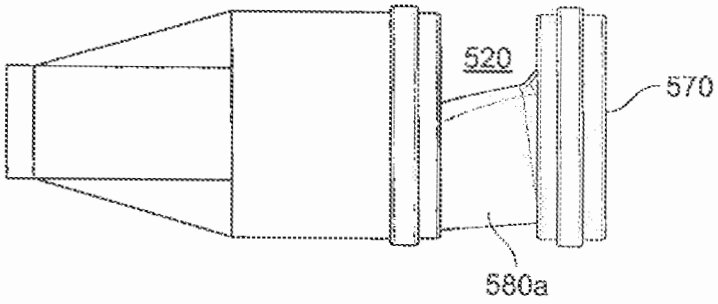


FIG. 4d

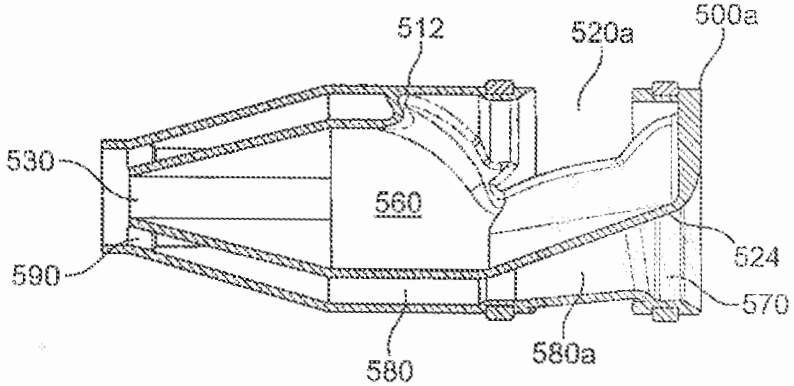


FIG. 4e

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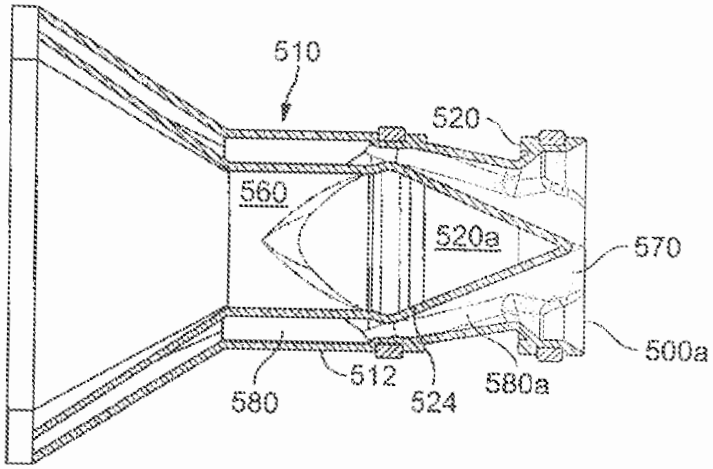


FIG. 4f

13 06 13

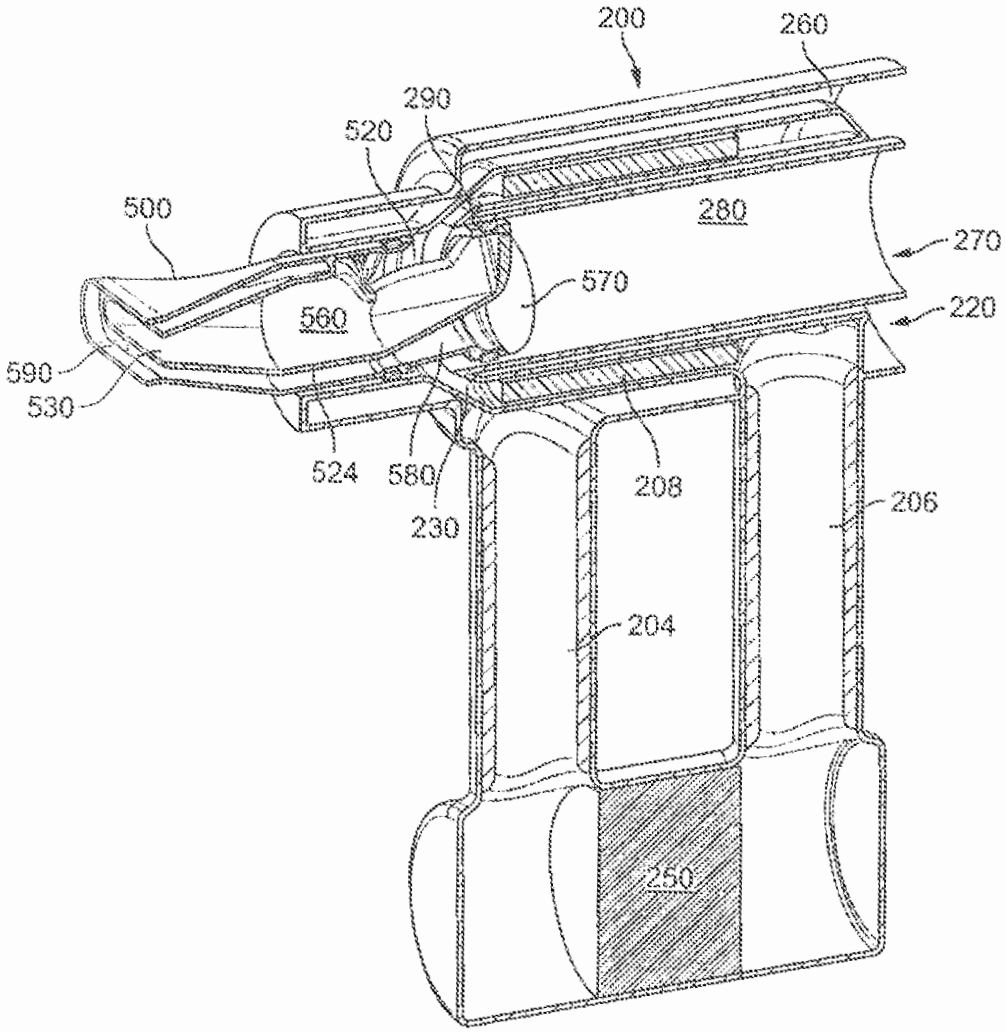


FIG. 4g

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13 06 13

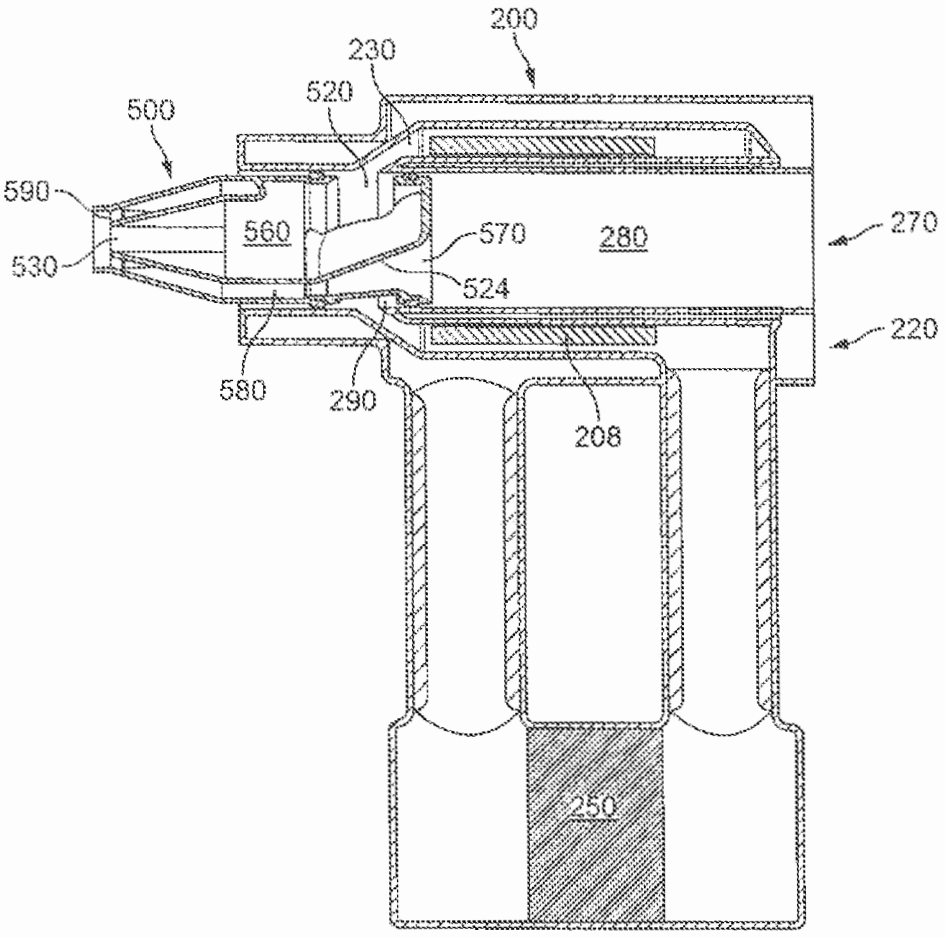


FIG. 4h

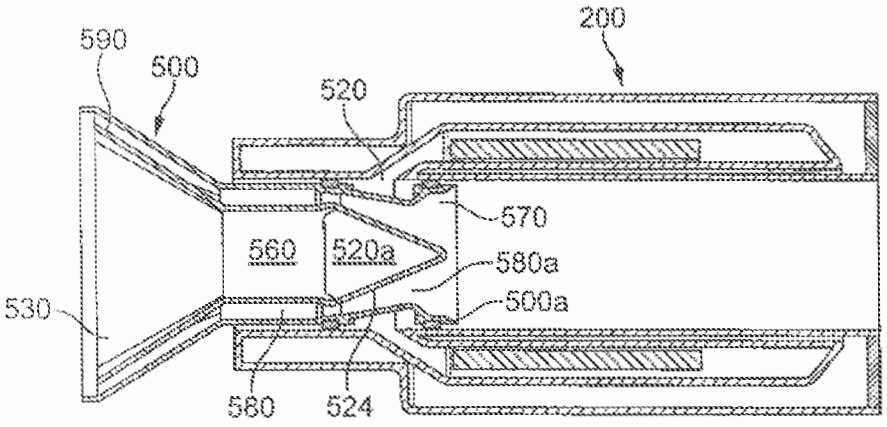


FIG. 4i

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13 06 13

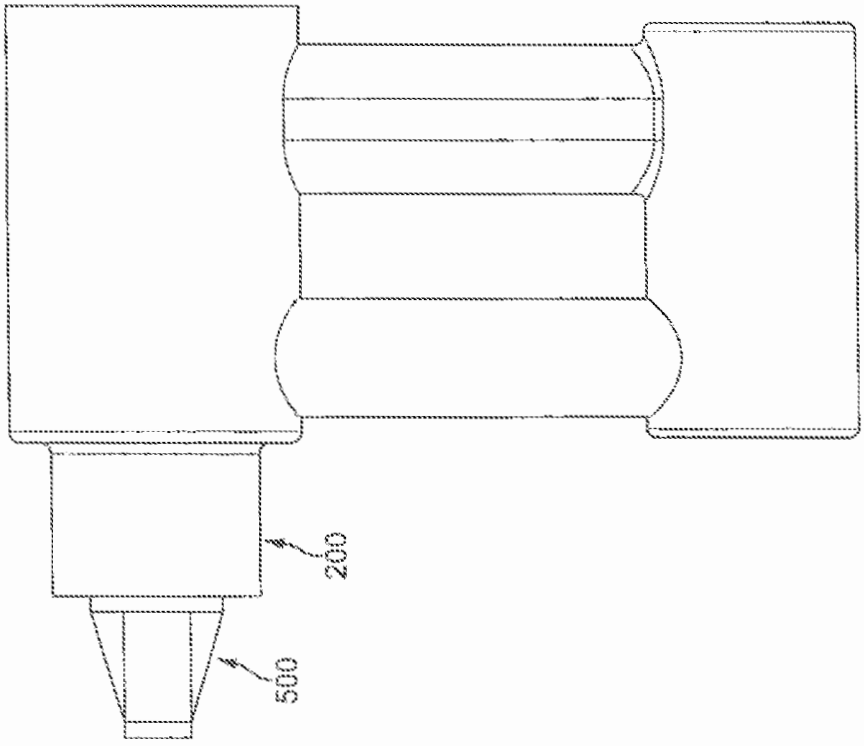


FIG. 4j

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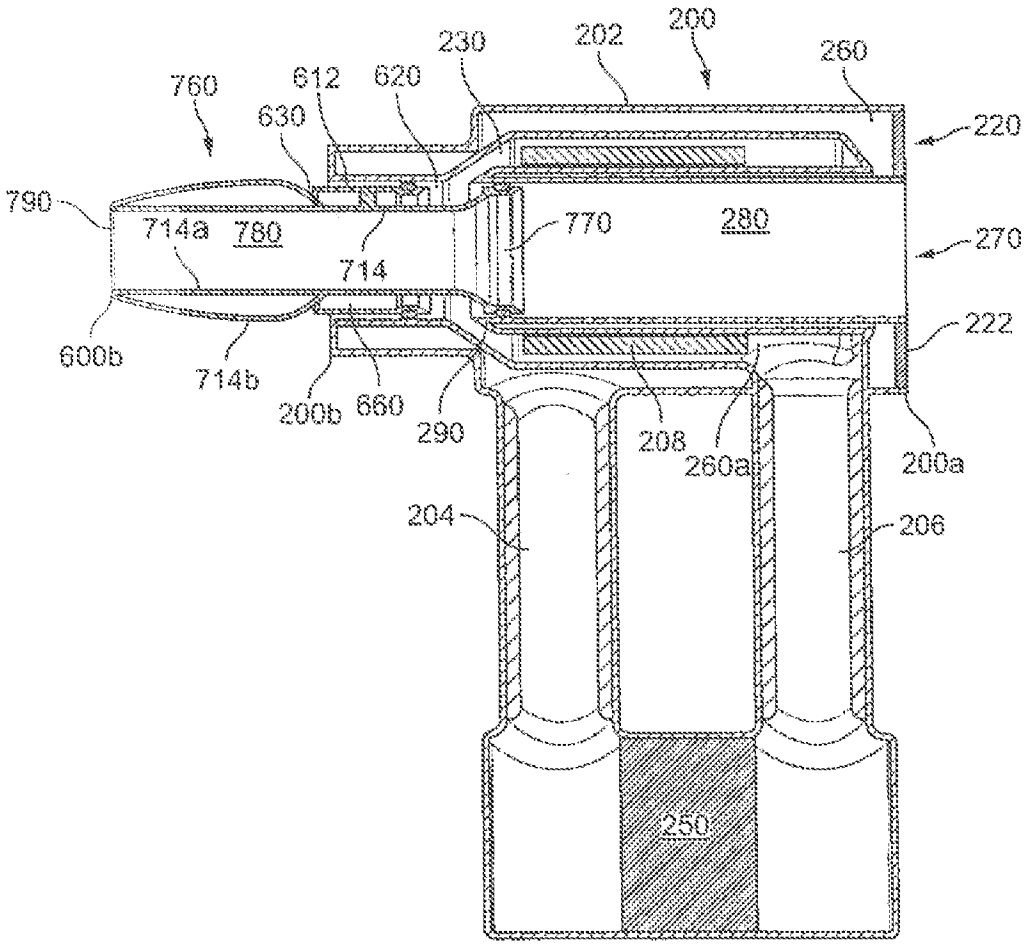


FIG. 5a

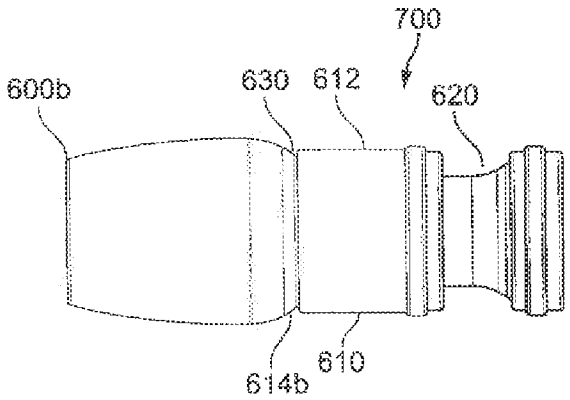


FIG. 5b

13 06 13

13 06 13

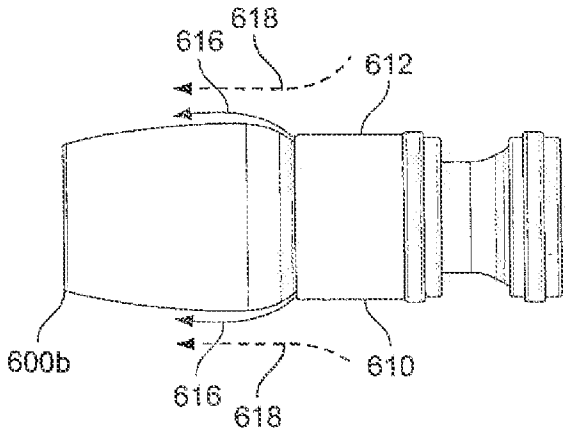


FIG. 5c

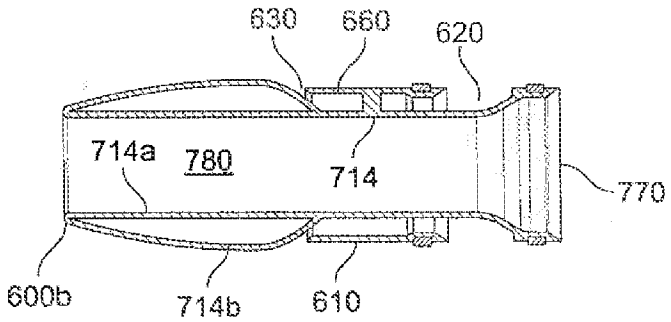


FIG. 5d

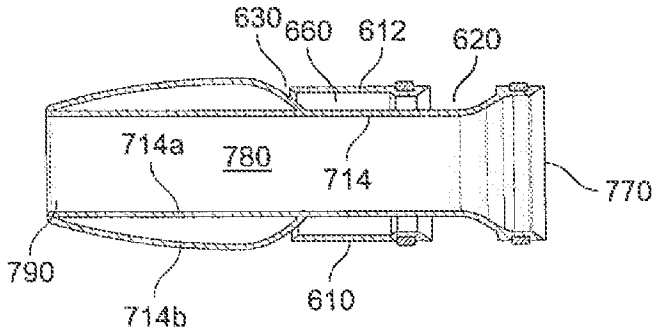


FIG. 5e

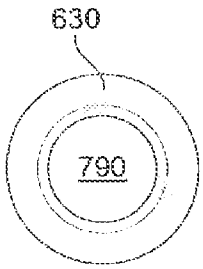


FIG. 5f

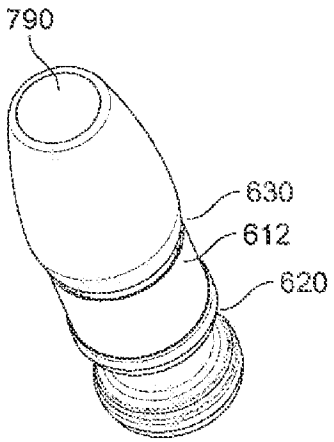


FIG. 5g

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Attachment For A Hand Held Appliance

This invention relates to an attachment for a hand held appliance, in particular an attachment for a hairdryer and an appliance, particularly a hairdryer comprising such an attachment.

Blowers and in particular hot air blowers are used for a variety of applications such as drying substances such as paint or hair and cleaning or stripping surface layers. Generally, a motor and fan are provided which draw fluid into a body; the fluid may be heated prior to exiting the body. The motor is susceptible to damage from foreign objects such as dirt or hair so conventionally a filter is provided at the fluid intake end of the blower. Conventionally such appliances are provided with a nozzle which can be attached and detached from the appliance and changes the shape and velocity of fluid flow that exits the appliance. Such nozzles can be used to focus the outflow of the appliance or to diffuse the outflow depending on the requirements of the user at that time.

According to a first aspect, the invention provides a hairdryer comprising a handle; a body comprising a fluid outlet and a primary fluid outlet; a fan unit for generating fluid flow through the hairdryer, the hairdryer comprising a fluid flow path extending from a fluid inlet through which a fluid flow enters the hairdryer to the fluid outlet, and a primary fluid flow path extending from a primary fluid inlet to the primary fluid outlet; a heater for heating a primary fluid flow drawn through the primary fluid inlet; and a nozzle attachable to the body, the nozzle comprising a primary nozzle fluid inlet for receiving the primary fluid flow from the primary fluid outlet, and a primary nozzle fluid outlet for emitting the primary fluid flow, a further nozzle fluid inlet for receiving the fluid flow from the fluid outlet, a further nozzle fluid outlet for emitting the fluid flow, and wherein within the nozzle the fluid flow is isolated from the primary fluid flow.

The hairdryer has a primary flow which is that processed by and drawn into the appliance by the fan unit and a fluid flow which is entrained by the primary, processed flow. Thus the fluid flow through the hairdryer is amplified by the entrained flow.

Preferably, one of the further nozzle fluid outlet and the primary nozzle fluid outlet extends about the other of the further nozzle fluid outlet and the primary nozzle fluid outlet.

It is preferred that the further nozzle fluid outlet and the primary nozzle fluid outlet are located on opposing sides of the nozzle.

Preferably, the further nozzle fluid outlet and the primary nozzle fluid outlet are substantially coplanar.

It is preferred that the nozzle comprises a further fluid flow path for conveying the fluid flow to the further fluid outlet, and wherein the primary fluid inlet extends at least partially about the further fluid flow path.

Preferably, the primary fluid inlet surrounds the further fluid flow path.

It is preferred that the nozzle comprises a first end and a second end remote from the first end, and wherein the second end of the nozzle comprises at least the further nozzle fluid outlet.

Preferably, the second end of the nozzle comprises the primary nozzle fluid outlet.

It is preferred that the primary nozzle fluid outlet is located between the first end and the second end of the nozzle.

Preferably, the second end of the nozzle is deformable.

It is preferred that the first end of the nozzle comprises the further nozzle fluid inlet.

Preferably, the first end of the nozzle is insertable into the fluid flow path through the fluid outlet.

It is preferred that the first end of the nozzle is slidably insertable into the fluid flow path through the fluid outlet.

Preferably, the nozzle is retained within the duct by means of friction between the nozzle and the body.

It is preferred that the primary fluid outlet is configured to emit the primary fluid flow into the primary nozzle fluid flow path, and wherein the primary nozzle fluid inlet is located between the first end and the second end of the nozzle.

Preferably, the nozzle comprises a side wall between the first end and the second end, and wherein a portion of the side wall which is located between the first end and the second end of the nozzle at least partially defines the primary nozzle fluid inlet.

It is preferred that the side wall is tubular in shape.

Preferably, the side wall extends about an inner wall, and wherein the primary nozzle fluid inlet is located between the inner wall and the side wall.

It is preferred that the inner wall is tubular in shape.

Preferably, the side wall extends from the first end to the second end, and the nozzle comprises an outer wall extending at least partially about the side wall, and wherein the primary nozzle fluid inlet is located between the outer wall and the side wall.

It is preferred that the outer wall is tubular in shape.

According to a second aspect, the invention provides a nozzle for a hairdryer comprising a handle; a body comprising a fluid outlet and a primary fluid outlet; a fan unit for generating fluid flow through the hairdryer; a fluid flow path extending from a fluid inlet through which a fluid flow enters the hairdryer to the fluid outlet, and a primary fluid flow path extending from a primary fluid inlet to the primary fluid outlet; and a heater for heating a primary fluid flow drawn through the primary fluid inlet;

wherein the nozzle is attachable to the body, the nozzle comprising a primary nozzle fluid inlet for receiving the primary fluid flow from the primary fluid outlet, and a primary nozzle fluid outlet for emitting the primary fluid flow, a further nozzle fluid inlet for receiving the fluid flow from the fluid outlet, a further nozzle fluid outlet for emitting the first fluid flow, a primary nozzle fluid inlet for receiving the primary fluid flow from the primary fluid outlet, and a primary nozzle fluid outlet for emitting the primary fluid flow, and wherein within the nozzle the fluid flow is isolated from the primary fluid flow

Preferably, one of the further nozzle fluid outlet and the primary nozzle fluid outlet extends about the other of the further nozzle fluid outlet and the primary nozzle fluid outlet.

It is preferred that the further nozzle fluid outlet and the primary nozzle fluid outlet are located on opposing sides of the nozzle.

Preferably, the further nozzle fluid outlet and the primary nozzle fluid outlet are substantially coplanar.

It is preferred that the nozzle comprises a further fluid flow path for conveying the further fluid flow to the further fluid outlet, and wherein the primary fluid inlet extends at least partially about the further fluid flow path.

Preferably, the primary fluid inlet surrounds the further fluid flow path.

It is preferred that the nozzle comprises a first end and a second end remote from the first end, and wherein the second end of the nozzle comprises at least the further nozzle fluid outlet.

Preferably, the second end of the nozzle comprises the primary nozzle fluid outlet.

It is preferred that the primary nozzle fluid outlet is located between the first end and the second end of the nozzle.

Preferably, the second end of the nozzle is deformable.

It is preferred that the first end of the nozzle comprises the further nozzle fluid inlet.

Preferably, the primary nozzle fluid inlet is located between the first end and the second end of the nozzle.

It is preferred that the nozzle comprises a side wall between the first end and the second end, and wherein a portion of the side wall which is located between the first end and the second end of the nozzle at least partially defines the primary nozzle fluid inlet.

Preferably, the side wall is tubular in shape.

It is preferred that the side wall extends about an inner wall, and wherein the primary nozzle fluid inlet is located between the inner wall and the side wall.

Preferably, the inner wall is tubular in shape.

It is preferred that the side wall extends from the first end to the second end, and the nozzle comprises an outer wall extending at least partially about the side wall, and

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wherein the primary nozzle fluid inlet is located between the outer wall and the side wall.

Preferably, the outer wall is tubular in shape.

Preferably, said at least one parameter of the fluid flow emitted from the hairdryer comprises at least one of the shape, profile, orientation, direction, flow rate and velocity of the fluid flow emitted from the hairdryer.

The invention will now be described by way of example and with reference to the accompanying drawings, of which:

Figures 1a to 1f show various representations of a double flow path nozzle according to the invention;

Figure 2a to 2c show a double flow path nozzle attached to a hairdryer;

Figures 3a to 3f show a laminar flow nozzle;

Figures 4a to 4f show a further double flow path nozzle;

Figures 4g to 4j show the further double flow path nozzle attached to a hairdryer;

Figure 5a shows an alternate double flow path nozzle; and

Figures 5b to 5g show an alternate double flow path nozzle.

Figures 1a to 1f show a double flow path nozzle 300 and Figures 2a to 2c show the nozzle 300 attached to a double flow path hairdryer 200. The nozzle 300 comprises a generally tubular body 310 having an outer wall 312 and an inner wall 382. The outer wall 312 extends from an upstream end 300a to a downstream end 300b of the nozzle

300 and about the inner wall 382. The outer wall 312 has an aperture which forms a fluid inlet 320 and a fluid outlet 330 is provided downstream of the fluid inlet 320. In use, fluid flows into the fluid inlet 320 along the length of the body 310 along fluid flow path 360 provided between the outer wall 312 and the inner wall 382 and out through the fluid outlet 330. The inner wall 382 is generally tubular however, at the fluid inlet 320 it curves outwards 322 and joins the outer wall 312 forming an upstream end to the fluid inlet 320.

A further inlet 370 is provided in the upstream end 300a of the nozzle 300 and fluid flows along a further fluid flow path 380 to further fluid outlet 390. The further fluid flow path 380 flows within a tube defined by the inner wall 382. The further fluid flow path 380 is nested within the fluid flow path 360 and surrounded by the fluid flow path 360. The fluid outlet 330 and further fluid outlet 390 have substantially the same shape and configuration and in this example, comprise a rounded slot with a central wider region. This means that fluid flow is directed mainly in the central region but that the drying area is increased by the slot portion.

The fluid outlet 330 and the further fluid outlet 390 can comprise alternative shapes such as a simple double slot 330a, 390a as is shown in Figure 1g.

In use, when the nozzle is attached to a hairdryer the fluid inlet is in fluid communication with a primary fluid outlet of the hairdryer and the further fluid inlet is in fluid communication with a second fluid outlet of the hairdryer. Having two fluid flow paths is advantageous as it enables manipulation of the fluid outflow to create different styling conditions depending on user requirements.

Referring now to Figures 2a to 2c, in particular the hairdryer 200 will now be described. The hairdryer 200 has a handle 204, 206 and a body 202 which comprises a duct 282, 284. A primary fluid flow path 260 starts at a primary inlet 220 which in this example is located at the upstream end 200a of the hairdryer i.e. at the distal end of the hairdryer from the fluid outlet 200b. Fluid is drawn into the primary fluid inlet 220 by a fan unit

250, fluid flows along primary fluid flow path 260 located on the inside of the outer body 202 of the hairdryer between the outer body 202 and the duct 282, along a first handle portion 204 to the fan unit 250.

The fan unit 250 includes a fan and a motor. The fluid is drawn through the fan unit 250, along a second handle portion 206 and returns to the body 202 of the hairdryer in an inner tier 260a of the body. The inner tier 260a of the body 202 is nested within the primary fluid flow path 260 between the primary fluid flow path 260 and the duct 282 and includes a heater 208. The heater 208 is annular and heats the fluid that flows through the inner tier 260a directly. Downstream of the heater 208, fluid exits the primary fluid flow path at the primary outlet 230.

The nozzle 300 is inserted into the downstream end 200b of the hairdryer until a stop is reached. In this position, the fluid inlet 320 of the nozzle 300 is in fluid communication with a primary fluid outlet 230 of the hairdryer 200. Fluid that flows out of the primary outlet 230 flows along the body 310 of the nozzle 300 to the nozzle outlet 330. The nozzle is an attachment for adjusting at least one parameter of the fluid flow emitted from the hairdryer and the downstream end 300b of the nozzle protrudes from the downstream end 200b of the hairdryer 200.

A second fluid flow path 280 is also provided and travels straight through the body 202 of the hairdryer 200 from a second inlet 270 to a second outlet 290. With the double flow path nozzle 300 attached to the outlet end 200b of the hairdryer 200, both the primary and second fluids flow from their respective inlet 220, 270 to a nozzle outlet 330, 390. The fluid that flows through the second fluid flow path 280 is not processed by the fan unit 250; it is entrained by the primary fluid flow through the primary fluid flow path 260 when the fan unit is switched on.

The second fluid flow path 280 can be considered to flow along a tube defined by an upstream duct 282 and a downstream duct 284 where the primary outlet 230 is an aperture in the tube between the ducts 282 and 284. The nozzle is partially inserted into

the tube defined by the ducts 284, 282. In this example the nozzle 300 is slidably inserted into hairdryer outlet 200b along downstream duct 284 past the aperture or primary fluid outlet 230 into the upstream duct 282. The nozzle 300 is retained in the duct 282, 284 by friction.

When nozzle 300 is attached to the hairdryer 200, fluid that flows through the primary fluid flow path 260 flows to the primary outlet 230 enters the inlet 320 of the nozzle 300, flows along the fluid flow path 360 between the outer wall 312 and the inner wall 382 to an outlet 330 of the nozzle 300 and appliance. Fluid that flows through the second fluid flow path 280 flows towards the second outlet 290, enters the further inlet 370 of the nozzle 300 and flows along further fluid flow path 380 within the inner wall 382 to the further outlet 390 of the nozzle 300.

In this embodiment, the further flow path 380 is central to and concentric with the fluid flow path 360 i.e. the fluid flow path extends about the further fluid flow path. The further outlet 390 is surrounded by the outlet 330 and this results in a central cool fluid path with an outer perimeter of hot fluid exiting the nozzle. In order that the integrity of the hot and cold fluid flow paths are maintained and that they are isolated within the hairdryer and nozzle, the inserted nozzle 300 must seal the primary fluid outlet 330 to prevent mixing of the hot and cold flows. In this example, the outer wall 312 is provided with an upstanding collar 312a that extends about the outer wall 312 and seals the duct 282 thus preventing ingress of fluid from the second fluid flow path 280 into the nozzle inlet 320 and egress from the primary fluid outlet 230 into the second fluid flow path 280. The collar 312a of outer wall 312 provides the friction between the nozzle and the hairdryer that retains the nozzle within the hairdryer.

A second collar 312b is provided downstream of the fluid inlet 320 and this seals the nozzle with respect to hairdryer duct 284 and the hairdryer outlet 200b that surrounds the nozzle outlet 330. This is to stop leakage around the nozzle and to provide a more focused outflow from the nozzle.

The collars 312a, 312b in this example are formed from an O-ring which is held in a recess formed in the body 310 of the nozzle. Alternatives will be apparent to the skilled person and include, but are not limited to an integral moulded lip, a plastic/hard rubber ring, a living hinge, an overmoulded lip and a push fit arrangement.

Whilst the hairdryer shown has the primary fluid flow path flowing through the handles of the hairdryer, this is not required. The primary fluid flow path can alternatively flow from the primary inlet 220 along the body 202 through the heater to the primary fluid outlet 230 and thence into the nozzle.

Figures 3a to 3f show various representations of a laminar nozzle according to the invention. A nozzle 400 has a body 410 with a generally tubular outer wall 412, and an inner wall 424 which divides the body 410 substantially in half lengthways. The outer wall 412 has an inlet 420 through the wall 412 and an outlet 430 downstream of the inlet and connected to the inlet 420 by a fluid flow path 460. The inlet 420 is a single semicircular aperture in the outer wall 412 and is defined by the outer wall 412, a side wall 422 and the inner wall 424. The inlet 420 is located between a downstream end 400b and an upstream end 400a of the nozzle 400. The side wall 422 connects between the outer wall 410 and the inner wall 424 and together with the outer wall 412 and the inner wall 424 defines the fluid flow path 460.

A further inlet 470 is provided in the upstream end 400a of the nozzle 400. In this example the further inlet 470 is substantially circular to provide a fluid connection with substantially circular hairdryer ducting 284 (for example at the second fluid outlet 290 of Figure 2a). The further inlet 470 is in fluid communication with a further outlet 490 via a further fluid flow path 480.

In order to create a laminar flow out of the nozzle 400, the two outlets 430, 490 of the nozzle are situated one on top of the other or side by side depending on the orientation of the nozzle i.e. they are coplanar and located on opposing sides of the nozzle. The fluid flow path 460 and further fluid flow path 480 are also bilateral along the length of

the nozzle from the inlet 420. Upstream of inlet 420, where there is only the further fluid flow path 480, the further fluid flow path 480 extends from a semicircular cross-section to a circular cross-section at the further inlet 470. This change in shape is facilitated by the side wall 422 that forms part of the fluid inlet 420.

As the nozzle 400 provides fluid communication with an annular primary flow, the diameter of the further fluid flow path 480 at the fluid inlet 420 is reduced slightly enabling fluid that exits the primary outlet of the hairdryer radially spaced 420a away from the inlet 420 to flow around the circumference of the nozzle and into the inlet 420. Without this feature, flow from the primary outlet would be restricted at the inlet.

In addition, a collar 412a is provided around the outer wall 412 at or near the upstream end of the fluid inlet 420 to seal the nozzle 400 against internal ducting 284 of a hairdryer to prevent any primary flow from a hairdryer mixing with entrained flow.

Figures 4a to 4j show a further double flow path nozzle 500 and the nozzle attached to a hairdryer 200. In this nozzle 500, the relative positions of the inlets and outlets are reversed producing an inside out nozzle.

The nozzle 500 has a generally tubular body 510 having a fluid inlet 520 through an outer wall 512 of the body 510 and a fluid outlet 530 downstream of the fluid inlet 520. In use, fluid flows into the fluid inlet 520 along the length of the body 510 along fluid flow path 560 and out through the fluid outlet 530. A further inlet 570 is provided in the upstream end 500a of the nozzle 500 and fluid flows from this further inlet 570 along a further fluid flow path 580 to a further fluid outlet 590.

Referring now to Figures 4g to 4j, when the nozzle 500 is inserted into a hairdryer 200, the inlet 520 aligns with a primary fluid outlet 230 of the hairdryer. Thus, fluid flows in the hairdryer from the primary fluid inlet 220, through the primary flow path 260 past the fan unit 250 and heater 208 to a primary fluid outlet 230 then into the fluid inlet 520 of the nozzle 500 along fluid flow path 560 to fluid outlet 530.

The further inlet 570 of the nozzle 500 aligns with and is inserted into a second fluid outlet 290 of the hairdryer 200. Fluid that is drawn into the hairdryer along a second fluid flow path 280 by the action of the fan unit 250 on the primary fluid flow path 260 enters the hairdryer at a second fluid inlet 270, flows along a second fluid flow path 280 towards a second fluid outlet 290. The fluid in the second fluid flow path 280 enters the further nozzle inlet 570, flows along a further fluid flow path 580 to a further fluid outlet 590.

The fluid outlet 530 and further fluid outlet 590 are arranged so that the fluid from the primary fluid flow path 260 i.e. the fluid that has been processed by the fan unit 250 and heater by the heater 208 is surrounded by fluid from the second fluid flow path i.e. cool entrained fluid. Thus, the further outlet 590 surrounds the outlet 530 and this results in a central hot fluid path with an outer perimeter of cool fluid exiting the nozzle. In this example, the outlets 530, 590 of the nozzle 500 are slot shaped but they could be circular.

In order to achieve this, the further inlet 570 has a circular opening to match shape and size of the second fluid outlet 290, the further fluid flow path 580 is initially a pair of slots or a V-shaped channel 580a (Figures 4b, 4d, and 4f in particular) formed from the outer wall 512 of the nozzle 500 and an inner wall 524 that divides the two fluid flow paths 560, 580 within the nozzle 500. Downstream of the fluid inlet 520, the inner wall 524 becomes circular and generally concentric to the outer wall 512 and the further fluid flow path 580 becomes annular in shape to form the radially outer outlet 590 of the nozzle 500 i.e. the further outlet 590 surrounds the fluid outlet 530.

Inlet 520 is annular and has a mouth 520a formed between the inner wall 524 and the outer wall 512 of the nozzle. The mouth 520a provides an entrance to the fluid flow path 560 which is generally circular within the body 510 of the nozzle 500 and surrounded by the further fluid flow path 580 downstream of the inlet 520.

Figures 5a to 5g show an alternate double flow path nozzle 700 on a hairdryer 200. The nozzle 700 has a generally tubular body 610, a first or upstream end 600a and a second or downstream end 600b. There is a fluid inlet 620 in an outer wall 612 of the body 610 between the first end 600a and the second end 600b of the nozzle 600 and a fluid outlet 630 downstream of the fluid inlet 620. In this example, the fluid outlet 630 is ring shaped or annular and is formed by an inner wall 614 of the nozzle 700 and the outer wall 612.

The fluid inlet 620 is an opening in the outer wall 612 of the nozzle and is defined by an aperture formed from a slanted edge 622b of the outer wall and a curved side wall 622 provided at the upstream end of the fluid inlet which connects the outer wall 612 and the inner wall 614. The slanted edge of the outer wall is slanted in the direction of fluid flow to reduce turbulence and pressure losses as the primary flow enters the nozzle.

The outer wall 612 surrounds inner wall 614 and together walls 612, 614 define a fluid flow path 660 through the generally tubular body 610 from the inlet 620 to the outlet 630. In the vicinity of the outlet 630, the inner wall curves outwards 614b and increases in diameter causing a reduction in the cross section of the fluid flow path at the outlet 630. The inner wall 614 continues beyond the outlet 630 and the end of the outer wall 612 of the nozzle 700 to a downstream nozzle end 600b. The inner wall 614b is convex and is a Coanda surface i.e. it causes fluid that flows through the fluid flow path 660 to hug the surface of the inner wall 614b as it curves forming an annular flow at the outlet 630 and downstream nozzle end 600b. In addition the Coanda surface 614 is arranged so a primary fluid flow exiting the outlet 630 is amplified by the Coanda effect.

The hairdryer achieves the output and cooling effect described above with a nozzle which includes a Coanda surface to provide an amplifying region utilising the Coanda effect. A Coanda surface is a known type of surface over which fluid flow exiting an output orifice close to the surface exhibits the Coanda effect. The fluid tends to flow over the surface closely, almost 'clinging to' or 'hugging' the surface. The Coanda effect is already a proven, well documented method of entrainment whereby a primary air

flow is directed over the Coanda surface. A description of the features of a Coanda surface, and the effect of fluid flow over a Coanda surface, can be found in articles such as Reba, Scientific American, Volume 214, June 1963 pages 84 to 92.

Advantageously, the assembly results in the entrainment of air surrounding the mouth of the nozzle such that the primary air flow is amplified by at least 15%, whilst a smooth overall output is maintained

By encouraging the fluid at the outlet 630 to flow along 616 the curved surface 614b of the inner wall to the downstream nozzle end 600b, fluid is entrained 618 from outside the hairdryer 200 (Figure 5c) by the Coanda effect. This action of entrainment increases the flow of air at the downstream nozzle end 600b, thus the volume of fluid flowing at the downstream nozzle end 600b is magnified by the entrainment above what is processed by the hairdryer 200 through a fan unit 250 and heater 208.

When the nozzle 700 is attached to a hairdryer 200 as shown in Figure 5a, the fluid inlet 620 aligns with a primary fluid outlet 230 of the hairdryer. Hairdryer 200 has a second fluid flow path 280 through a central duct 282 and this second fluid flow path 280 is in fluid communication with a further fluid flow path 780 provided in the nozzle 700. The inner wall 714 comprises a tube or bore through the nozzle 700 through which a fluid can flow from a further inlet 770 to a further outlet 790 along a further fluid flow path 780. In this example, adjacent to and upstream of the fluid outlet 630 the inner wall 714 splits into an outer curved wall 714b along which fluid from the fluid flow path 660 flows to fluid outlet 630 and an inner straight wall 714a which continues to a further fluid outlet 790.

In order to seal the nozzle fluid flow path 660 with respect to the primary fluid outlet 230, the outer wall 612 of the nozzle is provided with a collar 612a. The collar 612a is upstanding from the outer wall 612 so has a larger diameter than the outer wall and is designed to fit with ducting 282 within the hairdryer 200. The collar 612a is upstream of the fluid inlet 620 of the nozzle 700. A second collar 612b is ideally also provided

downstream of the fluid inlet 620 and prevents fluid from the primary outlet 230 of the hairdryer flowing between the outer wall 612 of the nozzle and the hairdryer outlet 200b.

When the nozzle 700 is attached to a hairdryer a primary flow from a primary inlet 220 to a primary outlet 230 along a primary flow path 260 is in fluid communication with the nozzle inlet 620. Fluid flows from the nozzle inlet 620 along fluid flow path 660 to nozzle outlet 630. As the surface of the outer curved wall 714b is a Coanda surface, fluid that flows out of the outlet 630 is drawn to the surface and amplified by the Coanda effect which entrains fluid 618 from outside of the nozzle along the nozzle to a nozzle end 600b. In addition, a second fluid flow path 280 is provided in the hairdryer 200 through which fluid is entrained by the action of fluid flowing in the primary fluid flow path 260,660 i.e. fluid that is drawn into the primary fluid flow path 260 directly by the fan unit 250. This second fluid flow path 280 has an inlet 270 and an outlet 290. The outlet 290 is in fluid communication with the further inlet 770 of the nozzle 700. So fluid that is entrained into the second fluid flow path 280 by the action of the fan unit 250 flows along a further fluid flow path 780 the boundaries of which are defined by the inner wall 714, 714b of the nozzle 700 to a further outlet 790.

Thus, in this example the hairdryer emits a hot annular fluid which has a central cool core from the internally entrained fluid and an outer cool ring from the externally entrained fluid.

The nozzle is retained with respect to the hairdryer by one of a number of alternatives which include but are not limited to a felt seal, a bump stop, an o-ring, magnets, friction fit, a mechanical clip, snap fit or actuated snap fit.

The hairdryers are preferably provided with a filter 222 (Figures 2b and 2c) which covers at least the primary fluid flow inlet 220 of the hairdryer. The filter 222 is provided as is prevents ingress of dust, debris and hair into the primary fluid flow path upstream 260 of the fan unit250 which includes a fan and a motor. These foreign

objects could damage the motor and cause premature failure of the hairdryer. The filter 222 can cover the entire intake of the hairdryer i.e. both the primary fluid flow path 260 and the second fluid flow path 280 however this is not preferred as it interferes with a line of sight through the appliance. A line of sight through the appliance is restricted by the use of a nozzle on the appliance.

The invention has been described in detail with respect to a nozzle for a hairdryer and a hairdryer comprising a nozzle however, it is applicable to any appliance that draws in a fluid and directs the outflow of that fluid from the appliance.

The appliance can be used with or without a heater; the action of the outflow of fluid at high velocity has a drying effect.

The fluid that flows through the appliance is generally air, but may be a different combination of gases or gas and can include additives to improve performance of the appliance or the impact the appliance has on an object the output is directed at for example, hair and the styling of that hair.

The invention is not limited to the detailed description given above. Variations will be apparent to the person skilled in the art.

CLAIMS

1. A hairdryer comprising a handle; a body comprising a fluid outlet and a primary fluid outlet; a fan unit for generating fluid flow through the hairdryer, the hairdryer comprising a fluid flow path extending from a fluid inlet through which a fluid flow enters the hairdryer to the fluid outlet, and a primary fluid flow path extending from a primary fluid inlet to the primary fluid outlet; a heater for heating a primary fluid flow drawn through the primary fluid inlet; and a nozzle attachable to the body, the nozzle comprising a primary nozzle fluid inlet for receiving the primary fluid flow from the primary fluid outlet, and a primary nozzle fluid outlet for emitting the primary fluid flow, a further nozzle fluid inlet for receiving the fluid flow from the fluid outlet, a further nozzle fluid outlet for emitting the fluid flow, and wherein within the nozzle the fluid flow is isolated from the primary fluid flow.

2. A hairdryer according to claim 1, wherein one of the further nozzle fluid outlet and the primary nozzle fluid outlet extends about the other of the further nozzle fluid outlet and the primary nozzle fluid outlet.

3. A hairdryer according to claim 1, wherein the further nozzle fluid outlet and the primary nozzle fluid outlet are located on opposing sides of the nozzle.

4. A hairdryer according to any preceding claim, wherein the further nozzle fluid outlet and the primary nozzle fluid outlet are substantially coplanar.

5. A hairdryer according to any preceding claim, wherein the nozzle comprises a further fluid flow path for conveying the fluid flow to the further fluid outlet, and wherein the primary fluid inlet extends at least partially about the further fluid flow path.

6. A hairdryer according to claim 5, wherein the primary fluid inlet surrounds the further fluid flow path.

7. A hairdryer according to any preceding claim, wherein the nozzle comprises a first end and a second end remote from the first end, and wherein the second end of the nozzle comprises at least the further nozzle fluid outlet.

8. A hairdryer according to claim 7, wherein the second end of the nozzle comprises the primary nozzle fluid outlet.

9. A hairdryer according to claim 7, wherein the primary nozzle fluid outlet is located between the first end and the second end of the nozzle.

10. A hairdryer according to any of claims 7 to 9, wherein the second end of the nozzle is deformable.

11. A hairdryer according to any of claims 7 to 10, wherein the first end of the nozzle comprises the further nozzle fluid inlet.

12. A hairdryer according to any of claims 7 to 11, wherein the first end of the nozzle is insertable into the fluid flow path through the fluid outlet.

13. A hairdryer according to claim 12, wherein the first end of the nozzle is slidably insertable into the fluid flow path through the fluid outlet.

14. A hairdryer according to claim 12 or claim 13, wherein the nozzle is retained within the duct by means of friction between the nozzle and the body.

15. A hairdryer according to any of claims 7 to 14, wherein the primary fluid outlet is configured to emit the primary fluid flow into the primary nozzle fluid flow path, and

wherein the primary nozzle fluid inlet is located between the first end and the second end of the nozzle.

16. A hairdryer according to claim 15, wherein the nozzle comprises a side wall between the first end and the second end, and wherein a portion of the side wall which is located between the first end and the second end of the nozzle at least partially defines the primary nozzle fluid inlet.

17. A hairdryer according to claim 16, wherein the side wall is tubular in shape.

18. A hairdryer according to claim 16 or claim 17, wherein the side wall extends about an inner wall, and wherein the primary nozzle fluid inlet is located between the inner wall and the side wall.

19. A hairdryer according to claim 18, wherein the inner wall is tubular in shape.

20. A hairdryer according to claim 16 or claim 17, wherein the side wall extends from the first end to the second end, and the nozzle comprises an outer wall extending at least partially about the side wall, and wherein the primary nozzle fluid inlet is located between the outer wall and the side wall.

21. A hairdryer according to claim 20, wherein the outer wall is tubular in shape.

22. A nozzle for a hairdryer comprising a handle; a body comprising a fluid outlet and a primary fluid outlet; a fan unit for generating fluid flow through the hairdryer; a fluid flow path extending from a fluid inlet through which a fluid flow enters the hairdryer to the fluid outlet, and a primary fluid flow path extending from a primary fluid inlet to the primary fluid outlet; and a heater for heating a primary fluid flow drawn through the primary fluid inlet;

wherein the nozzle is attachable to the body, the nozzle comprising a primary nozzle fluid inlet for receiving the primary fluid flow from the primary fluid outlet, and

a primary nozzle fluid outlet for emitting the primary fluid flow, a further nozzle fluid inlet for receiving the fluid flow from the fluid outlet, a further nozzle fluid outlet for emitting the first fluid flow, and wherein within the nozzle the fluid flow is isolated from the primary fluid flow.

23. A nozzle according to claim 22, wherein one of the further nozzle fluid outlet and the primary nozzle fluid outlet extends about the other of the further nozzle fluid outlet and the primary nozzle fluid outlet.

24. A nozzle according to claim 22, wherein the further nozzle fluid outlet and the primary nozzle fluid outlet are located on opposing sides of the nozzle.

25. A nozzle according to any of claims 22 to 24, wherein the further nozzle fluid outlet and the primary nozzle fluid outlet are substantially coplanar.

26. A nozzle according to any of claims 22 to 25, comprising a further fluid flow path for conveying the further fluid flow to the further fluid outlet, and wherein the primary fluid inlet extends at least partially about the further fluid flow path.

27. A nozzle according to claim 26, wherein the primary fluid inlet surrounds the further fluid flow path.

28. A nozzle according to any of claims 22 to 27, comprising a first end and a second end remote from the first end, and wherein the second end of the nozzle comprises at least the further nozzle fluid outlet.

29. A nozzle according to claim 28, wherein the second end of the nozzle comprises the primary nozzle fluid outlet.

30. A nozzle according to claim 29, wherein the primary nozzle fluid outlet is located between the first end and the second end of the nozzle.

31. A nozzle according to any of claims 28 to 30, wherein the second end of the nozzle is deformable.

32. A nozzle according to any of claims 28 to 31, wherein the first end of the nozzle comprises the further nozzle fluid inlet.

33. A nozzle according to any of claims 28 to 32, wherein the primary nozzle fluid inlet is located between the first end and the second end of the nozzle.

34. A nozzle according to claim 33, comprising a side wall between the first end and the second end, and wherein a portion of the side wall which is located between the first end and the second end of the nozzle at least partially defines the primary nozzle fluid inlet.

35. A nozzle according to claim 34 wherein the side wall is tubular in shape.

36. A nozzle according to claim 34 or claim 35, wherein the side wall extends about an inner wall, and wherein the primary nozzle fluid inlet is located between the inner wall and the side wall.

37. A nozzle according to claim 36, wherein the inner wall is tubular in shape.

38. A nozzle according to claim 34 or claim 35, wherein the side wall extends from the first end to the second end, and the nozzle comprises an outer wall extending at least partially about the side wall, and wherein the primary nozzle fluid inlet is located between the outer wall and the side wall.

39. A nozzle according to claim 38, wherein the outer wall is tubular in shape.

Application No:	GB1211830.3	**Examiner:**	Emma Tonner
Claims searched:	1-39	**Date of search:**	4 October 2012

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1, 3, 4, 7, 8, 11-14, 22, 24, 25, 28, 29, 32	US2005/0229422 A1 (MATTINGER et al.) see paragraph 0012
X	1, 3, 4, 7, 8, 11-14, 22, 24, 25, 28, 29, 32	EP0970633 A1 (GUENIN D) see English abstract and figures
X	1, 2, 7, 8, 11-14, 22, 23, 28, 29, 32	WO2012/059700 A2 (VELECTA PARAMOUNT) see English abstract and figures
X	1, 2, 7, 8, 11-14, 22, 23, 28, 29, 32	JP2010274050 A (KITANO H) see English abstract and figures

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[X] :

Worldwide search of patent documents classified in the following areas of the IPC

A45D

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI

International Classification:

Subclass	Subgroup	Valid From
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(56) Documents Cited:
EP 2392223 A2 JP 500130915 A
JP 2005000546 A

(58) Field of Search:
INT CL A45D
Other: EPODOC, WPI, TXTE, Internet

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(54) Title of the Invention: An attachment for a hand held appliance
Abstract Title: A nozzle for a hairdryer

(57) A hairdryer 120 comprises an attachment such as a nozzle 100 partially insertable into the end of a duct (123, fig.1c). The attachment 100 at least partially defines at least one aperture 150 for emitting fluid flow when the attachment is located in the duct (123, fig. 1c). The attachment has an external surface 110 located downstream from said at least one aperture 150, and over which fluid emitted from said at least one aperture 150 is directed. The external surface of the attachment is preferably convex in shape and may comprise a Coanda surface, which acts to entrain extra fluid from outside the nozzle into the flow, thus amplifying the fluid flow. A collar (350, fig. 2d) may be provided to define, together with the outer surface of the nozzle (310, fig. 2d) a flow path for the entrained fluid.

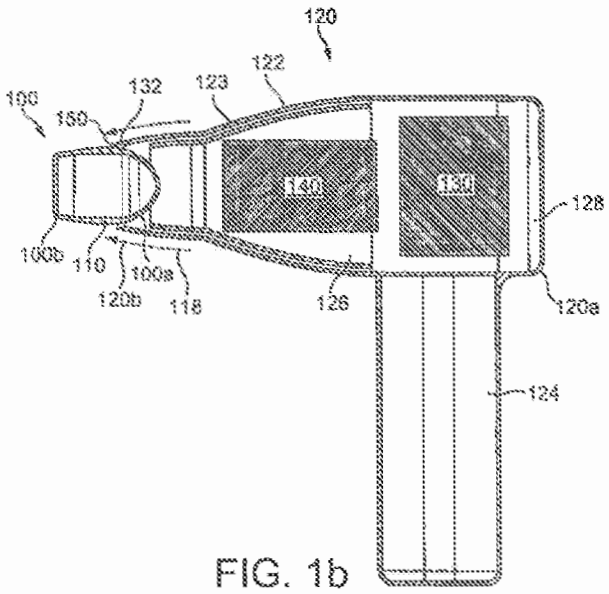


FIG. 1b

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

13 06 13

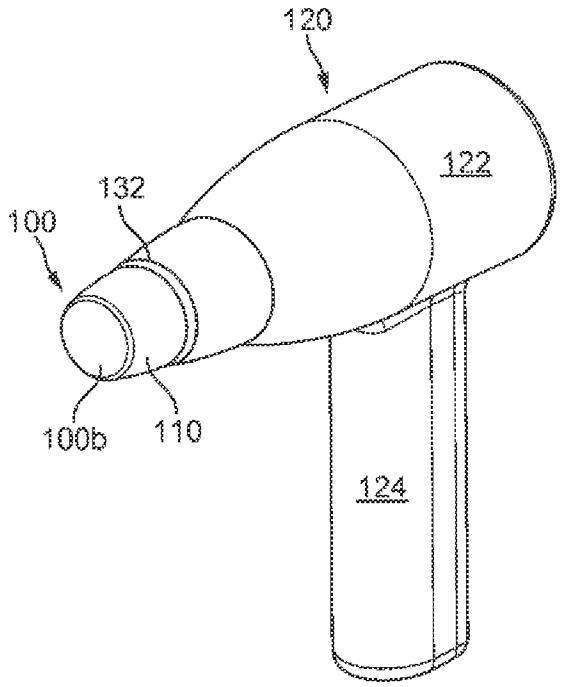


FIG. 1a

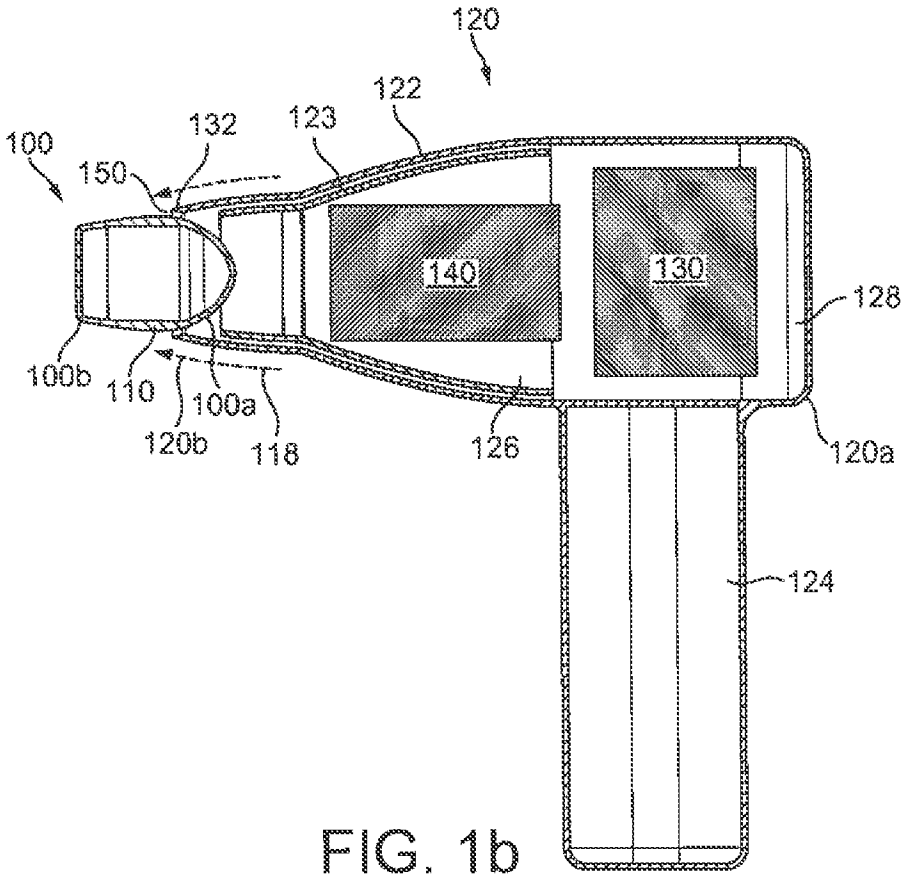


FIG. 1b

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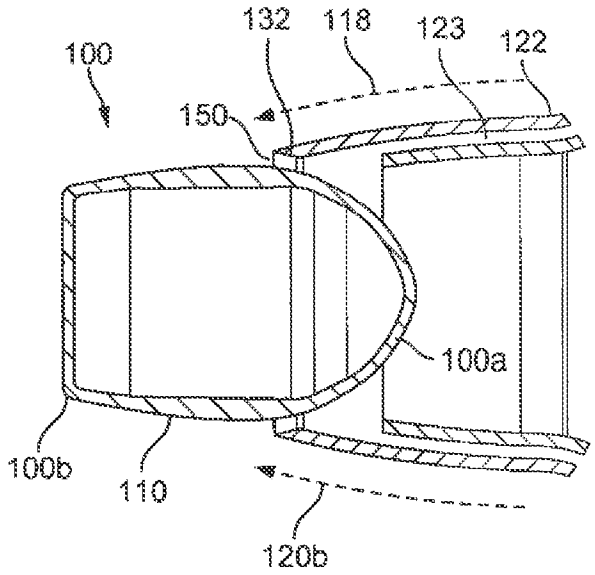


FIG. 1c

13 06 13

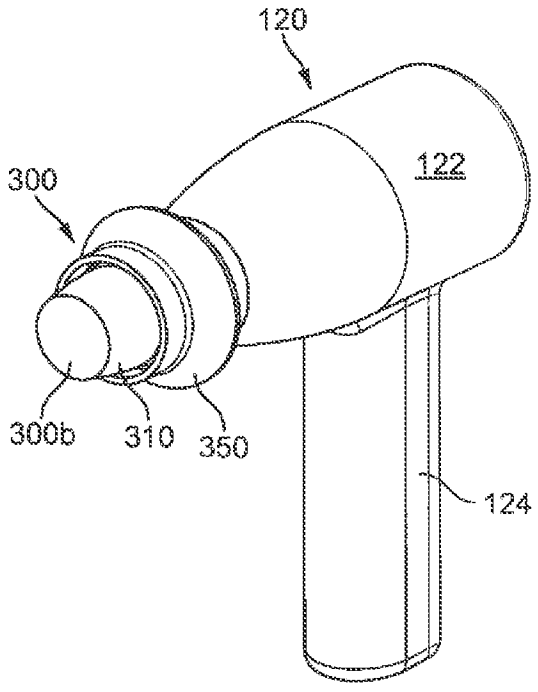


FIG. 2a

13 06 13

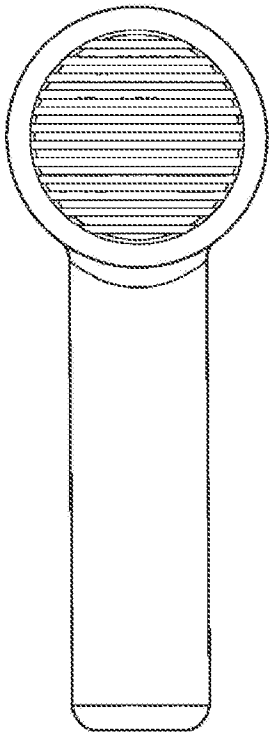


FIG. 2b

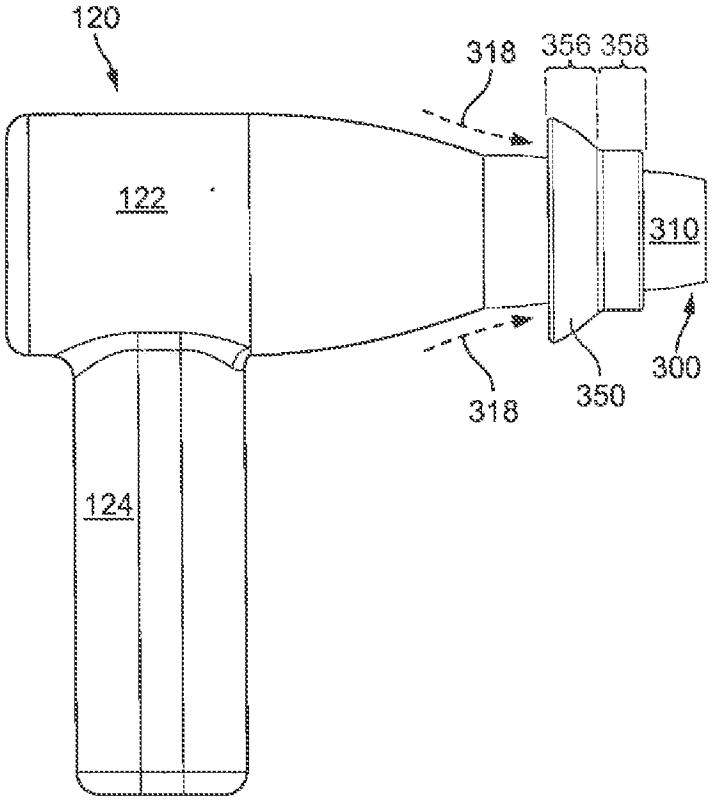


FIG. 2c

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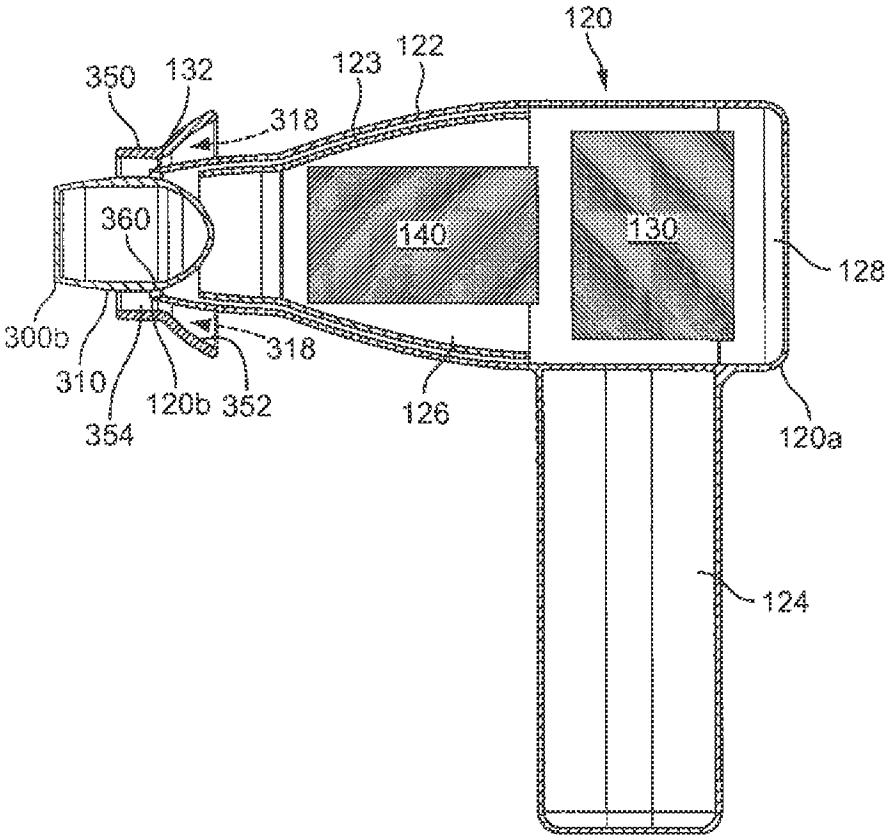


FIG. 2d

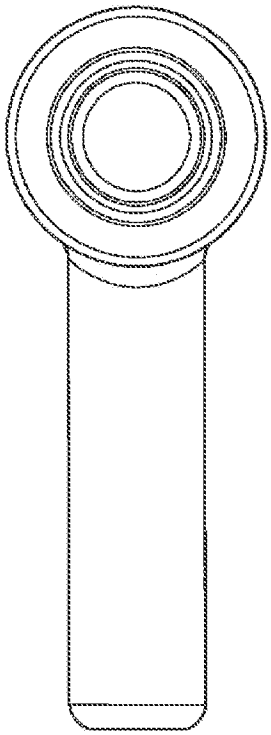


FIG. 2e

13 06 13

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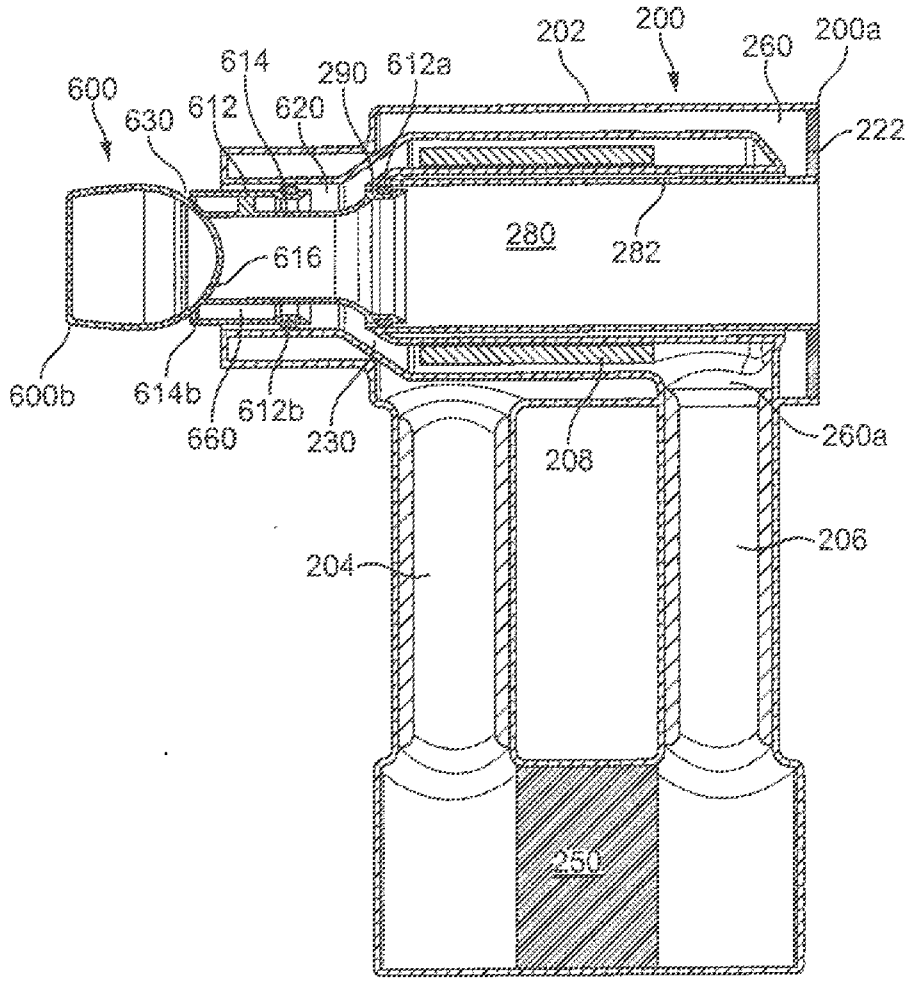


FIG. 3a

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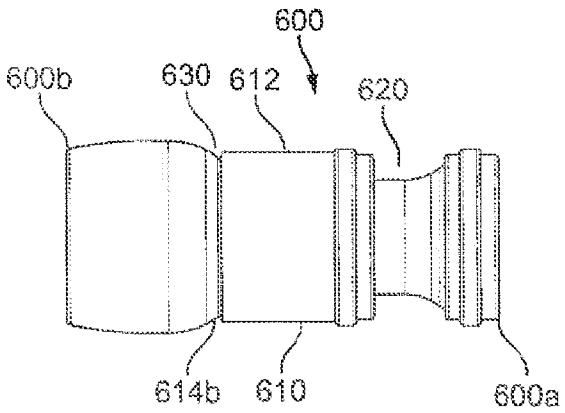


FIG. 3b

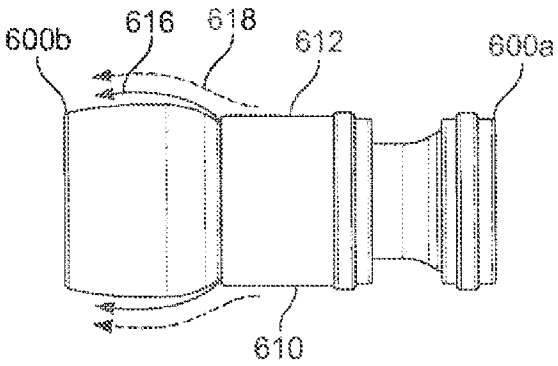


FIG. 3c

13 06 13

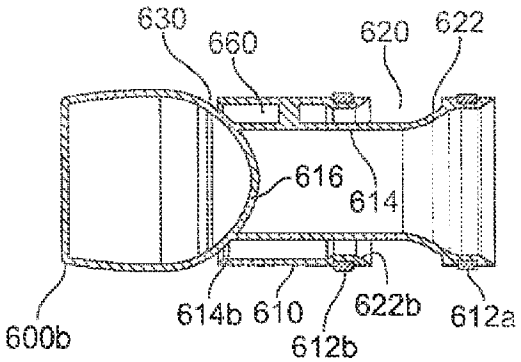


FIG. 3d

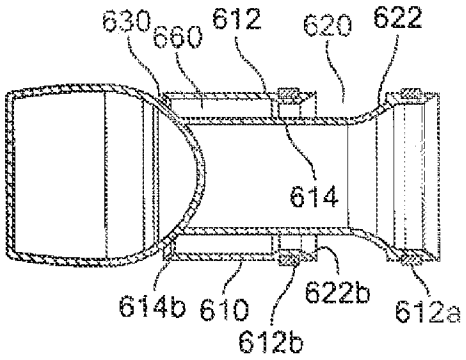


FIG. 3e

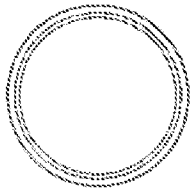


FIG. 3f

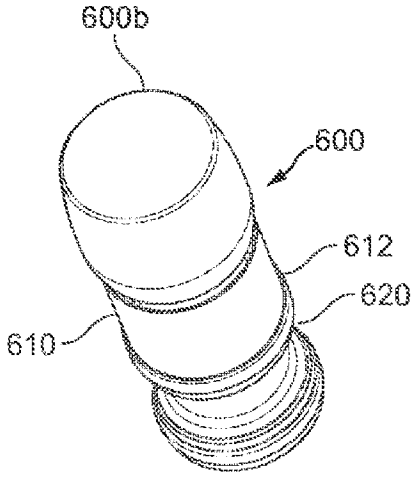


FIG. 3g

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13 06 13

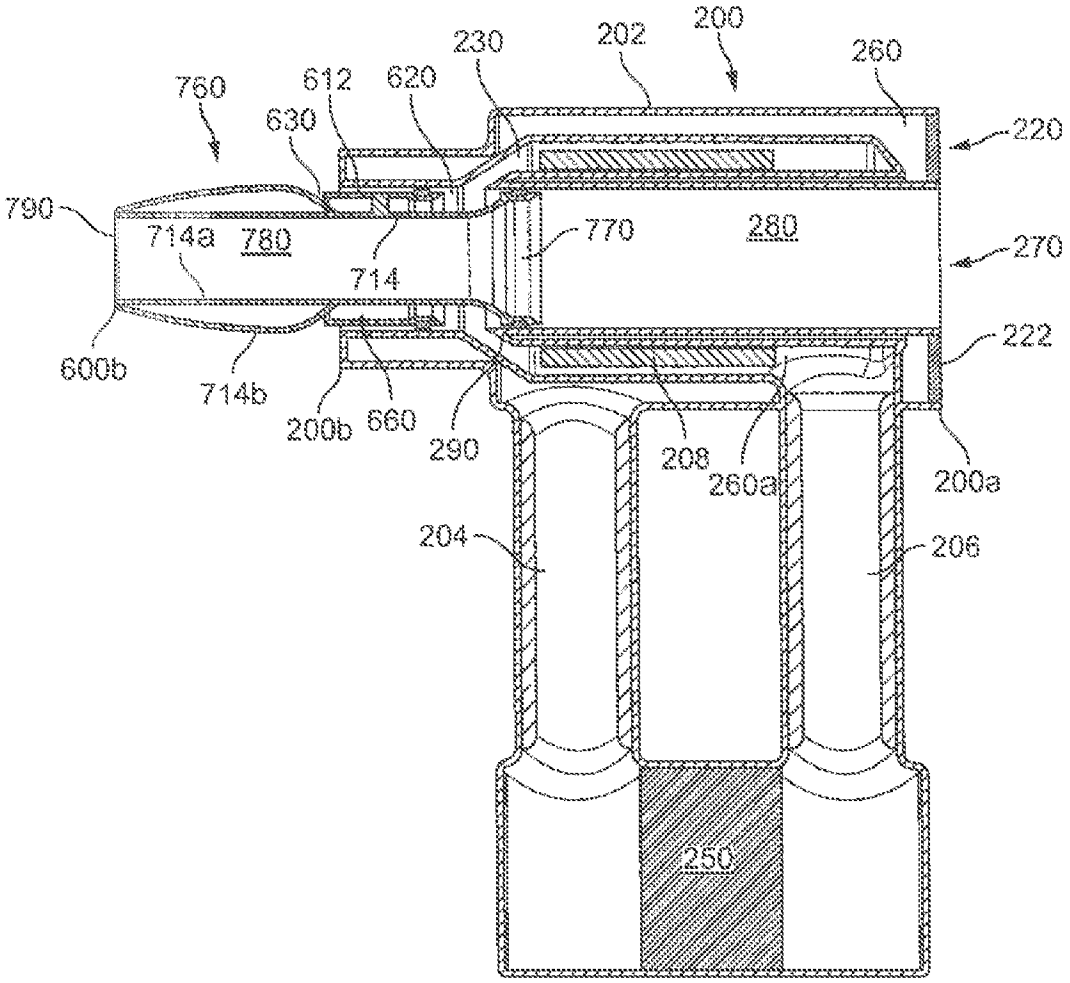


FIG. 4a

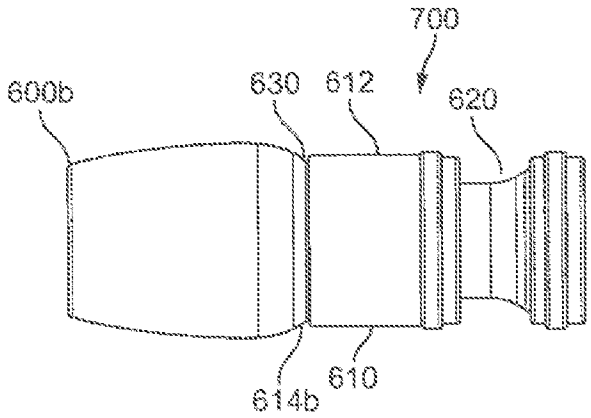


FIG. 4b

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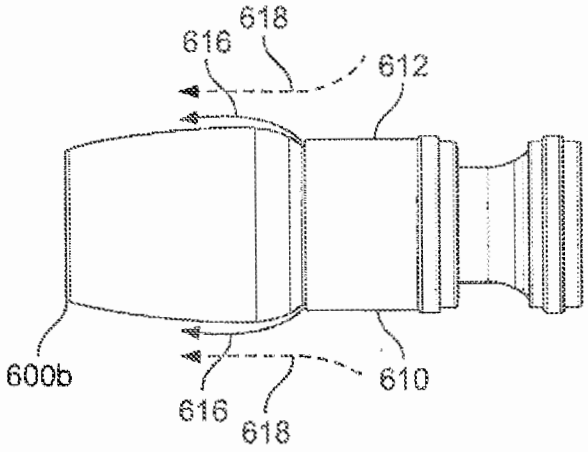


FIG. 4c

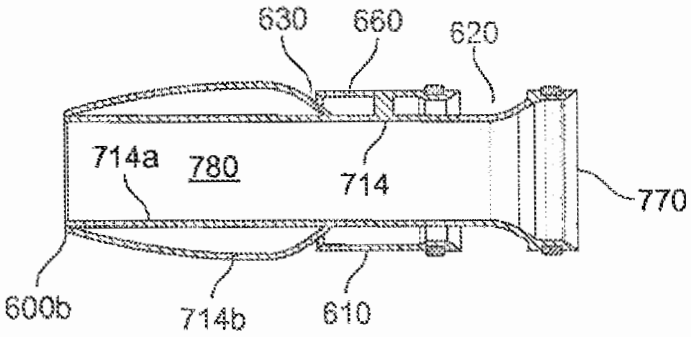


FIG. 4d

13 06 13

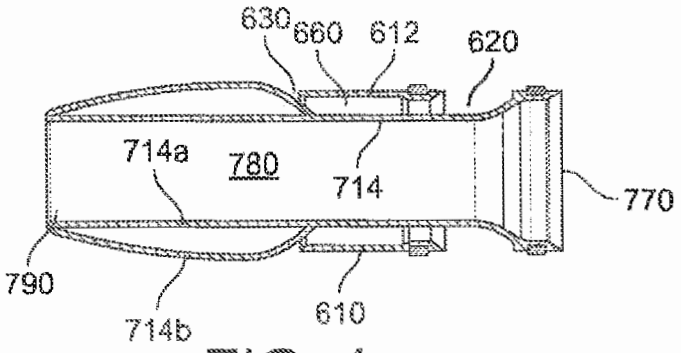


FIG. 4e

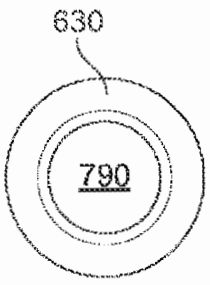


FIG. 4f

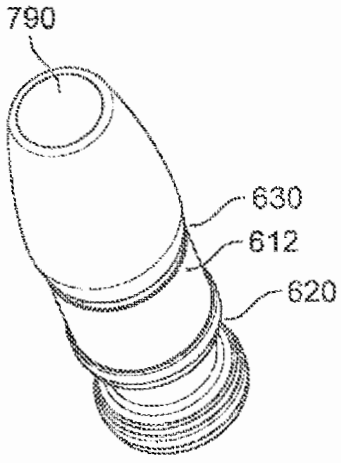


FIG. 4g

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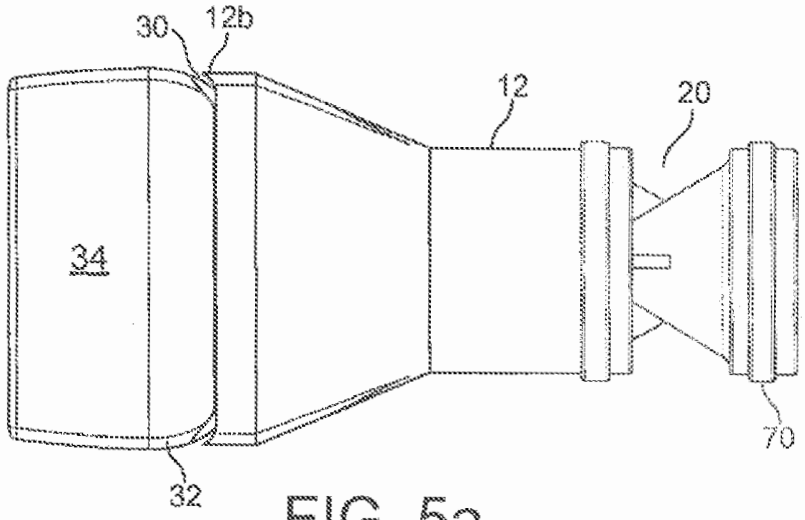


FIG. 5a

13 06 13

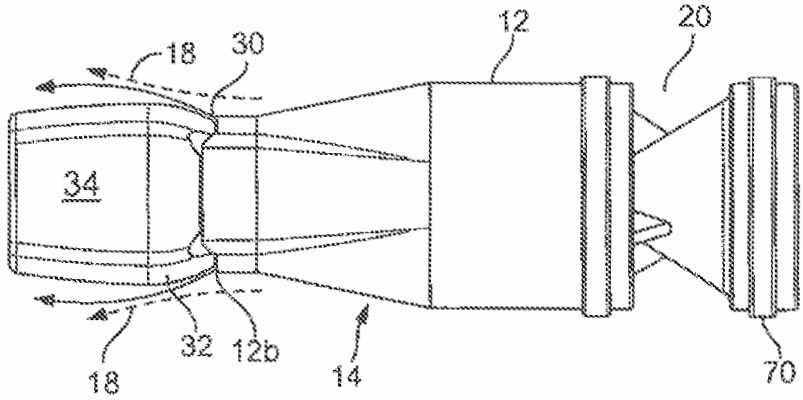


FIG. 5b

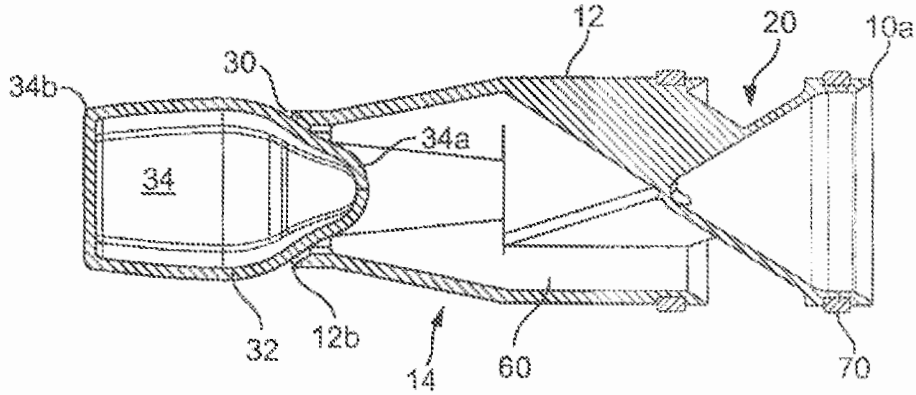


FIG. 5c

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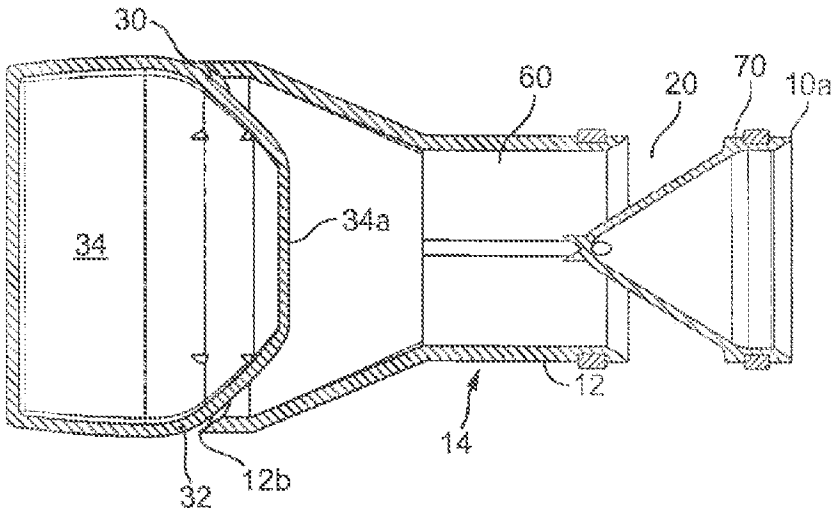


FIG. 5d

13 06 13

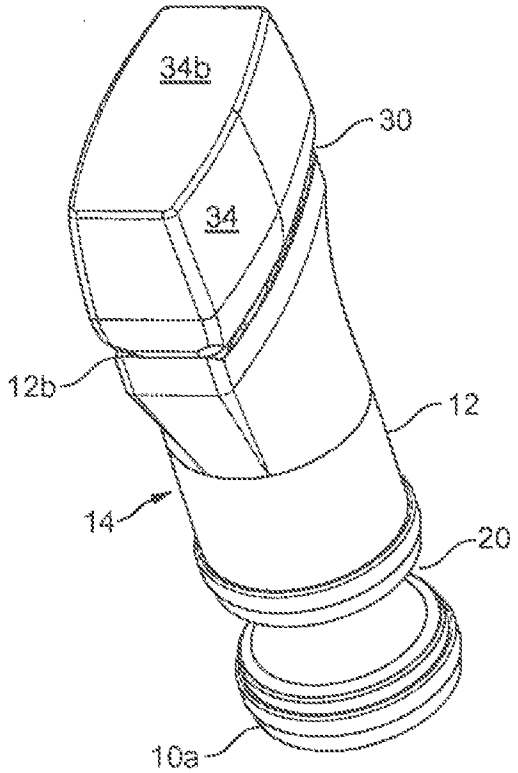


FIG. 5e

An Attachment For A Hand Held Appliance

This invention relates to an attachment for a hand held appliance, in particular an attachment for a hairdryer and an appliance, particularly a hairdryer comprising such an attachment.

Blowers and in particular hot air blowers are used for a variety of applications such as drying substances such as paint or hair and cleaning or stripping surface layers. Generally, a motor and fan are provided which draw fluid into a body; the fluid may be heated prior to exiting the body. The motor is susceptible to damage from foreign objects such as dirt or hair so conventionally a filter is provided at the fluid intake end of the blower. Conventionally such appliances are provided with a nozzle which can be attached and detached from the appliance and changes the shape and velocity of fluid flow that exits the appliance. Such nozzles can be used to focus the outflow of the appliance or to diffuse the outflow depending on the requirements of the user at that time.

According to a first aspect the invention provides a hairdryer comprising a handle; a body comprising a duct; a fan unit for generating a fluid flow from a fluid inlet through which the fluid flow enters the hairdryer to an end of the duct for emitting the fluid flow from the body; and an attachment partially insertable into the end of the duct and which at least partially defines at least one aperture for emitting the fluid flow when the attachment is located in the duct, and wherein the attachment has an external surface located downstream from said at least one aperture and over which fluid emitted from said at least one aperture is directed.

Preferably, the external surface of the attachment at least partially defines said at least one aperture.

It is preferred that the external surface of the attachment is convex in shape.

Preferably, the external surface of the attachment comprises a Coanda surface.

It is preferred that a front portion of the external surface of the attachment tapers towards a longitudinal axis of the nozzle.

Preferably, the front portion of the external surface of the attachment tapers to a point.

It is preferred that the attachment comprises a collar at least partially surrounding the external surface, and wherein the internal surface of the collar and the external surface define an external fluid flow path through which fluid from outside the hairdryer is drawn by fluid emitted from said at least one aperture.

Preferably, said at least one aperture is located between the internal surface of the duct and the external surface of the attachment.

It is preferred that the body comprises a fluid outlet for emitting the fluid flow into the duct, and wherein the attachment comprises a fluid inlet for receiving the fluid flow from the fluid outlet, and a fluid flow path extending from the fluid inlet to said at least one aperture.

Preferably, the attachment comprises a first end which is insertable within the duct, and a second end remote from the first end, and wherein the fluid inlet is located between the first end and the second end of the attachment.

It is preferred that the fluid inlet comprises at least one aperture extending at least partially about the longitudinal axis of the attachment.

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Preferably, the attachment comprises a side wall between the first end and the second end of the attachment, and wherein a portion of the side wall which is located between the first end and the second end of the attachment at least partially defines the fluid inlet. It is preferred that the side wall is tubular in shape.

Preferably, the attachment comprises an outer wall extending about an inner wall which at least partially defines the fluid flow path. It is preferred that the inner wall is tubular in shape.

It is preferred that the external surface of the attachment extends about the inner wall.

Preferably, the inner wall is open at each end, and wherein a fluid flow is drawn through the duct and the inner wall by the fluid flow emitted from said at least one aperture.

In one embodiment, the attachment comprises a first side wall extending from the first end to the second end, and a second side wall extending at least partially about the first side wall, and wherein the fluid flow path is located between the side walls.

Preferably, each of the first and second side walls is tubular in shape. It is preferred that the external surface of the attachment extends about the first side wall.

Preferably, the first side wall is open at each end, and wherein a fluid flow is drawn through the duct and the first side wall by the fluid flow emitted from said at least one aperture.

The invention will now be described by way of example and with reference to the accompanying drawings, of which:

Figures 1a to 1c show a single flow path nozzle attached to a hairdryer;

Figures 2a to 2e show a double flow path nozzle attached to a hairdryer;

Figure 3a shows an alternate single flow path nozzle attached to a hairdryer;

Figures 3b to 3g show an alternate single flow path nozzle;

Figure 4a shows an alternate double flow path nozzle;

Figures 4b to 4g show an alternate double flow path nozzle; and

Figures 5a to 5e show a further single flow path nozzle.

Figures 1a to 1c show a nozzle 100 attached to a conventional hairdryer 120.

The hairdryer 120 has a body 122 and a handle 124. The body 122 includes a duct 123 that houses a fan unit 130 and a heater 140 and a fluid flow path 126 is provided from an inlet 128 located at the upstream end 120a of the hairdryer to an outlet 132 provided at a downstream end 120b of the hairdryer. In use, fluid is drawn through the fluid flow path 126 by the fan unit 130 from the inlet 128 to the outlet 132. When there is no attachment, the hairdryer outlet 132 is circular.

The nozzle 100 has an upstream end 100a which is inserted into duct 123 at the outlet 132 of the hairdryer 120 and a downstream end 100b which protrudes from the outlet 132 of the hairdryer 120. The nozzle 100 has a convex outer surface 110 which curves inwards to a rounded point or dome at the upstream end 100a of the nozzle and at the downstream end 100b of the nozzle. The convex outer surface 110 of the nozzle together with the hairdryer outlet 132 define an annular fluid outlet or aperture 150 of the hairdryer at the downstream end 120b of the hairdryer.

In the vicinity of the outlet 150, the convex outer wall 110 curves outwards and increases in diameter causing a reduction in the cross section of the fluid flow path at the outlet 150. The convex outer wall 110 continues beyond the outlet 150 and the

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downstream end 120b of the hairdryer to a downstream nozzle end 100b. The convex outer wall 110 is a Coanda surface i.e. it causes fluid that flows through the fluid flow path 126 to hug the surface of the outer wall 110 as it curves forming an annular flow at the outlet 150 and downstream nozzle end 100b. In addition the Coanda surface 110 is arranged so a fluid flow exiting the outlet 150 is amplified by the Coanda effect.

A Coanda surface is a known type of surface over which fluid flow exiting an output orifice close to the surface exhibits the Coanda effect. The fluid tends to flow over the surface closely, almost 'clinging to' or 'hugging' the surface. The Coanda effect is already a proven, well documented method of entrainment whereby a primary air flow is directed over the Coanda surface. A description of the features of a Coanda surface, and the effect of fluid flow over a Coanda surface, can be found in articles such as Reba, Scientific American, Volume 214, June 1963 pages 84 to 92.

Advantageously, the assembly results in the entrainment of air surrounding the mouth of the nozzle such that the primary air flow is amplified by at least 15%, whilst a smooth overall output is maintained. The hairdryer achieves the output and cooling effect described above with a nozzle which includes a Coanda surface to provide an amplifying region utilising the Coanda effect.

By encouraging the fluid at the outlet 150 to flow along the curved surface 110 of the outer wall to the downstream nozzle end 100b, fluid is entrained 118 from outside the hairdryer 120 (Figures 1b and 1c) by the Coanda effect. This action of entrainment increases the flow of air at the downstream nozzle end 100b, thus the volume of fluid flowing at the downstream nozzle end 100b is magnified by the entrainment above what is processed by the hairdryer 120 through a fan unit 130 and heater 140.

The entrainment provides an advantage as it results in the production of an annular ring of hot fluid which is surrounded by and the outer edges are partially cooled by the entrained cool fluid.

The nozzle 100 is retained within the hairdryer outlet 132 by one of a number of methods such as providing a ring around the outer surface and attached thereto by a number of radially spaced struts, the ring engaging with the duct 122 when the nozzle 100 is partially inserted in the hairdryer outlet 132. An alternative retention method is to use a central strut to support the nozzle.

Figures 2a to 2e show an alternate nozzle 300 attached to a conventional hairdryer 120. Features that have already been described with respect to Figures 1a and 1b are provided with the same reference numerals.

The nozzle 300 is provided with a collar 350 which surrounds the outer surface 310. The internal surface 352 of the collar 350 and the outer surface 310 of the nozzle together define an entrained fluid flow path 354 through which fluid 318 that has been entrained from outside the hairdryer 120 by the action of the fan unit 130 drawing a fluid flow through the hairdryer to the annular outlet 360 formed by the convex outer surface 310 of the nozzle and the hairdryer outlet 132 can flow.

The collar 350 has two portions, an upstream portion 356 which flares outwards and away from the body 122 of the hairdryer and a downstream portion 358 which is generally constant in diameter and follows the line of the convex outer surface 310 of the nozzle 300. The flared end 356 is to increase the entrainment effect and the volume of fluid that flows through the entrained fluid flow path 354. The downstream end 358 focuses the flow towards the Coanda surface namely the outer surface 310 of the nozzle to provide a focused ring of fluid output from the end of the nozzle.

The entrained fluid 318 and fluid flow from the hairdryer fluid flow path 126 mix and combine at the downstream end 120b of the hairdryer and within the collar 350.

The collar 350 additionally provides a finger guard to prevent a person from touching the outlet 132 directly and the entrained flow 318 cools the surface of the collar 350 preventing the collar 350 getting hot.

Figures 3b to 3g show an alternate single flow path nozzle 600 having a generally tubular body 610, a first or upstream end 600a and a second or downstream end 600b. There is a fluid inlet 620 in an outer wall 612 of the body 610 between the first end 600a and the second end 600b of the nozzle 600 and a fluid outlet 630 downstream of the fluid inlet 620. In this example, the fluid outlet 630 is ring shaped or annular and is formed by an inner wall 614 of the nozzle 600 and the outer wall 612.

The fluid inlet 620 is an opening in the outer wall 612 of the nozzle and is defined by an aperture formed from a slanted edge 622b of the outer wall and a curved side wall 622 provided at the upstream end of the fluid inlet which connects the outer wall 612 and the inner wall 614. The slanted edge of the outer wall is slanted in the direction of fluid flow to reduce turbulence and pressure losses as the primary flow enters the nozzle.

The outer wall 612 surrounds inner wall 614 and together walls 612, 614 define a fluid flow path 660 through the generally tubular body 610 from the inlet 620 to the outlet 630. In the vicinity of the outlet 630, the inner wall curves outwards 614b and increases in diameter causing a reduction in the cross section of the fluid flow path at the outlet 630. The inner wall 614 continues beyond the outlet 630 and the end of the outer wall 612 of the nozzle 600 to a downstream nozzle end 600b. The inner wall 614b is convex and is a Coanda surface i.e. it causes fluid that flows through the fluid flow path 660 to hug the surface of the inner wall 614b as it curves forming an annular flow at the outlet 630 and downstream nozzle end 600b. In addition the Coanda surface 614 is arranged so a primary fluid flow exiting the outlet 630 is amplified by the Coanda effect.

The hairdryer achieves the output and cooling effect described above with a nozzle which includes a Coanda surface to provide an amplifying region utilising the Coanda effect. A Coanda surface is a known type of surface over which fluid flow exiting an output orifice close to the surface exhibits the Coanda effect. The fluid tends to flow over the surface closely, almost 'clinging to' or 'hugging' the surface. The Coanda effect is already a proven, well documented method of entrainment whereby a primary air

flow is directed over the Coanda surface. A description of the features of a Coanda surface, and the effect of fluid flow over a Coanda surface, can be found in articles such as Reba, Scientific American, Volume 214, June 1963 pages 84 to 92.

Advantageously, the assembly results in the entrainment of air surrounding the mouth of the nozzle such that the primary air flow is amplified by at least 15%, whilst a smooth overall output is maintained

By encouraging the fluid at the outlet 630 to flow along 616 the curved surface 614b of the inner wall to the downstream nozzle end 600b, fluid is entrained 618 from outside the hairdryer 200 (Figure 3c) by the Coanda effect. This action of entrainment increases the flow of air at the downstream nozzle end 600b, thus the volume of fluid flowing at the downstream nozzle end 600b is magnified by the entrainment above what is processed by the hairdryer 200 through a fan unit 250 and heater 208.

When the nozzle 600 is attached to a hairdryer 200 as shown in Figure 3a, the fluid inlet 620 aligns with a primary fluid outlet 230 of the hairdryer. Hairdryer 200 has a second fluid flow path 280 through a central duct 282 but this is blocked by the nozzle 600. In the example shown in Figure 3a, nozzle 100 blocked the second fluid flow path 280 at the upstream end 100a of the nozzle. In this example, the nozzle 600 uses an upstream continuation of curved wall 614b which curves inwards to form a rounded end 616 which blocks the second fluid flow path.

The nozzle 600 is inserted into the downstream end 200b of the hairdryer until a stop is reached. In this position, the fluid inlet 620 of the nozzle 600 is in fluid communication with a primary fluid outlet 230 of the hairdryer 200. The nozzle is an attachment for adjusting at least one parameter of the fluid flow emitted from the hairdryer and the downstream end 600b of the nozzle protrudes from the downstream end 200b of the hairdryer 200.

The hairdryer 200 has a handle 204, 206 and a body 202 which comprises a duct 282, 284. A primary fluid flow path 260 starts at a primary inlet 220 which in this example is located at the upstream end 200a of the hairdryer i.e. at the distal end of the hairdryer from the fluid outlet 200b. Fluid is drawn into the primary fluid inlet 220 by a fan unit 250, fluid flows along primary fluid flow path 260 located on the inside of the outer body 202 of the hairdryer between the outer body 292 and the duct 282, along a first handle portion 204 to the fan unit 250.

The fan unit 250 includes a fan and a motor. The fluid is drawn through the fan unit 250, along a second handle portion 206 and returns to the body 202 of the hairdryer in an inner tier 260a of the body. The inner tier 260a of the body 202 is nested within the primary fluid flow path 260 between the primary fluid flow path 260 and the duct 282 and includes a heater 208. The heater 208 is annular and heats the fluid that flows through the inner tier 260a directly. Downstream of the heater 208, fluid exits the primary fluid flow path at the primary outlet 230.

In order to seal the nozzle fluid flow path 660 with respect to the primary fluid outlet 230, the outer wall 612 of the nozzle is provided with a collar 612a. The collar 612a is upstanding from the outer wall 612 so has a larger diameter than the outer wall and is designed to fit with ducting 282 within the hairdryer 200. The collar 612a is upstream of the fluid inlet 620 of the nozzle 600. A second collar 612b is ideally also provided downstream of the fluid inlet 620 and prevents fluid from the primary outlet 230 of the hairdryer flowing between the outer wall 612 of the nozzle and the hairdryer outlet 200b.

Figures 4a to 4g show an alternate double flow path nozzle 700 on a hairdryer 200. In this embodiment, components illustrated and described with respect to Figures 3a to 3g have like reference numbers. In this example, in addition to a fluid flow path 660 from an inlet 620 to an outlet 630, a further fluid flow path 780 is provided. The inner wall 714 comprises a tube or bore through the nozzle 700 through which a fluid can flow from a further inlet 770 to a further outlet 790 along a further fluid flow path 780.

In this example, adjacent to and upstream of the fluid outlet 630 the inner wall 714 splits into an outer curved wall 714b along which fluid from the fluid flow path 660 flows to fluid outlet 630 and an inner straight wall 714a which continues to a further fluid outlet 790.

The hairdryer 200 has a second fluid flow path 280. This second fluid flow path 280 flows from a second inlet 270 along the length of the body 202 of the hairdryer through duct 282 to a second outlet 280 outlet where, when there is no nozzle attached to the hairdryer, fluid flowing through the second fluid flow path 280 mixes with the primary fluid at the primary fluid outlet 230. This mixed flow continues along duct 284 to the fluid outlet 200b of the hairdryer. The fluid that flows through the second fluid flow path 280 is not processed by the fan unit 250; it is entrained by the primary fluid flow through the primary fluid flow path 260 when the fan unit is switched on. Thus, the hairdryer has a primary flow which is that processed by and drawn into the appliance by the fan unit and a second fluid flow which is entrained by the primary, processed flow. Thus the fluid flow through the hairdryer is amplified by both the internal (second fluid flow 280) and external (entrained fluid 618) entrained flow.

The second fluid flow path 280 can be considered to flow along a tube defined by an upstream duct 282 and a downstream duct 284 where the primary outlet 230 is an aperture in the tube between the ducts 282 and 284. The nozzle is partially inserted into the tube defined by the ducts 284, 282. In this example the nozzle 100 is slidably inserted into hairdryer outlet 200b along downstream duct 284 past the aperture or primary fluid outlet 230 into the upstream duct 282. The nozzle 100 is retained in the duct 282, 284 by friction.

When the nozzle 700 is attached to a hairdryer a primary flow from a primary inlet 220 to a primary outlet 230 along a primary flow path 260 is in fluid communication with the nozzle inlet 620. Fluid flows from the nozzle inlet 620 along fluid flow path 660 to nozzle outlet 630. As the surface of the outer curved wall 714b is a Coanda surface, fluid that flows out of the outlet 630 is drawn to the surface and amplified by the

Coanda effect which entrains fluid 618 from outside of the nozzle along the nozzle to a nozzle end 600b. In addition, a second fluid flow path 280 is provided in the hairdryer 200 through which fluid is entrained by the action of fluid flowing in the primary fluid flow path 260,660 i.e. fluid that is drawn into the primary fluid flow path 260 directly by the fan unit 270. This second fluid flow path 280 has an inlet 270 and an outlet 290. The outlet 290 is in fluid communication with the further inlet 770 of the nozzle 700. So fluid that is entrained into the second fluid flow path 280 by the action of the fan unit 250 flows along a further fluid flow path 780 the boundaries of which are defined by the inner wall 714, 714b of the nozzle 700 to a further outlet 790.

Thus, in this example the hairdryer emits a hot annular fluid which has a central cool core from the internally entrained fluid and an outer cool ring from the externally entrained fluid.

Figures 5a to 5e show a further single flow path nozzle 10 which is similar to the one described with respect to Figure 3. In this nozzle a fluid flow path 60 is provided from an inlet 20 to an outlet 30. The inlet 20 is through an outer wall 12 of a generally tubular body 14 of the nozzle 10 between a first or upstream end 10a and a second or downstream end 10b of the nozzle 10. The outlet 30 is a slit formed between the outer wall 12 and an inner wall 32 of the nozzle.

The inner wall 32 is convex and formed by a bung 34 which is located in the downstream end 12b of the outer wall 12. Fluid that flows through the fluid flow path 60 is funnelled by an upstream end 34a of the bung 34 towards the outlet 30. As the inner wall 32 is convex, fluid that flows out of the outlet 30 is drawn to the surface 32 by the Coanda effect and this entrains fluid 18 from the environment around the nozzle 10.

The shape of the bung 34 at the downstream end 34b is generally rectangular so the fluid exits the nozzle in a generally rectangular profile.

The rear or upstream end 10a of the nozzle has a cone shaped bung 70 so when the nozzle 10 is used in conjunction with hairdryer 200 (not shown), fluid from the second fluid flow path 280 is blocked by the cone shaped bung 70.

The nozzle is retained with respect to the hairdryer by one of a number of alternatives which include but are not limited to a felt seal, a bump stop, an o-ring, magnets, friction fit, a mechanical clip, snap fit or actuated snap fit.

The invention has been described in detail with respect to a nozzle for a hairdryer and a hairdryer comprising a nozzle however, it is applicable to any appliance that draws in a fluid and directs the outflow of that fluid from the appliance.

The appliance can be used with or without a heater; the action of the outflow of fluid at high velocity has a drying effect.

The fluid that flows through the appliance is generally air, but may be a different combination of gases or gas and can include additives to improve performance of the appliance or the impact the appliance has on an object the output is directed at for example, hair and the styling of that hair.

The invention is not limited to the detailed description given above. Variations will be apparent to the person skilled in the art.

CLAIMS

1. A hairdryer comprising a handle; a body comprising a duct; a fan unit for generating a fluid flow from a fluid inlet through which the fluid flow enters the hairdryer to an end of the duct for emitting the fluid flow from the body; and an attachment partially insertable into the end of the duct and which at least partially defines at least one aperture for emitting the fluid flow when the attachment is located in the duct, and wherein the attachment has an external surface located downstream from said at least one aperture and over which fluid emitted from said at least one aperture is directed.

2. A hairdryer according to claim 1, wherein the external surface of the attachment at least partially defines said at least one aperture.

3. A hairdryer according to claim 1 or claim 2, wherein the external surface of the attachment is convex in shape.

4. A hairdryer according to any preceding claim, wherein the external surface of the attachment comprises a Coanda surface.

5. A hairdryer according to any preceding claim, wherein a front portion of the external surface of the attachment tapers towards a longitudinal axis of the nozzle.

6. A hairdryer according to claim 5, wherein the front portion of the external surface of the attachment tapers to a point.

7. A hairdryer according to any preceding claim, wherein the attachment comprises a collar at least partially surrounding the external surface, and wherein the internal surface of the collar and the external surface define an external fluid flow path through which fluid from outside the hairdryer is drawn by fluid emitted from said at least one aperture.

8. A hairdryer according to any preceding claim, wherein said at least one aperture is located between the internal surface of the duct and the external surface of the attachment.

9. A hairdryer according to any of claims 1 to 7, wherein the body comprises a fluid outlet for emitting the fluid flow into the duct, and wherein the attachment comprises a fluid inlet for receiving the fluid flow from the fluid outlet, and a fluid flow path extending from the fluid inlet to said at least one aperture.

10. A hairdryer according to claim 9, wherein the attachment comprises a first end which is insertable within the duct, and a second end remote from the first end, and wherein the fluid inlet is located between the first end and the second end of the attachment.

11. A hairdryer according to claim 10, wherein the fluid inlet comprises at least one aperture extending at least partially about the longitudinal axis of the attachment.

12. A hairdryer according to claim 10 or claim 11, wherein the attachment comprises a side wall between the first end and the second end of the attachment, and wherein a portion of the side wall which is located between the first end and the second end of the attachment at least partially defines the fluid inlet.

13. A hairdryer according to claim 12, wherein the side wall is tubular in shape.

14. A hairdryer according to any of claims 9 to 11, wherein the attachment comprises an outer wall extending about an inner wall which at least partially defines the fluid flow path.

15. A hairdryer according to claim 14, wherein the inner wall is tubular in shape.

16. A hairdryer according to claim 15, wherein the external surface of the attachment extends about the inner wall.

17. A hairdryer according to claim 14 or claim 15, wherein the inner wall is open at each end, and wherein a fluid flow is drawn through the duct and the inner wall by the fluid flow emitted from said at least one aperture.

18. A hairdryer according to any of claims 9 to 11, wherein the attachment comprises a first side wall extending from the first end to the second end, and a second side wall extending at least partially about the first side wall, and wherein the fluid flow path is located between the side walls.

19. A hairdryer according to claim 18, wherein each of the first and second side walls is tubular in shape.

20. A hairdryer according to claim 19, wherein the external surface of the attachment extends about the first side wall.

21. A hairdryer according to claim 19 or claim 20, wherein the first side wall is open at each end, and wherein a fluid flow is drawn through the duct and the first side wall by the fluid flow emitted from said at least one aperture.

Application No:	GB1211831.1	**Examiner:**	Emma Tonner
Claims searched:	1-21	**Date of search:**	9 October 2012

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1, 2, 5, 6, 8	EP2392223 A2 (YOE) see paragraph 0023
X	1, 2, 8	JP50130915 A (HITACHI MAXELL) see English abstract and figures
X	1, 2, 8	JP2005000546 A (MATSUSHITA ELECTRIC WORKS LTD.) see English abstract and figures

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[X] :

Worldwide search of patent documents classified in the following areas of the IPC

A45D

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI, TXTE, Internet

International Classification:

Subclass	Subgroup	Valid From
None		

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(56) Documents Cited:
JP 050130915 A **US 5598640 A**

(58) Field of Search:
INT CL **A45D**
Other: **EPODOC, WPI, TXTE**

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(54) Title of the Invention: **Attachment for a hand held appliance**
Abstract Title: **An attachment for a hairdryer**

(57) A hairdryer comprises a handle 204, a body 202 and a fluid outlet 1122, 1124. Occluding means 1130 for covering at least part of the fluid outlet 1122 are provided, said means 1130 being moveable relative to the fluid outlet 1124. An attachment such as a nozzle 1100 for varying the shape of a fluid flow may be received by the hairdryer. The attachment 1100 effects movement of the occluding means 1130 relative to the fluid outlet 1124. Engaging means 1108 may be provided on the attachment and arranged to move the occluding means 1130 away from the fluid outlet 1124 as the attachment 1100 is received. The occluding means 1130 is preferably biased towards a closed position.

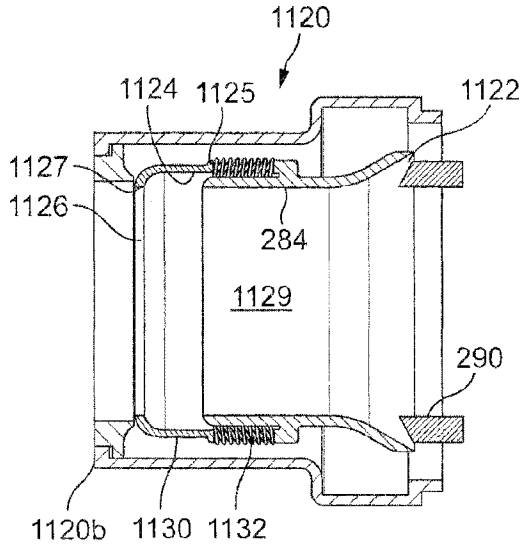


FIG. 1a

GB 2503686 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

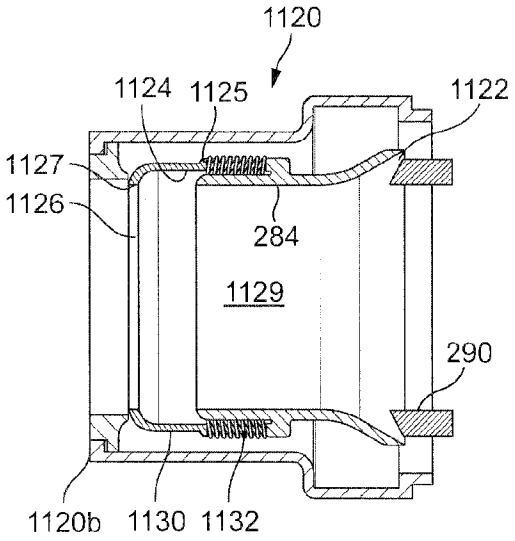


FIG. 1a

13 06 13

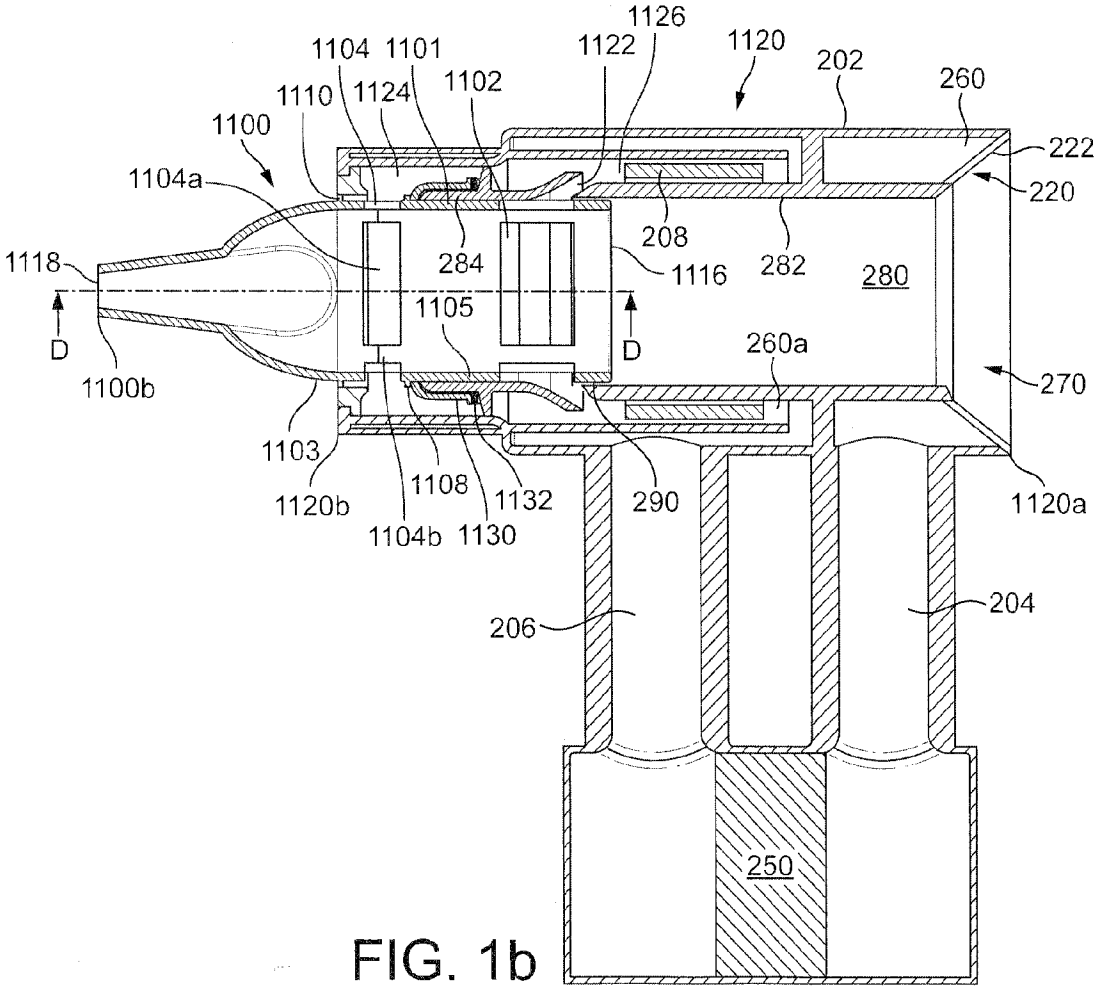


FIG. 1b

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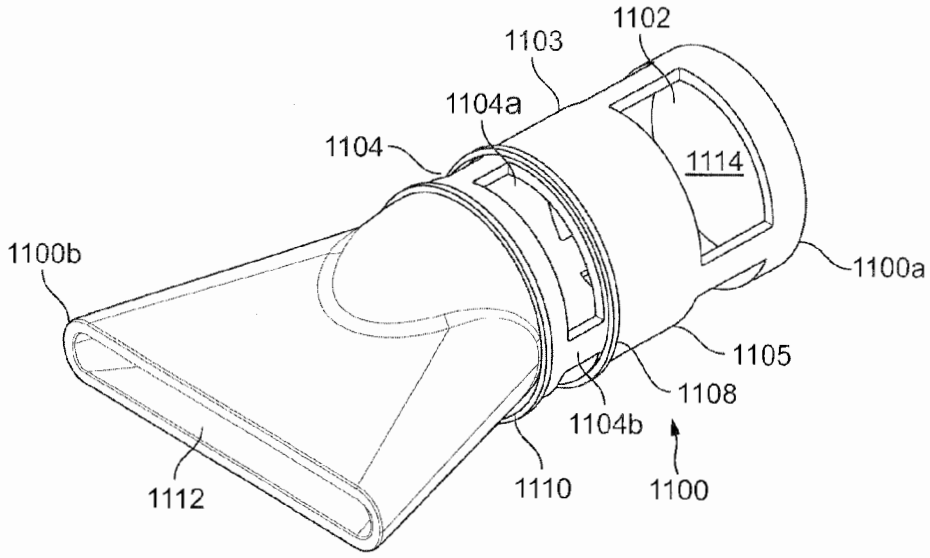


FIG. 1c

13 06 13

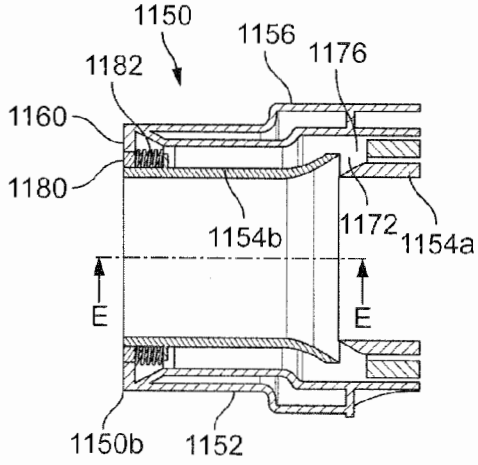


FIG. 2a

SharkNinja Ex. 1002
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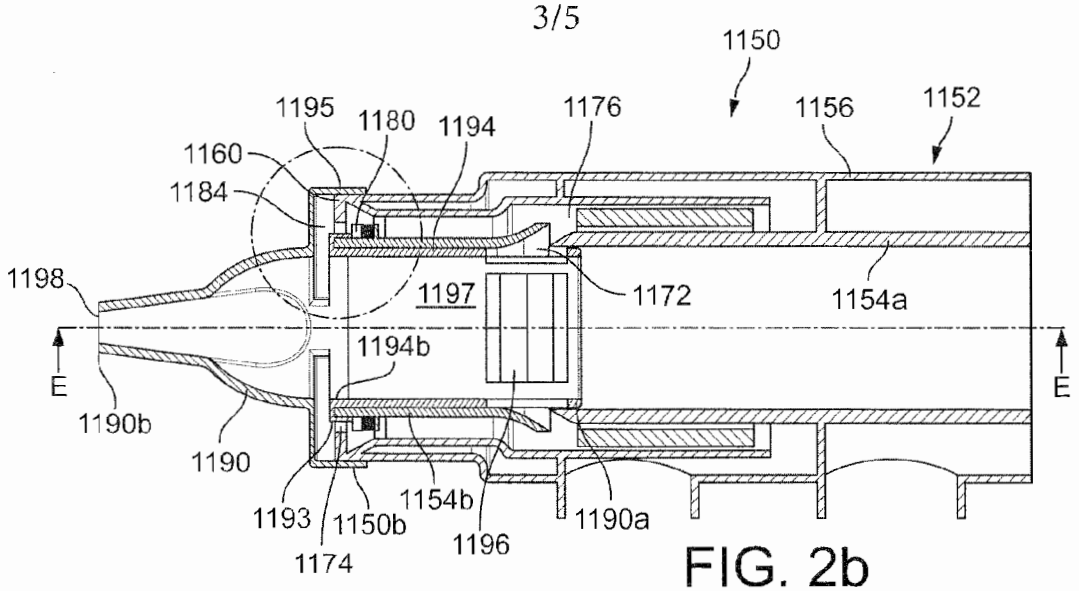


FIG. 2b

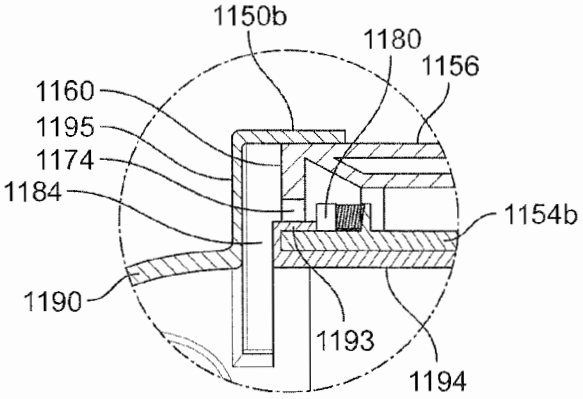


FIG. 2c

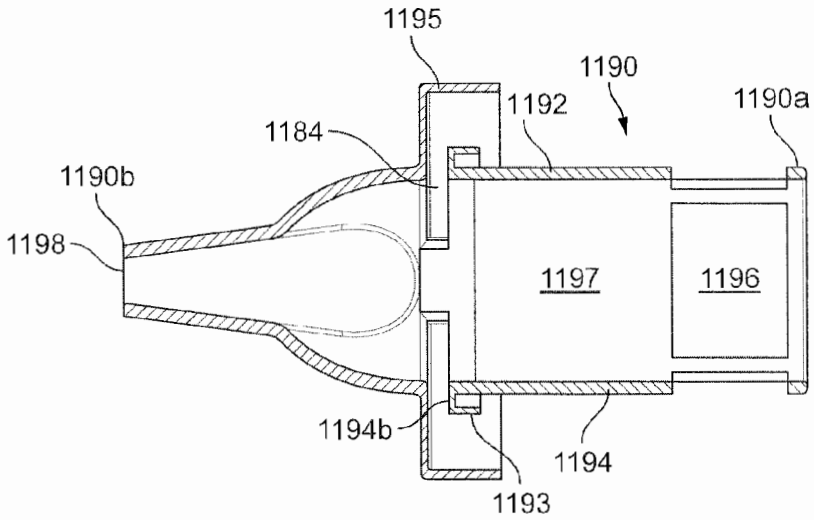


FIG. 2d

13 06 13

13 06 13

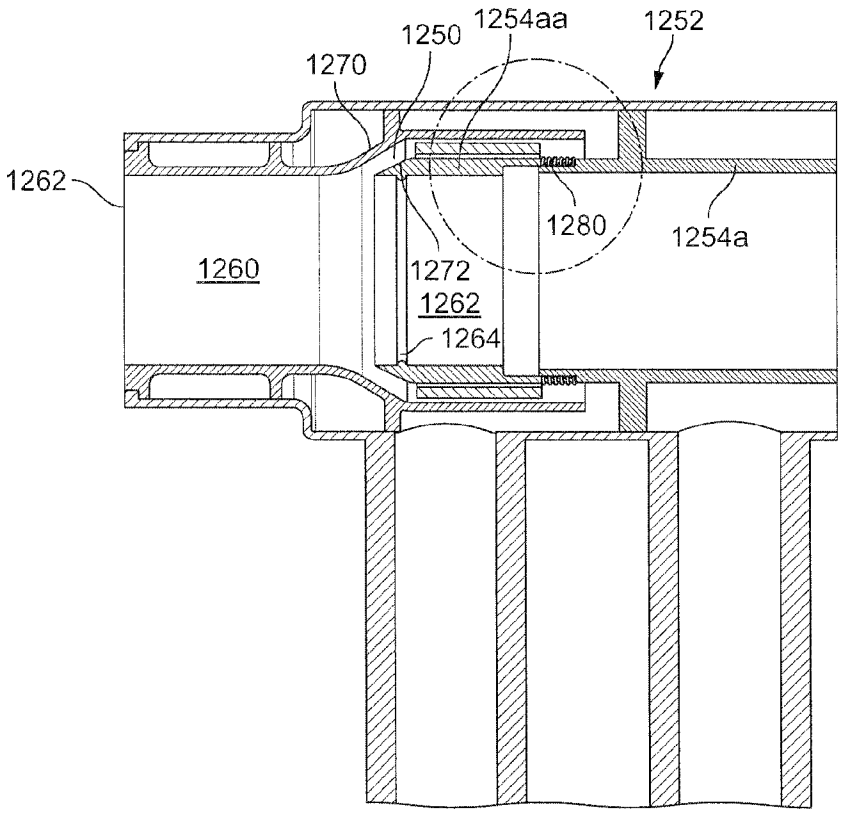


FIG. 3a

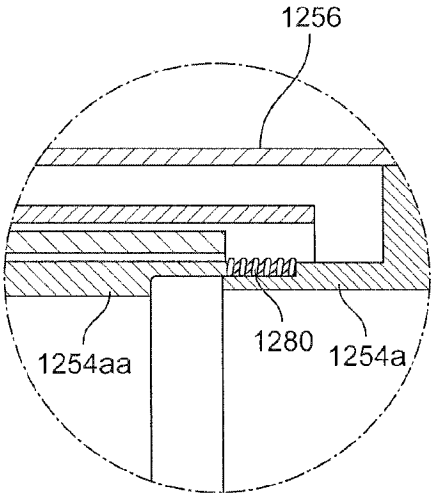


FIG. 3b

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13 06 13

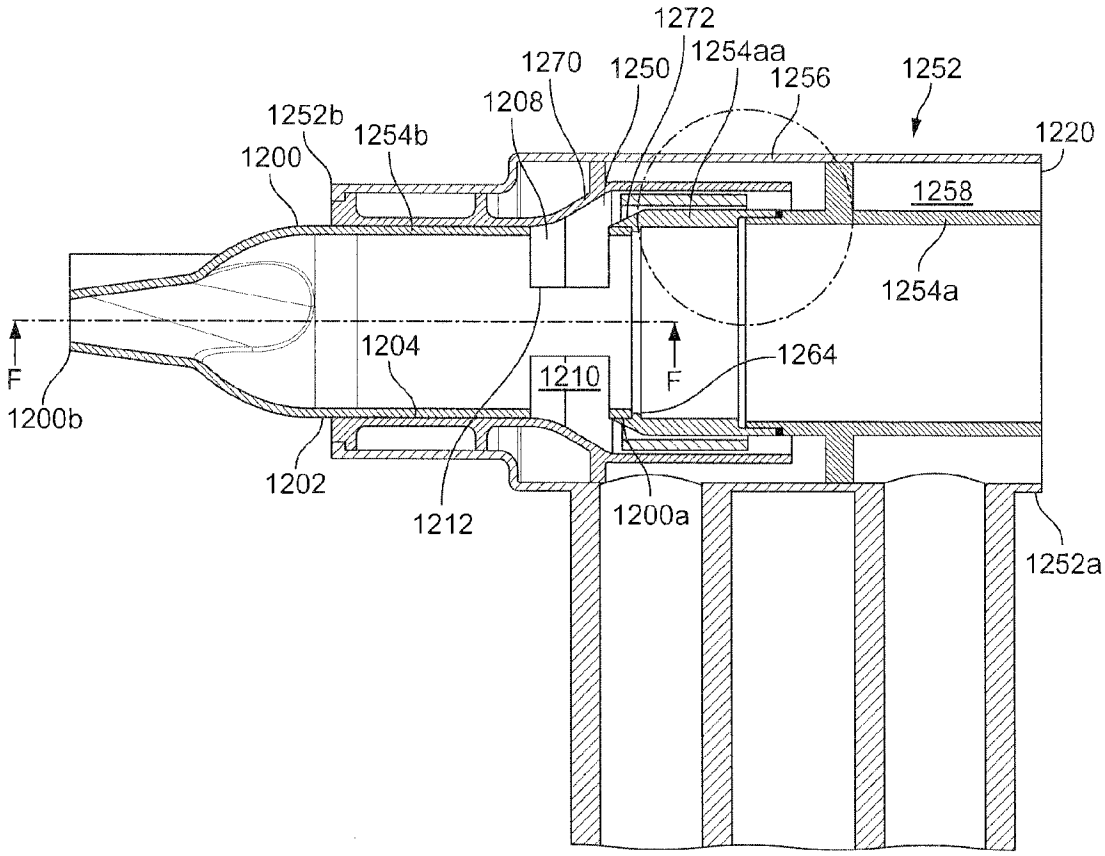


FIG. 3c

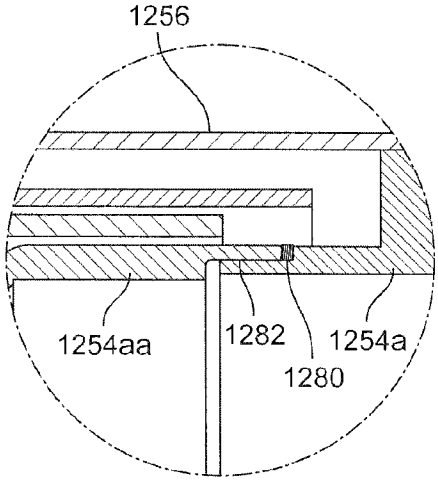


FIG. 3d

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Attachment For A Hand Held Appliance

This invention relates to an attachment for a hand held appliance, in particular an attachment for a hairdryer and an appliance, particularly a hairdryer comprising such an attachment.

Blowers and in particular hot air blowers are used for a variety of applications such as drying substances such as paint or hair and cleaning or stripping surface layers. Generally, a motor and fan are provided which draw fluid into a body; the fluid may be heated prior to exiting the body. The motor is susceptible to damage from foreign objects such as dirt or hair so conventionally a filter is provided at the fluid intake end of the blower. Conventionally such appliances are provided with a nozzle which can be attached and detached from the appliance and changes the shape and velocity of fluid flow that exits the appliance. Such nozzles can be used to focus the outflow of the appliance or to diffuse the outflow depending on the requirements of the user at that time.

According to a first aspect, the invention provides a hairdryer comprising a handle; a body comprising a fluid outlet, the fluid outlet comprising at least one aperture; a fan unit for generating a fluid flow from a fluid inlet through which the fluid flow enters the hairdryer to the fluid outlet; means for occluding at least part of the fluid outlet, the occluding means being moveable relative to the fluid outlet; and means for receiving an attachment for varying the shape of a fluid flow emitted from the hairdryer, wherein the attachment comprises means for engaging the occluding means as the attachment is received by the receiving means to effect movement of the occluding means relative to the fluid outlet.

Preferably, the engaging means is arranged to move the occluding means away from said at least part of the fluid outlet as the attachment is received by the receiving means.

It is preferred that the occluding means is arranged to move in a direction parallel to a plane in which said at least part of the fluid outlet is located. Preferably, the occluding means is slidably moveable in said direction relative to said at least part of the fluid outlet.

Alternatively, the occluding means is arranged to move in a direction substantially orthogonal to a plane in which said at least part of the fluid outlet is located.

It is preferred that the engaging means is arranged to move the occluding means from a first position to a second position as the attachment is received by the receiving means. Preferably, the fluid outlet comprises a first aperture and a second aperture, and wherein in the first position the occluding means is arranged to occlude only the second aperture. It is preferred that the first aperture is spaced from the second aperture.

Preferably, the first aperture is located in a first plane and the second aperture is located in a second plane which is angled relative to the first plane. It is preferred that the second plane is orthogonal to the first plane.

Preferably, the second aperture is located at an end of the hairdryer.

In one embodiment, the fluid outlet comprises an aperture which is partially occluded when the occluding means is in the first position, and wherein the engaging means is arranged to move the occluding means away from said aperture as the attachment is received by the receiving means. It is preferred that wherein the occluding means is biased towards the first position

Preferably, the engaging means extends about part of the attachment. It is preferred that the attachment comprises a side wall, and wherein the engaging means extends about the wall. Preferably, the engaging means surrounds the side wall.

It is preferred that the side wall is tubular in shape, and the engaging means comprises a lip upstanding from the side wall.

Preferably, the hairdryer includes a bore extending through the body, and wherein said at least part of the fluid outlet is arranged to emit fluid into the bore.

It is preferred that said at least part of the fluid outlet is annular in shape.

The invention will now be described by way of example and with reference to the accompanying drawings, of which:

Figures 1a to 1c show a nozzle and hairdryer having two inlets into a single flow path;

Figures 2a to 2d show an alternate two outlet arrangement; and

Figures 3a to 3d show a further nozzle and hairdryer combination.

Figures 1a to 1c show a nozzle 1100 and hairdryer 1120 combination where the nozzle 1100 has a generally tubular body 1103 with a longitudinal axis D-D extending along the length of the body and having a first inlet 1102 and a second inlet 1104 into the fluid flow path 1106 of the nozzle 1100.

Figure 1a shows the nozzle 1100 attached to a hairdryer 1120. The nozzle 1100 is inserted into the downstream end 1120b of the hairdryer until a stop is reached. In this position, a first fluid inlet 1102 of the nozzle 1100 is in fluid communication with a primary fluid outlet 1122 of the hairdryer 1120. The nozzle is an attachment for adjusting at least one parameter of the fluid flow emitted from the hairdryer and the downstream end 1100b of the nozzle protrudes from the downstream end 1120b of the hairdryer 1120.

The hairdryer 1120 has a handle 204, 206 and a body 202 which comprises a duct 282, 284. A primary fluid flow path 260 starts at a primary inlet 220 which in this example is located at the upstream end 1120a of the hairdryer i.e. at the distal end of the hairdryer from the fluid outlet 1120b. Fluid is drawn into the primary fluid inlet 220 by a fan unit 250, fluid flows along primary fluid flow path 260 located on the inside of the outer body 202 of the hairdryer between the outer body 202 and the duct 282, along a first handle portion 204 to the fan unit 250.

The fan unit 250 includes a fan and a motor. The fluid is drawn through the fan unit 250, along a second handle portion 206 and returns to the body 202 of the hairdryer in an inner tier 260a of the body. The inner tier 260a of the body 202 is nested within the primary fluid flow path 260 between the primary fluid flow path 260 and the duct 282 and includes a heater 208. The heater 208 is annular and heats the fluid that flows through the inner tier 260a directly. Downstream of the heater 208, fluid exits the primary fluid flow path at the primary outlet 1122.

With the nozzle 1100 attached to the hairdryer 1120, the primary outlet 1122 is in fluid communication with the first fluid inlet 1102 of the nozzle 1100 and the second primary outlet 1124 is in fluid communication with the second inlet 1104 of the nozzle 1100 Fluid that flows out of the primary outlet 1122 and second primary outlet 1124 flows along the body 1103 of the nozzle 1100 to the nozzle outlet 1130.

The hairdryer 1120 has a second fluid flow path 280. This second fluid flow path 280 flows from a second inlet 270 along the length of the body 202 of the hairdryer through duct 282 to a second outlet 290 outlet where, when there is no nozzle attached to the hairdryer, fluid flowing through the second fluid flow path 280 mixes with the primary fluid at the primary fluid outlet 1122. This mixed flow continues along duct 284 to the fluid outlet 1120b of the hairdryer. The fluid that flows through the second fluid flow path 280 is not processed by the fan unit 250; it is entrained by the primary fluid flow through the primary fluid flow path 260 when the fan unit is switched on.

The second fluid flow path 280 can be considered to flow along a tube defined by an upstream duct 282 and a downstream duct 284 where the primary outlet 230 is an aperture in the tube between the ducts 282 and 284. The nozzle is partially inserted into the tube defined by the ducts 284, 282. In this example the nozzle 1100 is slidably inserted into hairdryer outlet 1120b along downstream duct 284 past the aperture or primary fluid outlet 230 into the upstream duct 282. The nozzle 1100 is retained in the duct 282, 284 by friction. In this example, the friction is provided between stop 1110 and the duct 284 of the hairdryer.

This arrangement means that the primary flow through the primary fluid flow path 1126 of the hairdryer has two outlet regions. The use of a nozzle 1100 on a hairdryer 1120 introduces a restriction to the flow through the hairdryer resulting in a drop in output by the hairdryer of up to around 4l/s. By introducing a second primary outlet 1124 for the primary flow the drop in output is mitigated.

The second inlet 1104 of the nozzle is similar to first inlet 1102 in that is extends in the direction of the longitudinal axis of the nozzle and radially round through outer wall 1110 of the generally tubular body 1103 of the nozzle 1100. The second inlet 1104 consists of a number of discrete apertures 1104a separated by reinforcing struts 1104b.

Referring to Figure 1b, which shows a portion of a hairdryer having a primary fluid outlet comprising first 1122 and second 1124 primary outlets when there is no nozzle attached to the hairdryer 1120, the second primary outlet 1124 is closed as it is not required to increase flow through the primary fluid flow path 1126 of the hairdryer 1120. A closure 1130 is provided which occludes, blocks, covers or restricts the second primary outlet 1124. The closure 1130 is biased into the closed position by a spring 1132, in this example, which pushes against the closure 1124 to occlude the second primary outlet 1124. The first 1122 and second 1124 primary outlets both comprise apertures and are spaced apart along the longitudinal axis D-D of the nozzle 1100.

Referring now to Figure 1c, the nozzle 1100 is provided with a lip 1108 which is upstanding from the generally tubular wall 1101 of the nozzle. The lip 1108 can be continuous or discontinuous around the perimeter of the generally tubular outer wall 1105 of the body 1103 of the nozzle 1100 and is of sufficient depth or height upstanding from the wall 1105 to firstly engage with the closure 1130 and secondly to allow the nozzle to be inserted up to the point of engagement of the lip 1108 with the closure 1130 without snagging of the nozzle 1100.

The lip in this example is formed from an O-ring which is held in a recess formed in the body 1103 of the nozzle. Alternatives will be apparent to the skilled person and include, but are not limited to an integral moulded lip, a plastic/hard rubber ring, a living hinge, an overmoulded lip and a push fit arrangement.

The closure 1130 is ring shaped and has an S-shaped profile. Central to the ring is an aperture 1126 to enable fluid flowing through the primary fluid flow path 1126 of the hairdryer to exit the downstream end 1120b of the hairdryer from the first primary fluid outlet 1122 of the hairdryer. A first end 1125 of the S-shaped profile of the closure 1130 engages with one end of spring 1132 and provides the means by which the closure 1130 is biased into an occluded or closed position. A second end 1127 of the S-shaped profile protrudes into the fluid flow path 1129 of the hairdryer between the primary outlet 1122 and the downstream end 1120b of the hairdryer. This second end 1127 of the closure 1130 engages with the lip 1108 of the nozzle 1100 when the nozzle is inserted far enough into the downstream end 1120b of the hairdryer 1120 (see Figure 1a) and as the nozzle is inserted past the point of engagement, the closure 1130 is pushed against the action of the spring 1132 and slides, opening the second primary outlet 1124 to allow fluid flowing in the primary fluid flow path 1126 to exit via either the first primary outlet 1122 or the second primary outlet 1124 thus mitigating any restriction on fluid flow through the hairdryer from the use of a nozzle.

In order to prevent egress of fluid from the primary fluid flow path 1126 from the hairdryer outlet 1120b around the outside of the nozzle 1100. The outer wall 1103 is

provided with an upstanding collar 1110 that extends about the outer wall 1103 and seals the nozzle with respect to the hairdryer outlet 1120. The collar 1110 additionally provides a point of friction between the nozzle and the hairdryer that retains the nozzle within the hairdryer.

The nozzle 1100 has a downstream end 110b where fluid is output through a nozzle outlet 1112 and an upstream end 1100a. In one embodiment the upstream end 1100b of the nozzle comprises an end wall 1114. In this embodiment, the primary flow from the hairdryer is the only flow that is output from the nozzle outlet 1112. Alternatively, the upstream end 1100a of the nozzle comprises an opening 1116 which provides a further nozzle inlet for a second fluid flow path 1140 in the hairdryer. The second fluid flow path is for fluid that is entrained into the hairdryer by the action of the fan unit (not shown) drawing fluid into the primary fluid flow path 1126. The entrained fluid enters the hairdryer at a second inlet 1142, flows along the second fluid flow path 1140 into the further nozzle inlet 1116. The entrained fluid mixes with primary fluid flow within the nozzle before exiting at the nozzle outlet 1112.

Figures 2a to 2d show a different arrangement. In this example, the second primary outlet 1174 from the primary fluid flow path 1176 is in an end wall 1160 of the hairdryer 1150 rather than through an internal wall.

Referring now to Figure 2a, the hairdryer has a generally tubular body 1152 having an inner wall 1154a 1154b and an outer or external wall 1156. At the downstream end 1150b of the hairdryer an end wall 1160, 1180 is provided between the inner 1154b and outer 1156 wall. The end wall is orthogonal to a longitudinal axis E-E of the body 1152 and includes a fixed portion 1160 and a moveable portion or closure 1180. The closure 1180 is annular and is biased by a spring 1182 to be substantially flush with the fixed portion of the end wall 1160. When a nozzle is inserted into the hairdryer 1150, the closure 1180 is pushed against the spring 1182, causing the spring to compress and open the second primary outlet 1174. In this example, the closure 1180 is adjacent to the inner wall 1154b of the hairdryer however the closure could be located anywhere

between the inner and outer walls. In addition, the closure need not be continuous around the end wall.

Referring now to Figure 2d, the nozzle 1190 has a generally tubular body 1192 having an outer wall 1194. A first inlet 1196 is provided in the outer wall 1194 between an upstream or first end 1190a and a downstream or second end 1190b of the nozzle but towards the upstream end 1190a of the nozzle. This first inlet 1196 is in fluid communication with a first primary outlet 1172 of the hairdryer provided in the inner wall 1154 of the body of the hairdryer and a fluid flow path 1197 is provided through the nozzle from the first inlet 1196 through the body 1192 of the nozzle to a nozzle outlet 1198 at the downstream end 1190b of the nozzle. The outer wall 1194 of the nozzle is designed to be insertable into the outlet end 1150b of the hairdryer. At the downstream end 1194b of the outer wall 1194 a hook shaped lip 1193 is provided. When the nozzle 1190 is inserted in the hairdryer, the hooked shaped lip 1193 covers the end of inner wall 1154b of the hairdryer and engages with closure 1180 pushing it against the action of the spring 1182. In order to provide a second fluid flow path 1184 from the second opening 1174 to the downstream end 1190b of the nozzle, a collar 1195 is provided on the nozzle. When the nozzle is inserted into the hairdryer, the collar 1195 fits over the outer wall 1156 of the body 1152 of the hairdryer and forms together with the fixed portion of the end wall 1160 and the hook shaped lip 1193 a second fluid inlet 1184 for the nozzle which combines with fluid from the first inlet 1196 in the fluid flow path 1197 within the nozzle.

The nozzle 1190 is inserted as shown in Figures 2b and 2c; the lip 1193 engages with the closure 1180 and forces the closure back against the action of the spring 1182 opening the second primary outlet 1174.

Figures 3a to 3d show an alternate arrangement for mitigating flow restriction when a nozzle 1200 is used on a hairdryer 1252. In this example, insertion of a nozzle 1200 results in the primary fluid outlet 1250 of the hairdryer 1252 increasing in size.

The nozzle 1200 has a generally tubular body 1202 with a longitudinal axis F-F extending along the length of the body 1202. A fluid inlet 1208 comprising a number of apertures 1210 separated by struts 1212 has a length that extends in the direction of the longitudinal axis F-F of the nozzle 1200 and is located between a first or upstream end 1200a and a second or downstream end 1200b of the nozzle 1200 in an outer wall 1204 of the body 1202.

The hairdryer 1252 has a generally tubular body having an inner wall 1254a, 1254b, an outer wall 1256 and a primary fluid flow path 1258 provided therebetween. The primary fluid flow path 1258 flows from a primary inlet 1220 to a primary outlet 1250 provided as an aperture between two sections of the inner wall 1254a, 1254b and then through a central bore 1260 in the body of the hairdryer 1252 to a hairdryer outlet 1262.

The primary outlet 1250 is formed from a fixed surface 1270 attached to the downstream section of inner wall 1254b and a moveable surface 1272 which is connected to an upstream section of the inner wall 1254a. In order that the primary outlet 1250 can be opened, a moveable portion 1254aa of the upstream inner wall 1254a is slidably moveable against the direction of fluid flow at the primary fluid outlet 1250 towards the upstream end 1252a of the hairdryer 1252. The upstream section of the inner wall 1254a and the moveable portion 1254aa form a lap joint 1282 (Figure 3d) which is biased apart by a spring 1280 (Figures 3a and 3b). The moveable portion 1254aa has an internal surface which describes a duct 1262 within the hairdryer and is provided with a rim or lip 1264 which is upstanding from the duct 1262 and extends radially into the duct 1262. When a nozzle 1200 is inserted into the outlet 1262 of the hairdryer, the upstream end 1200a of the outer wall 1204 of the nozzle engages with the rim or lip 1262 on the moveable portion 1254aa and pushes the moveable portion 1254aa against the biasing action of the spring 1280 so the moveable portion 1254aa slides towards the upstream inner wall 1254a and opens the primary fluid outlet 1250 (Figures 3c and 3d).

When the nozzle 1200 is subsequently removed, the moveable portion 1254aa slides back towards the downstream end 1252b of the hairdryer 1252 causing the primary outlet 1250 to reduce back to its' original size.

The nozzle is retained with respect to the hairdryer by one of a number of alternatives which include but are not limited to a felt seal, a bump stop, an o-ring, magnets, friction fit, a mechanical clip, snap fit or actuated snap fit.

The hairdryers are preferably provided with a filter 222 (Figure 1a) which covers at least the primary fluid flow inlet 220 of the hairdryer. The filter 222 is provided as is prevents ingress of dust, debris and hair into the primary fluid flow path upstream 260 of the fan unit250 which includes a fan and a motor. These foreign objects could damage the motor and cause premature failure of the hairdryer. The filter 222 can cover the entire intake of the hairdryer i.e. both the primary fluid flow path 260 and the second fluid flow path 280 however this is not preferred as it interferes with a line of sight through the appliance. A line of sight through the appliance is restricted by the use of a nozzle on the appliance.

The invention has been described in detail with respect to a nozzle for a hairdryer and a hairdryer comprising a nozzle however, it is applicable to any appliance that draws in a fluid and directs the outflow of that fluid from the appliance.

The appliance can be used with or without a heater; the action of the outflow of fluid at high velocity has a drying effect. The fluid that flows through the appliance is generally air, but may be a different combination of gases or gas and can include additives to improve performance of the appliance or the impact the appliance has on an object the output is directed at for example, hair and the styling of that hair.

The invention is not limited to the detailed description given above. Variations will be apparent to the person skilled in the art.

CLAIMS

1. A hairdryer comprising a handle; a body comprising a fluid outlet, the fluid outlet comprising at least one aperture; a fan unit for generating a fluid flow from a fluid inlet through which the fluid flow enters the hairdryer to the fluid outlet; means for occluding at least part of the fluid outlet, the occluding means being moveable relative to the fluid outlet; and means for receiving an attachment for varying the shape of a fluid flow emitted from the hairdryer, wherein the attachment comprises means for engaging the occluding means as the attachment is received by the receiving means to effect movement of the occluding means relative to the fluid outlet.

2. A hairdryer according to claim 1, wherein the engaging means is arranged to move the occluding means away from said at least part of the fluid outlet as the attachment is received by the receiving means.

3. A hairdryer according to claim 1 or claim 2, wherein the occluding means is arranged to move in a direction parallel to a plane in which said at least part of the fluid outlet is located.

4. A hairdryer according to claim 3, wherein the occluding means is slidably moveable in said direction relative to said at least part of the fluid outlet.

5. A hairdryer according to claim 1 or claim 2, wherein the occluding means is arranged to move in a direction substantially orthogonal to a plane in which said at least part of the fluid outlet is located.

6. A hairdryer according to any preceding claim, wherein the engaging means is arranged to move the occluding means from a first position to a second position as the attachment is received by the receiving means.

7. A hairdryer according to claim 6, wherein the fluid outlet comprises a first aperture and a second aperture, and wherein in the first position the occluding means is arranged to occlude only the second aperture.

8. A hairdryer according to claim 7, wherein the first aperture is spaced from the second aperture.

9. A hairdryer according to claim 8, wherein the first aperture is located in a first plane and the second aperture is located in a second plane which is angled relative to the first plane.

10. A hairdryer according to claim 9, wherein the second plane is orthogonal to the first plane.

11. A hairdryer according to any of claims 7 to 10, wherein the second aperture is located at an end of the hairdryer.

12. A hairdryer according to claim 6, wherein the fluid outlet comprises an aperture which is partially occluded when the occluding means is in the first position, and wherein the engaging means is arranged to move the occluding means away from said aperture as the attachment is received by the receiving means.

13. A hairdryer according to any of claims 6 to 12, wherein the occluding means is biased towards the first position

14. A hairdryer according to any preceding claim, wherein the engaging means extends about part of the attachment.

15. A hairdryer according to any preceding claim, wherein the attachment comprises a side wall, and wherein the engaging means extends about the wall.

16. A hairdryer according to claim 15, wherein the engaging means surrounds the side wall.

17. A hairdryer according to claim 15 or claim 16, wherein the side wall is tubular in shape, and the engaging means comprises a lip upstanding from the side wall.

18. A hairdryer according to any preceding claim, comprising a bore extending through the body, and wherein said at least part of the fluid outlet is arranged to emit fluid into the bore.

19. A hairdryer according to any preceding claim, wherein said at least part of the fluid outlet is annular in shape.

Application No: GB1211833.7 **Examiner:** Emma Tonner

Claims searched: 1-19 **Date of search:** 8 October 2012

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1, 6	US5598640 A (SCHEPISI) see col.3, lines 27-52
A	1	JP05130915 A (HITACHI MAXELL) see English abstract and figures

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

A45D

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI, TXTE

International Classification:

Subclass	Subgroup	Valid From
A45D	0020/10	01/01/2006
A45D	0020/12	01/01/2006

Intellectual Property Office is an operating name of the Patent Office
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I hereby certify that this paper is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: February 2, 2015 Signature: /dbernecker/
(Donna Bernecker)

Patent
Docket No. 424662077100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Patrick Joseph William MOLONEY et al.

Application No.: 14/323,937 Confirmation No.: 2130

Filed: July 3, 2014 Art Unit: 3743

For: HAND HELD APPLIANCE Examiner: Kenneth Rinehart

INFORMATION DISCLOSURE
STATEMENT UNDER 37 C.F.R. § 1.97 & § 1.98

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

Pursuant to 37 C.F.R. § 1.97 and § 1.98, Applicants submit for consideration in the above-identified application the documents listed on the attached Form PTO/SB/08a/b. Copies of the foreign documents and non-patent literature are submitted herewith. The Examiner is requested to make these documents of record.

Concerning a brief explanation of the relevancy of the teachings of the cited foreign prior art references pursuant to 37 CFR 1.98(a)(3)(i), Applicants indicate on the attached Form PTO/SB/08a/b that DE 25 59 697 corresponds to US 4,250,902 (U.S. counterpart), CN 100353882 corresponds to US 7,412,781 (U.S. counterpart) and KR 10-1229109 corresponds to US 2013/0111777 (U.S. counterpart).

va-442374

This Information Disclosure Statement is submitted within three months of the application filing date or before mailing of a first Office Action on the merits; accordingly, no fee or separate requirements are required.

Applicants would appreciate the Examiner initialing and returning the Form PTO/SB/08a/b, indicating that the information has been considered and made of record herein.

The information contained in this Information Disclosure Statement under 37 C.F.R. § 1.97 and § 1.98 is not to be construed as a representation that: (i) a complete search has been made; (ii) additional information material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the above information constitutes prior art to the subject invention.

In the unlikely event that the transmittal form is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief (such as payment of a fee under 37 C.F.R. § 1.17 (p)) is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petition and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing (424662077100). However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: February 2, 2015

Respectfully submitted,

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va-442374

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/323,937
Filing Date	July 3, 2014
First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3743
Examiner Name	K. Rinehart
Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	US-2013/0045084	02-21-2013	Tu et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	2.	CH-588 835	06-15-1977	Gimelli & Co. AG (Samuel GIMELLI)		X
	3.	EP-0 306 765	03-15-1989	Robert Krups Stiftung & Co. KG (Hans-Dieter POWELEIT et al.)	Machine Translation	X
	4.	EP-1 661 481	05-31-2006	K.I.C.A. Inc. (Tai Cheul KIM)		
	5.	CN-200973446	11-14-2007	Qin WENLONG		X
	6.	GB-2464736	04-28-2010	Dyson Technology Ltd. (Kevin John SIMMONDS et al.)		

Examiner Signature		Date Considered	

*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	7.	International Search Report and Written Opinion mailed December 8, 2014, directed to International Application No. PCT/GB2014/051830; 14 pages	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

DESCRIPTION CH588835

The invention relates to a hot-air device for hair treatment with a maintained in a designed as a handle tubular housing dc small motor with fan blades, one attached to the motor, against these wings flared circular truncated cone and provided with helical heating coils peg-like radiator and with diode rectifier, smoothing chokes and smoothness capacitor, the DC motor has two axially projecting conductive terminals and is embedded in a shell-shaped version, and with a two-port circuit board is provided which is provided with printed circuit stuck on which board the wire ends of the diode rectifier, the smoothness chokes and the smoothness capacitor have.

The invention relates to an evolution of the hot air device of the above type.

By a handy switch handle assembly, the heater can be turned on and off during use in two stages.

In addition, the heater is also coated internally by the air.

This hot air device is characterized in that a protruding from the housing indicating longitudinally thereof slidable switching brands operating handle is provided which is operatively connected with two Druckschaltem, and that the radiator is connected by lamellae with the casing-like version of the engine.

In the drawing, an embodiment of the subject invention is shown.

In the drawings:

FIG. 1 is a longitudinal section through the hot air tool,

FIG. 2 shows a section according to line II-II of FIG. One,

FIG. 3, switching devices of FIG. One seen from the inside.

The hot air tool for hair treatment includes a handle formed as a tubular housing 1.

In this a version 2 with its three fins used (Fig.

1).

The version 2 encloses a small DC motor fourth

On the air inlet side, the motor 4 a projecting shaft that carries a fan blade 5.

On a motor 4 against the wing 5 widening truncated cone 6 is fixed.

The blades 5 overlaps the outer edge of the frustocone jacket 6, so that no hairs can wrap around the motor shaft.

DerMotor 4 has on its side facing the air outlet side facing two axially projecting conductive terminals 7.

At this the corresponding terminals of a circuit board 8 are soldered.

The circuit board 8 has the motor side on a printed circuit.

On the side facing the air outlet of electrical components include a diode rectifier, two choke coils and a capacitor is arranged compactly smoothness.

The holder 2 protrudes from above the engine 4 and four fins 9, with a tube-like, having a helical Heizdrahtwindung radiator 10 is fixedly connected.

The future of Wings 5 air can get inside the heater 19 between the slats through 9.

Characterized the heater is outside and inside coated 10 from the fresh air and the circuit board 8 is cooled with the electrical components.

On the air outlet side of the housing 1 to a remote end 11, which can be used to connect a comb hair drying or hair curler.

To this end 11 provided with a concentric air outlet openings insert piece 12 is inserted, at which the heater 10 abuts.

At the air inlet end of the housing 1 provided with a concentric apertures end cap 13 is screwed.

By an inserted between the motor 4 and connection piece 13 of the spacer sleeve 14, the radiator 10 and engine 4 in the axial direction are held.

On the air inlet side of the spacer sleeve 14 is provided with a cross bar 15 for receiving the cable connections 16.

Power is supplied from the terminals 16 via cable conductors, which are guided in longitudinal grooves of the spacer sleeve 14 to two low pressure switches 18, 19 (Fig.

2, 3).

These are held in place by pins on the socket 2.

The socket 2 includes the air discharge side facing the two switches 18, 19, in the longitudinal center plane between the same a not apparent from the drawing, V-shaped guide, into which the provided with a triangular cross-section end 21 of a control rod 20 (Fig. Two 3) is held laterally.

The shift rod 20 has a cross in a guide groove 22 of the housing 1, guide portion 23 (Fig.

1, 3).

It is provided with lateral anchoring projections 24, and made of two parallel longitudinal slots 25 laterally resilient so that the guide portion 23 of the shift rod 20 in the assembly of the inside of the housing 1 by the guide groove 22 of the same can be pressed, the anchoring lugs 24 at the outer side of housing the guide groove 22 into place.

On the outside of the housing 1 a provided with comb-like grooves shifter 26 is provided which is provided with two connecting pins 27 (Fig. One), the plug holes 28 in the switching bar 20.

By moving the shift handle 26 against the switch 18, 19 is first the switch button 29 of the switch 18 and on further displacement of the shift knob

30 of the switch 19 is pressed by one of the two surfaces facing the interior of the housing of the three-edged end 21 of the switching rod 20.

The two control buttons 29, 30 are used for the gradual activation and deactivation of the heating.

By advancing the shift handle 26 marks 31 of the switching stages visible (FIG.

3).

The relatively large heating resistor of the heater 10 is divided into two stages and is flowed through by mains current, which is then passed in series to the diode rectifier, to which only a terminal voltage of 12 volts is present, so that the DC motor 4 is connected to a low clamping voltage .

CLAIM

Hot air for hair treatment with a maintained in a designed as a handle tubular housing dc small motor with fan blades, one fixed to the motor, against these wings flared circular cone frustum and provided with helical heating coils tubular heaters, as well as with diode rectifier, smoothing chokes and smoothness capacitor, the DC motor, two in having axially projecting conductive terminals and is embedded in a shell-shaped version, and with a two-port circuit board is provided which is provided with printed circuit, are placed on which board the wire ends of the diode rectifier, the smoothness chokes and the smoothness capacitor, characterized that one of the housing (1) protruding in the longitudinal direction thereof displaceable switching marks (31) indicating the switching handle (26) is provided which is operatively connected to two pressure switches (18,

19), and in that the radiator (10) connected by blades (9) with the casing-like holder (2) of the motor (4).

UNDER ANY

First hot-air device according to claim, characterized in that the switching handle (26) is secured by pins (27) on a switching rod (20) having a triangular cross section to the longitudinal guide at the switching end (21), and in that the two after the interior of the housing facing surfaces of the

Rod-end (21) in operative connection with one of the two

Pressure switch (18, 19) are provided.

Second

Hot-air device according to claim, characterized in that at the air outlet end of the housing (1) provided with concentric air outlet openings insert (12) is provided.

** WARNING ** end of DESC field could overlap the beginning of CLMS **.

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PN - CH588835 A5 19770615
PA - GIMELLI & CO AG

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AN - 1977-F9379Y
TI - Hot air hair dryer - has two stage control by grip switch and rod acting on pressure switches in lengthways movements from handle
AB - Hot air hair blower/dryer handle tube encloses a small d.c. motor, fan, heater coils, rectifier, smoothing chokes and condenser plugged into a printed circuit board joined to the motor connections. A two position grip switch protrudes from and adjusts lengthways in the housing. The switch is positively coupled to two pressure switches (18,19). The heater is joined to the motor casing by strips.
The grip switch should be pinned to a bar which is designed as a triangle (21) at its switching end in such a way that the two triangle surfaces pointing into the housing connect positively to the two switches (18,19) respectively, thus facilitating two stage heat control.
PN - CH588835 A 19770615 DW197729
PA - (GIME-N) GIMELLI & CO AG

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 1815 of 2286

CH 588 835

SCHWEIZERISCHE EIDGENOSSENSCHAFT
EIDGENÖSSISCHES AMT FÜR GEISTIGES EIGENTUM

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Patent erteilt: 30.4.1977

(45) Patentschrift veröffentlicht: 15.6.1977

(54) Titel: **Heissluftgerät für Haarbehandlung**

(73) Inhaber: Gimelli & Co. AG, Zollikofen

(74) Vertreter: «PERUHAG», Patent-Erwirkungs- und Handels-Gesellschaft mbH, Bern

(72) Erfinder: Samuel Gimelli, Zollikofen

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 1816 of 2286

Die Erfindung betrifft ein Heissluftgerät für Haarbehandlung, mit einem in einem als Handgriff ausgebildeten rohrförmigen Gehäuse gehaltenen Gleichstromkleinmotor mit Ventilatorflügel, einem am Motor befestigten, gegen diesen Flügel sich erweiternden Kreiskegelstumpfmantel und einem mit schraubenförmigen Heizwindungen versehenen zapfenartigen Heizkörper sowie mit Diodengleichrichter, Glättedrosseln und Glättekondensator, wobei der Gleichstrommotor zwei in axialer Richtung vorstehende, leitende Anschlüsse aufweist und in eine mantelförmige Fassung gebettet ist, und wobei eine zwei Anschlüsse aufweisende Platine vorgesehen ist, die mit gedruckter Schaltung versehen ist, auf welcher Platine die Drahtenden des Diodengleichrichters, der Glättedrosseln und des Glättekondensators gesteckt sind.

Die Erfindung betrifft eine Weiterentwicklung des Heissluftgerätes obgenannter Art. Durch eine handliche Schaltgriffanordnung kann die Heizung während des Gebrauchs in zwei Stufen ein- und ausgeschaltet werden. Zudem wird der Heizkörper auch inwendig von der Luft bestrichen. Dieses Heissluftgerät ist dadurch gekennzeichnet, dass ein aus dem Gehäuse ragender, in Längsrichtung derselben verschiebbarer Schaltmarken anzeigender Schaltgriff vorgesehen ist, der in Wirkverbindung mit zwei Druckschaltern steht, und dass der Heizkörper durch Lamellen mit der mantelförmigen Fassung des Motors verbunden ist.

In der Zeichnung ist ein Ausführungsbeispiel des Erfindungsgegenstandes dargestellt. Es zeigen:

Fig. 1 einen Längsschnitt durch das Heissluftgerät,

Fig. 2 einen Schnitt nach Linie II–II der Fig. 1,

Fig. 3 die Schaltorgane nach Fig. 1 von innen gesehen.

Das Heissluftgerät für Haarbehandlung weist ein als Handgriff ausgebildetes rohrförmiges Gehäuse 1 auf. In dieses ist eine Fassung 2 mit ihren Rippen 3 eingesetzt (Fig. 1). Die Fassung 2 umschliesst einen Gleichstromkleinmotor 4. Auf der Lufteintrittseite weist der Motor 4 eine vorstehende Welle auf, die einen Ventilatorflügel 5 trägt. Am Motor 4 ist ein gegen den Flügel 5 sich erweiternder Kegelstumpfmantel 6 befestigt. Der Flügel 5 übergreift den äusseren Rand des Kegelstumpfmantels 6, so dass sich keine Haare um die Motorwelle wickeln können.

DerMotor 4 weist auf seiner dem Luftaustritt zugewandten Seite zwei in Achsrichtung vorstehende, leitende Anschlüsse 7 auf. An diesen sind die entsprechenden Anschlüsse einer Platine 8 angelötet. Die Platine 8 weist auf der Motorseite eine gedruckte Schaltung auf. Auf der dem Luftaustritt zugewandten Seite sind elektrische Bauelemente: ein Dioden-Gleichrichter, zwei Drosselspulen und ein Glättekondensator kompakt angeordnet. Die Fassung 2 steht gegenüber dem Motor 4 vor und ist über vier Lamellen 9 mit einem rohrartigen, eine schraubenförmige Heizdrahtwindung aufweisenden Heizkörper 10 fest verbunden. Die vom Flügel 5 kommende Luft kann zwischen den Lamellen 9 hindurch ins Innere des Heizkörpers 10 gelangen. Dadurch wird der Heizkörper 10 aussen und innen von der Frischluft bestrichen und die Platine 8 mit den elektrischen Bauelementen abgekühlt.

An der Luftaustrittseite weist das Gehäuse 1 ein abgesetztes Ende 11 auf, das zum Anschluss eines Haartrocknungskammes oder eines Lockenwicklers benutzt werden kann. In dieses Ende 11 ist ein mit konzentrischen Luftaustrittsöffnungen versehenes Einsatzstück 12 gesteckt, an welchem der Heizkörper 10 anstösst. Am Lufteintrittsende des Gehäuses 1 ist ein mit konzentrischen Öffnungen versehenes Abschlussstück 13 angeschraubt. Durch eine zwischen Motor 4 und Anschlussstück 13 eingesetzte Distanzhülse 14 sind der Motor 4 und der Heizkörper 10 in axialer Richtung gehalten. Auf der Lufteintrittseite ist die Distanzhülse 14 mit einer Traverse 15 zur Aufnahme der Kabelanschlüsse 16 versehen.

Die Stromzuführung erfolgt von den Kabelanschlüssen 16 über Leiter, die in Längsrillen der Distanzhülse 14 geführt sind, zu zwei kleinen Druckschaltern 18, 19 (Fig. 2, 3). Diese sind durch Zapfen an der Fassung 2 gehalten. Die Fassung 2 weist auf der dem Luftaustritt zugewandten Seite der beiden Schalter 18, 19, in der Längsmittelebene zwischen denselben eine aus der Zeichnung nicht ersichtliche V-förmige Führung auf, in welcher das mit einem Dreikantquerschnitt versehene Ende 21 eines Schaltstabes 20 (Fig. 2, 3) seitlich gehalten ist. Der Schaltstab 20 weist eine in eine Führungsnut 22 des Gehäuses 1 greifende Führungspartie 23 auf (Fig. 1, 3). Diese ist mit seitlichen Verankerungsnasen 24 versehen und durch zwei parallele Längsschlitze 25 seitlich federelastisch gemacht, so dass die Führungspartie 23 des Schaltstabes 20 bei der Montage von der Innenseite des Gehäuses 1 durch die Führungsnut 22 desselben gedrückt werden kann, wobei die Verankerungsnasen 24 an der Gehäuseaussenseite der Führungsnut 22 einrasten. An der Aussenseite des Gehäuses 1 ist ein mit kammartigen Rillen versehener Schaltgriff 26 vorgesehen, der mit zwei Verbindungszapfen 27 versehen ist (Fig. 1), die in Löchern 28 des Schaltstabes 20 stecken. Durch Verschieben des Schaltgriffes 26 gegen die Schalter 18, 19 wird zunächst der Schaltknopf 29 des Schalters 18 und bei weiterem Verschieben der Schaltknopf 30 des Schalters 19 durch eine der beiden nach dem Gehäuseinnern gerichteten Flächen des dreikantigen Endes 21 des Schaltstabes 20 gedrückt. Die beiden Schaltknöpfe 29, 30 dienen zur stufenweisen Ein- und Ausschaltung der Heizung. Durch das Vorschieben des Schaltgriffes 26 werden Marken 31 der Schaltstufen sichtbar (Fig. 3).

Der relativ grosse Heizwiderstand des Heizkörpers 10 ist in zwei Stufen unterteilt und wird vom Netzstrom durchflossen, der dann in Serienschaltung an den Diodengleichrichter gelangt, an dem nur noch eine Klemmenspannung von 12 Volt vorhanden ist, so dass der Gleichstrommotor 4 an eine niedrige Klemmenspannung angeschlossen ist.

PATENTANSPRUCH

Heissluftgerät für Haarbehandlung, mit einem in einem als Handgriff ausgebildeten rohrförmigen Gehäuse gehaltenen Gleichstromkleinmotor mit Ventilatorflügel, einem am Motor befestigten, gegen diesen Flügel sich erweiternden Kreiskegelstumpfmantel und einem mit schraubenförmigen Heizwindungen versehenen rohrartigen Heizkörper sowie mit Diodengleichrichter, Glättedrosseln und Glättekondensator, wobei der Gleichstrommotor zwei in axialer Richtung vorstehende leitende Anschlüsse aufweist und in eine mantelförmige Fassung gebettet ist, und wobei eine zwei Anschlüsse aufweisende Platine vorgesehen ist, die mit gedruckter Schaltung versehen ist, auf welcher Platine die Drahtenden des Diodengleichrichters, der Glättedrosseln und des Glättekondensators gesteckt sind, dadurch gekennzeichnet, dass ein aus dem Gehäuse (1) ragender, in Längsrichtung desselben verschiebbarer Schaltmarken (31) anzeigender Schaltgriff (26) vorgesehen ist, der in Wirkverbindung mit zwei Druckschaltern (18, 19) steht, und dass der Heizkörper (10) durch Lamellen (9) mit der mantelförmigen Fassung (2) des Motors (4) verbunden ist.

UNTERANSPRÜCHE

1. Heissluftgerät nach Patentanspruch, dadurch gekennzeichnet, dass der Schaltgriff (26) durch Zapfen (27) an einem Schaltstab (20) befestigt ist, der zu seiner Längsführung am schaltenden Ende (21) einen Dreikantquerschnitt aufweist, und dass die zwei nach dem Gehäuseinnern gerichteten Flächen des Stabendes (21) in Wirkverbindung mit je einem der beiden Druckschalter (18, 19) stehen.

2. Heissluftgerät nach Patentanspruch, dadurch gekennzeichnet, dass am Luftaustrittsende des Gehäuses (1) ein mit konzentrischen Luftaustrittsöffnungen versehenes Einsatzstück (12) vorgesehen ist.

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3. Heissluftgerät nach Patentanspruch, dadurch gekennzeichnet, dass am Lufteintrittsende des Gehäuses (1) ein mit konzentrischen Öffnungen versehenes Abschlussstück (13) vorgesehen ist, und dass eine Distanzhülse (14) zwischen dem Motor (4) und dem Abschlussstück (13) eingebaut ist.

4. Heissluftgerät nach Patentanspruch, dadurch gekennzeichnet, dass die Anschlüsse (7) des Motors (4) mit den entsprechenden Anschlüssen der Platine (8) durch Lötstellen verbunden sind.

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Fig.1

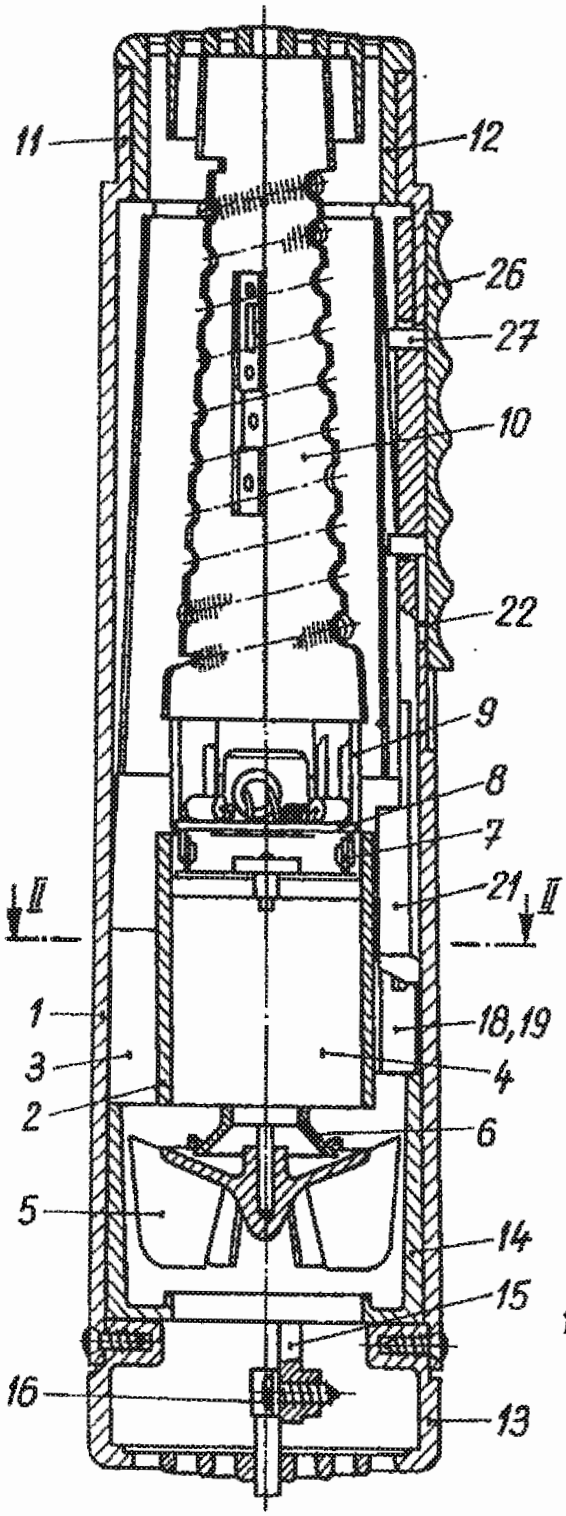


Fig.3

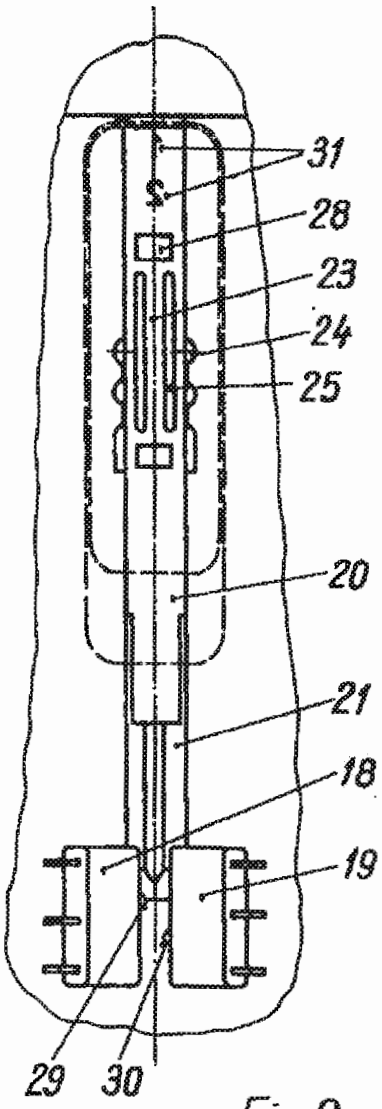
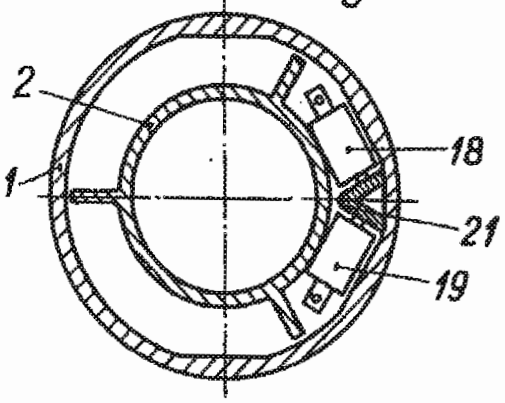


Fig.2



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Espacenet

Bibliographic data: EP0306765 (A1) — 1989-03-15

Hand-held electrical hair dryer.

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Abstract of EP0306765 (A1)

The hand-held electrical hairdryer (10) has a housing (11, 12), having at one end an inlet (13) and at the other end an outlet (14), for accommodating an electric motor (18) driving an impeller (22), a heater (16) for heating the air and a printed circuit board (43) for the motor with a triac (41) or another electronic component. The triac (41) or another electronic component is arranged in the region of the run-out device (20) in order to achieve optimum cooling. The heater (16) is received by a support (17) and connected by plugging-on to the counter-contacts (47) of the printed circuit board (43) for the motor via contacts (50, 51). In another embodiment, the printed circuit board (43) for the motor of the hand-held hairdryer (10) is constructed as a body surrounding the motor (18). The printed circuit board (43) for the motor is preferably an annular

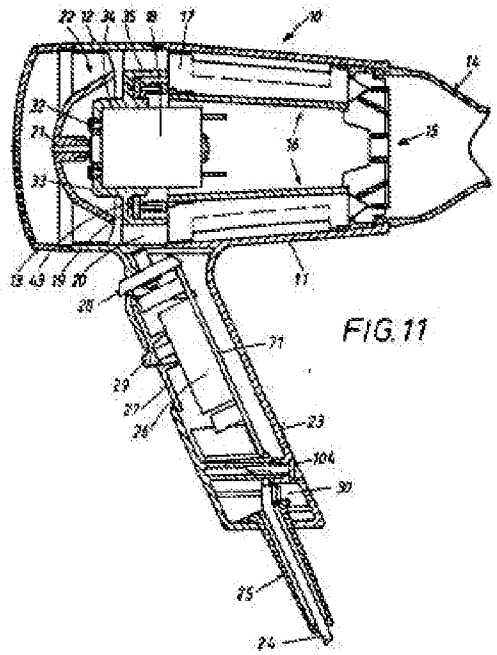


FIG.11

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body.; Boundary walls of said annular body (41) serve as guide elements in interaction with adjacent parts of the housing (11, 12).

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DESCRIPTION EP0306765

[0001]

The invention relates to an electrically powered hand hair dryer with a one end an inlet and at the other an outlet comprising a housing for accommodating a a wheel driving electric motor, a blade comprising further conducting for guiding and a heater for heating the air and an engine circuit board with a triac having-the switching and control devices.

[0002]

Such electrically operated hand-held hair dryers are known in paid-rich embodiments.

There are also under-different types of accommodation for the motor circuit board with its switching and control facilities, which include includes a triac.

Under a triac is meant a thyristor, which passes both half cycles of an alternating current, and controls.

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In a first embodiment of the arrangement of such a motor printed circuit board is made housed inside a hollow cylinder, which partially surrounds the electric motor at one end and carries on its lateral surface, the mounting of the heating of the hand hair drier.

This arrangement of the motor circuit board has not been proven, especially because in the almost closed cavity of the hollow cylinder no cooling air for the switchgear and control mechanisms, in particular special-was present for the triac.

It is therefore to überge-addressed the triac of the motor printed circuit board is in a range anzuord-NEN, which lies between the heating on the one hand and the inner wall of the housing of the hair dryer on the other hand.

With this arrangement, There have been improvements in the cooling of the triac, but experiments carried out have shown that the cooling effect in this region is not out-of-ranges to obtain optimum values.

[0003]

The invention has for its object to improve electric hand hair dryers of the type identified initially in more detail, in particular such that the triac is moved to such a position inside the housing of the hand hair dryer, in which optimum cooling.

Here, this goal should be achieved with simple and inexpensive means.

[0004]

To solve this problem, the invention proposes to arrange the triac of the hand hair dryer in the Nachleiteinrich-tion of the electrically driven hand hair dryer.

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[0005]

In the preferred embodiment of the invention the blades of the further conducting is removed and instead the triac arranged in this region of the further conducting.

Tests carried out have shown that significant advantages over the known be achieved with a fiction,-according to the design of electrically operated hand hair dryer.

Thus, for example, in a further conducting, which is equipped with twelve blades twelfth removed and instead the triac in the lack region of the Nachleitein-direction.

With such an arrangement Runaway-led tests have shown that this optimum cooling of the triac is reached.

This not least because he is fully air current generated by the driven by the electric motor impeller.

Since the triac is practically take the place of the missing one scoop of Nachleiteinrich-tung, there are no changes in the dimen-tions of further conducting, so that the housing of the hand hair dryer can maintain its present shape.

[0006]

It is recommended to leave the further conducting in the area of a missing blade having a recess extending into a triac having extension of the motor plate.

The embodiment of the recess is selected so that the triac is pressed into the correct position and held in this well.

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[0007]

It is recommended to leave the recess parallel and spaced-vonein other arranged have limitations, which are interconnected by an upper limit.

Whereas it is appropriate to let the upper limit a section for engaging the free end of the extension of the motor circuit board aufwei-sen.

It is advisable to solder the triac on the motor circuit board in such a way that it provides the missing blade of further conducting.

[0008]

It is recommended that a boundary wall of the section include such an angle with the horizontal to las-sen, which is approximately equal to the angle which a scoop of further conducting encloses with the horizontal.

Such an angle is about 60 [deg.].

[0009]

The invention is also concerned with an electrically operated hand hairdryer, wherein the heating of a substrate is broken-taken, the mating contacts can be connected by plugging contacts with the Motorleiterplat th.

These embodiments are known per se in manifold embodiments.

It is usually this uses a heater which comprises a support, is which is formed of two insulating plates which are arranged crosswise and take up at least one designed as a heating coil heater,

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which is held on the peripheral surface of the insulating plates in such a way that regions of the wendelför -migen engage in recesses in the heater edges of the insulating panels.

Thus, the helical heater is only set at some points.

Otherwise it bridges the free space between the portions of the insulating plates.

On the substrate and electrical contacts are secured, the need to cooperate with mating contacts, which are arranged on the motor printed circuit board.

This motor printed circuit board carrying the other in a known manner and the switching control means is usually attached to the end face of the electric motor and extending into the cavity of the fitting on the support in the heater.

Until now it now has the contacts which are provided on the supports of the heater is soldered to the corresponding counter-contacts of the motor printed circuit board.

This connection between the contacts of the carrier of the heater on the one hand and the mating contacts of the motor circuit board on the other hand is very complex and costly to manufacture hand hairdryer.

Moreover, after soldering the contacts to the mating contacts in practice a rigid, non-releasable connection be-tween the heater and the carrier on the one hand and the Motorleiterplat th other hand.

The mechanical cohesion but it made only on the solder joints.

Again, the invention is intended to remedy.

It is based on the additional on-task of improving electric hand hair dryer the genann-th type further, in particular the production of a slight connection between the contacts of the heater and

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the motor circuit board is to be achieved.

[0010]

To solve this task according to the invention is further pre-propose that the heater carrier holding the plate under Motorleiter- providing a detachable connection between his contacts and the mating contacts of the motor circuit board by plugging is connected.

This design of electrically operated hand hair dryer has rise to major advantages over the known.

So the heater with the carrier and the zugeord-Neten contacts can be prefabricated as a unit, which is then plugged as a whole on the engine PCB.

In this plugged into the end position, the contacts of the heater come with the mating contacts of the motor circuit board in conducting connec-tion.

The complicated and considerable costs soldering the contacts and the mating contacts deleted.

This becomes particularly noticeable cost, that even with a plurality of contacts, and these mating contacts are all transferred during insertion of the assembly to the motor printed circuit board in its conductive connection.

Nevertheless, a solubility between the heater and the support and the motor cable-terplatte is possible.

For this purpose, the unit merely needs to be withdrawn from the motor printed circuit board.

The contacts come with the mating contacts disengaged.

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Such separability is for example desirable when the heater is faulty.

[0011]

In the inventive design of the electrically driven hand hair dryer so no longer - as before - only one connection between the heater and its support on the one hand and the motor circuit board on the other hand emerged over the solder joints yet but it is a rigid mechanical connection in that when attaching the carrier with the heaters are mechanically coupled to the motor circuit board areas of these two parts.

It is advisable to let the carriers have with the heater connected conductively contact tabs which engage in his plugging in with conductor tracks together-acting slots of the motor circuit board.

In this way, during mating of the two parts were slightly soluble, but mechanically stable connection is established.

Characterized the position of the carrier of the heater is also fixed in relation to the motor printed circuit board.

[0012]

To allow easy manufacturing of the compound, it is em-mends to arrange the slots on the front end surface of the motor printed circuit board, wherein the angled free ends of the tabs engage in contact-making in the slots.

The slots can be produced with this in the production of the motor printed circuit board, so that additional working processes are eliminated.

[0013]

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It is advisable to refrain from any contact tab consist of a metal strip which is connected in its central region with one of the carriers forming intersecting arranged insulating panels and one end with said heating means is conductively connected, while the opposite other end in the slots of the motor circuit board engages.

It is advisable to make the contact tabs not only from an electrically conductive metallic material but to let these also have resilient properties.

This can be exploited in a simple manner to produce the desired contact pressure.

[0014]

In one proposed embodiment of an electrically operated hand-held hair dryer is the long-sized, as seen in plan view, approximately rectangularly designed motor printed circuit board, which has at its front free end on one side open slots into which can engage the attaching parts of the carrier of the heater.

This corresponds to the length of the motor circuit board as that of the carrier of the heater.

The attachment area between the engine PCB and the support of the heater is kept relatively short.

In contrast to this proposed embodiment of the electrically driven hand hair dryer improvement should also be made, particularly to an inexpensive plug-together individual parts of electrically operated hand hair dryer can be achieved.

[0015]

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To solve this further object of the invention is pre-propose to design the motor circuit board as the engine encompassing body, the guide and support areas as well as its the outlet grille facing surface includes contacts that are releasably connected to the mating contacts of the heater by plugging.

Preferably is provided to form the motor printed circuit board as an annular body, the central recess is penetrated by the motor and the outer boundary wall being usable as a guiding area, while a portion acting as a supporting area.

The motor board is therefore designed not seen as a top view of rectangular body which is arranged in the extension of the axis of the electric motor but the motor circuit board embraces now this electric motor, which guide and support spaces provided on the engine PCB, with adjacent areas of the housing the hand hair dryer cooperate.

In this case, a detachable connection of this motor circuit board is given to the support of the heater of preference.

As before, the motor circuit board may include all essential electronic or electrical components.

A montage relief is obtained by pre-prepared assemblies.

[0016]

Another advantage is that the motor circuit board located in the immediate vicinity of the engine, so that very short Verbindun-gen to the terminal contacts of the motor are available.

[0017]

It is advisable to organize in the area of the central portion of a holder of a further conducting a receptacle for the motor, which is limited in its upper part by a circumferential extension of the

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central part, which can interact leading to the inner limiting wall of the engine PCB.

Such long-held leadership makes noticeably advantageous when at bringing the mounting plate.

[0018]

It is recommended to let cooperate in the assembly, the outer boundary wall of Motorleiterplat-te with the inner wall of a blade support member to further improve the guide.

[0019]

For limiting the insertion movement, it is advantageous that both the said extension and the inner wall of the blade support member comprises a support shoulder for the support region of the motor printed circuit board.

These support shoulders can be produced readily with in the production of the housing of the hand hair drier.

Since the two support shoulders are arranged away from each other, there is the advantage that the annular engine board is supported both in the region of its inner-diameter and in the region of the outer diameter.

[0020]

It is expedient laterally offset in the bottom of the holder of further conducting is to be placed on the shoulders supporting a free space to accommodate protruding parts of the engine PCB.

This free space is kept in its dimensions so that the usual, on the engine PCB angeord-Neten

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electrical or electronic components or the connection points can be accommodated in it.

[0021]

In principle it is not necessary to connect the annular motor printed circuit board with the adjacent parts of the housing of the hand hair drier.

Where a detachable connection between the two parts is used, it is expedient to provide the motor board with notches that cooperate with Gegenra th to the adjacent walls of the holder of Nachleitein-direction.

This snap-in connection ensures that even at the pre motor circuit board is connected to the associated portion of the housing.

On the other hand it is also possible, if required, such a latching connection to release.

[0022]

It is recommended that the motor circuit board perpendicular from its base plane projecting contacts that can be plugged together with Gegenkon-clocking, which are arranged on the support of the heater.

Respect to the design of the contacts and the mating contacts are several possibilities.

According to a first proposal is to form the contacts of the Motorleiterplat th as flat plug, the rear end thereof is soldered to the motor printed circuit board, while the front end cooperates with a counter-contact formed as a spring clip of the heater.

In other Ausführungsorm is provided to form the other hand, the mating contacts of the heater as

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a flat connector and the contacts on the motor printed circuit board as Klemmfe-countries.

In both cases it is advisable to let the protruding counter-contacts respectively on the face of the wearer of the heater and to provide them with a tap.

Such a construction has the advantage first that a light fitting together of the contacts and counter-contacts take place.

The measures provided for taps then provide the desired electrical connection to the respective parts, eg.

B. forth to the heater.

When plugging the modules connect the existing electric elements is achieved immediately.

It can eg.

The heater itself, a winding tap, a thermostat, the motor can be connected immediately characterized as the like.

Here is an adaptation to a wide variety of existing components.

[0023]

It is recommended to connect the annular motor circuit board via interconnectors with another board, namely a switch circuit board to form a prefabricated unit.

Such a prefabricated assembly facilitates assembly of the parts of the electrically operated hand-held hair dryer significantly.

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[0024]

For enabling a simple mounting of the switch circuit board to the housing, it is provided that the switch conductor plate, or the like, which interconnect ports. can take in any number and composition comprises recesses which cooperate with retaining projections.

The latter are provided directly on the inner wall of the handle.

This Haltevorsprün-ge are thus generated in the production of handle halves.

[0025]

In the drawing, the invention is illustrated in more Ausführungsbei-play and show namely:

1 shows a longitudinal section through a first embodiment of an electrically driven hand hair drier with an attached shaping die.

2 shows a cross section through the electrically operated dryer of FIG 1 -.. The cross-section lies in the area of further conducting, and is perpendicular to an axis out of the hand hair drier AA.

FIG. 3 on an enlarged scale, partly in section, partially, in elevation and partly broken away for the post-guide means of the electrically operated hand-held hair dryer of Fig. One with existing blades cutting plane taken along line III-III of Fig. 2,

, Partially broken away, Fig. 4 is a view of the further conducting the electrically operated hand-held hair dryer, and in the absence of the blade is not inserted triac

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FIG. 5 the area of Fig. 4 the further conducting after insertion into the hand hairdryer and after application of the triac and the motor circuit board,

FIG. 6 shows a second embodiment of the present invention formed, electrically operated hand-held hair dryer, in longitudinal section,

FIG. 7 on an enlarged scale and in side view - partially in section, -. Carrier of the heater of the electrically driven hand hair dryer according to the Figure 6 of his place in the direction of arrow B pushing on the engine board (exploded view)

Fig. 8 the position of the carrier and the printed circuit board motor of the electrically operated hand-held hair dryer of FIG. 6, partially cut away and partially in phantom, wherein the carrier and the motor is now printed circuit board are transferred to its final position,

FIG. 9 is a plan view of the assembled parts of the electrically operated hand-held hair dryer, but after the attachment of the heater, the latter partially shown in dot-dash lines,

FIG. 10 in a third embodiment of a rear view of the invention according trained hand hair dryer,

FIG. 11 is a longitudinal sectional view of the handheld hair-dryer in accordance with the Fig. 10 on an enlarged scale, partly broken-Wegge,

FIG. 12 in plan view the rear part of the housing of the electrically operated hand hair drier according to Figs. 10 and 11 with integral handle half removed at offal

FIG. To 13 are inserted in plan view an assembly consisting of a circuit board and a motor switch circuit board which are connected by lines and which is intended, in the housing part according to FIG. 12 of the drawing,

FIG. But 14 is a sectional, partly broken away through the rear housing part of the electrically operated hand-held hair dryer in accordance with Fig. 10 and 11 after the mounting of the motor printed circuit board and the electric motor, prior to the mounting of the heater,

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FIG. Part 15 of the motor circuit board after the attachment of the elec-rule heater, partially broken away and in section, on an enlarged scale and

FIG. Another embodiment 16 of the contacts and the mating contacts of the electrically operated hand-held hair dryer, similar to FIG. The drawing 14, also partially cut away in section.

[0026]

It is first noted that in the figures of the drawings, only those parts are shown of electrically operated hand hair driers, which are relevant to the understanding of the invention.

In particular, missing a part of the switching and control devices.

Furthermore, in many drawing-tions of the electrical heater is not shown.

Moreover, all of the missing in the figures of the drawings, parts may have a known structure.

[0027]

The dryer of the embodiment shown in FIGS. 1-5 is generally designated 10.

Hand hair-dryer 10 has a housing composed of a front housing part 11 and a rear housing part 12.

The two 11 and 12 can be connected to one another are known per se and therefore not shown means of an insulating material, in particular plastic-made housing parts.

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On the rear opening of the rear housing member 12, an inlet mesh 13 is arranged for sucking the fresh air.

This intake grill 13 can be locked for example with the rear end of the housing part 12.

In a known manner has such intake grill 13, a plurality of inlet openings, which are suitably arranged in concentric part rings.

[0028]

Across the other side of the electric hand hair dryer 10 has an outlet grille 15th

This is in the selected embodiment, a one-piece plastic-body, the aufwist an outer ring and a plurality of inner rings concentric to the center-point of lying.

These have different diameters and are connected together by connecting webs.

[0029]

In the selected embodiment, at least one of the inner rings inclined to the longitudinal axis of the hair dryer 10 is hand-arranged.

The inclination of the inner ring is about 25 [deg.].

[0030]

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In the vicinity of the outer ring of the exit grid 15 a unspecified return is provided.

In this way, space is created for the engagement of the rear end of a die 14 which can be releasably connected, if required by the user, with the front part 11 of the housing of the hand hair drier 10.

Suitably chosen as the detachable connection a snap-connection.

It can rest and be co-generated directly counter-raced in the preparation of the case or the forming die.

[0031]

From the Fig. The drawing 1 is best seen that the outlet grille 15 is inserted into the interior of the front part 11 of the housing.

The rear end of the outlet grid 15 it interacts with the facing ends of beams 17, a heater generally designated 16 operatively connected.

For this purpose are described in detail.

Recordings at Ver-bond webs of the exit grid 15.

[0032]

The heater 16, which is arranged approximately in the center of the housing ds hand hair drier, having a known training.

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It consists of a plurality of flat carriers 17 extending substantially in the direction of the longitudinal axis of the hand hair-dryer 10.

The actual, borne by the carriers heating wire 17 or the heating coil is omitted in FIGS. 1-5 for simplicity.

[0033]

Before the heater 16 is located in the air flow direction seen a generally designated 20 further conducting, whose training in FIGS. 1 and 2 of the drawings is best ersicht- Lich.

It follows that it is the Nachleitein-direction is a single piece made of an insulating material body, which is broken Reclassi--changed into several sections.

Thus, the further conducting a first medium 20 has, just held substantially central portion 33 having a center lying in the opening for the passage of the motor shaft 21 of an electric motor, generally designated 18.

In the area of planar central portion 33 and mounting screws 32 are provided, which is carried a set of further conducting 20.

Are provided in the selected embodiment three fastening screws 32 which are offset by 120 [deg.] To each other.

[0034]

A connecting member 34 connects to the flat central part 33 of the further conducting 20 to which AA of the hand hair drier 10 extends approximately in the direction of the longitudinal axis and then changes into a plane perpendicular to the longitudinal axis AA, unspecified other part, to which in turn Gradient of the blade support member 35 connects in direction of the longitudinal

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axis AA.

In the selected embodiment 35, the blade-supporting member at a total of eleven blades 36, one of which is shown in FIG. 3 of the drawing.

The result is that each blade 36 extends further conducting the 20 is curved.

36 defined by the ends of the blades connecting line connects with the horizontal an angle [alpha] of about 60 [deg.] A.

To the further conducting 20 has twelve vanes 36, but the present invention is the twelfth in this blade is removed and the missing portion of the Triac 41 of the motor printed circuit board 43 is arranged, are located on the further switching and Regelein-devices of known type.

The arrangement of the triac 41 is effected in the upper right part of FIG. 2 of the drawing.

[0035]

As Figs. 4 of the drawing reveals, in the region of the one missing blade 36 has a generally by 37 denoted recess is present.

This recess has parallel and spaced apart boundaries 38, which are interconnected by a further upper limit 39.

The upper limit of 39 has a cutout 40 for engaging the free end of an extension 42 of the motor printed circuit board 43 (see FIG. To Figs. 5 of the drawings).

Shown in Figs. Right boundary wall 4 and 5 of the cutouts 40 encloses an angle [beta] with the horizontal, which is approximately equal to the angle, the one of the blades 36 with the horizontal.

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This means that the angle [alpha] is substantially equal to the angle [beta].

In the selected embodiment, the size of each of these angles is 60 [deg.].

[0036]

Through the position shown in FIGS. 4 and 5 forming the off recess 37 and the cutout 40 of the triac 41 is pressed and held in the correct position.

The triac 41 which may have a known Ausbiuldung is, it soldered to the motor circuit board 43 and forms the missing twelfth scoop of further conducting 20th

It is therefore in the airflow and optimal cooling.

[0037]

It remains to be added that the support 17 of the heater 16 is arranged in offset relation to the blades of the further conducting 20.

Ie the blades and the carrier 17 is not contiguous region.

The offset arrangement of the two said parts is chosen to provide a swirling of the intake air and thus a reduction of the temperatures occurring in the region of the heater.

The temperatures are reduced to such a level that any adverse effect on the surrounding area of the heater housing is eliminated.

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[0038]

As already mentioned, the further conducting 20 simultaneously forms a holder for the electric motor 18th

This electric motor 18 has a known construction and is also used in a known manner to drive a wheel 22.

This is rotatably mounted on the motor shaft 21.

The impeller 22 has him doing a molded hub 31, in the middle of which a hole is present, in which the motor shaft 21 engages into.

The sucked by unspecified openings of the inlet grating 13 air first reaches the intended use of the electrically driven hand hair dryer in the region of the impeller 22, then in the scope of further conducting 20 and thus also in the area of the triac 41, the yes at the point of further conducting 20 is arranged on the one of the blades 36 has been previously removed.

From further conducting 20, the sucked air passes eventually to the heater 16th

There taking place in accordance with the He-warm the air leaves the outlet grille 15 and, optionally, the front opening of a die 14, when it is detachably connected by the user before the housing part 11.

[0039]

As Figs. The drawing 1 is best seen, the handheld hair-dryer 10 has a handle 23, which includes with the longitudinal axis an angle smaller than a right angle.

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The handle is hollow.

Therefore, it can be used for sub-Brin-tion of parts of the hand hair dryer.

In the embodiment shown a switch 26 of known design is housed in the interior of the hollow handle 23, which is covered outwardly by a cover plate 27.

The covering aperture 27 is limited slidable on the inner walls of the handle 23.

This does not serve-illustrated guides that can interact 27, for example, by a margin of Abdeckplat th.

By moving the filler panel of the switch to its input or exhibition can be transferred.

Above the switch 26 is in the cavity of the handle or a scroll wheel 28 rotatably mounted, which engages with a portion of its peripheral surface through an opening of the wall of Handgrif-fes 23 outwards and thus is available to the user.

This jog wheel can be, for example, regulate the power of the electrically driven hand hair dryer 10.

[0040]

In the area of the end surface of the handle 23 a bend protection grommet 25 having a continuous bore for accommodating one end of an electrical lead 24.

The other, in the Fig. 1 invisible end of the power cable 24 carries a known plug that can be inserted by the user into a wall socket to power the electric motor 11 with the power after the switch using its handle portion 29 in the closed position is brought.

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[0041]

Introduced in the hollow interior of the handle 23 end of the power cable interacts in a known manner with a strain relief clamp 30 through which a relief of the connection points to be brought about by tensile forces.

[0042]

In the FIG. 6-9 another embodiment of the inventive electrically operated hand hair dryer is illustrated.

Where the parts of this electrically-powered hand hair dryer of the second embodiment are opposite the first remain unchanged, the above-mentioned reference numerals have been retained.

[0043]

The general with 43 designated motor circuit board of the hand hair-dryer 10 is a flat, fabricated of electrically insulating material plant-body is arranged in the direction of the longitudinal axis of the hand hair dryer 10.

In this case, the rear end of the motor printed circuit board 43 of the one end face of the electric motor 18 is turned.

The known motor conductor connections are indicated at 44 in FIG. 7 of the drawings.

Moreover, the motor circuit board 43 carries manner known in principle switching and control devices.

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[0044]

In the selected embodiment 43, the motor circuit board on a central, a substantial portion of the length of the motor PCB detected recess 45 which is open towards the front face.

Laterally adjacent to the recess 45 are disposed in the front face of the motor circuit board 43 slots 46 which also remain free to face towards open.

Each of the two available slots 46 is associated with a conductor 47 which may be mounted in known manner on the motor printed circuit board 43.

The motor circuit board 43 thus has mating contacts 47 which cooperate with the contacts of the heater 16.

[0045]

How can the Fig. 8 and 9 of the drawings, best seen, part of the heater 16, a carrier 17, which is composed of two plate-shaped insulators, which are arranged crosswise.

These insulation panels are designated in the selected embodiment 48 and reciprocally-connected.

They each have in their motor board 43 facing one area towards the end face open Ausspa-tion 49th

The two crossing arranged, assembled insulating take 48 in a known manner the heater 16.

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The heater 16 is designed in the selected embodiment as a heating coil.

The outwardly facing end face of the insulation 48 have in a known manner a plurality of adjacent grooves which are engaged by a respective portion of the coils of the heater.

Since the loading of the mounting of the heater coil is known in principle, only a portion of the same is shown in FIG. 9.

[0046]

In the selected embodiment 17 contact plates 50 and 51 are attached to the insulation 48 of the carrier.

These contact lugs are conductively connected to the coil of the heater is connected in a known manner.

A region of each contact lug 50 and 51 is fixed to one of the insulating plates 48.

This can occur, for example, that one uses a hollow rivet.

But you can make also have the contact lugs connecting tongues, pass through the openings in the insulation and then crimped.

The rear ends of the tabs, so those who are to be electrically connected to the heater 16 are denoted by 52 and 53.

It is in the selected Ausfüh-ing example to solder joints.

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[0047]

The front free ends of the contact tabs 50 and 51 are denoted by 54 and 55.

You reach for the assembly of the individual parts into the slots 46 of the motor circuit board 43.

Characterized once a light connection between the contact tabs 50 and 51 and the mating contacts 47 einrseits results on the other hand.

Characterized on the other hand, a mechanical connection between the support 17 and the motor printed circuit board 43 is prepared.

In order to achieve out-reaching contact, it is recommended that the contact tabs 50 and 51 are constructed of a metallic material with elastic-properties.

In this way, a good contact between the free ends 54 and 55 of the two contact lugs results and the associated Gegenkon-47 overclock the engine PCB 43rd

[0048]

From the exploded view of FIG. 7 of the drawing shows that an assembly is prefabricated comprising 50 or 51 comprising the carrier 17, the heater 16 and the contact tabs.

For simplicity, in the upper part of Figure 7. The helical heater omitted.

A prepared constructional unit in such a way is then advanced in the direction of the arrow B to the motor printed circuit board 43 which is already connected via the connecting lines 44 to the motor 18.

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Then arrive in the end position, the front free ends 54 and 55 of the tabs 50 and 51 into the open slots 46 at the forward end face of the motor printed circuit board 43rd

This not only an electrically conductive connection between the contacts and mating contacts, but also a mechanical link between the motor 43 and the printed circuit board carrier 17 is made.

This end position of the said parts can be seen from FIG. 9 of the drawings.

In this position, the front free ends are located 54 and 55 of the tabs 50 and 51 in the slots 46 of the motor PCB 43rd

[0049]

Shown in FIGS. 10-16, a third embodiment of the electrically operated hand hair dryer is illustrated.

Where the parts of the two above-mentioned exemplary embodiments are off remains unchanged in the reference above, the same reference numerals have been retained.

To be electrically-driven dryer of Figs. 10-16, in turn, is part of an electric motor 18th

To accommodate the same in a cross-section of circular-shaped receptacle 67 is located in the rear housing part 12.

In this receptacle 67, the electric motor 18 with its rear region introduced as shown in FIG. Manner shown 11.

The receptacle 67 for the motor 18 is limited by the back of the hand hair-dryer 10 through the flat central portion 33 and the side through the connecting portion 34.

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This connecting portion 34 has a circumferential extension 88 comp. To Figs. The drawing 14.

The wall thickness of the front part of the extension 88 is thick moderately reduced, so that a peripheral support shoulder 89 is formed.

This support shoulder 89 engages areas of the motor circuit board 43 together, which in this example - compare to Figure 13 of the drawing -.. Has an annular shape.

[0050]

From the Fig. 13 of the drawing that the motor printed circuit board, a central recess 97 which in this case, which is penetrated by the motor 18, but also engages the extension 88 in Fig. Fourteen manner shown in this recess.

In this way, comes in the installed position of FIG. 14 of the drawing, the circuit board 43 is not directly connected to the peripheral surface of the motor 18 in connec-tion.

Rather, the outer boundary wall 100 is located on the motor printed circuit board 43 on the inside of extension 88.

Here, the support portion 101 of the Motorleiterplat th 43 is on the support shoulder 89 each.

There are two such support shoulders 89 available.

The second is in the area of the inner wall of the blade support member 35th

In the end position shown in Fig. 14 is thus the outer boundary wall 100 to the inner wall of the blade support member 35, while the inner limiting wall 102 cooperates with the exten-tion 88.

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Below the motor circuit board 43, a space 90 is created in the bottom 36 of the further conducting 20.

This space 90 is dimensioned so that the visit of the floor 66 facing electronic or electrical components-rule 92 of the motor circuit board 43 in his place.

[0051]

At the outlet of the hand facing side of the hair dryer 10 is - as the 13 of the drawings reveals -. Motor circuit board 43 first provided with a number of electronic or electrical components 82.

Further facilities include ports for connecting lines 98 and An-tions for the moving motor terminals 96 which are engageable in conductive connection with the stationary motor terminals 87, the latter area to the front free end face of the electric motor 18 are provided.

[0052]

According to a further feature of the invention are mounted on the motor circuit board 43 contacts, of which 13 to 16, several embodiments are shown in FIGS..

In the embodiment according to FIGS. 14 and 15 of the drawing each of the contacts 84 is ausgebil-DET as a flat plug.

This flat plug 84 penetrates an unspecified hole in the engine PCB 43rd

His back-wärtiges end is connected via a solder joint 91 with the motor wire plate 43.

The front free end of each tab 84 interacts with a mating contact.

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These counter contacts have also different education, but each of the heater 16 is assigned.

[0053]

In the embodiment of FIGS. 14 and 15 of the drawing of the designated 85 contact ausgebil-DET as a clamping spring, ie it is designed seen in the Querscnitt bow-shaped, contact with the outer surface of the flat connector in conductive connection inwardly drawn bends of the clamping spring.

Each mating contact 85 is fixed to the heater 16 is connected by a rivet 86.

Here, the hollow rivet holds 86 also establishes a non-descript tap.

[0054]

The mating contacts 85 are respectively arranged facing the front surface of the heater 16, so that a simple fitting together with the contacts 84 of the motor printed circuit board 43 can be carried out.

In the selected embodiment three tabs 84 are provided on the Motorleiterplat th 43.

However, if necessary more tabs can be attached easily, which then a corresponding number of Gegenkon clocks 85 must be associated to the heater 16.

In the drawings, it is left open, which part of the heater cooperating mating contacts conductive.

This is because this can be effected in a basically known way.

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Because of the well-known one is to dispense with the drawing Dar-position of the resistance of the heater wires.

[0055]

Figs. The drawing 16 differs from the FIG. 14 and 15 only in that a swapping of the flat connector and of the clamping springs is made.

This means that the spring clips 93 are now assigned to the motor circuit board, while the flat plugs which are now designated 94 beds, the heater 16.

The mating of the parts 93 and 94 is carried out by transferring the heater 16 in the direction of the electric motor 18th

During this movement, which takes place in the longitudinal direction of the hand hair drier rich, the clamping spring 93 are in the end position of the tabs 94 in the area between the two legs lie, so that here also made of a good electrical connection.

. Like Figure 11 of the drawing reveals, the handheld hair-dryer 10 - as already mentioned - a handle 23, which is kept hollow and is comprised of two halves, of which the allocated one of the front housing part 11 and the other to the rear part 12 is assigned.

This cavity is used for housing electrical switchgear and control mechanisms.

Thus, a switch 26 is accommodated in the known design Ausführungsbei game inside the hollow handle 23 first.

The handle portion 29 of this switch engages through a window 69, cf. To Figs. The drawing 12.

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In the boundary wall of the Handgrif-fes 23 above the window 69 is another, but smaller sized window 68 is arranged.

By this rises in the manner shown in Fig. Portion of a controller 11 of the wheel 28 passes.

This jog wheel 28 is rotatably mounted.

With it can be in a known manner, the power of the electrically driven hand hair dryer 10 regulate.

[0056]

The switch 26 is associated with a general with 71 designated switch circuit board, the - compare to the 13 -.. Designed is seen -in plan view rectangularly.

To this switch circuit board 71 interconnects ports 99 and are arranged in a known manner.

To its mounting in the cavity of the handle 22, the switch circuit board 71 has four openings, two of which in FIG. 13 Darge-set top are designed as rectangular openings, during which are designed like slots lying in the region of the lower end face.

The recesses are respectively designated by 72.

They interact with retaining projections 70, which are of an inner wall of the handle 23 immediately be-formed.

The switch circuit board 71 is thereby secured in its final, in FIG. Reproduced position 11, that the two halves of the handle 23 and thus the housing parts 11 and 12 of the hand hair drier 10 together quantity-added.

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To make this possible, the inner wall of a handle 23 having bores with inner Vorsprün gene 103 is provided, which engage in the retaining screws 104, see FIG. To Figs. 11 and 12 of the drawing.

[0057]

Figs. The drawing 13 reveals, furthermore, that the annular motor printed circuit board 43 is combined with the 71-th Schalterleiterplat to form a unit.

This is done by using a plurality of connecting lines 98th

These are so dimensioned that the annular motor may surround the circuit board motor 18, as shown in FIG. 11.

In contrast, the switch circuit board 71 is attached to the holding projections 70.

The connection lines 98 may be present in unspecified, are placed to the front open slots that are present in the region of the end face of the blade support member 35.

[0058]

In the illustrated embodiment of FIGS. 10-16 is provided, that the annular motor printed circuit board rests on the support shoulders 89 without any special fixing means.

As a rule, such an arrangement is sufficient, because the security situation of the motor circuit board 43 is accomplished by combining body parts of the add-hand hair dryer 10.

In special cases, however, can utilize additional connection medium.

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However, this should be solvable.

Specifically, it is also possible for the engine 43 to the printed circuit board is provided with catches which cooperate with counter-catches on the adjacent walls of the holder 20 of the further conducting.

In this way, a positional securing of the motor printed circuit board 43 is already achieved when it is placed in the in the Fig. Dargestell 14-th position, where, therefore, the housing parts 11 and 12 are not yet assembled.

[0059]

The use of a annular circuit board motor, as it is shown in Fig. Figure 13 is not necessarily required.

It is important that in the embodiment of FIGS. 10-16 of the drawing, the motor printed circuit board is formed so that it can surround the electric motor 18.

If this motor z 18.

B. should have other than a circular-shaped cross-sectional area, the engine head-plate can be fitted with a correspondingly shaped recess 97.

The contacts and mating contacts of the motor circuit board 43 and the heater can have a different design of the illustrated embodiments.

Also, the number of the existing co-operating contacts and mating contacts vary.

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[0060]

As mentioned above, the illustrated embodiments are only examples of implementations of the invention and is not limited to this.

Rather, various other embodiments and applications are still possible.

Thus, in the embodiment can of FIGS. 1-5 of the drawing, both the construction as well as the shape of the recess 37 and the cutout 40 in the further conducting be varied.

The blades 36 of the 20 can further conducting one of 60 [deg.] Angle deviating from the horizontal einschlies-sen.

In this case, the angle [beta] 5 of the drawing would according to FIG. Be changed according to practical.

Further, the invention according to FIGS. 1-5 of the drawing, in the embodiment, it would be also possible to arrange the triac 20 in another region of the further conducting than the illustrated.

It is important that it is fully covered by the cooling airflow and thus optimally cooled.

If the foregoing as an electronic module is always called a triac, so, other electronic devices, such as a diode or the like., Be used in the inventive manner in which a hair dryer.

It is always aims to give each electronic device in hand hairdryer optimum cooling.

[0061]

Whereas in the embodiment of the invention according to FIGS. 6-9 only two contact tabs 50 and

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51 are provided, more than two contact lugs can be attached to the carrier 17 if necessary.

Regardless of the number of existing contact has tabs postponing or

Attaching the support to the motor printed circuit board has the advantage that all existing contacts and mating contacts may be converted into their conductive connection or it is a common separate possible.

Finally, the invention may also be used in other known electrically operated hand hairdryers.

List of Reference Numerals

[0062]

10 - The dryer

11 - front housing part

12 - rear housing part

13 - intake grille

14 - forming die

15 - outlet grille

16 - heater

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17 - holder (of 16)

18 - Electric Motor

19 - Holder

20 - further conducting

21 - motor shaft

22 - impeller

23 - Handle

24 - lead

25 - bend relief

26 - switch

27 - switch panel

28 - jog

39 - handle part

30 - strain relief

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31 - hub (22)

32 - mounting screw

33 - middle section (20)

34 - connecting part (30)

35 - blade support member (20)

36 - Scoop (30)

37 - recess (20)

38 - lateral boundaries (of 37)

39 - upper limit (of 37)

40 - Neck

41 - Triac

42 - Extension (43)

43 - Motor PCB

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44 - motor terminal

45 - recess (43)

46 - slot (43)

47 - conductor track (43)

48 - Insulation (17)

49 - recess (48)

50 - I. Contact tab

51 - II. Contact tab

52 - soldering point (from 51 to 16)

53 - solder joint (50 to 16)

54 - free end (50)

55 - free end (51)

66 - Soil

67 - Recording (for 18)

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68 - window (for 28)

69 - window (for 26)

70 - retaining projection

71 - Switches PCB

72 - recess (41 in)

84 - Contact (flat connector)

85 - mating contact (clamp spring with tap)

86 - hollow rivet

87 - motor connections

88 - Extension

89 - support switch (for 43)

90 - Space (36)

91 - solder joint

92 - Electronic Components (43)

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93 - Contact (. Execution II Figure 8.)

94 - mating contact (II. Execution Figure 8.)

95 - rpckwärtige electronic parts and connectors (43)

96 - moving motor connections

97 - central recess (43)

98 - Connecting cables

99 - conductors and connectors (41)

100 - outer boundary wall (43)

101 - support area (43)

102 - inner boundary wall (43)

103 - projection

104 - retaining screw

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AA Längsachsde (10)

The slip-B (FIG.

7)

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CLAIMS EP0306765

1.

Electrically powered hand-held hair dryer (10) having at one end an inlet (13) and at the other an outlet (14)-the housing (11, 12) for accommodating a a wheel (22) driving the electric motor (18), a heater (16) for heating the air motor and a printed circuit board (43) with a triac (41) or other electrical unit, such as diode or the like. having switching and control devices

characterized in

that the triac (41) or other electronic component of the hand hair drier (10) in the region of the further conducting (20) is arranged.

2.

The dryer of claim 1, characterized in that one of the blades (36) of the further conducting (20) is removed and, instead, the triac (41) is arranged in this area.

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3.

The dryer of claim 1 and 2, characterized in that the further conducting (20) in the area of a missing-of the vane (36) has a recess (37) in which a triac (41) having the extension (42) of the motor printed circuit board (43) projects.

4.

The dryer of claim 3, characterized in that the recess (37) parallel and spaced apart boundaries (38) that are interconnected by an upper boundary (39) and that the upper limitation (39) a cutout (40) for engagement of the free end of the extension (42).

5.

The dryer according to claim 3 and 4, characterized in-net that a boundary wall of the cutout (40) an angle () with the horizontal line includes, which is approximately equal to the angle (), the one blade (36) to the horizontal including (FIG. 3 and 5).

6.

Electrically powered hand-held hair dryer as claimed in claim 1, in which the heater is held by a carrier and connected by contacts to opposing contacts of the motor printed circuit board,

characterized in

that the heater (16), holding carriers (17) to the motor printed circuit board (43) under establishment of a detachable connection between its contacts (50, 51) and the mating contacts (47) of the motor printed circuit board (43) is connectable by plugging.

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7.

The dryer of claim 1 and 6, characterized marked in that the carrier (17) with the heater (16) conductively connected to contact tabs (50, 51), cooperating with its insertion in the conductor tracks (47), slots (46) of the motor circuit board (43) to intervene.

8.

The dryer of claim 6 and 7, characterized in-net that the slots (46) are arranged on the front free end face of the motor printed circuit board (43) and that the abge-angled free ends (54, 55) of the contact lugs (50, 51) intervene making contact in the slots (46).

9.

The dryer of claim 6, characterized in that each contact lug (50, 51) consists of a metal strip which is connected in its central region to one of the support forming, cross arranged insulating panels, and having one end connected to the heater (16) in conductive connected, whereas (46) of the motor printed circuit board (43) engages the opposite other end (54, 55) into the slots.

10.

The dryer of claim 1 and 6, characterized marked in that the motor printed circuit board (43) as the motor (19) engages around the body is formed, the guide and support areas (100, 101) and facing on its side facing the outlet grid (15) surface contacts (84, 93), with the mating contacts (85, 94) of the heater (16) On-plug releasably connectable (FIGS. 11-16).

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11.

The dryer of claim 10, characterized in that the motor printed circuit board (43) is designed as an annular body whose central recess (57) from the motor (18) is engaged by and the outer boundary wall (100) is usable as a guiding area, while part of the region of its surface serves as a supporting area (101).

12.

The dryer of claim 10 or 11, characterized marked in that in the region of the central part (33) of the holder (19) is a further conducting (20) a receptacle (67) for the motor (19) by at its upper part a circumferential extension (88) of the central part (33) is limited, with the inner boundary wall (102) of the motor printed circuit board (43) cooperates.

13.

The dryer of claim 10, characterized in that the outer boundary wall (100) of the motor printed circuit board (43) with the inner wall of a blade support member (35) together-acting, and that both the extension (88) and the inner wall of the blade support member (35) has a support shoulder (89) having the supporting portion (101) of the motor printed circuit board (43).

14.

Disposed dryer of claim 13, characterized in that in the bottom (66) of the holder (19) of the further conducting (20) laterally offset from the support shoulders (89) a free space (90) for accommodating projecting parts of the motor printed circuit board (43) is.

15.

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The dryer of claim 10, characterized in that the motor printed circuit board (43) is provided with notches, with the mating catches on the adjacent walls of the holder (19) of the further conducting (20) cooperate.

16.

The dryer of claim 10, characterized in that the motor printed circuit board (43) vertically from its base plane projecting contacts (84, 93) which can be plugged together with counter-contacts (85 and 94) on the support (17) of the heater (16) are arranged.

17.

The dryer of claim 16, characterized in that the contacts (84) are designed as flat plug, the rear end thereof with the motor printed circuit board (43) is ver-solder and the front end with a as a clamping spring (85) constructed counter-contact of the heater (16) interacting (Fig. 14 and 15).

18.

The dryer of claim 16, characterized in that the mating contacts (94) to the heater (16) of a flat plug and the contacts (93) on the motor printed circuit board (43) are formed as spring clamps (Fig.

16).

19.

The dryer of claim 16 to 18, characterized marked in that the mating contacts (85 and 94) on the

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Stirnflä-surface of the carrier (17) projecting of the heater (16) and are provided with a tap.

20.

The dryer of claim 10, characterized in that the motor printed circuit board (43) via connecting lines (98) with a switch circuit board (71) is connected to a pre-prepared assembly.

21.

The dryer of claim 20, characterized in that the conductor track connections or the like. having switch circuit board (71) has recesses (72) which serve to its attachment to the retaining projections (70) on the inner walls of the handle (23).

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PN - EP0306765 A1 19890315
PNFP - EP0306765 B1 19920422
TI - (A1)
Hand-held electrical hair dryer.
- (B1)
HAND-HELD ELECTRICAL HAIR DRYER
AB - (A1)
The hand-held electrical hairdryer (10) has a housing (11, 12), having at one end an inlet (13) and at the other end an outlet (14), for accommodating an electric motor (18) driving an impeller (22), a heater (16) for heating the air and a printed circuit board (43) for the motor with a triac (41) or another electronic component. The triac (41) or another electronic component is arranged in the region of the run-out device (20) in order to achieve optimum cooling. The heater (16) is received by a support (17) and connected by plugging-on to the counter-contacts (47) of the printed circuit board (43) for the motor via contacts (50, 51). In another embodiment, the printed circuit board (43) for the motor of the hand-held hairdryer (10) is constructed as a body surrounding the motor (18). The printed circuit board (43) for the motor is preferably an annular body. Boundary walls of said annular body (41) serve as guide elements in interaction with adjacent parts of the housing (11, 12). <IMAGE>
PA - (A1)
KRUPS STIFTUNG [DE]

© WPI / Thomson

AN - 1989-078281
TI - Hand-held hair-drier with optimally cooled triac - has duct for turbulent air flow between rotor and heater to reduce temp. of electronic components
AB - The motor (18) drives a rotor (22) drawing air through an inlet (13) and forcing it through a heater (16) to an outlet (14) behind a grille (15). The heater (16) is mounted in a carrier (17) on which electrical contacts co-operate with those on the motor circuit board (43) to supply heating current.
The circuit board (43) is pref. annular with boundary walls for guiding adjacent parts of the housing (11,12). The triac or equiv. electronic component is positioned in a duct (20) between the rotor (22) and heater carrier (17), where turbulence in the induced air stream reduces the temp. to prevent overheating.
- ADVANTAGE :
Triac is placed in best position for cooling by simple and inexpensive arrnagement, with circuit board close to motor whose wires are of min. length.

PN -	EP0306765	A 19890315 DW198911
	DE3729774	A 19890316 DW198912
	DE3802638	A 19890803 DW198932
	DE3807287	A 19890914 DW198938
	US4896020	A 19900123 DW199011
	US4896021	A 19900123 DW199011
	US4918289	A 19900417 DW199020
	EP0306765	B 19920422 DW199217
	DE3802638	C2 19951102 DW199548
	DE3807287	C2 19970710 DW199732

PA - (KRUP-N) KRUPS GMBH & CO KG ROBERT
- (KRUP-N) KRUPS R GMBH
- (KRUP-N) KRUPS R STIFTUNG

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DESCRIPTION EP0306765

[0001]

The invention relates to an electrically powered hand hair dryer with a one end an inlet and at the other an outlet comprising a housing for accommodating a a wheel driving electric motor, a blade comprising further conducting for guiding and a heater for heating the air and an engine circuit board with a triac having-the switching and control devices.

[0002]

Such electrically operated hand-held hair dryers are known in paid-rich embodiments.

There are also under-different types of accommodation for the motor circuit board with its switching and control facilities, which include includes a triac.

Under a triac is meant a thyristor, which passes both half cycles of an alternating current, and controls.

In a first embodiment of the arrangement of such a motor printed circuit board is made housed inside a hollow cylinder, which partially surrounds the electric motor at one end and carries on its lateral surface, the mounting of the heating of the hand hair drier.

This arrangement of the motor circuit board has not been proven, especially because in the almost closed cavity of the hollow cylinder no cooling air for the switchgear and control mechanisms, in particular special-was present for the triac.

It is therefore to überge-addressed the triac of the motor printed circuit board is in a range anzuord-NEN, which lies between the heating on the one hand and the inner wall of the housing of the hair dryer on the other hand.

With this arrangement, There have been improvements in the cooling of the triac, but experiments carried out have shown that the cooling effect in this region is not out-of-ranges to obtain optimum values.

[0003]

The invention has for its object to improve electric hand hair dryers of the type identified initially in more detail, in particular such that the triac is moved to such a position inside the housing of the hand hair dryer, in which optimum cooling.

Here, this goal should be achieved with simple and inexpensive means.

[0004]

To solve this problem, the invention proposes to arrange the triac of the hand hair dryer in the Nachleiteinrich-tion of the electrically driven hand hair dryer.

[0005]

In the preferred embodiment of the invention the blades of the further conducting is removed and instead the triac arranged in this region of the further conducting.

Tests carried out have shown that significant advantages over the known be achieved with a fiction,-according to the design of electrically operated hand hair dryer.

Thus, for example, in a further conducting, which is equipped with twelve blades twelfth removed and instead the triac in the lack region of the Nachleitein-direction.

With such an arrangement Runaway-led tests have shown that this optimum cooling of the triac is reached.

This not least because he is fully air current generated by the driven by the electric motor impeller.

Since the triac is practically take the place of the missing one scoop of Nachleiteinrich-tung, there are no changes in the dimen-tions of further conducting, so that the housing of the hand hair dryer can maintain its present shape.

[0006]

It is recommended to leave the further conducting in the area of a missing blade having a recess extending into a triac having extension of the motor plate.

The embodiment of the recess is selected so that the triac is pressed into the correct position and held in this well.

[0007]

It is recommended to leave the recess parallel and spaced-vonein other arranged have limitations, which are interconnected by an upper limit.

Whereas it is appropriate to let the upper limit a section for engaging the free end of the extension of the motor circuit board aufwei-sen.

It is advisable to solder the triac on the motor circuit board in such a way that it provides the missing blade of further conducting.

[0008]

It is recommended that a boundary wall of the section include such an angle with the horizontal to las-sen, which is approximately equal to the angle which a scoop of further conducting encloses with the horizontal.

Such an angle is about 60 [deg.].

[0009]

The invention is also concerned with an electrically operated hand hairdryer, wherein the heating of a substrate is broken-taken, the mating contacts can be connected by plugging contacts with the Motorleiterplat th.

These embodiments are known per se in manifold embodiments.

It is usually this uses a heater which comprises a support, is which is formed of two insulating plates which are arranged crosswise and take up at least one designed as a heating coil heater, which is held on the peripheral surface of the insulating plates in such a way that regions of the wendelför -migen engage in recesses in the heater edges of the insulating panels.

Thus, the helical heater is only set at some points.

Otherwise it bridges the free space between the portions of the insulating plates.

On the substrate and electrical contacts are secured, the need to cooperate with mating contacts, which are arranged on the motor printed circuit board.

This motor printed circuit board carrying the other in a known manner and the switching control means is usually attached to the end face of the electric motor and extending into the cavity of the fitting on the support in the heater.

Until now it now has the contacts which are provided on the supports of the heater is soldered to the corresponding counter-contacts of the motor printed circuit board.

This connection between the contacts of the carrier of the heater on the one hand and the mating contacts of the motor circuit board on the other hand is very complex and costly to manufacture hand hairdryer.

Moreover, after soldering the contacts to the mating contacts in practice a rigid, non-releasable connection be-tween the heater and the carrier on the one hand and the Motorleiterplat th other hand.

The mechanical cohesion but it made only on the solder joints.

Again, the invention is intended to remedy.

It is based on the additional on-task of improving electric hand hair dryer the genann-th type further, in particular the production of a slight connection between the contacts of the heater and the motor circuit board is to be achieved.

[0010]

To solve this task according to the invention is further pre-propose that the heater carrier holding the plate under Motorleiter- providing a detachable connection between his contacts and the mating contacts of the motor circuit board by plugging is connected.

This design of electrically operated hand hair dryer has rise to major advantages over the known.

So the heater with the carrier and the zugeord-Neten contacts can be prefabricated as a unit, which is then plugged as a whole on the engine PCB.

In this plugged into the end position, the contacts of the heater come with the mating contacts of the motor circuit board in conducting connec-tion.

The complicated and considerable costs soldering the contacts and the mating contacts deleted.

This becomes particularly noticeable cost, that even with a plurality of contacts, and these mating contacts are all transferred during insertion of the assembly to the motor printed circuit board in its conductive connection.

Nevertheless, a solubility between the heater and the support and the motor cable-terplatte is possible.

For this purpose, the unit merely needs to be withdrawn from the motor printed circuit board.

The contacts come with the mating contacts disengaged.

Such separability is for example desirable when the heater is faulty.

[0011]

In the inventive design of the electrically driven hand hair dryer so no longer - as before - only one connection between the heater and its support on the one hand and the motor circuit board on the other hand emerged over the solder joints yet but it is a rigid mechanical connection in that when attaching the carrier with the heaters are mechanically coupled to the motor circuit board areas of these two parts.

It is advisable to let the carriers have with the heater connected conductively contact tabs which engage in his plugging in with conductor tracks together-acting slots of the motor circuit board.

In this way, during mating of the two parts were slightly soluble, but mechanically stable connection is established.

Characterized the position of the carrier of the heater is also fixed in relation to the motor printed circuit board.

[0012]

To allow easy manufacturing of the compound, it is em-mends to arrange the slots on the front end surface of the motor printed circuit board, wherein the angled free ends of the tabs engage in contact-making in the slots.

The slots can be produced with this in the production of the motor printed circuit board, so that additional working processes are eliminated.

[0013]

It is advisable to refrain from any contact tab consist of a metal strip which is connected in its central region with one of the carriers forming intersecting arranged insulating panels and one end with said heating means is conductively connected, while the opposite other end in the slots of the motor circuit board engages.

It is advisable to make the contact tabs not only from an electrically conductive metallic material but to let these also have resilient properties.

This can be exploited in a simple manner to produce the desired contact pressure.

[0014]

In one proposed embodiment of an electrically operated hand-held hair dryer is the long-sized, as seen in plan view, approximately rectangularly designed motor printed circuit board, which has at its front free end on one side open slots into which can engage the attaching parts of the carrier of the heater.

This corresponds to the length of the motor circuit board as that of the carrier of the heater.

The attachment area between the engine PCB and the support of the heater is kept relatively short.

In contrast to this proposed embodiment of the electrically driven hand hair dryer improvement should also be made, particularly to an inexpensive plug-together individual parts of electrically operated hand hair dryer can be achieved.

[0015]

To solve this further object of the invention is pre-propose to design the motor circuit board as the engine encompassing body, the guide and support areas as well as its the outlet grille facing surface includes contacts that are releasably connected to the mating contacts of the heater by plugging.

Preferably is provided to form the motor printed circuit board as an annular body, the central recess is penetrated by the motor and the outer boundary wall being usable as a guiding area, while a portion acting as a supporting area.

The motor board is therefore designed not seen as a top view of rectangular body which is arranged in the extension of the axis of the electric motor but the motor circuit board embraces now this electric motor, which guide and support spaces provided on the engine PCB, with adjacent areas of the housing the hand hair dryer cooperate.

In this case, a detachable connection of this motor circuit board is given to the support of the heater of preference.

As before, the motor circuit board may include all essential electronic or electrical components.

A montage relief is obtained by pre-prepared assemblies.

[0016]

Another advantage is that the motor circuit board located in the immediate vicinity of the engine, so that very short Verbindun-gen to the terminal contacts of the motor are available.

[0017]

It is advisable to organize in the area of the central portion of a holder of a further conducting a receptacle for the motor, which is limited in its upper part by a circumferential extension of the central part, which can interact leading to the inner limiting wall of the engine PCB.

Such long-held leadership makes noticeably advantageous when at bringing the mounting plate.

[0018]

It is recommended to let cooperate in the assembly, the outer boundary wall of Motorleiterplat-te with the inner wall of a blade support member to further improve the guide.

[0019]

For limiting the insertion movement, it is advantageous that both the said extension and the inner wall of the blade support member comprises a support shoulder for the support region of the motor printed circuit board.

These support shoulders can be produced readily with in the production of the housing of the hand hair drier.

Since the two support shoulders are arranged away from each other, there is the advantage that the annular engine board is supported both in the region of its inner-diameter and in the region of the outer diameter.

[0020]

It is expedient laterally offset in the bottom of the holder of further conducting is to be placed on the shoulders supporting a free space to accommodate protruding parts of the engine PCB.

This free space is kept in its dimensions so that the usual, on the engine PCB angeord-Neten electrical or electronic components or the connection points can be accommodated in it.

[0021]

In principle it is not necessary to connect the annular motor printed circuit board with the adjacent parts of the housing of the hand hair drier.

Where a detachable connection between the two parts is used, it is expedient to provide the motor board with notches that cooperate with Gegenra th to the adjacent walls of the holder of Nachleitein-direction.

This snap-in connection ensures that even at the pre motor circuit board is connected to the associated portion of the housing.

On the other hand it is also possible, if required, such a latching connection to release.

[0022]

It is recommended that the motor circuit board perpendicular from its base plane projecting contacts that can be plugged together with Gegenkon-clocking, which are arranged on the support of the heater.

Respect to the design of the contacts and the mating contacts are several possibilities.

According to a first proposal is to form the contacts of the Motorleiterplat th as flat plug, the rear end thereof is soldered to the motor printed circuit board, while the front end cooperates with a counter-contact formed as a spring clip of the heater.

In other Ausführungsorm is provided to form the other hand, the mating contacts of the heater as a flat connector and the contacts on the motor printed circuit board as Klemmfe-countries.

In both cases it is advisable to let the protruding counter-contacts respectively on the face of the wearer of the heater and to provide them with a tap.

Such a construction has the advantage first that a light fitting together of the contacts and counter-contacts take place.

The measures provided for taps then provide the desired electrical connection to the respective parts, eg.

B. forth to the heater.

When plugging the modules connect the existing electric elements is achieved immediately.

It can eg.

The heater itself, a winding tap, a thermostat, the motor can be connected immediately characterized as the like.

Here is an adaptation to a wide variety of existing components.

[0023]

It is recommended to connect the annular motor circuit board via interconnectors with another board, namely a switch circuit board to form a prefabricated unit.

Such a prefabricated assembly facilitates assembly of the parts of the electrically operated hand-held hair dryer significantly.

[0024]

For enabling a simple mounting of the switch circuit board to the housing, it is provided that the switch conductor plate, or the like, which interconnect ports. can take in any number and composition comprises recesses which cooperate with retaining projections.

The latter are provided directly on the inner wall of the handle.

This Haltevorsprün-ge are thus generated in the production of handle halves.

[0025]

In the drawing, the invention is illustrated in more Ausführungsbei-play and show namely:

1 shows a longitudinal section through a first embodiment of an electrically driven hand hair drier with an attached shaping die.

2 shows a cross section through the electrically operated dryer of FIG 1 -.. The cross-section lies in the area of further conducting, and is perpendicular to an axis out of the hand hair drier AA.

FIG. 3 on an enlarged scale, partly in section, partially, in elevation and partly broken away for the post-guide means of the electrically operated hand-held hair dryer of Fig. One with existing blades cutting plane taken along line III-III of Fig. 2,

, Partially broken away, Fig. 4 is a view of the further conducting the electrically operated hand-held hair dryer, and in the absence of the blade is not inserted triac

FIG. 5 the area of Fig. 4 the further conducting after insertion into the hand hairdryer and after application of the triac and the motor circuit board,

FIG. 6 shows a second embodiment of the present invention formed, electrically operated hand-held hair dryer, in longitudinal section,

FIG. 7 on an enlarged scale and in side view - partially in section, -. Carrier of the heater of the electrically driven hand hair dryer according to the Figure 6 of his place in the direction of arrow B pushing on the engine board (exploded view)

Fig. 8 the position of the carrier and the printed circuit board motor of the electrically operated hand-held hair dryer of FIG. 6, partially cut away and partially in phantom, wherein the carrier and the motor is now printed circuit board are transferred to its final position,

FIG. 9 is a plan view of the assembled parts of the electrically operated hand-held hair dryer, but after the attachment of the heater, the latter partially shown in dot-dash lines,

FIG. 10 in a third embodiment of a rear view of the invention according trained hand hair dryer,

FIG. 11 is a longitudinal sectional view of the handheld hair-dryer in accordance with the Fig. 10 on an enlarged scale, partly broken-Wegge,

FIG. 12 in plan view the rear part of the housing of the electrically operated hand hair drier according to Figs. 10 and 11 with integral handle half removed at offal

FIG. To 13 are inserted in plan view an assembly consisting of a circuit board and a motor switch circuit board which are connected by lines and which is intended, in the housing part according to FIG. 12 of the drawing,

FIG. But 14 is a sectional, partly broken away through the rear housing part of the electrically operated hand-held hair dryer in accordance with Fig. 10 and 11 after the mounting of the motor printed circuit board and the electric motor, prior to the mounting of the heater,

FIG. Part 15 of the motor circuit board after the attachment of the elec-rule heater, partially broken away and in section, on an enlarged scale and

FIG. Another embodiment 16 of the contacts and the mating contacts of the electrically operated hand-held hair dryer, similar to FIG. The drawing 14, also partially cut away in section.

[0026]

It is first noted that in the figures of the drawings, only those parts are shown of electrically operated hand hair driers, which are relevant to the understanding of the invention.

In particular, missing a part of the switching and control devices.

Furthermore, in many drawing-tions of the electrical heater is not shown.

Moreover, all of the missing in the figures of the drawings, parts may have a known structure.

[0027]

The dryer of the embodiment shown in FIGS. 1-5 is generally designated 10.

Hand hair-dryer 10 has a housing composed of a front housing part 11 and a rear housing part 12.

The two 11 and 12 can be connected to one another are known per se and therefore not shown means of an insulating material, in particular plastic-made housing parts.

On the rear opening of the rear housing member 12, an inlet mesh 13 is arranged for sucking the fresh air.

This intake grill 13 can be locked for example with the rear end of the housing part 12.

In a known manner has such intake grill 13, a plurality of inlet openings, which are suitably arranged in concentric part rings.

[0028]

Across the other side of the electric hand hair dryer 10 has an outlet grille 15th

This is in the selected embodiment, a one-piece plastic-body, the aufwist an outer ring and a plurality of inner rings concentric to the center-point of lying.

These have different diameters and are connected together by connecting webs.

[0029]

In the selected embodiment, at least one of the inner rings inclined to the longitudinal axis of the hair dryer 10 is hand-arranged.

The inclination of the inner ring is about 25 [deg.].

[0030]

In the vicinity of the outer ring of the exit grid 15 a unspecified return is provided.

In this way, space is created for the engagement of the rear end of a die 14 which can be releasably connected, if required by the user, with the front part 11 of the housing of the hand hair drier 10.

Suitably chosen as the detachable connection a snap-connection.

It can rest and be co-generated directly counter-raced in the preparation of the case or the forming die.

[0031]

From the Fig. The drawing 1 is best seen that the outlet grille 15 is inserted into the interior of the front part 11 of the housing.

The rear end of the outlet grid 15 it interacts with the facing ends of beams 17, a heater generally designated 16 operatively connected.

For this purpose are described in detail.

Recordings at Ver-bond webs of the exit grid 15.

[0032]

The heater 16, which is arranged approximately in the center of the housing ds hand hair drier, having a known training.

It consists of a plurality of flat carriers 17 extending substantially in the direction of the longitudinal axis of the hand hair-dryer 10.

The actual, borne by the carriers heating wire 17 or the heating coil is omitted in FIGS. 1-5 for simplicity.

[0033]

Before the heater 16 is located in the air flow direction seen a generally designated 20 further conducting, whose training in FIGS. 1 and 2 of the drawings is best ersicht- Lich.

It follows that it is the Nachleitein-direction is a single piece made of an insulating material body, which is broken Reclassi--changed into several sections.

Thus, the further conducting a first medium 20 has, just held substantially central portion 33 having a center lying in the opening for the passage of the motor shaft 21 of an electric motor, generally designated 18.

In the area of planar central portion 33 and mounting screws 32 are provided, which is carried a set of further conducting 20.

Are provided in the selected embodiment three fastening screws 32 which are offset by 120 [deg.] To each other.

[0034]

A connecting member 34 connects to the flat central part 33 of the further conducting 20 to which AA of the hand hair drier 10 extends approximately in the direction of the longitudinal axis and then changes into a plane perpendicular to the longitudinal axis AA, unspecified other part, to which in turn Gradient of the blade support member 35 connects in direction of the longitudinal axis AA.

In the selected embodiment 35, the blade-supporting member at a total of eleven blades 36, one of which is shown in FIG. 3 of the drawing.

The result is that each blade 36 extends further conducting the 20 is curved.

36 defined by the ends of the blades connecting line connects with the horizontal an angle [alpha] of about 60 [deg.] A.

To the further conducting 20 has twelve vanes 36, but the present invention is the twelfth in this blade is removed and the missing portion of the Triac 41 of the motor printed circuit board 43 is arranged, are located on the further switching and Regelein-devices of known type.

The arrangement of the triac 41 is effected in the upper right part of FIG. 2 of the drawing.

[0035]

As Figs. 4 of the drawing reveals, in the region of the one missing blade 36 has a generally by 37 denoted recess is present.

This recess has parallel and spaced apart boundaries 38, which are interconnected by a further upper limit 39.

The upper limit of 39 has a cutout 40 for engaging the free end of an extension 42 of the motor printed circuit board 43 (see FIG. To Figs. 5 of the drawings).

Shown in Figs. Right boundary wall 4 and 5 of the cutouts 40 encloses an angle [beta] with the horizontal, which is approximately equal to the angle, the one of the blades 36 with the horizontal.

This means that the angle [alpha] is substantially equal to the angle [beta].

In the selected embodiment, the size of each of these angles is 60 [deg.].

[0036]

Through the position shown in FIGS. 4 and 5 forming the off recess 37 and the cutout 40 of the triac 41 is pressed and held in the correct position.

The triac 41 which may have a known Ausbiuldung is, it soldered to the motor circuit board 43 and forms the missing twelfth scoop of further conducting 20th

It is therefore in the airflow and optimal cooling.

[0037]

It remains to be added that the support 17 of the heater 16 is arranged in offset relation to the blades of the further conducting 20.

Ie the blades and the carrier 17 is not contiguous region.

The offset arrangement of the two said parts is chosen to provide a swirling of the intake air and thus a reduction of the temperatures occurring in the region of the heater.

The temperatures are reduced to such a level that any adverse effect on the surrounding area of the heater housing is eliminated.

[0038]

As already mentioned, the further conducting 20 simultaneously forms a holder for the electric motor 18th

This electric motor 18 has a known construction and is also used in a known manner to drive a wheel 22.

This is rotatably mounted on the motor shaft 21.

The impeller 22 has him doing a molded hub 31, in the middle of which a hole is present, in which the motor shaft 21 engages into.

The sucked by unspecified openings of the inlet grating 13 air first reaches the intended use of the electrically driven hand hair dryer in the region of the impeller 22, then in the scope of further conducting 20 and thus also in the area of the triac 41, the yes at the point of further conducting 20 is arranged on the one of the blades 36 has been previously removed.

From further conducting 20, the sucked air passes eventually to the heater 16th

There taking place in accordance with the He-warm the air leaves the outlet grille 15 and, optionally, the front opening of a die 14, when it is detachably connected by the user before the housing part 11.

[0039]

As Figs. The drawing 1 is best seen, the handheld hair-dryer 10 has a handle 23, which includes with the longitudinal axis an angle smaller than a right angle.

The handle is hollow.

Therefore, it can be used for sub-Brin-tion of parts of the hand hair dryer.

In the embodiment shown a switch 26 of known design is housed in the interior of the hollow handle 23, which is covered outwardly by a cover plate 27.

The covering aperture 27 is limited slidable on the inner walls of the handle 23.

This does not serve-illustrated guides that can interact 27, for example, by a margin of Abdeckplat th.

By moving the filler panel of the switch to its input or exhibition can be transferred.

Above the switch 26 is in the cavity of the handle or a scroll wheel 28 rotatably mounted, which engages with a portion of its peripheral surface through an opening of the wall of Handgrif-fes 23 outwards and thus is available to the user.

This jog wheel can be, for example, regulate the power of the electrically driven hand hair dryer 10.

[0040]

In the area of the end surface of the handle 23 a bend protection grommet 25 having a continuous bore for accommodating one end of an electrical lead 24.

The other, in the Fig. 1 invisible end of the power cable 24 carries a known plug that can be inserted by the user into a wall socket to power the electric motor 11 with the power after the switch using its handle portion 29 in the closed position is brought.

[0041]

Introduced in the hollow interior of the handle 23 end of the power cable interacts in a known manner with a strain relief clamp 30 through which a relief of the connection points to be brought about by tensile forces.

[0042]

In the FIG. 6-9 another embodiment of the inventive electrically operated hand hair dryer is illustrated.

Where the parts of this electrically-powered hand hair dryer of the second embodiment are opposite the first remain unchanged, the above-mentioned reference numerals have been retained.

[0043]

The general with 43 designated motor circuit board of the hand hair-dryer 10 is a flat, fabricated of electrically insulating material plant-body is arranged in the direction of the longitudinal axis of the hand hair dryer 10.

In this case, the rear end of the motor printed circuit board 43 of the one end face of the electric motor 18 is turned.

The known motor conductor connections are indicated at 44 in FIG. 7 of the drawings.

Moreover, the motor circuit board 43 carries manner known in principle switching and control devices.

[0044]

In the selected embodiment 43, the motor circuit board on a central, a substantial portion of the length of the motor PCB detected recess 45 which is open towards the front face.

Laterally adjacent to the recess 45 are disposed in the front face of the motor circuit board 43 slots 46 which also remain free to face towards open.

Each of the two available slots 46 is associated with a conductor 47 which may be mounted in known manner on the motor printed circuit board 43.

The motor circuit board 43 thus has mating contacts 47 which cooperate with the contacts of the heater 16.

[0045]

How can the Fig. 8 and 9 of the drawings, best seen, part of the heater 16, a carrier 17, which is composed of two plate-shaped insulators, which are arranged crosswise.

These insulation panels are designated in the selected embodiment 48 and reciprocally-connected.

They each have in their motor board 43 facing one area towards the end face open Ausspa-tion 49th

The two crossing arranged, assembled insulating take 48 in a known manner the heater 16.

The heater 16 is designed in the selected embodiment as a heating coil.

The outwardly facing end face of the insulation 48 have in a known manner a plurality of adjacent grooves which are engaged by a respective portion of the coils of the heater.

Since the loading of the mounting of the heater coil is known in principle, only a portion of the same is shown in FIG. 9.

[0046]

In the selected embodiment 17 contact plates 50 and 51 are attached to the insulation 48 of the carrier.

These contact lugs are conductively connected to the coil of the heater is connected in a known manner.

A region of each contact lug 50 and 51 is fixed to one of the insulating plates 48.

This can occur, for example, that one uses a hollow rivet.

But you can make also have the contact lugs connecting tongues, pass through the openings in the insulation and then crimped.

The rear ends of the tabs, so those who are to be electrically connected to the heater 16 are denoted by 52 and 53.

It is in the selected Ausfüh-ing example to solder joints.

[0047]

The front free ends of the contact tabs 50 and 51 are denoted by 54 and 55.

You reach for the assembly of the individual parts into the slots 46 of the motor circuit board 43.

Characterized once a light connection between the contact tabs 50 and 51 and the mating contacts 47 einrseits results on the other hand.

Characterized on the other hand, a mechanical connection between the support 17 and the motor printed circuit board 43 is prepared.

In order to achieve out-reaching contact, it is recommended that the contact tabs 50 and 51 are constructed of a metallic material with elastic-properties.

In this way, a good contact between the free ends 54 and 55 of the two contact lugs results and the associated Gegenkon-47 overclock the engine PCB 43rd

[0048]

From the exploded view of FIG. 7 of the drawing shows that an assembly is prefabricated comprising 50 or 51 comprising the carrier 17, the heater 16 and the contact tabs.

For simplicity, in the upper part of Figure 7. The helical heater omitted.

A prepared constructional unit in such a way is then advanced in the direction of the arrow B to the motor printed circuit board 43 which is already connected via the connecting lines 44 to the motor 18.

Then arrive in the end position, the front free ends 54 and 55 of the tabs 50 and 51 into the open slots 46 at the forward end face of the motor printed circuit board 43rd

This not only an electrically conductive connection between the contacts and mating contacts, but also a mechanical link between the motor 43 and the printed circuit board carrier 17 is made.

This end position of the said parts can be seen from FIG. 9 of the drawings.

In this position, the front free ends are located 54 and 55 of the tabs 50 and 51 in the slots 46 of the motor PCB 43rd

[0049]

Shown in FIGS. 10-16, a third embodiment of the electrically operated hand hair dryer is illustrated.

Where the parts of the two above-mentioned exemplary embodiments are off remains unchanged in the reference above, the same reference numerals have been retained.

To be electrically-driven dryer of Figs. 10-16, in turn, is part of an electric motor 18th

To accommodate the same in a cross-section of circular-shaped receptacle 67 is located in the rear housing part 12.

In this receptacle 67, the electric motor 18 with its rear region introduced as shown in FIG. Manner shown 11.

The receptacle 67 for the motor 18 is limited by the back of the hand hair-dryer 10 through the flat central portion 33 and the side through the connecting portion 34.

This connecting portion 34 has a circumferential extension 88 comp. To Figs. The drawing 14.

The wall thickness of the front part of the extension 88 is thick moderately reduced, so that a peripheral support shoulder 89 is formed.

This support shoulder 89 engages areas of the motor circuit board 43 together, which in this example - compare to Figure 13 of the drawing -.. Has an annular shape.

[0050]

From the Fig. 13 of the drawing that the motor printed circuit board, a central recess 97 which in this case, which is penetrated by the motor 18, but also engages the extension 88 in Fig. Fourteen manner shown in this recess.

In this way, comes in the installed position of FIG. 14 of the drawing, the circuit board 43 is not directly connected to the peripheral surface of the motor 18 in connec-tion.

Rather, the outer boundary wall 100 is located on the motor printed circuit board 43 on the inside of extension 88.

Here, the support portion 101 of the Motorleiterplat th 43 is on the support shoulder 89 each.

There are two such support shoulders 89 available.

The second is in the area of the inner wall of the blade support member 35th

In the end position shown in Fig. 14 is thus the outer boundary wall 100 to the inner wall of the blade support member 35, while the inner limiting wall 102 cooperates with the exten-tion 88.

Below the motor circuit board 43, a space 90 is created in the bottom 36 of the further conducting 20.

This space 90 is dimensioned so that the visit of the floor 66 facing electronic or electrical components-rule 92 of the motor circuit board 43 in his place.

[0051]

At the outlet of the hand facing side of the hair dryer 10 is - as the 13 of the drawings reveals -. Motor circuit board 43 first provided with a number of electronic or electrical components 82.

Further facilities include ports for connecting lines 98 and An-tions for the moving motor terminals 96 which are engageable in conductive connection with the stationary motor terminals 87, the latter area to the front free end face of the electric motor 18 are provided.

[0052]

According to a further feature of the invention are mounted on the motor circuit board 43 contacts, of which 13 to 16, several embodiments are shown in FIGS..

In the embodiment according to FIGS. 14 and 15 of the drawing each of the contacts 84 is ausgebil-DET as a flat plug.

This flat plug 84 penetrates an unspecified hole in the engine PCB 43rd

His back-wärtiges end is connected via a solder joint 91 with the motor wire plate 43.

The front free end of each tab 84 interacts with a mating contact.

These counter contacts have also different education, but each of the heater 16 is assigned.

[0053]

In the embodiment of FIGS. 14 and 15 of the drawing of the designated 85 contact ausgebil-DET as a clamping spring, ie it is designed seen in the Querscnitt bow-shaped, contact with the outer surface of the flat connector in conductive connection inwardly drawn bends of the clamping spring.

Each mating contact 85 is fixed to the heater 16 is connected by a rivet 86.

Here, the hollow rivet holds 86 also establishes a non-descript tap.

[0054]

The mating contacts 85 are respectively arranged facing the front surface of the heater 16, so that a simple fitting together with the contacts 84 of the motor printed circuit board 43 can be carried out.

In the selected embodiment three tabs 84 are provided on the Motorleiterplat th 43.

However, if necessary more tabs can be attached easily, which then a corresponding number of Gegenkon clocks 85 must be associated to the heater 16.

In the drawings, it is left open, which part of the heater cooperating mating contacts conductive.

This is because this can be effected in a basically known way.

Because of the well-known one is to dispense with the drawing Dar-position of the resistance of the heater wires.

[0055]

Figs. The drawing 16 differs from the FIG. 14 and 15 only in that a swapping of the flat connector and of the clamping springs is made.

This means that the spring clips 93 are now assigned to the motor circuit board, while the flat plugs which are now designated 94 beds, the heater 16.

The mating of the parts 93 and 94 is carried out by transferring the heater 16 in the direction of the electric motor 18th

During this movement, which takes place in the longitudinal direction of the hand hair drier rich, the clamping spring 93 are in the end position of the tabs 94 in the area between the two legs lie, so that here also made of a good electrical connection.

. Like Figure 11 of the drawing reveals, the handheld hair-dryer 10 - as already mentioned - a handle 23, which is kept hollow and is comprised of two halves, of which the allocated one of the front housing part 11 and the other to the rear part 12 is assigned.

This cavity is used for housing electrical switchgear and control mechanisms.

Thus, a switch 26 is accommodated in the known design Ausführungsbei game inside the hollow handle 23 first.

The handle portion 29 of this switch engages through a window 69, cf. To Figs. The drawing 12.

In the boundary wall of the Handgrif-fes 23 above the window 69 is another, but smaller sized window 68 is arranged.

By this rises in the manner shown in Fig. Portion of a controller 11 of the wheel 28 passes.

This jog wheel 28 is rotatably mounted.

With it can be in a known manner, the power of the electrically driven hand hair dryer 10 regulate.

[0056]

The switch 26 is associated with a general with 71 designated switch circuit board, the - compare to the 13 -.. Designed is seen -in plan view rectangularly.

To this switch circuit board 71 interconnects ports 99 and are arranged in a known manner.

To its mounting in the cavity of the handle 22, the switch circuit board 71 has four openings, two of which in FIG. 13 Darge-set top are designed as rectangular openings, during which are designed like slots lying in the region of the lower end face.

The recesses are respectively designated by 72.

They interact with retaining projections 70, which are of an inner wall of the handle 23 immediately be-formed.

The switch circuit board 71 is thereby secured in its final, in FIG. Reproduced position 11, that the two halves of the handle 23 and thus the housing parts 11 and 12 of the hand hair drier 10 together quantity-added.

To make this possible, the inner wall of a handle 23 having bores with inner Vorsprün gene 103 is provided, which engage in the retaining screws 104, see FIG. To Figs. 11 and 12 of the drawing.

[0057]

Figs. The drawing 13 reveals, furthermore, that the annular motor printed circuit board 43 is combined with the 71-th Schalterleiterplat to form a unit.

This is done by using a plurality of connecting lines 98th

These are so dimensioned that the annular motor may surround the circuit board motor 18, as shown in FIG. 11.

In contrast, the switch circuit board 71 is attached to the holding projections 70.

The connection lines 98 may be present in unspecified, are placed to the front open slots that are present in the region of the end face of the blade support member 35.

[0058]

In the illustrated embodiment of FIGS. 10-16 is provided, that the annular motor printed circuit board rests on the support shoulders 89 without any special fixing means.

As a rule, such an arrangement is sufficient, because the security situation of the motor circuit board 43 is accomplished by combining body parts of the add-hand hair dryer 10.

In special cases, however, can utilize additional connection medium.

However, this should be solvable.

Specifically, it is also possible for the engine 43 to the printed circuit board is provided with catches which cooperate with counter-catches on the adjacent walls of the holder 20 of the further conducting.

In this way, a positional securing of the motor printed circuit board 43 is already achieved when it is placed in the in the Fig. Dargestell 14-th position, where, therefore, the housing parts 11 and 12 are not yet assembled.

[0059]

The use of a annular circuit board motor, as it is shown in Fig. Figure 13 is not necessarily required.

It is important that in the embodiment of FIGS. 10-16 of the drawing, the motor printed circuit board is formed so that it can surround the electric motor 18.

If this motor z 18.

B. should have other than a circular-shaped cross-sectional area, the engine head-plate can be fitted with a correspondingly shaped recess 97.

The contacts and mating contacts of the motor circuit board 43 and the heater can have a different design of the illustrated embodiments.

Also, the number of the existing co-operating contacts and mating contacts vary.

[0060]

As mentioned above, the illustrated embodiments are only examples of implementations of the invention and is not limited to this.

Rather, various other embodiments and applications are still possible.

Thus, in the embodiment can of FIGS. 1-5 of the drawing, both the construction as well as the shape of the recess 37 and the cutout 40 in the further conducting be varied.

The blades 36 of the 20 can further conducting one of 60 [deg.] Angle deviating from the horizontal einschliessen.

In this case, the angle [beta] 5 of the drawing would according to FIG. Be changed according to practical.

Further, the invention according to FIGS. 1-5 of the drawing, in the embodiment, it would be also possible to arrange the triac 20 in another region of the further conducting than the illustrated.

It is important that it is fully covered by the cooling airflow and thus optimally cooled.

If the foregoing as an electronic module is always called a triac, so, other electronic devices, such as a diode or the like., Be used in the inventive manner in which a hair dryer.

It is always aims to give each electronic device in hand hairdryer optimum cooling.

[0061]

Whereas in the embodiment of the invention according to FIGS. 6-9 only two contact tabs 50 and 51 are provided, more than two contact lugs can be attached to the carrier 17 if necessary.

Regardless of the number of existing contact has tabs postponing or

Attaching the support to the motor printed circuit board has the advantage that all existing contacts and mating contacts may be converted into their conductive connection or it is a common separate possible.

Finally, the invention may also be used in other known electrically operated hand hairdryers.

List of Reference Numerals

[0062]

10 - The dryer

11 - front housing part

12 - rear housing part

13 - intake grille

14 - forming die

15 - outlet grille

16 - heater

17 - holder (of 16)

18 - Electric Motor

19 - Holder

20 - further conducting

21 - motor shaft

22 - impeller

23 - Handle

24 - lead

25 - bend relief

26 - switch
27 - switch panel
28 - jog
39 - handle part
30 - strain relief
31 - hub (22)
32 - mounting screw
33 - middle section (20)
34 - connecting part (30)
35 - blade support member (20)
36 - Scoop (30)
37 - recess (20)
38 - lateral boundaries (of 37)
39 - upper limit (of 37)
40 - Neck
41 - Triac
42 - Extension (43)
43 - Motor PCB
44 - motor terminal
45 - recess (43)
46 - slot (43)
47 - conductor track (43)
48 - Insulation (17)
49 - recess (48)
50 - I. Contact tab
51 - II. Contact tab
52 - soldering point (from 51 to 16)
53 - solder joint (50 to 16)
54 - free end (50)
55 - free end (51)
66 - Soil
67 - Recording (for 18)
68 - window (for 28)
69 - window (for 26)
70 - retaining projection
71 - Switches PCB
72 - recess (41 in)
84 - Contact (flat connector)
85 - mating contact (clamp spring with tap)
86 - hollow rivet
87 - motor connections
88 - Extension
89 - support switch (for 43)
90 - Space (36)
91 - solder joint
92 - Electronic Components (43)

93 - Contact (. Execution II Figure 8.)

94 - mating contact (II. Execution Figure 8.)

95 - rpckwärtige electronic parts and connectors (43)

96 - moving motor connections

97 - central recess (43)

98 - Connecting cables

99 - conductors and connectors (41)

100 - outer boundary wall (43)

101 - support area (43)

102 - inner boundary wall (43)

103 - projection

104 - retaining screw

AA Längsachsde (10)

The slip-B (FIG.

7)

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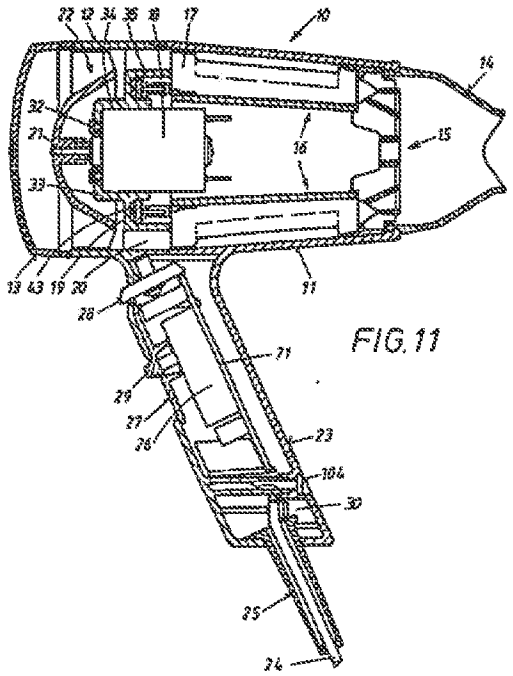
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(54) Elektrisch betriebener Handhaartrockner.

(57) Es handelt sich um einen elektrisch betriebenen Handhaartrockner (10) mit einerends einen Einlaß (13) und anderenends einen Auslaß (14) aufweisenden Gehäuse (11, 12) zum Unterbringen eines ein Laufrad (22) antreibenden Elektromotors (18), einem Heizer (16) zum Erwärmen der Luft sowie einer Motorleiterplatte (43) mit einem Triac (41) oder einer anderen elektronischen Baueinheit. Der Triac (41) oder ein anderes elektronisches Bauteil ist im Bereich der Nachleiteinrichtung (20) angeordnet, um eine optimale Kühlung zu erzielen. Der Heizer (16) ist von einem Träger (17) aufgenommen und über Kontakte (50, 51) mit den Gegenkontakten (47) der Motorleiterplatte (43) durch Aufstecken verbunden. Bei einer anderen Ausführungsform ist die Motorleiterplatte (43) des Handhaartrockners (10) als den Motor (18) umgreifender Körper ausgebildet. Vorzugsweise ist die Motorleiterplatte (43) ein Ringkörper. Begrenzungswandungen dieses Ringkörpers (41) dienen als Führungselemente im Zusammenwirken mit benachbarten Teilen des Gehäuses (11, 12).



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Elektrisch betriebener Handhaartrockner

Die Erfindung bezieht sich auf einen elektrisch betriebenen Handhaartrockner mit einem einerends einen Einlaß und anderenends einen Auslaß aufweisenden Gehäuse zur Unterbringung eines ein Laufrad antreibenden Elektromotors, einer Schaufeln aufweisenden Nachleiteinrichtung zum Führen und einem Heizer zum Erwärmen der Luft sowie einer Motorleiterplatte mit einen Triac aufweisenden Schalt- und Steuereinrichtungen.

Derartige elektrisch betriebene Handhaartrockner sind in zahlreichen Ausführungsformen bekannt. Dabei gibt es auch unterschiedliche Unterbringungsarten für die Motorleiterplatte mit ihrem Schalt- und Steuereinrichtungen, zu denen u.a. auch ein Triac gehört. Unter einem Triac versteht man einen Thyristor, der beide Halbschwingungen eines Wechselstromes durchläßt und steuert. Bei einer ersten Ausführungsform der Anordnung einer solchen Motorleiterplatte hat man diese im Inneren eines Hohlzylinders untergebracht, welcher mit seinem einen Ende den Elektromotor teilweise umgreift und der an seiner Mantelfläche die Halterung der Heizung des Handhaartrockners trägt. Diese Anordnung der Motorleiterplatte hat sich nicht bewährt, insbe sondere weil in dem fast geschlossenen Hohlraum des Hohlzylinders keine Kühlluft für die Schalt- und Steuereinrichtungen, insbesondere für den Triac vorhanden war. Man ist daher dazu übergegangen, den Triac der Motorleiterplatte in einem Bereich anzuordnen, der zwischen der Heizung einerseits und der Innenwandung des Gehäuses des Handhaartrockners andererseits liegt. Bei dieser Anordnung hat es zwar Verbesserungen hinsichtlich der Kühlung des Triacs gegeben, jedoch haben durchgeführte Versuche gezeigt, daß die Kühlwirkung in diesem Bereich noch nicht ausreicht, um optimale Werte zu erhalten.

Der Erfindung liegt die Aufgabe zugrunde, elektrisch betriebene Handhaartrockner der eingangs näher gekennzeichneten Art weiter zu verbessern, insbesondere derart, daß der Triac an eine solche Stelle im Inneren des Gehäuses des Handhaartrockners verlegt wird, in der eine optimale Kühlung erfolgt. Dabei soll dieses Ziel mit einfachen und wohlfeilen Mitteln erreicht werden.

Zur Lösung dieser Aufgabe wird erfindungsgemäß vorgeschlagen, den Triac des Handhaartrockners im Bereich der Nachleiteinrichtung des elektrisch betriebenen Handhaartrockners anzuordnen.

Bei der bevorzugten Ausführungsform der Erfindung wird eine der Schaufeln der Nachleiteinrichtung entfernt und stattdessen der Triac in diesem Bereich der Nachleiteinrichtung angeordnet. Durchgeführte Versuche haben ergeben, daß mit einer erfindungsgemäßen Ausbildung des elektrisch betriebenen Handhaartrockners wesentliche Vorteile gegenüber dem Bekannten erreicht werden. So wurde beispielsweise bei einer Nachleiteinrichtung, die mit zwölf Schaufeln ausgerüstet ist, die zwölfte entfernt und stattdessen der Triac in dem fehlenden Bereich der Nachleiteinrichtung angeordnet. Die mit einer derartigen Anordnung durchgeführten Versuche haben ergeben, daß damit eine optimale Kühlung des Triacs erreicht ist. Dies nicht zuletzt deshalb, weil er voll im Luftstrom liegt, der von dem durch den Elektromotor angetriebenen Schaufelrad entsteht. Da der Triac praktisch an die Stelle der fehlenden einen Schaufel der Nachleiteinrichtung tritt, ergeben sich auch keine Veränderungen in den Abmessungen der Nachleiteinrichtung, so daß auch das Gehäuse des Handhaartrockners seine bisherige Gestalt beibehalten kann.

Es empfiehlt sich, die Nachleiteinrichtung im Bereich der einen fehlenden Schaufel eine Ausnehmung aufweisen zu lassen, in die eine den Triac aufweisende Verlängerung der Motorplatte hineinragt. Die Ausführungsform der Ausnehmung wird dabei so gewählt, daß der Triac in die richtige Position gedrückt und in dieser auch gehalten wird.

Es empfiehlt sich, die Ausnehmung parallel und in Abstand voneinander angeordnete Begrenzungen aufweisen zu lassen, die durch eine obere Begrenzung miteinander verbunden sind. Ferner ist es zweckmäßig, die obere Begrenzung einen Ausschnitt zum Eingriff des freien Endes der Verlängerung der Motorleiterplatte aufweisen zu lassen. Dabei ist es zweckmäßig, den Triac auf die Motorleiterplatte zu löten und zwar derart, daß er die fehlende Schaufel der Nachleiteinrichtung ergänzt.

Es empfiehlt sich, die eine Begrenzungswand des Ausschnittes einen solchen Winkel mit der Horizontalen einschließen zu lassen, der etwa gleich ist dem Winkel, den eine Schaufel der Nachleiteinrichtung mit der Horizontalen einschließt. Ein solcher Winkel beträgt etwa 80°.

Die Erfindung befaßt sich auch mit einem elektrisch betriebenen Handhaartrockner, bei dem die Heizung von einem Träger aufgenommen ist, dessen Gegenkontakte mit Kontakten der Motorleiterplatte durch Aufstecken verbindbar sind. Auch diese Ausführungsformen sind an sich in mannigfachen Ausführungsformen bekannt. Es wird dabei in aller Regel ein Heizer benutzt, der einen Träger aufweist, welcher aus zwei Isolierplatten gebildet ist, die überkreuz angeordnet sind und die wenigstens eine als Heizwendel ausgebildete Heizung aufnehmen, die an der Umfangsfläche der Isolierplatten derart gehalten ist, daß Bereiche des wendelförmigen Heizers in Vertiefungen in den Rän-

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dem der Isolierplatten eingreifen. Damit ist der wendelförmige Heizer lediglich an einigen Punkten festgelegt. Ansonsten überbrückt er den freien Zwischenraum zwischen den Bereichen der Isolierplatten. Auf dem Träger sind dabei auch elektrische Kontakte befestigt, die mit Gegenkontakten zusammenwirken müssen, welche auf der Motorleiterplatte angeordnet sind. Diese Motorleiterplatte, die im übrigen in bekannter Weise Schalt- und Steuereinrichtungen trägt, ist in der Regel an der Stirnfläche des Elektromotors befestigt und ragt in den Hohlraum des auf dem Träger sitzenden Heizers hinein. Bisher hat man nun die Kontakte, die auf den Trägern des Heizers vorgesehen sind, mit den zugehörigen Gegenkontakten der Motorleiterplatte verlötet. Diese Verbindungsart zwischen den Kontakten des Trägers der Heizeinrichtung einerseits und den Gegenkontakten der Motorleiterplatte andererseits ist sehr aufwendig und verteuert die Herstellung der Handhaartrockner. Darüber hinaus ist nach dem Verlöten der Kontakte mit den Gegenkontakten praktisch eine starre, nicht lösbare Verbindung zwischen dem Heizer und dem Träger einerseits und der Motorleiterplatte andererseits vorhanden. Der mechanische Zusammenhalt wird dabei aber nur über die Lötstellen hergestellt. Auch hier will die Erfindung Abhilfe schaffen. Ihr liegt die zusätzliche Aufgabe zugrunde, elektrisch betriebene Handhaartrockner der genannten Art weiter zu verbessern, wobei insbesondere die Herstellung einer leichten Verbindung zwischen den Kontakten des Heizers und der Motorleiterplatte erreicht werden soll.

Zur Lösung dieser weiteren Aufgabe wird erfindungsgemäß vorgeschlagen, daß der den Heizer haltende Träger mit der Motorleiter platte unter Schaffung einer lösbaren Verbindung zwischen seinen Kontakten und den Gegenkontakten der Motorleiterplatte durch Aufstecken verbindbar ist. Diese Ausbildung des elektrisch betriebenen Handhaartrockners hat gegenüber dem Bekannten erhebliche Vorteile. So kann der Heizer mit dem Träger und den zugeordneten Kontakten als Baueinheit vorgefertigt werden, die dann als Ganzes auf die Motorleiterplatte aufgesteckt wird. Bei diesem Aufstecken kommen in der Endlage die Kontakte des Heizers mit den Gegenkontakten der Motorleiterplatte in leitende Verbindung. Das umständliche und erhebliche Kosten verursachende Verlöten der Kontakte und der Gegenkontakte entfällt. Dabei macht es sich besonders kostengünstig bemerkbar, daß auch bei einer Vielzahl von Kontakten und Gegenkontakten diese sämtlich beim Aufstecken der Baueinheit auf die Motorleiterplatte in ihre leitende Verbindung überführt werden. Trotzdem ist eine Lösbarkeit zwischen dem Heizer und dem Träger und der Motorleiterplatte möglich. Zu diesem Zweck braucht die Baueinheit lediglich von der Motorleiterplatte abgezogen zu werden. Dabei kommen die Kontakte mit dem Gegenkontakten außer Eingriff. Eine solche Trennbarkeit ist beispielsweise dann erwünscht, wenn der Heizer defekt sein sollte.

Bei der erfindungsgemäßen Ausbildung des elektrisch betriebenen Handhaartrockners ist also nicht mehr - wie bisher - lediglich eine Verbindung zwischen dem Heizer und seinem Träger einerseits und der Motorleiterplatte andererseits über die Lötstellen vorhanden sondern es ist eine formstabile mechanische Verbindung dadurch entstanden, daß beim Aufstecken des Trägers mit dem Heizer auf die Motorleiterplatte Bereiche dieser beiden Teile mechanisch gekuppelt werden. Dabei empfiehlt es sich, den Träger mit dem Heizer leitend verbundene Kontaktlaschen aufweisen zu lassen, die bei seinem Aufstecken in mit Leiterbahnen zusammenwirkende Schlitze der Motorleiterplatte eingreifen. Auf diese Weise ist beim Zusammenstecken der beiden Teile eine zwar leicht lösbare, jedoch mechanisch stabile Verbindung hergestellt. Dadurch ist zusätzlich die Lage des Trägers des Heizers im bezug auf die Motorleiterplatte fixiert.

Um ein leichtes Herstellen der Verbindung zu ermöglichen, empfiehlt es sich, die Schlitze an der vorderen Stirnfläche der Motorleiterplatte anzuordnen, wobei die abgewinkelten freien Enden der Kontaktlaschen unter Kontaktgabe in die Schlitze eingreifen. Die Schlitze können dabei bei der Herstellung der Motorleiterplatte mit erzeugt werden, so daß zusätzliche Arbeitsvorgänge entfallen.

Es empfiehlt sich, jede Kontaktlasche aus einem Metallstreifen bestehen zu lassen, der jeweils in seinem Mittelbereich mit einem der den Träger bildenden, überkreuz angeordneten Isolierplatten verbunden ist und deren eines Ende mit der Heizeinrichtung in leitender Verbindung steht, während das gegenüberliegende andere Ende in die Schlitze der Motorleiterplatte eingreift. Dabei empfiehlt es sich, die Kontaktlaschen nicht nur aus einem stromleitenden, metallischen Werkstoff herzustellen sondern diese auch federnde Eigenschaften aufweisen zu lassen. Diese können in einfacher Weise zur Erzeugung des gewünschten Kontaktdruckes ausgenutzt werden.

Bei einer vorgeschlagenen Ausführungsform eines elektrisch betriebenen Handhaartrockners hat dieser eine lang bemessene, in Draufsicht gesehen etwa rechteckig gestaltete Motorleiterplatte, die an ihrem vorderen freien Ende einseitig offene Schlitze aufweist, in die beim Aufstecken Teile des Trägers des Heizers eingreifen können. Dabei entspricht die Länge der Motorleiterplatte etwa derjenigen des Trägers des Heizers. Der Aufsteckbereich zwischen der Motorleiterplatte und dem Träger des Heizers ist dabei verhältnismäßig kurz gehalten. Gegenüber dieser vorgeschlagenen Ausfüh-

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rungsform des elektrisch betriebenen Handhaartrockners soll ebenfalls eine Verbesserung erzielt werden, insbesondere soll ein kostengünstiges Zusammenstecken der Einzelteile des elektrisch betriebenen Handhaartrockners erreicht werden.

Zur Lösung dieser weiteren Aufgabe der Erfindung wird vorgeschlagen, die Motorleiterplatte als den Motor umgreifenden Körper auszubilden, der Führungs- und Stützbereiche sowie auf seiner dem Austrittsgitter zugekehrten Fläche Kontakte aufweist, die mit den Gegenkontakten der Heizeinrichtung durch Aufstecken lösbar verbindbar sind. Bevorzugt ist vorgesehen, die Motorleiterplatte als Ringkörper auszubilden, dessen mittlere Ausnehmung vom Motor durchgriffen wird und dessen äußere Begrenzungswand als Führungsbereich benutzbar ist, während ein Teilbereich als Stützbereich dient. Die Motorleiterplatte ist daher nicht mehr als in Draufsicht gesehen rechteckiger Körper ausgebildet, der in Verlängerung der Achse des Elektromotors angeordnet ist sondern die Motorleiterplatte umgreift nunmehr diesen Elektromotor, wobei Führungs- und Stützbereiche an der Motorleiterplatte vorgesehen sind, die mit benachbarten Bereichen des Gehäuses des Handhaartrockners zusammenwirken. Dabei wird einer lösbaren Verbindung dieser Motorleiterplatte mit dem Träger des Heizers der Vorzug gegeben. Nach wie vor kann die Motorleiterplatte alle wesentlichen elektronischen oder elektrischen Bauteile aufweisen. Eine Montageerleichterung ergibt sich durch vorgefertigte Baugruppen.

Ein weiterer Vorteil ist der, daß die Motorleiterplatte in unmittelbarer Nähe des Motors liegt, so daß sehr kurze Verbindungen zu den Anschlußkontakten des Motors vorhanden sind.

Es empfiehlt sich, im Bereich des Mittelteils eines Halters einer Nachleiteinrichtung eine Aufnahme für den Motor anzuordnen, die in ihrem oberen Teil durch eine umlaufende Verlängerung des Mittelteiles begrenzt ist, die mit der inneren Begrenzungswand der Motorleiterplatte führend zusammenwirken kann. Eine solche lang gehaltene Führung macht sich vorteilhaft beim Anbringen der Montageplatte bemerkbar.

Es empfiehlt sich, zur weiteren Verbesserung der Führung bei der Montage die äußere Begrenzungswand der Motorleiterplatte mit der Innenwand eines Schaufeltragteiles zusammenwirken zu lassen.

Zur Begrenzung der Einschiebbewegung ist es zweckmäßig, daß sowohl die erwähnte Verlängerung als auch die Innenwand des Schaufeltragteiles eine Stützschulter für den Stützbereich der Motorleiterplatte aufweist. Diese Stützschultern lassen sich bei der Fertigung des Gehäuses des Handhaartrockners ohne weiteres mit erzeugen. Da die beiden Stützschultern entfernt voneinander angeordnet sind, ergibt sich der Vorteil, daß die ringförmige Motorleiterplatte sowohl im Bereich ihres Innendurchmessers als auch im Bereich des Außendurchmessers abgestützt ist.

Zweckmäßig ist es, im Boden des Halters der Nachleiteinrichtung seitlich versetzt zu den Stützschultern einen Freiraum zur Unterbringung von vorstehenden Teilen der Motorleiterplatte anzuordnen. Dieser Freiraum wird dabei in seinen Abmessungen so gehalten, daß die üblichen, auf der Motorleiterplatte angeordneten elektrischen oder elektronischen Bauteile oder auch die Anschlußstellen in ihm Platz finden können.

Grundsätzlich ist es nicht erforderlich, die ringförmige Motorleiterplatte mit den benachbarten Teilen des Gehäuses des Handhaartrockners zu verbinden. Sofern eine lösbare Verbindung zwischen den beiden Teilen benutzt wird, ist es zweckmäßig, die Motorleiterplatte mit Rasten zu versehen, die mit Gegenrasten an den benachbarten Wandungen des Halters der Nachleiteinrichtung zusammenwirken. Diese Rastverbindung sorgt dafür, daß schon bei der Vormontage die Motorleiterplatte mit dem zugehörigen Teil des Gehäuses verbunden ist. Auf der anderen Seite ist es bei Bedarf auch möglich, eine solche Rastverbindung wieder zu lösen.

Es empfiehlt sich, daß die Motorleiterplatte senkrecht aus ihrer Grundebene vorragende Kontakte aufweist, die mit Gegenkontakten zusammensteckbar sind, die am Träger der Heizeinrichtung angeordnet sind. Hinsichtlich der Ausbildung der Kontakte und der Gegenkontakte ergeben sich mehrere Möglichkeiten. Nach einem ersten Vorschlag ist vorgesehen, die Kontakte der Motorleiterplatte als Flachstecker auszubilden, deren rückwärtiges Ende mit der Motorleiterplatte verlötet ist, während das vordere Ende mit einem als Klemmfeder ausgebildeten Gegenkontakt des Heizers zusammenwirkt. Bei der anderen Ausführungsform ist demgegenüber vorgesehen, die Gegenkontakte an der Heizeinrichtung als Flachstecker und die Kontakte an der Motorleiterplatte als Klemmfedern auszubilden. In beiden Fällen empfiehlt es sich, die Gegenkontakte jeweils über die Stirnfläche des Trägers des Heizers vorstehen zu lassen und sie mit einem Abgriff zu versehen. Eine solche Ausbildung hat zunächst den Vorteil, daß ein leichtes Zusammenstecken der Kontakte und Gegenkontakte erfolgen kann. Die vorgesehenen Abgriffe stellen dann die gewünschte elektrische Verbindung zu den jeweiligen Teilen, z.B. zum Heizer her. Beim Zusammenstecken der Baugruppen wird sofort eine Verbindung der vorhandenen elektrischen Elemente erreicht. Es können z.B. sofort dadurch verbunden werden der Heizer selbst, eine Wicklungsanzapfung, ein Thermostat, der Motor od.dgl. Hier kann eine Anpassung an die unterschiedlichsten

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vorhandenen Bauelemente erfolgen.

Es empfiehlt sich, die ringförmige Motorleiterplatte über Verbindungsleitungen mit einer weiteren Leiterplatte, nämlich einer Schalterleiterplatte zu einer vorgefertigten Baueinheit zu verbinden. Eine derartig vorgefertigte Baueinheit erleichtert die Montage der Teile des elektrisch betriebenen Handhaartrockners wesentlich.

Um dabei ein einfaches Anbringen der Schalterleiterplatte an dem Gehäuse zu ermöglichen, ist vorgesehen, daß die Schalterleiterplatte, welche Leiterbahnenanschlüsse od.dgl. in beliebiger Anzahl und Zusammensetzung tragen kann, Ausnehmungen aufweist, die mit Haltevorsprüngen zusammenwirken. Letztere sind unmittelbar an der Innenwand des Handgriffes vorgesehen. Diese Haltevorsprünge werden somit bei der Herstellung der Handgriffhälften mit erzeugt.

Auf der Zeichnung ist die Erfindung in mehreren Ausführungsbeispielen dargestellt und zwar zeigen:

Fig. 1 einen Längsschnitt durch eine erste Ausführungsform eines elektrisch betriebenen Handhaartrockners mit einer aufgesetzten Formdüse;

Fig. 2 einen Querschnitt durch den elektrisch betriebenen Handhaartrockner nach der Fig. 1 - der Querschnitt liegt im Bereich der Nachleiteinrichtung und ist senkrecht zu einer Achse A-A des Handhaartrockners geführt.,

Fig. 3 im vergrößerten Maßstab, teilweise im Schnitt, teilweise in Ansicht und teilweise weggebrochen die Nachleiteinrichtung des elektrisch betriebenen Handhaartrockners nach Fig. 1 mit einer der vorhandenen Schaufeln Schnittverlauf entlang der Linie III-III der Fig. 2,

Fig. 4 eine Ansicht der Nachleiteinrichtung des elektrisch betriebenen Handhaartrockners, teilweise weggebrochen, bei fehlender Schaufel und bei nicht eingesetztem Triac,

Fig. 5 den Bereich der Fig. 4 der Nachleiteinrichtung nach dem Einsetzen in den Handhaartrockner und nach dem Anbringen des Triacs und der Motorleiterplatte,

Fig. 6 eine zweite Ausführungsform des erfindungsgemäß ausgebildeten, elektrisch betriebenen Handhaartrockners im Längsschnitt,

Fig. 7 im vergrößerten Maßstab und in Seitenansicht - teilweise geschnitten - den Träger des Heizers des elektrisch betriebenen Handhaartrockners gemäß der Fig. 6 von seinem in Richtung des Pfeiles B erfolgenden Aufschieben auf die Motorleiterplatte (explosionsartige Darstellung),

Fig. 8 die Lage von Träger und Motorleiterplatte des elektrisch betriebenen Handhaartrockners nach der Fig. 6, teilweise weggeschnitten und teilweise gestrichelt, wobei nunmehr Träger und Motorleiterplatte in ihre Endlage überführt sind,

Fig. 9 eine Draufsicht auf die zusammengesetzten Teile des elektrisch betriebenen Handhaartrockners, jedoch nach dem Anbringen des Heizers, letzterer teilweise strichpunktiert dargestellt,

Fig. 10 in einer dritten Ausführungsform eine Rückansicht eines erfindungsgemäß ausgebildeten Handhaartrockners,

Fig. 11 einen Längsschnitt durch den Handhaartrockner gemäß der Fig. 10 im vergrößerten Maßstab, teilweise weggebrochen,

Fig. 12 in Draufsicht den hinteren Teil des Gehäuses des elektrisch betriebenen Handhaartrockners nach den Fig. 10 und 11 mit angeformter Handgriffhälfte bei entfernten Innereien,

Fig. 13 in Draufsicht eine Baueinheit, die aus einer Motorleiterplatte und einer Schalterleiterplatte besteht, die durch Leitungen miteinander verbunden sind und die dazu bestimmt ist, in den Gehäuseteil gemäß der Fig. 12 der Zeichnung eingesetzt zu werden,

Fig. 14 einen Schnitt durch den hinteren Gehäuseteil des elektrisch betriebenen Handhaartrockners nach den Fig. 10 und 11 nach dem Anbringen der Motorleiterplatte und des Elektromotors, jedoch vor dem Aufstecken des Heizers, teilweise weggebrochen,

Fig. 15 im Schnitt und im vergrößerten Maßstab einen Teil der Motorleiterplatte nach dem Aufstecken des elektrischen Heizers, teilweise weggebrochen und

Fig. 16 im Schnitt eine andere Ausführungsform der Kontakte und der Gegenkontakte des elektrisch betriebenen Handhaartrockners, ähnlich der Fig. 14 der Zeichnung, ebenfalls teilweise weggeschnitten.

Es sei zunächst erwähnt, daß in den Figuren der Zeichnungen nur diejenigen Teile von elektrisch betriebenen Handhaartrocknern dargestellt sind, welche für das Verständnis der Erfindung Bedeutung haben. So fehlen insbesondere ein Teil der Schalt- und Steuereinrichtungen. Ferner ist in vielen Zeichnungen der elektrische Heizer nicht mit dargestellt. Im übrigen können alle in den Figuren der Zeichnungen fehlenden Teile einen an sich bekannten Aufbau haben.

Der dem Ausführungsbeispiel nach den Fig. 1 bis 5 dargestellte Handhaartrockner ist generell mit 10 bezeichnet. Der Handhaartrockner 10 hat ein Gehäuse, das aus einem vorderen Gehäuseteil 11 und einem hinteren Gehäuseteil 12 zusammengesetzt ist. Dabei können die beiden aus einem isolierenden Werkstoff, insbesondere Kunststoff, gefertigten Gehäuseteile 11 und 12 mit an sich bekannten und daher nicht dargestellten Mitteln miteinander verbunden werden. Auf der rückwärtigen Öffnung des hinteren Gehäuseteiles 12 ist ein Einlaßgitter 13 zum Ansaugen der Frischluft angeordnet. Dieses Einlaßgitter 13 kann beispielsweise mit

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dem rückwärtigen Ende des Gehäuseteiles 12 verrastet werden. In bekannter Weise hat ein solches Einlaßgitter 13 eine Vielzahl von Einlaßöffnungen, die zweckmäßig in konzentrischen Teilringen angeordnet sind.

Auf der gegenüberliegenden anderen Seite hat der elektrisch betriebene Handhaartrockner 10 ein Auslaßgitter 15. Dieses ist im gewählten Ausführungsbeispiel ein einstückiger Kunststoffkörper, der einen Außenring und mehrere konzentrisch zum Mittelpunkt liegende Innenringe aufwist. Diese haben unterschiedliche Durchmesser und sind über Verbindungsstege miteinander verbunden.

Im gewählten Ausführungsbeispiel ist wenigstens einer der Innenringe geneigt zur Längsachse A-A des Handhaartrockners 10 angeordnet. Die Neigung des Innenringes beträgt etwa 25°.

In der Nähe des Außenringes des Austrittsgitters 15 ist ein nicht näher bezeichneter Rücksprung vorgesehen. Auf diese Weise wird Raum zum Eingriff des hinteren Endes einer Formdüse 14 geschaffen, die bei Bedarf von dem Benutzer mit dem vorderen Teil 11 des Gehäuses des Handhaartrockners 10 lösbar verbunden werden kann. Zweckmäßig wird als lösbare Verbindung eine Rastverbindung gewählt. Dabei können Rasten und Gegen-rasten bei der Herstellung des Gehäuses bzw. der Formdüse unmittelbar miterzeugt werden.

Aus der Fig. 1 der Zeichnung ist am besten ersichtlich, daß das Austrittsgitter 15 in den Innenraum des vorderen Teiles 11 des Gehäuses eingesetzt ist. Das rückwärtige Ende des Austrittsgitters 15 tritt mit den ihm zugekehrten Enden von Trägern 17 eines generell mit 16 bezeichneten Heizers in Wirkverbindung. Zu diesem Zweck sind nicht näher bezeichnete. Aufnahmen an Verbindungsstegen des Austrittsgitters 15 vorgesehen.

Der Heizer 16, der etwa in der Mitte des Gehäuses ds Handhaartrockners angeordnet ist, hat eine an sich bekannte Ausbildung. Er besteht aus einer Mehrzahl von flachen Trägern 17, die sich im wesentlichen in Richtung der Längsachse A-A des Handhaartrockners 10 erstrecken. Der eigentliche, von den Trägern 17 getragene Heizdraht oder die Heizwendel ist in den Fig. 1 bis 5 der Einfachheit halber fortgelassen.

Vor dem Heizer 16 liegt in Strömungsrichtung der Luft gesehen eine generell mit 20 bezeichnete Nachleiteinrichtung, deren Ausbildung am besten aus den Fig. 1 und 2 der Zeichnung ersicht lich ist. Daraus ergibt sich, daß es sich bei der Nachleiteinrichtung um einen einstückig aus einem isolierenden Werkstoff gefertigten Körper handelt, der in mehrere Teilbereiche aufgegliedert ist. So hat die Nachleiteinrichtung 20 zunächst einen mittleren, im wesentlichen eben gehaltenen Mittelteil 33 mit einer im Zentrum liegenden Öffnung zum Durchgriff der Motorwelle 21 eines generell mit 18 bezeichneten Elektromotors. Im Bereich des ebenen Mittelteiles 33 sind auch Befestigungsschrauben 32 vorgesehen, mit denen ein Festlegen der Nachleiteinrichtung 20 erfolgt. Es sind im gewählten Ausführungsbeispiel insgesamt drei Befestigungsschrauben 32 vorgesehen, die jeweils um 120° zueinander versetzt liegen.

An den ebenen Mittelteil 33 der Nachleiteinrichtung 20 schließt sich ein Verbindungsteil 34 an, welcher etwa in Richtung der Längsachse A-A des Handhaartrockners 10 verläuft und der dann in einen senkrecht zu der Längsachse A-A liegenden, nicht näher bezeichneten weiteren Teil übergeht, an den sich dann wiederum in Richtung der Längsachse A-A verlaufend der Schaufeltragteil 35 anschließt. Im gewählten Ausführungsbeispiel weist der Schaufeltragteil 35 insgesamt elf Schaufeln 36 auf, von denen die eine in der Fig. 3 der Zeichnung dargestellt ist. Daraus ergibt sich, daß jede Schaufel 36 der Nachleiteinrichtung 20 gekrümmt verläuft. Die durch die Enden der Schaufeln 36 gelegte Verbindungslinie schließt mit der Horizontalen einen Winkel α von etwa 60° ein. An sich hat die Nachleiteinrichtung 20 zwölf Schaufeln 36, jedoch ist erfindungsgemäß die zwölfte Schaufel entfernt und in diesem fehlenden Bereich ist der Triac 41 der Motorleiterplatte 43 angeordnet, auf den auch weitere Schalt- und Regeleinrichtungen bekannter Art untergebracht sind. Die Anordnung des Triacs 41 erfolgt in dem rechten oberen Bereich der Fig. 2 der Zeichnung.

Wie die Fig. 4 der Zeichnung erkennen läßt, ist im Bereich der einen fehlenden Schaufel 36 eine generell mit 37 bezeichnete Ausnehmung vorhanden. Diese Ausnehmung hat parallel und im Abstand voneinander angeordnete Begrenzungen 38, die durch eine weitere obere Begrenzung 39 miteinander verbunden sind. Dabei hat die obere Begrenzung 39 einen Ausschnitt 40 zum Eingriff des freien Endes einer Verlängerung 42 der Motorleiterplatte 43 (vergl. dazu die Fig. 5 der Zeichnung). Die in den Fig. 4 und 5 rechte Begrenzungswand der Ausschnitte 40 schließt einen Winkel β mit der Horizontalen ein, der etwa gleich ist dem Winkel, den eine der Schaufeln 36 mit der Horizontalen einschließt. Dies bedeutet, daß der Winkel α im wesentlichen gleich dem Winkel β ist. Im gewählten Ausführungsbeispiel beträgt die Größe jedes dieser Winkel 60°.

Durch die in den Fig. 4 und 5 dargestellte Ausbildung der Ausnehmung 37 und des Ausschnittes 40 wird der Triac 41 in die richtige Position gedrückt und gehalten. Der Triac 41, der eine bekannte Ausbiuldung haben kann, ist dabei mit der Motorleiterplatte 43 verlötet und bildet die fehlende zwölfte Schaufel der Nachleiteinrichtung 20. Er liegt somit im Luftstrom und wird optimal gekühlt.

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Es bleibt noch nachzutragen, daß die Träger 17 der Heizung 16 im bezug auf die Schaufeln der Nachleiteinrichtung 20 versetzt angeordnet sind. D.h. die Schaufeln und die Träger 17 liegen nicht unmittelbar hintereinander. Die versetzte Anordnung der beiden genannten Teile wird gewählt, um eine Verwirbelung der angesaugten Luft und dadurch eine Reduzierung der im Bereich des Heizers auftretenden Temperaturen zu erzielen. Die Temperaturen werden auf ein solches Maß reduziert, daß jede nachteilige Beeinträchtigung des den Heizer umgebenden Gehäusebereiches entfällt.

Wie schon erwähnt, bildet die Nachleiteinrichtung 20 zugleich einen Halter für den Elektromotor 18. Dieser Elektromotor 18 hat eine an sich bekannte Bauart und wird in ebenfalls an sich bekannter Weise zum Antrieb eines Laufrades 22 benutzt. Dieses ist drehbar auf der Motorwelle 21 angeordnet. Das Laufrad 22 hat dabei eine ihm angeformte Nabe 31, in deren Mitte eine Bohrung vorhanden ist, in welche die Motorwelle 21 hineingreift. Die durch nicht näher bezeichnete Öffnungen des Eintrittsgitters 13 angesaugte Luft gelangt beim bestimmungsgemäßen Gebrauch des elektrisch betriebenen Handhaartrockners zunächst in den Bereich des Laufrades 22, danach in den Wirkungsbereich der Nachleiteinrichtung 20 und damit auch in den Bereich des Triacs 41, der ja an derjenigen Stelle der Nachleiteinrichtung 20 angeordnet ist, an der vorher eine der Schaufeln 36 entfernt wurde. Von der Nachleiteinrichtung 20 gelangt die angesaugte Luft schließlich zum Heizer 16. Nach dem dort erfolgenden Erwärmen verläßt die Luft das Austrittsgitter 15 und gegebenenfalls die vordere Öffnung einer Formdüse 14, wenn diese vorher von dem Benutzer mit dem Gehäuseteil 11 lösbar verbunden ist.

Wie die Fig. 1 der Zeichnung am besten erkennen läßt, hat der Handhaartrockner 10 einen Handgriff 23, der mit der Längsachse A-A einen Winkel einschließt, der kleiner als ein rechter ist. Der Handgriff ist hohl ausgebildet. Daher kann er zur Unterbringung von Betriebsteilen des Handhaartrockners benutzt werden. Im dargestellten Ausführungsbeispiel ist im Inneren des hohlen Handgriffes 23 ein Schalter 26 bekannter Bauart untergebracht, der nach außen hin durch eine Abdeckblende 27 verdeckt ist. Die Abdeck-blende 27 ist an den Innenwandungen des Handgriffes 23 begrenzt verschiebbar. Hierzu dienen nicht näher dargestellte Führungen, die beispielsweise mit einem Vorsprung der Abdeckplatte 27 zusammenwirken können. Durch Verschieben der Abdeckblende kann der Schalter in seine Ein- oder Ausstellung überführt werden. Oberhalb des Schalters 26 ist in dem Hohlraum des Handgriffes noch ein Reglerrad 28 drehbar gelagert, das mit einem Bereich seiner Umfangsfläche durch eine Öffnung der Wandung des Handgriffes 23 nach außen tritt und damit für den Benutzer zugänglich wird. Mit diesem Reglerrad läßt sich beispielsweise die Leistung des elektrisch betriebenen Handhaartrockners 10 regulieren.

Im Bereich der Stirnfläche des Handgriffes 23 ist eine Knickschutztülle 25 mit einer durchlaufenden Bohrung zur Unterbringung des einen Endes einer elektrischen Zuleitung 24 angeordnet. Das andere, in der Fig. 1 nicht sichtbare Ende der elektrischen Zuleitung 24 trägt einen bekannten Stecker, der vom Benutzer in eine Steckdose eingesteckt werden kann, um den Elektromotor 11 mit Strom zu versorgen, nachdem der Schalter unter Benutzung seines Griffteiles 29 in die Einschaltstellung gebracht ist.

Das in dem hohlen Innenraum des Handgriffes 23 eingeführte Ende der elektrischen Zuleitung wirkt in bekannter Weise mit einer Zugentlastungsschelle 30 zusammen, durch die ein Entlasten der Anschlußstellen von Zugkräften herbeigeführt werden soll.

In den Fig. 6 bis 9 ist ein weiteres Ausführungsbeispiel des erfindungsgemäßen elektrisch betriebenen Handhaartrockners dargestellt. Soweit die Teile dieses elektrisch betriebenen Handhaartrockners der Zweiten Ausführungsform gegenüber der ersten unverändert geblieben sind, sind die vorgenannten Bezugszeichen beibehalten worden.

Die generell mit 43 bezeichnete Motorleiterplatte des Handhaartrockners 10 ist ein flacher, aus elektrisch isolierendem Werkstoff gefertigter Körper, der in Richtung der Längsachse A-A des Handhaartrockners 10 angeordnet ist. Dabei ist das rückwärtige Ende der Motorleiterplatte 43 der einen Stirnfläche des Elektromotors 18 zugekehrt. Die an sich bekannten Motorleiteranschlüsse sind mit 44 in der Fig. 7 der Zeichnungen gekennzeichnet. Im übrigen trägt die Motorleiterplatte 43 in grundsätzlich bekannter Weise Schalt- und Steuereinrichtungen.

Im gewählten Ausführungsbeispiel weist die Motorleiterplatte 43 eine mittige, einen wesentlichen Teil der Länge der Motorleiterplatte erfassende Ausnehmung 45 auf, die zur vorderen Stirnfläche hin offen ist. Seitlich neben dieser Ausnehmung 45 sind in der Stirnfläche der Motorleiterplatte 43 Schlitze 46 angeordnet, die ebenfalls zur freien Stirnfläche hin offen bleiben. Jedem der beiden vorhandenen Schlitze 46 ist eine Leiterbahn 47 zugeordnet, die in bekannter Weise auf der Motorleiterplatte 43 angebracht sein können. Die Motorleiterplatte 43 hat somit Gegenkontakte 47, die mit den Kontakten des Heizers 16 zusammenwirken.

Wie die Fig. 8 und 9 der Zeichnungen am besten erkennen lassen, gehört zum Heizer 16 ein Träger 17, der aus zwei plattenförmigen Isolierkör-

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pern zusammengesetzt ist, die überkreuz angeordnet sind. Diese Isolierplatten sind im gewählten Ausführungsbeispiel mit 48 bezeichnet und ineinandergesteckt. Sie haben jeweils in ihrem der Motorleiterplatte 43 zugekehrten Bereich eine zur Stirnfläche hin offene Aussparung 49. Die beiden überkreuz angeordneten, zusammengesteckten Isolierplatten 48 nehmen in bekannter Weise den Heizer 16 auf. Der Heizer 16 ist im gewählten Ausführungsbeispiel als Heizwendel gestaltet. Die nach außen weisenden Stirnfläche der Isolierplatten 48 haben in bekannter Weise eine Vielzahl von nebeneinander angeordneten Nuten, in die jeweils ein Teilbereich der Wendeln des Heizers eingreifen. Da die Befestigung der Wendel des Heizers grundsätzlich bekannt ist, ist in der Fig. 9 nur ein Teilbereich derselben dargestellt.

In dem gewählten Ausführungsbeispiel sind an den Isolierplatten 48 des Trägers 17 Kontaktlaschen 50 und 51 angebracht. Diese Kontaktlaschen sind in bekannter Weise mit der Wendel des Heizers leitend verbunden. Ein Bereich jeder Kontaktlasche 50 bzw. 51 ist an einer der Isolierplatten 48 befestigt. Dies kann beispielsweise dadurch geschehen, daß man einen Hohlniet benutzt. Man kann aber auch die Kontaktlaschen Verbindungszungen aufweisen lassen, die Durchbrüche der Isolierplatte durchgreifen und danach umgebördelt werden. Die rückwärtigen Enden der Kontaktlaschen, also diejenigen, die mit dem Heizer 16 leitend verbunden werden sollen, sind mit 52 und 53 bezeichnet. Es handelt sich im gewählten Ausführungsbeispiel um Lötstellen.

Die vorderen freien Enden der Kontaktlaschen 50 bzw. 51 sind mit 54 und 55 bezeichnet. Sie greifen nach der Montage der Einzelteile in die Schlitze 46 der Motorleiterplatte 43 ein. Dadurch ergibt sich einmal eine leichte Verbindung zwischen den Kontaktlaschen 50 und 51 einrseits und der Gegenkontakte 47 andererseits. Zum anderen wird dadurch auch eine mechanische Verbindung zwischen dem Träger 17 und der Motorleiterplatte 43 hergestellt. Um einen ausreichenden Kontakt zu erzielen, empfiehlt es sich, die Kontaktlaschen 50 und 51 aus einem metallischen Werkstoff mit elastischen Eigenschaften herzustellen. Auf diese Weise ergibt sich eine gute Kontaktierung zwischen den freien Enden 54 und 55 der beiden Kontaktlaschen und den zugehörigen Gegenkontakten 47 der Motorleiterplatte 43.

Aus der explosionsartigen Darstellung der Fig. 7 der Zeichnung ergibt sich, daß eine Baueinheit vorgefertigt wird, die den Träger 17, den Heizer 16 und die Kontaktlaschen 50 bzw. 51 aufweist. Der Einfachheit halber ist in dem oberen Teil der Fig. 7 der wendelförmige Heizer fortgelassen. Eine der art vorbereitete Baueinheit wird dann in Richtung des Pfeiles B auf die Motorleiterplatte 43 aufgeschoben, die über die Anschlußleitungen 44 mit dem Motor 18 bereits verbunden ist. In der Endlage gelangen dann die vorderen freien Enden 54 bzw. 55 der Kontaktlaschen 50 und 51 in die nach vorn offenen Schlitze 46 an der Stirnseite der Motorleiterplatte 43. Dadurch wird nicht nur eine elektrisch leitende Verbindung zwischen den Kontakten und Gegenkontakten sondern auch eine mechanische Verbindung zwischen der Motorleiterplatte 43 und dem Träger 17 hergestellt. Diese Endlage der genannten Teile ist aus der Fig. 9 der Zeichnungen ersichtlich. In dieser Lage befinden sich die vorderen freien Enden 54 und 55 der Kontaktlaschen 50 und 51 in den Schlitzen 46 der Motorleiterplatte 43.

In den Fig. 10 bis 16 ist eine dritte Ausführungsform des elektrisch betriebenen Handhaartrockners dargestellt. Soweit dessen Teile in bezug auf die beiden vorher genannten Ausführungsbeispiele unverändert geblieben sind, wurden die gleichen Bezugszeichen beibehalten. Zu dem elektrisch betriebenen Handhaartrockner nach den Fig. 10 bis 16 gehört wiederum ein Elektromotor 18. Zur Unterbringung desselben ist in dem hinteren Gehäuseteil 12 eine im Querschnitt kreisförmige Aufnahme 67 angeordnet. In diese Aufnahme 67 wird der Elektromotor 18 mit seinem hinteren Bereich in der in Fig. 11 dargestellten Weise eingeführt. Die Aufnahme 67 für den Motor 18 wird nach der Rückseite des Handhaartrockners 10 durch den ebenen Mittelteil 33 und seitlich durch den Verbindungsteil 34 begrenzt. Dieser Verbindungsteil 34 hat eine umlaufende Verlängerung 88, vergl. dazu die Fig. 14 der Zeichnung. Die Wandstärke des vorderen Teiles der Verlängerung 88 ist dickenmäßig reduziert, so daß eine umlaufende Stützschulter 89 entsteht. Diese Stützschulter 89 wirkt mit Bereichen der Motorleiterplatte 43 zusammen, die bei diesem Ausführungsbeispiel - vergl. dazu die Fig. 13 der Zeichnung - ringförmig gestaltet ist.

Aus der Fig. 13 der Zeichnung ist ersichtlich, daß die Motorleiterplatte in diesem Falle eine mittlere Ausnehmung 97 aufweist, die vom Motor 18 durchgriffen wird, wobei jedoch in diese Ausnehmung auch die Verlängerung 88 in der Fig. 14 dargestellten Weise eingreift. Auf diese Weise kommt in der Einbaulage nach Fig. 14 der Zeichnung die Leiterplatte 43 nicht direkt mit der Umfangsfläche des Motors 18 in Verbindung. Vielmehr liegt die äußere Begrenzungswand 100 der Motorleiterplatte 43 an der Innenseite der Verlängerung 88 an. Dabei liegt der Stützbereich 101 der Motorleiterplatte 43 jeweils auf der Stützschulter 89. Es sind zwei solcher Stützschultern 89 vorhanden. Die zweite befindet sich im Bereich der Innenwandung des Schaufeltragteiles 35. In der in der Fig. 14 dargestellten Endlage liegt somit die äußere Begrenzungswand 100 an der Innenwand des Schaufeltragteiles 35 an, während die innere Begren-

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zungswand 102 mit der Verlängerung 88 zusammenwirkt. Unterhalb der Motorleiterplatte 43 ist im Boden 38 der Nachleiteinrichtung 20 ein Freiraum 90 geschaffen. Dieser Freiraum 90 ist so bemessen, daß die auf der dem Boden 66 zugekehrten elektronischen oder elektrischen Bauteile 92 der Motorleiterplatte 43 in ihm Platz finden.

Auf der dem Auslaß des Handhaartrockners 10 zugekehrten Seite ist - wie die Fig. 13 der Zeichnungen erkennen läßt - die Motorleiterplatte 43 zunächst mit einer Anzahl von elektronischen oder elektrischen Bauteilen 82 versehen. Ferner befinden sich dort Anschlüsse für Verbindungsleitungen 98 sowie Anschlüsse für die beweglichen Motoranschlüsse 96, die mit den ortsfesten Motoranschlüssen 87 in leitende Verbindung bringbar sind, wobei letztere an der vorderen freien Stirn fläche des Elektromotors 18 vorgesehen sind.

Gemäß einem weiteren Vorschlag der Erfindung sind auf der Motorleiterplatte 43 Kontakte angeordnet, von denen in den Fig. 13 bis 16 mehrere Ausführungsbeispiele dargestellt sind. Bei der Ausführungsform nach den Fig. 14 und 15 der Zeichnung ist jeder der Kontakte 84 als Flachstekker ausgebildet. Dieser Flachstecker 84 durchdringt eine nicht näher bezeichnete Bohrung in der Motorleiterplatte 43. Sein rückwärtiges Ende ist über eine Lötstelle 91 mit der Motorleiterplatte 43 verbunden. Das vordere freie Ende jedes Flachstecker 84 wirkt mit einem Gegenkontakt zusammen. Diese Gegenkontakte haben ebenfalls unterschiedliche Ausbildung, sind aber jeweils dem Heizer 16 zugeordnet.

Bei der Ausführungsform nach den Fig. 14 und 15 der Zeichnung ist der mit 85 bezeichnete Gegenkontakt als Klemmfeder ausgebildet, d.h. er ist im Querschnitt gesehen bügelförmig gestaltet, wobei nach innen gezogene Abwinkelungen der Klemmfeder mit der Außenfläche des Flachsteckers in leitende Verbindung treten. Jeder Gegenkontakt 85 ist durch einen Hohlniet 86 mit dem Heizer 16 fest verbunden. Dabei hält der Hohlniet 86 zugleich einen nicht näher bezeichneten Abgriff fest.

Die Gegenkontakte 85 sind jeweils vor der Stirnfläche des Heizers 16 angeordnet, so daß ein einfaches Zusammenstecken mit den Kontakten 84 der Motorleiterplatte 43 erfolgen kann. Im gewählten Ausführungsbeispiel sind auf der Motorleiterplatte 43 insgesamt drei Flachstecker 84 vorgesehen. Bei Bedarf können jedoch ohne weiteres mehr Flachstecker angebracht werden, denen dann eine entsprechende Anzahl von Gegenkontakten 85 an dem Heizer 16 zugeordnet werden müssen. In den Zeichnungen ist es offengelassen, mit welchen Teilen des Heizers die Gegenkontakte leitend zusammenwirken. Dies deshalb, weil dies in grundsätzlich bekannter Art erfolgen kann. Wegen des Bekanntseins ist auf die zeichnerische Darstellung der Widerstandsdrähte des Heizers verzichtet.

Die Fig. 16 der Zeichnung unterscheidet sich von den Fig. 14 und 15 lediglich dadurch, daß ein Vertauschen der Flachstecker und der Klemmfedern vorgenommen ist. Dies bedeutet, daß die Klemmfedern 93 nunmehr der Motorleiterplatte zugeordnet sind, während die Flachstecker, die jetzt mit 94 bezeichnet sind, am Heizer 16 liegen. Das Zusammenstecken der Teile 93 und 94 erfolgt durch Überführen des Heizers 16 in Richtung auf den Elektromotor 18. Bei dieser Bewegung, die in Längsrichtung des Handhaartrockners erfolgt, kommen in der Endlage die Flachstecker 94 in den Bereich zwischen den beiden Schenkeln der Klemmfeder 93 zu liegen, so daß auch hier für eine gute elektrische Verbindung gesorgt ist. Wie die Fig. 11 der Zeichnung erkennen läßt, hat der Handhaartrockner 10 - wie schon erwähnt - einen Handgriff 23, der hohl gehalten ist und aus zwei Hälften besteht, von denen die eine dem vorderen Gehäuseteil 11 und die andere dem rückwärtigen Teil 12 zugeordnet ist. Dieser Hohlraum dient zur Unterbringung elektrischer Schalt- und Steuereinrichtungen. So ist im Ausführungsbeispiel im Inneren des hohlen Handgriffes 23 zunächst ein Schalter 26 bekannter Bauart untergebracht. Der Griffteil 29 dieses Schalters durchgreift ein Fenster 69, vergl. dazu die Fig. 12 der Zeichnung. In der Begrenzungswand des Handgriffes 23 oberhalb des Fensters 69 ist ein weiteres, jedoch kleiner bemessenes Fenster 68 angeordnet. Durch dieses ragt in der in Fig. 11 dargestellten Weise der Teilbereich eines Reglerrades 28 hindurch. Dieses Reglerrad 28 ist drehbar gelagert. Mit ihm läßt sich in bekannter Weise die Leistung des elektrisch betriebenen Handhaartrockners 10 regulieren.

Dem Schalter 26 ist eine generell mit 71 bezeichnete Schalterleiterplatte zugeordnet, die - vergl. dazu die Fig. 13 - in Draufsicht gesehen rechteckig gestaltet ist. Auf dieser Schalterleiterplatte 71 sind in bekannter Weise Leiterbahnen und Anschlüsse 99 angeordnet. Zu seiner Anbringung im Hohlraum des Handgriffes 22 hat die Schalterleiterplatte 71 insgesamt vier Ausnehmungen, von denen die beiden in der Fig. 13 dargestellten oberen als rechteckige Öffnungen ausgebildet sind, während die im Bereich der unteren Stirnfläche liegenden schlitzartig gestaltet sind. Die Ausnehmungen sind jeweils mit 72 bezeichnet. Sie wirken mit Haltevorsprüngen 70 zusammen, die der einen Innenwand des Handgriffes 23 unmittelbar angeformt sind. Die Schalterleiterplatte 71 wird dadurch in ihrer endgültigen, in der Fig. 11 wiedergegebenen Lage gesichert, daß die beiden Hälften des Handgriffes 23 und damit auch die Gehäuseteile 11 und 12 des Handhaartrockners 10 zusammengefügt werden. Um dieses zu ermöglichen, ist die eine Innenwand des Handgriffes 23 mit Innenboh-

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rungen aufweisenden Vorsprüngen 103 versehen, in welche Halteschrauben 104 eingreifen, vergl. dazu die Fig. 11 und 12 der Zeichnung.

Die Fig. 13 der Zeichnung läßt ferner erkennen, daß die ringförmige Motorleiterplatte 43 mit der Schalterleiterplatte 71 zu einer Baueinheit vereinigt ist. Dies geschieht durch Verwendung mehrerer Verbindungsleitungen 98. Diese sind so bemessen, daß die ringförmige Motorleiterplatte den Motor 18 umgreifen kann, so wie dies in der Fig. 11 dargestellt ist. Demgegenüber wird die Schalterleiterplatte 71 auf die Haltevorsprünge 70 aufgesteckt. Die Verbindungsleitungen 98 können dabei in nicht näher bezeichnete, nach vorn offene Schlitze eingelegt werden, die im Bereich der Stirnfläche des Schaufeltragteiles 35 vorhanden sind.

Im dargestellten Ausführungsbeispiel nach den Fig. 10 bis 16 ist vorgesehen, daß die ringförmige Motorleiterplatte ohne besondere Befestigungseinrichtungen auf den Stützschultern 69 aufliegt. In aller Regel genügt eine derartige Anordnung, weil die Lagesicherung der Motorleiterplatte 43 durch Zusammenfügen der Gehäuseteile des Handhaartrockners 10 erfolgt. In Sonderfällen kann man jedoch auch zusätzliche Verbindungsmittel einsetzen. Jedoch sollten diese lösbar sein. Speziell ist es auch möglich, die Motorleiterplatte 43 mit Rasten zu versehen, die mit Gegenrasten an den benachbarten Wandungen des Halters der Nachleiteinrichtung 20 zusammenwirken. Auf diese Weise wird eine Lagesicherung der Motorleiterplatte 43 schon dann erzielt, wenn sie in die in der Fig. 14 dargestellte Lage gebracht ist, wo also die Gehäuseteile 11 und 12 noch nicht zusammengesetzt sind.

Die Verwendung einer ringförmigen Motorleiterplatte, so wie sie in der Fig. 13 gezeigt ist, ist nicht unbedingt erforderlich. Wichtig ist, daß bei dem Ausführungsbeispiel nach den Fig. 10 bis 16 der Zeichnung die Motorleiterplatte so ausgebildet ist, daß sie den Elektromotor 18 umgreifen kann. Falls dieser Motor 18 z.B. eine andere als eine kreisförmige Querschnittsfläche haben sollte, kann die Motorleiterplatte mit einer entsprechend gestalteten Ausnehmung 97 ausgestattet sein. Die Kontakte und Gegenkontakte der Motorleiterplatte 43 und der Heizer können eine von den dargestellten Ausführungsbeispielen abweichende Gestaltung haben. Auch läßt sich die Anzahl der vorhandenen zusammenwirkende Kontakte und Gegenkontakte variieren.

Wie bereits erwähnt, sind die dargestellten Ausführungen nur beispielsweise Verwirklichungen der Erfindung und diese nicht darauf beschränkt. Vielmehr sind noch mancherlei andere Ausführungen und Anwendungen möglich. So kann bei der Ausfüh rungsform nach den Fig. 1 bis 5 der Zeichnung sowohl die Ausbildung als auch die Gestalt der Ausnehmung 37 und auch des Ausschnittes 40 in der Nachleiteinrichtung variiert werden. Die Schaufeln 38 der Nachleiteinrichtung 20 können einen von 60° abweichenden Winkel zur Horizontalen einschliessen. In diesem Falle müßte auch der Winkel β gemäß der Fig. 5 der Zeichnung zweckmäßig entsprechend geändert werden. Ferner wäre es bei der Ausführungsform der Erfindung nach den Fig. 1 bis 5 der Zeichnung auch möglich, den Triac in einem anderen Bereich der Nachleiteinrichtung 20 als dem dargestellten anzuordnen. Wesentlich ist, daß er von dem kühlenden Luftstrom voll erfaßt und somit optimal gekühlt wird. Wenn im Vorstehenden als elektronischer Baustein immer ein Triac genannt ist, so können auch andere elektronische Bauelemente, wie eine Diode od.dgl., in der erfindungsgemäßen Weise in dem Haartrockner eingesetzt werden. Es wird immer das Ziel verfolgt, dem jeweiligen elektronischen Bauelement im Handhaartrockner eine optimale Kühlung zu geben.

Während bei der Ausführungsform der Erfindung nach den Fig. 8 bis 9 lediglich zwei Kontaktlaschen 50 und 51 vorgesehen sind, können bei Bedarf auch mehr als zwei Kontaktlaschen am Träger 17 angebracht sein. Unabhängig von der Anzahl der vorhandenen Kontaktlaschen hat das Aufschieben bzw. Aufstecken des Trägers auf die Motorleiterplatte den Vorteil, daß alle vorhandenen Kontakte und Gegenkontakte in ihre leitende Verbindung überführt werden können bzw. es ist ein gemeinsames Trennen voneinander möglich. Und schließlich können die Erfindungen auch bei anderen an sich bekannten elektrisch betriebenen Handhaartrocknern benutzt werden.

Bezugszeichenliste :

10 - Handhaartrockner
11 - vorderer Gehäuseteil
12 - hinterer Gehäuseteil
13 - Einlaßgitter
14 - Formdüse
15 - Austrittsgitter
16 - Heizer
17 - Träger (von 16)
18 - elektrischer Motor
19 - Halter
20 - Nachleiteinrichtung
21 - Motorwelle
22 - Laufrad
23 - Handgriff
24 - Zuleitung
25 - Knickschutztülle
26 - Schalter
27 - Schalterblende

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28 - Reglerrad
29 - Griffteil
30 - Zugentlastungsschelle
31 - Nabe (von 22)
32 - Befestigungsschraube
33 - Mittelteil (von 20)
34 - Verbindungsteil (von 30)
35 - Schaufeltragteil (von 20)
36 - Schaufel (von 30)
37 - Ausnehmung (in 20)
38 - seitliche Begrenzungen (von 37)
39 - obere Begrenzung (von 37)
40 - Ausschnitt
41 - Triac
42 - Verlängerung (von 43)
43 - Motorleiterplatte
44 - Motoranschluß
45 - Ausnehmung (in 43)
46 - Schlitz (in 43)
47 - Leiterbahn (auf 43)
48 - Isolierplatte (von 17)
49 - Aussparung (von 48)
50 - I. Kontaktlasche
51 - II. Kontaktlasche
52 - Lötstelle (von 51 an 16)
53 - Lötstelle (von 50 an 16)
54 - freies Ende (von 50)
55 - freies Ende (von 51)
66 - Boden
67 - Aufnahme (für 18)
68 - Fenster (für 28)
69 - Fenster (für 26)
70 - Haltevorsprung
71 - Schalterleiterplatte
72 - Ausnehmung (in 41)
84 - Kontakt (Flachstecker)
85 - Gegenkontakt (Klemmfeder mit Abgriff)
86 - Hohlniet
87 - Motoranschlüsse
88 - Verlängerung
89 - Stützschalter (für 43)
90 - Freiraum (über 36)
91 - Lötstelle
92 - elektronische Bauteile (auf 43)
93 - Kontakt (II. Ausführung Fig. 8)
94 - Gegenkontakt (II. Ausführung Fig. 8)
95 - rpckwärtige Elektronikteile und Anschlüsse (von 43)
96 - bewegliche Motoranschlüsse
97 - mittlere Ausnehmung (von 43)
98 - Verbindungsleitungen
99 - Leiterbahnen und Anschlüsse (von 41)
100 - äußere Begrenzungswand (von 43)
101 - Stützbereich (von 43)
102 - innere Begrenzungswand (von 43)
103 - Vorsprung
104 - Halteschraube
A-A Längsachsde (von 10)
B Aufsteckrichtung (Fig. 7)

Ansprüche

1. Elektrisch betriebener Handhaartrockner (10) mit einerends einen Einlaß (13) und anderenends einen Auslaß (14) aufweisenden Gehäuse (11, 12) zum unterbringen eines ein Laufrad (22) antreibenden Elektromotors (18), einem Heizer (16) zum Erwärmen der Luft sowie einer Motorleiterplatte (43) mit einen Triac (41) oder eine andere elektrische Baueinheit, wie Diode od.dgl. aufweisenden Schalt- und Steuereinrichtungen
dadurch gekennzeichnet,
daß der Triac (41) oder ein anderes elektronisches Bauteil des Handhaartrockners (10) im Bereich der Nachleiteinrichtung (20) angeordnet ist.

2. Handhaartrockner nach Anspruch 1, dadurch gekennzeichnet, daß eine der Schaufeln (36) der Nachleiteinrichtung (20) entfernt und stattdessen der Triac (41) in diesem Bereich angeordnet ist.

3. Handhaartrockner nach Anspruch 1 und 2, dadurch gekennzeichnet, daß die Nachleiteinrichtung (20) im Bereich der einen fehlenden Schaufel (36) eine Ausnehmung (37) aufweist, in den eine den Triac (41) aufweisende Verlängerung (42) der Motorleiterplatte (43) hineinragt.

4. Handhaartrockner nach Anspruch 3, dadurch gekennzeichnet, daß die Ausnehmung (37) parallel und im Abstand voneinander angeordnete Begrenzungen (38) aufweist, die durch eine obere Begrenzung (39) miteinander verbunden sind und daß die obere Begrenzung (39) einen Ausschnitt (40) zum Eingriff des freien Endes der Verlängerung (42) aufweist.

5. handhaartrockner nach Anspruch 3 und 4, dadurch gekennzeichnet, daß die eine Begrenzungswand des Ausschnittes (40) einen Winkel ( ) mit der Horizontalen einschließt, der etwa gleich ist dem Winkel ( ), den eine Schaufel (36) mit der Horizontalen einschließt (Fig. 3 und 5).

6. Elektrisch betriebener Handhaartrockner nach Anspruch 1, bei dem der Heizer von einem Träger aufgenommen und über Kontakte mit Gegenkontakten der Motorleiterplatte verbunden ist,
dadurch gekennzeichnet,
daß der den Heizer (16) haltende Träger (17) mit der Motorleiterplatte (43) unter Schaffung einer lösbaren Verbindung zwischen seinen Kontakten (50, 51) und den Gegenkontakten (47) der Motorleiterplatte (43) durch Aufstecken verbindbar ist.

7. Handhaartrockner nach Anspruch 1 und 6, dadurch gekennzeichnet, daß der Träger (17) mit dem Heizer (16) leitend verbundene Kontaktla-

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schen (50, 51) aufweist, die bei seinem Aufstecken in mit Leiterbahnen (47) zusammenwirkende Schlitze (46) der Motorleiterplatte (43) eingreifen.

8. Handhaartrockner nach Anspruch 6 und 7, dadurch gekennzeichnet, daß die Schlitze (46) an der vorderen freien Stirnfläche der Motorleiterplatte (43) angeordnet sind und daß die abgewinkelten freien Enden (54, 55) der Kontaktlaschen (50, 51) unter Kontaktgabe in die Schlitze (46) eingreifen.

9. Handhaartrockner nach Anspruch 6, dadurch gekennzeichnet, daß jede Kontaktlasche (50, 51) aus einem Metallstreifen besteht, der jeweils in seinem Mittelbereich mit einem der den Träger bildenden, überkreuz angeordneten Isolierplatten verbunden ist und deren eines Ende mit dem Heizer (16) in leitender Verbindung steht, während das gegenüberliegende andere Ende (54, 55) in die Schlitze (46) der Motorleiterplatte (43) eingreift.

10. Handhaartrockner nach Anspruch 1 und 6, dadurch gekennzeichnet, daß die Motorleiterplatte (43) als den Motor (19) umgreifender Körper ausgebildet ist, der Führungs- und Stützbereiche (100, 101) sowie auf seiner dem Austrittsgitter (15) zugekehrten Fläche Kontakte (84, 93) aufweist, die mit den Gegenkontakten (85, 94) des Heizers (16) durch Aufstecken lösbar verbindbar sind (Fig. 11 bis 16).

11. handhaartrockner nach Anspruch 10, dadurch gekennzeichnet, daß die Motorleiterplatte (43) als Ringkörper ausgebildet ist, dessen mittlere Ausnehmung (57) vom Motor (18) durchgriffen wird und dessen äußere Begrenzungswand (100) als Führungsbereich benutzbar ist, während ein Teilbereich seiner Oberfläche als Stützbereich (101) dient.

12. Handhaartrockner nach Anspruch 10 und 11, dadurch gekennzeichnet, daß im Bereich des Mittelteiles (33) des Halters (19) einer Nachleiteinrichtung (20) eine Aufnahme (67) für den Motor (19) angeordnet ist, die in ihrem oberen Teil durch eine umlaufende Verlängerung (88) des Mittelteiles (33) begrenzt ist, die mit der inneren Begrenzungswand (102) der Motorleiterplatte (43) zusammenwirkt.

13. Handhaartrockner nach Anspruch 10, dadurch gekennzeichnet, daß die äußere Begrenzungswand (100) der Motorleiterplatte (43) mit der Innenwand eines Schaufeltragteiles (35) zusammenwirkt und daß sowohl die Verlängerung (88) als auch die Innenwand des Schaufeltragteiles (35) eine Stützschulter (89) für den Stützbereich (101) der Motorleiterplatte (43) aufweisen.

14. Handhaartrockner nach Anspruch 13, dadurch gekennzeichnet, daß im Boden (68) des halters (19) der Nachleiteinrichtung (20) seitlich versetzt zu den Stützschultern (89) ein Freiraum (90) zur Unterbringung von vorstehenden Teilen der Motorleiterplatte (43) angeordnet ist.

15. Handhaartrockner nach Anspruch 10, dadurch gekennzeichnet, daß die Motorleiterplatte (43) mit Rasten versehen ist, die mit Gegenrasten an den benachbarten Wandungen des Halters (19) der Nachleiteinrichtung (20) zusammenwirken.

16. Handhaartrockner nach Anspruch 10, dadurch gekennzeichnet, daß die Motorleiterplatte (43) senkrecht aus ihrer Grundebene vorragende Kontakte (84 bzw. 93) aufweist, die mit Gegenkontakten (85 bzw. 94) zusammensteckbar sind, die am Träger (17) des Heizers (16) angeordnet sind.

17. Handhaartrockner nach Anspruch 16, dadurch gekennzeichnet, daß die Kontakte (84) als Flachstecker ausgebildet sind, deren rückwärtiges Ende mit der Motorleiterplatte (43) verlötet ist und deren vorderes Ende mit einem als Klemmfeder (85) ausgebildeten Gegenkontakt des Heizers (16) zusammenwirkt (Fig. 14 und 15).

18. Handhaartrockner nach Anspruch 16, dadurch gekennzeichnet, daß die Gegenkontakte (94) an dem Heizer (16) als Flachstecker und die Kontakte (93) an der Motorleiterplatte (43) als Klemmfedern ausgebildet sind (Fig. 16).

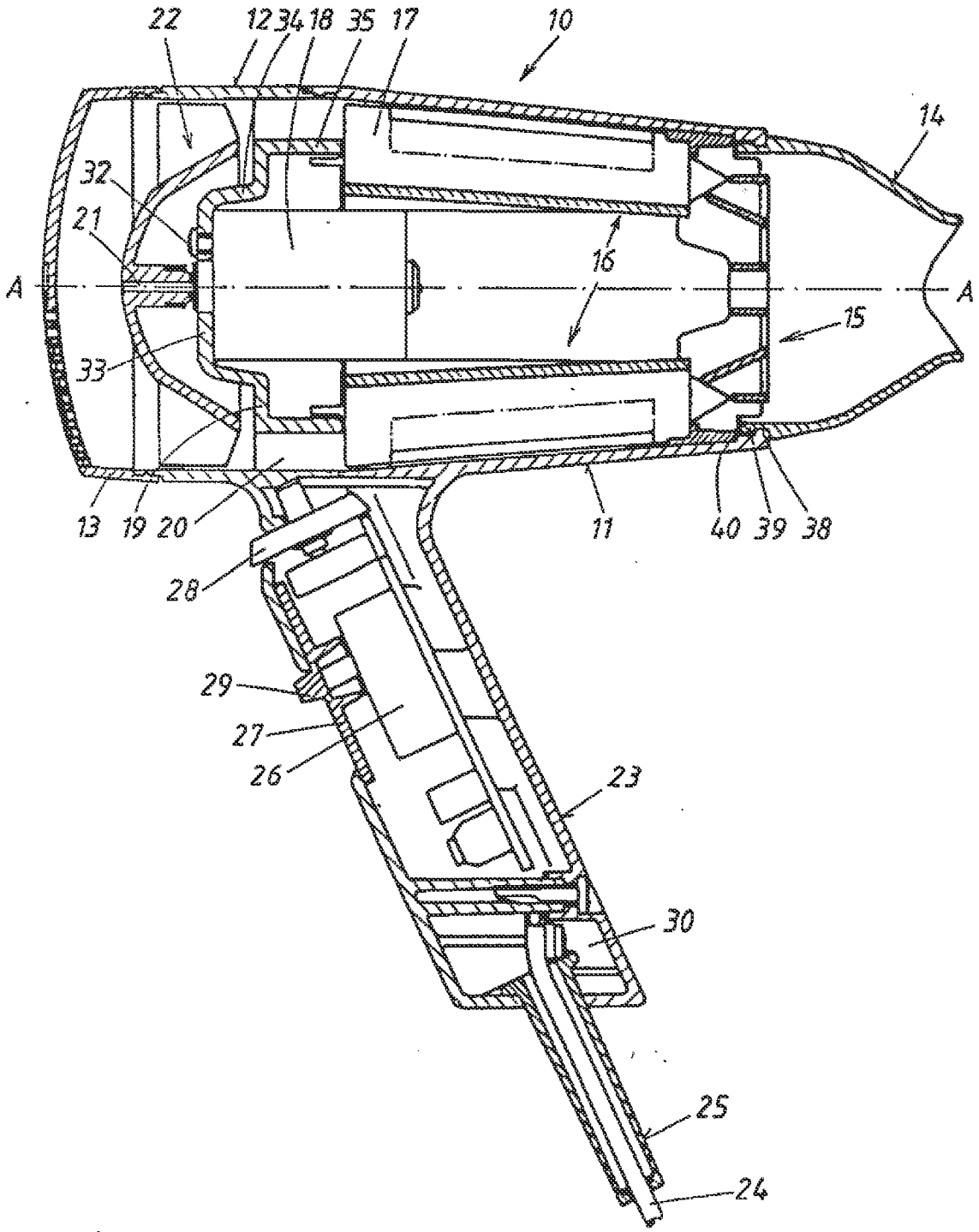
19. Handhaartrockner nach Anspruch 16 bis 18, dadurch gekennzeichnet, daß die Gegenkontakte (85 bzw. 94) über die Stirnfläche des Trägers (17) des Heizers (16) vorstehen und mit einem Abgriff versehen sind.

20. Handhaartrockner nach Anspruch 10, dadurch gekennzeichnet, daß die Motorleiterplatte (43) über Verbindungsleitungen (98) mit einer Schalterleiterplatte (71) zu einer vorgefertigten Baueinheit verbunden ist.

21. Handhaartrockner nach Anspruch 20, dadurch gekennzeichnet, daß die Leiterbahnenanschlüsse od.dgl. aufweisende Schalterleiterplatte (71) Ausnehmungen (72) aufweist, die zu ihrem Aufstecken auf Haltevorsprünge (70) an den Innenwandungen des Handgriffes (23) dienen.

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FIG. 1



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FIG. 2

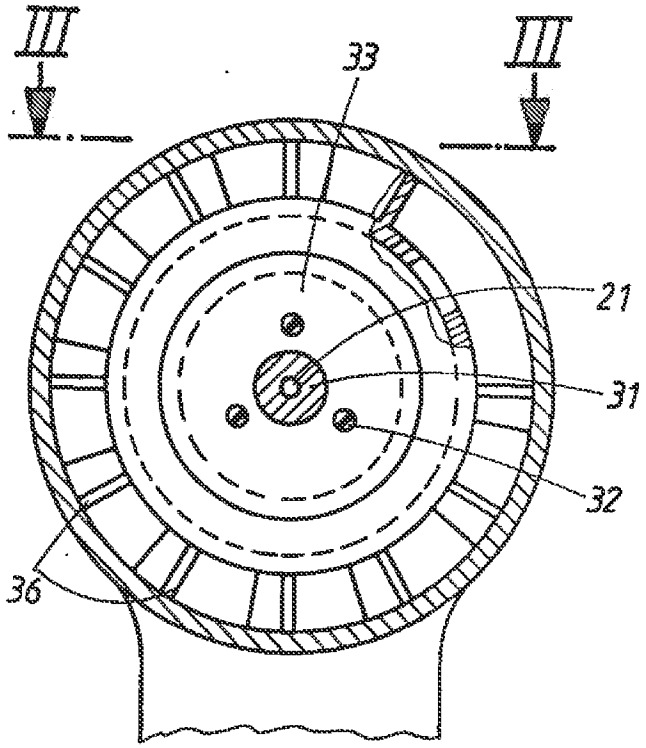


FIG. 3

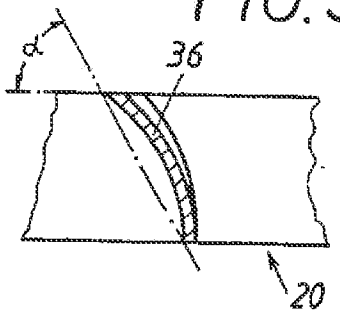


FIG. 4

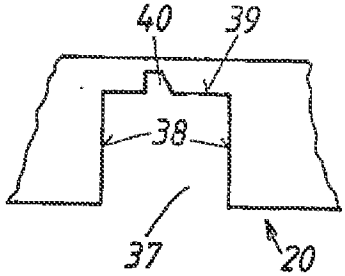
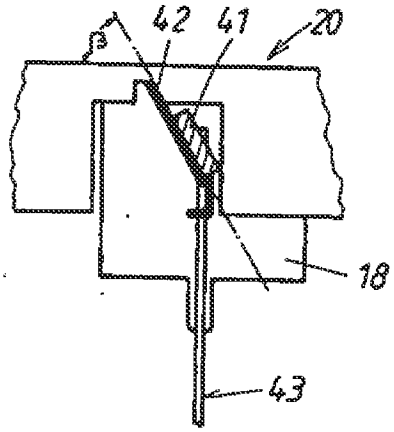
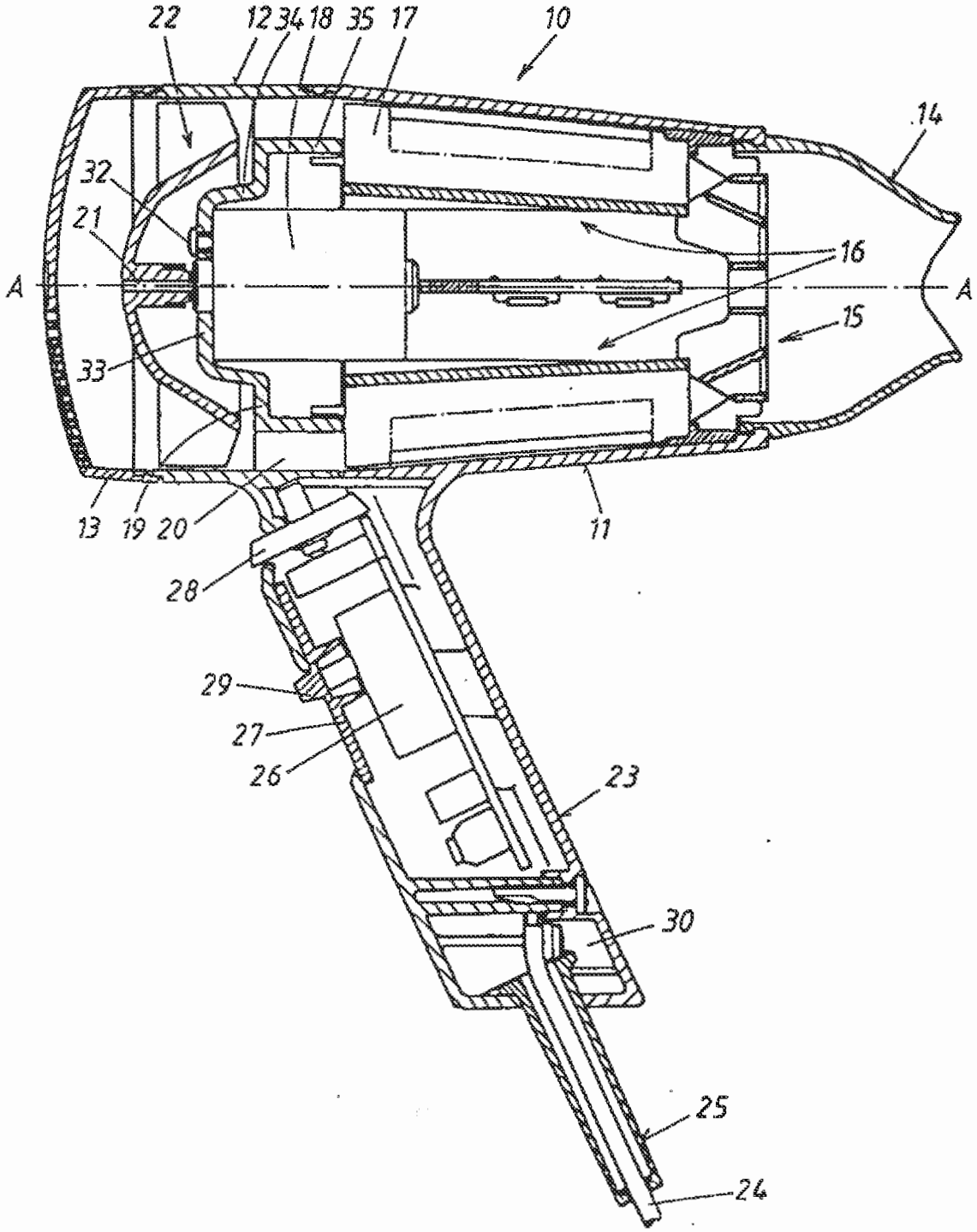


FIG. 5



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FIG.6



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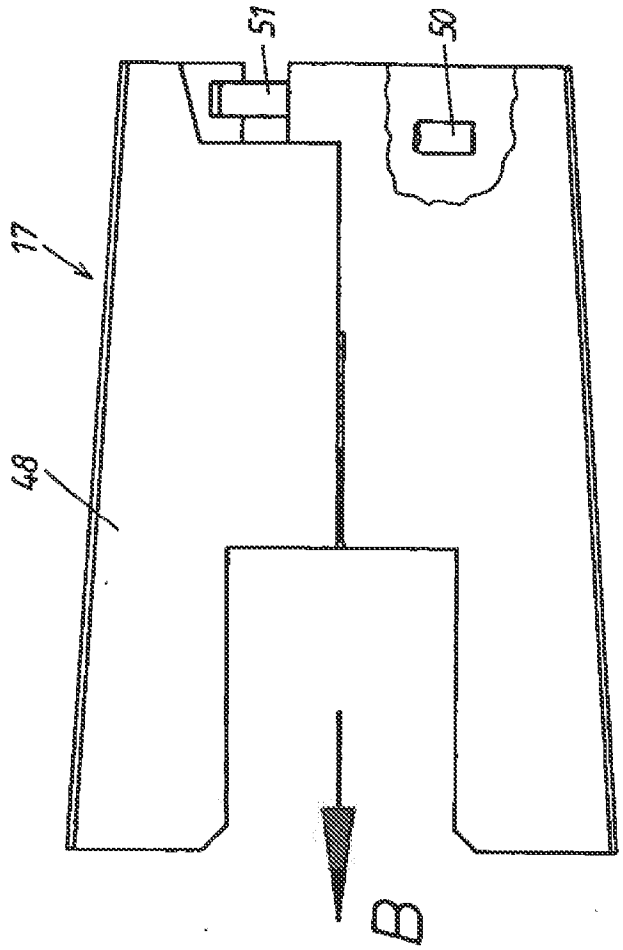
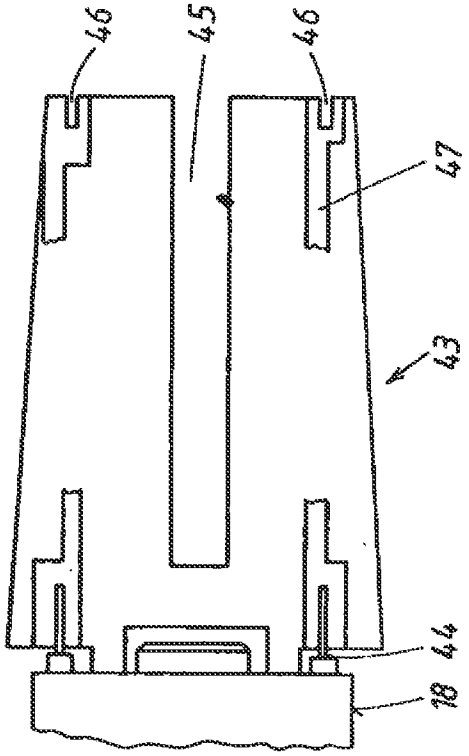


FIG. 7



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FIG. 8

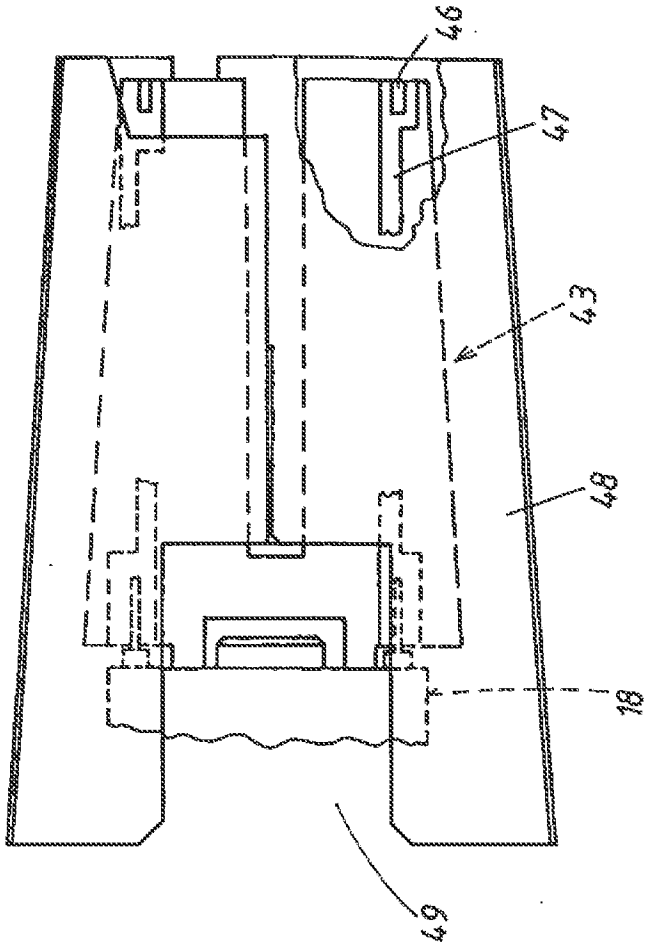
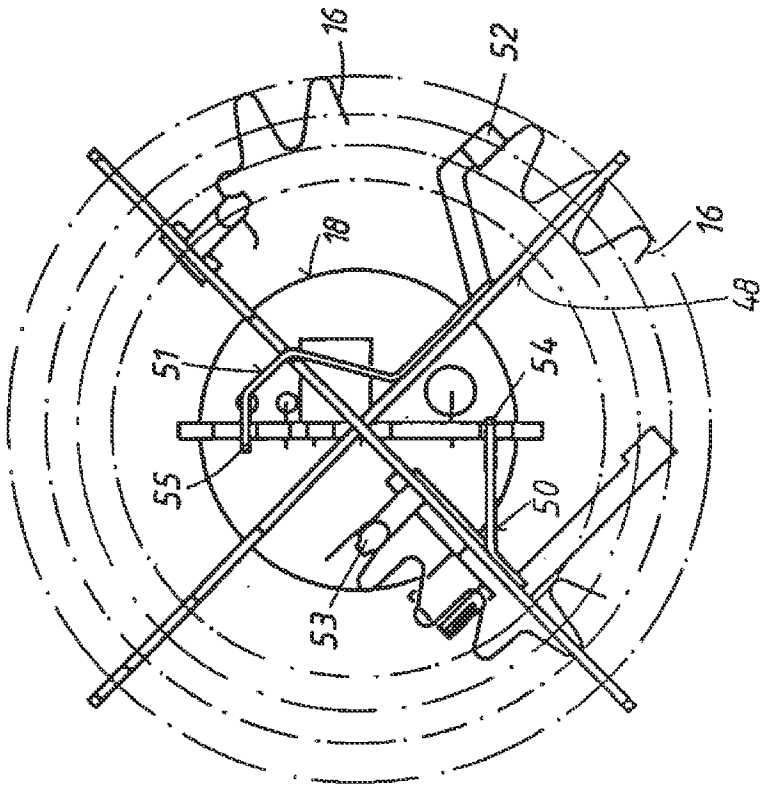
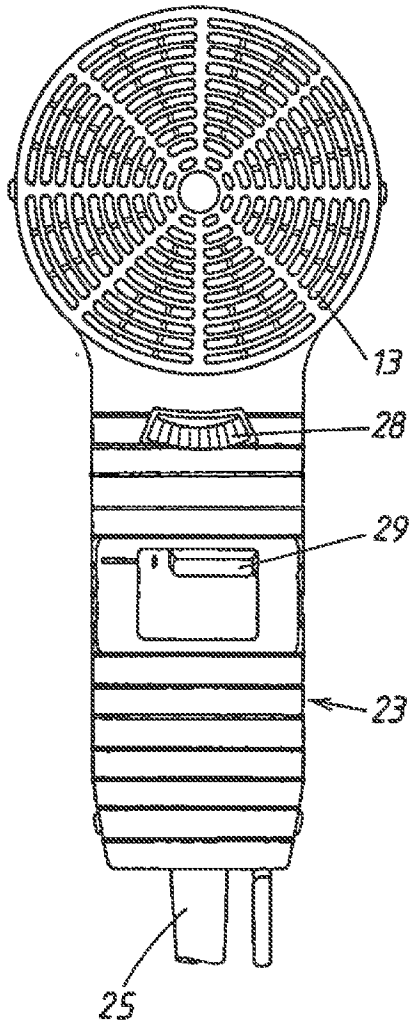


FIG. 9



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FIG. 10



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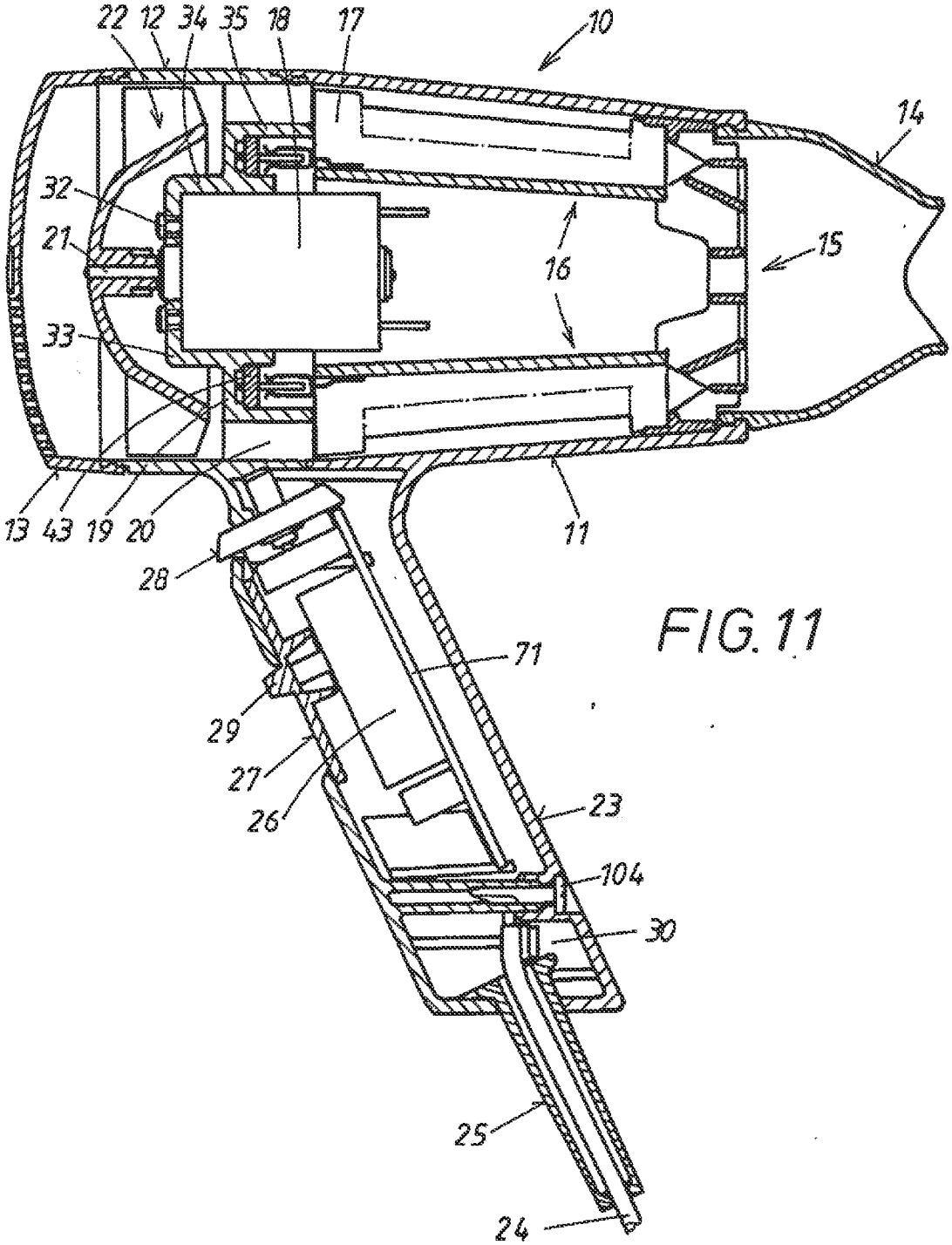


FIG. 11

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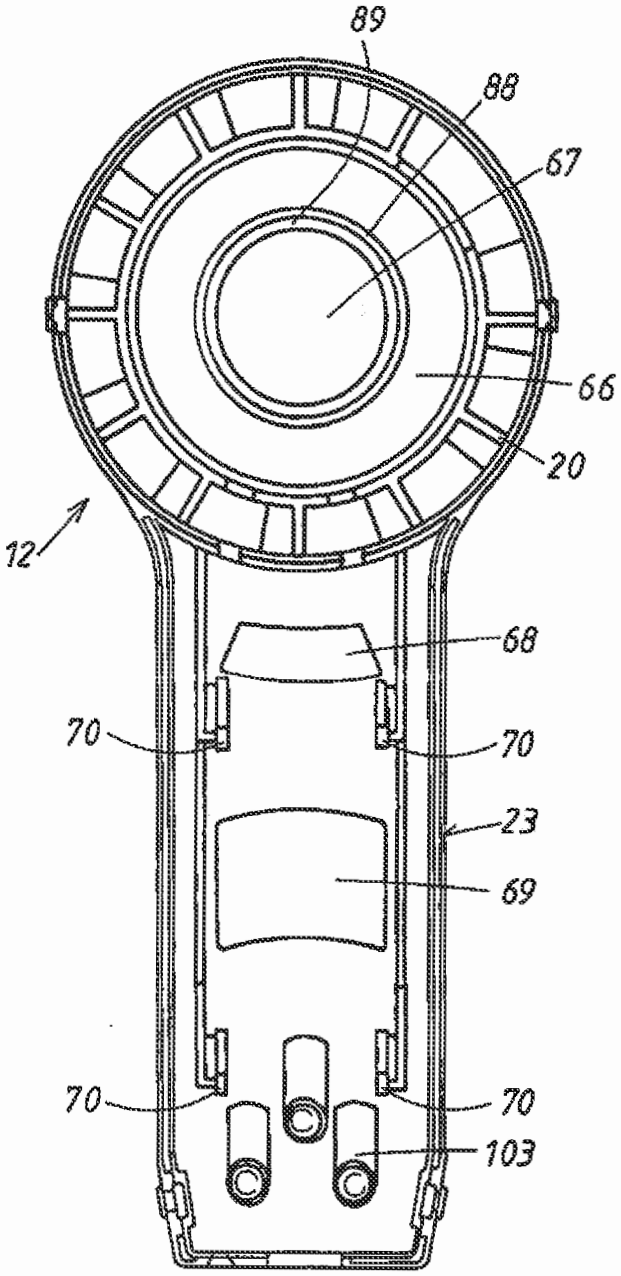


FIG. 12

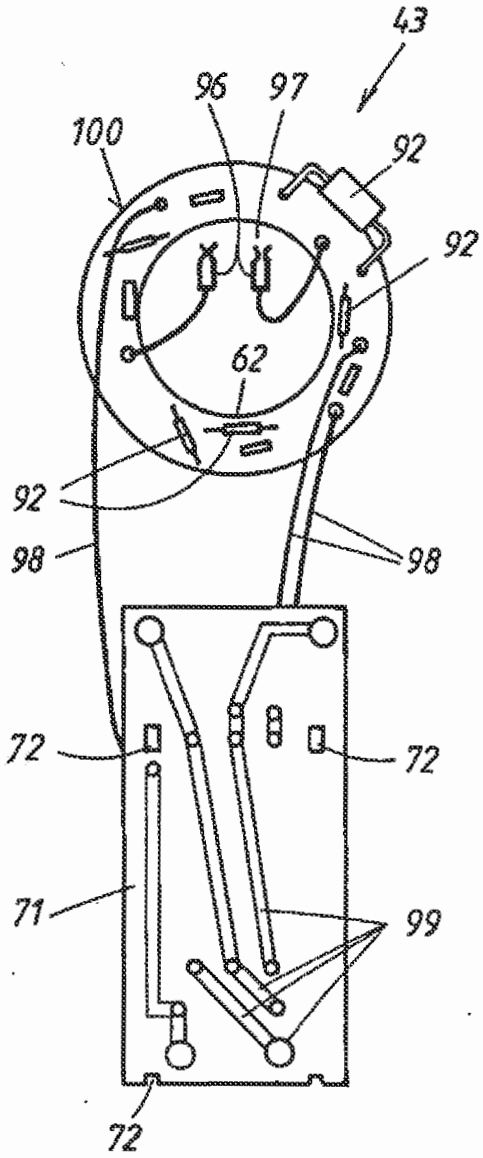


FIG. 13

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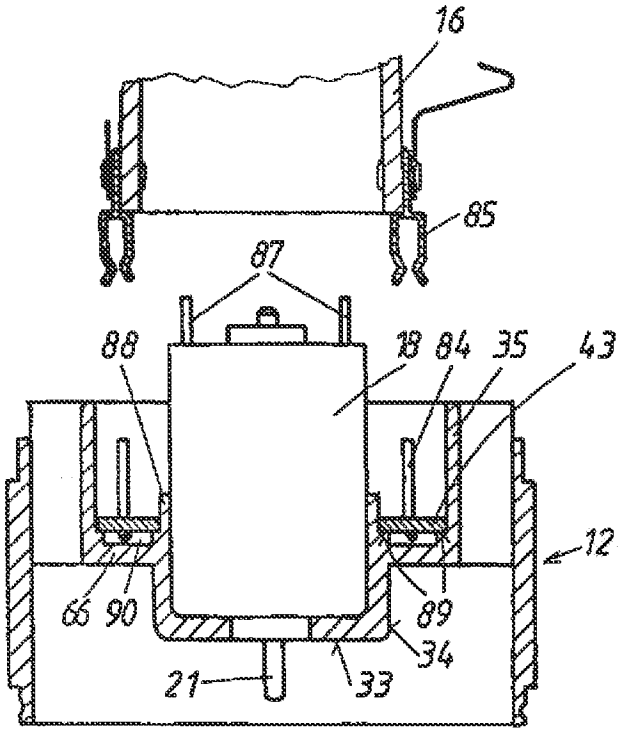


FIG. 14

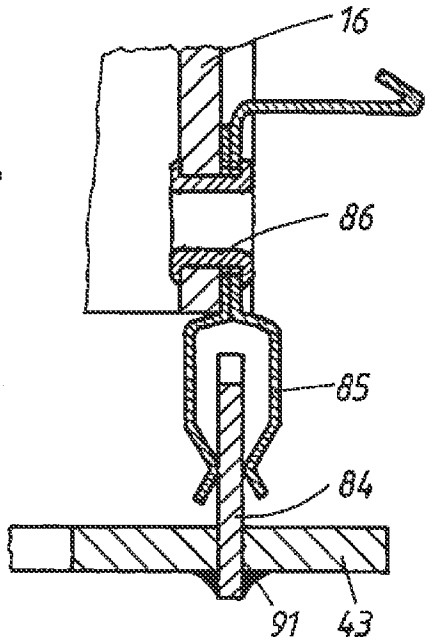


FIG. 15

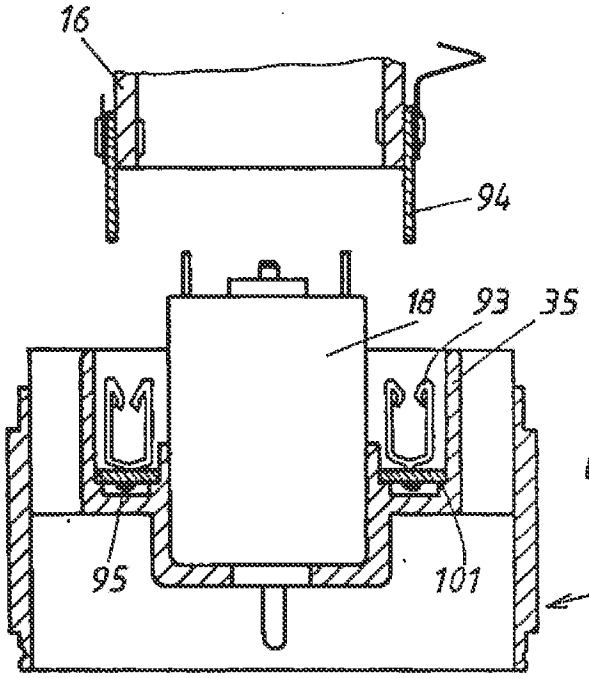


FIG. 16

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Europäisches Patentamt

EUROPÄISCHER RECHERCHENBERICHT

Nummer der Anmeldung

EP 88113689.9

EINSCHLÄGIGE DOKUMENTE

Kategorie	Kennzeichnung des Dokuments mit Angabe, soweit erforderlich, der maßgeblichen Teile	Betrifft Anspruch	KLASSIFIKATION DER ANMELDUNG (Int. Cl.4)
A	GB - A - 2 174 900 (CAPMAELS & RANSFORD) * Gesamt * --	1-21	A 45 D 20/12
A	EP - A1 - 0 010 795 (BRAUN AKTIENGESELLSCHAFT) * Gesamt * --	1-21	
A	WO - A1 - 80/00 783 (DYER-HUGH; FIRTH CLEVELAND LIMITED) * Fig. 3,4 * ----	1,6-21	

RECHERCHIERTE SACHGEBIETE (Int. Cl.4)

A 45 D 20/00

Der vorliegende Recherchenbericht wurde für alle Patentansprüche erstellt.

Recherchenort	Abschlußdatum der Recherche	Prüfer
WIEN	08-11-1988	PIRKER

KATEGORIE DER GENANNTEN DOKUMENTEN

X : von besonderer Bedeutung allein betrachtet
Y : von besonderer Bedeutung in Verbindung mit einer anderen Veröffentlichung derselben Kategorie
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29.04.2005 KR 2005036033

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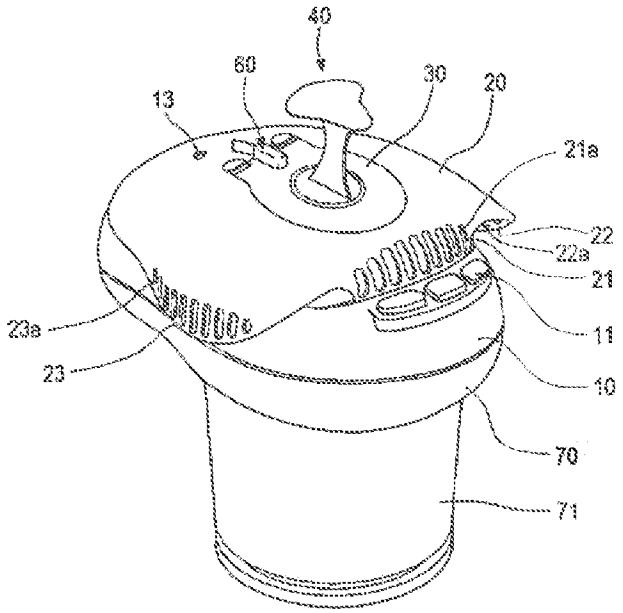
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(54) Hair dryer

(57) The present invention relates to a hair dryer in which the direction of a palm of a user gripping the hair dryer is same as the direction of wind blown from the hair dryer. A blowing pipe (71) is coupled to a case and has an air outlet at one end. A heater (73a) for heating air is provided inside the case. A fan (75) for blowing air toward the heater and the air outlet is provided inside the case. A grip part (20), which is designed to be gripped by a human hand, is coupled to a portion of the case opposite to the air outlet. A handle (40) is mounted to the grip part (20) so as to prevent the grip part (20) from being released from the hand.

Fig. 1



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Description

[0001] The present invention generally relates to a hair dryer, and more particularly to a hair dryer configured in a manner so that the direction of a palm of a user gripping the hair dryer is the same as the direction of wind blown from the hair dryer.

[0002] Hair dryers are employed not only to remove moisture from hair, but also to facilitate the styling and shaping of the hair as it dries. Typically, the hair dryers are constructed to have a housing defining an air intake and an air outlet. The housing contains a fan, which is adapted to draw air from the ambient environment through the air intake, and a heating element.

[0003] Generally, the housing of a prior art hair dryer includes a handle such that the overall device has a "pistol-like" shape. Such type of hair dryer is disclosed in U.S. Patent Nos. 6,406,533 and 6,715,215.

[0004] However, the handle is at an angle of about 90° to the air outlet in the "pistol-like" shaped hair dryer. Thus, when changing the direction of the blowing air, the user must often twist his/her wrist or change the position of his/her hand gripping the handle. Further, a relatively larger force is needed in gripping the handle. Such an inconvenience can cause much fatigue to the user's wrist when drying or styling the hair of the user.

[0005] Therefore, it is an object of the present invention to provide a hair dryer in which the direction of blowing air can be freely changed with a small movement of a user's wrist.

[0006] It is another object of the present invention to provide a hair dryer, which can reduce unnecessary electricity consumption and prevent accidents such as electric shocks by automatically shutting down the power when a user takes his/her hand off the hair dryer.

[0007] It is yet another object of the present invention to provide a hair dryer with a detachable comb member so that combing can be done while drying the hair.

[0008] It is a further object of the present invention to provide a hair dryer, which can generate far-infrared ray and anion and radiate the same while blowing the air.

[0009] It is still yet another object of the present invention to provide a hair dryer, which can prevent the leakage of electric or magnetic field generated by a motor or a heater.

[0010] Consistent with the foregoing objects and in accordance with the invention as embodied broadly herein, there is provided a hair dryer comprising: a case; a blowing pipe coupled to the case and having an air outlet at one end; a heater for heating air disposed inside the case; a fan for blowing air toward the heater and the air outlet, the fan being disposed inside the case; a grip part configured to be gripped by a human hand and coupled to a portion of the case opposite to the air outlet; and a handle mounted to the grip part to prevent the grip part from being released from the hand.

[0011] A filter is mounted to a portion of the case facing the fan. Further, a plurality of air intakes are formed at the grip part adjacent to the filter.

[0012] A space is formed at the grip part above the filter for removing extraneous substances from the filter. Further, a cover is detachably coupled to the grip part to open and close the space. The handle is installed on the cover.

[0013] The handle includes a vertical plate designed to be fitted between two fingers of the hand. It also includes a horizontal upper plate, which is formed at the top of the vertical plate to prevent the vertical plate from slipping out of the hand, and a horizontal lower plate formed at the bottom of the vertical plate. A depressed portion is formed at the cover in which the lower plate of the handle is rotatably seated.

[0014] A cylindrical holder is located below the cover and connected to the lower plate of the handle so as to be rotated together with the handle. The holder has at least one supporting plate sectioned partially from the side wall of the holder, which is to be deformed elastically from the side wall, and a latching convex formed at the inner surface of the supporting plate. A circular loop is formed at the lower surface of the cover and is surrounded by the holder. The loop has a plurality of recesses arranged radially along the overall outer periphery of the loop. When the handle is rotated, the latching convex of the supporting plate is selectively fitted in one of the recesses of the loop.

[0015] A power switch for controlling the power supplied to the hair dryer and at least one manipulating button for selecting the operating mode are provided on the case.

The power switch can be pressed down through the pressure of the hand holding the grip part.

[0016] A switch-accommodating portion for accommodating the power switch is formed at the grip part. The power switch includes: a push button exposed above the grip part; a spring for biasing the push button above the grip part; an operating rod extending from the push button toward the inside of the case; and a restraining rod extending from the push button toward the inside of the switch-accommodating portion, wherein the restraining rod has a hook at one end. A means for sensing the movement of the operating rod and a control unit for controlling the operation of the hair dryer in response to the signals from the means for sensing the operating rod are provided inside the case.

[0017] A grill for preventing extraneous substances from entering into the blowing pipe is mounted at a position near the air outlet inside the blowing pipe. The grill is coated with ceramics containing tourmaline or iron oxide.

[0018] A far-infrared ray and anion generating device is mounted inside the case. The far-infrared ray and anion generating device includes: a quartz tube coated with ceramics containing tourmaline or iron oxide; a ceramic base provided in the quartz tube; and a heating coil wound around the ceramic base.

[0019] The hair dryer further comprises an auxiliary

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blowing unit detachably mounted to the blowing pipe near the air outlet, wherein the auxiliary blowing unit has a plurality of air holes.

[0020] The above object and features of the present invention will become more apparent from the following description of the preferred embodiments given in conjunction with the accompanying drawings.

Fig. 1 is a perspective view illustrating a hair dryer constructed in accordance with the present invention.

Fig. 2 is an exploded perspective view illustrating a hair dryer constructed in accordance with the present invention.

Fig. 3 is an exploded perspective view illustrating a grip part, a cover and a handle.

Fig. 4 is a partial exploded perspective view illustrating a hair dryer constructed in accordance with the present invention.

Fig. 5 is a cross-sectional view of a hair dryer constructed in accordance with the present invention.

Fig. 6 is an enlarged cross-sectional view of a mounting structure of an operation switch and a lamp.

Fig. 7 is an enlarged cross-sectional view of a far-infrared ray and anion generating device.

Fig. 8 is a bottom view of a hair dryer constructed in accordance with the present invention.

Fig. 9 is a partial exploded perspective view showing one embodiment of an auxiliary blowing unit.

Fig. 10 is a partial exploded perspective view showing another embodiment of an auxiliary blowing unit.

Fig. 11 is a control circuit diagram of a hair dryer constructed in accordance with the present invention.

Fig. 12 is a drawing schematically illustrating a wiring of a heater coil.

Fig. 13 is a perspective view illustrating an operating state of a hair dryer constructed in accordance with the present invention.

[0021] The preferred embodiments of the present invention will now be described with reference to the accompanying drawings.

[0022] Figs. 1 and 2 are perspective and exploded perspective views illustrating a hair dryer, which is constructed in accordance with the present invention. As shown in the figures, there is provided a case for forming an exterior appearance and containing essential components, which comprises an upper case 10 and a lower case 70. The upper case 10 and the lower case 70 are manufactured separately and coupled to each other to facilitate the production and assembly processes. Preferably, the upper and lower cases 10 and 70 are made from synthetic resins, but are certainly not limited thereto.

[0023] Manipulating buttons 11 for selecting operating modes of the hair dryer are provided at the front surface of the upper case 10. The top portions of the manipulating buttons 11 are exposed from the upper case 10 so that a user can easily push them. A filter 12, which permits an ambient air to pass while filtering extraneous substances such as dust in the air, is provided at the upper surface of the upper case 10. Preferably, the filter 12 is made from a metallic material. A lamp 13 for indicating the operating condition of the hair dryer and a slit 14 for guiding the movement of a power switch 60 are provided at the rear portion of the upper surface of the upper case 10.

[0024] A grip part 20 is fixed above the upper case 10. The grip part 20 shields most of the upper case 10 except the manipulating buttons 11. When using the hair dryer, the user holds the grip part 20 with his/her hand. The grip part 20 is configured in a dome-shape so that the user can easily hold the grip part 20 with his/her hand (i.e., a palm). In order to fix the grip part 20 to the upper case 10, protrusions (not shown) are formed at the lower surface of the grip part 20 and inserting holes 15, which correspond to the protrusions, are formed at the upper surface of the upper case 10.

The protrusions of the grip part 20 are fitted into the respective inserting holes 15 of the upper case 10.

[0025] Wing portions 21, 22 and 23 extend downward integrally from the front and both sides of the grip part 20. As shown in Fig. 3, a plurality of air intakes 21a, 22a and 23a are formed at the wing portions 21, 22 and 23, respectively, through which the ambient air is introduced into the cases 10 and 70. For smooth inflow of air, the air intakes 21a, 22a and 23a are placed away from the upper case 10. For enhancing the stability of coupling between the grip part 20 and the upper case 10, the front end of the wing portion 21 is fitted into a slot 16, which is formed at the upper surface of the upper case 10.

[0026] The grip part 20 is provided with a coupling space 24, through which the extraneous substances on the filter 12 can be removed. A cover 30 is detachably coupled to the grip part 20 to open or close the coupling space 24. A plurality of supporting pieces 25 is formed at the border defining the coupling space 24 to support the cover 30. Further, a plurality of inserting pieces 31 is formed at the verge of the cover 30. To securely couple the cover 30 to the grip part 20, a pair of hooks 32 are provided at the rear portion of the cover 30. Each hook 32 is formed in a U-shape and has elasticity. A pair of inserting holes 26, into which the corresponding hooks 32 are elastically fitted, are formed at the grip part 20.

[0027] After locating the inserting pieces 31 of the cover 30 into the gaps between the adjacent supporting pieces 25 in the coupling space 24, if the rear portion of the cover 30 is pushed down, the inserting pieces 31 of the cover 30 are forced under the grip part 20. At the same time, the hooks 32 of the cover 30 are forcedly fitted into the inserting holes 26 of the grip part 20 against the elastic force of the hooks 32. When separating the cover 30 from the grip part 20, if the hooks 32 are pressed and lifted up, the hooks 32 and the inserting pieces 31 are released from the inserting holes 26 and the supporting pieces 25 and thus, the coupling space 24 is opened. Accordingly,

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the filter 12 can be easily cleaned by clearing the extraneous substances such as dust, hair and the like from the filter 12 through the opened coupling space 24.

[0028] A handle 40 is mounted to the cover 30. The handle 40 can prevent the grip part 20 from slipping out of the user's hand. The handle 40 includes a vertical plate 42, a horizontal upper plate 44 formed at the top of the vertical plate 42, and a horizontal lower plate 46 formed at the bottom of the vertical plate 42. The vertical plate 42 is to be fitted between two fingers of the user. The horizontal upper plate 44 prevents the vertical plate 42 from slipping out of the user's hand. These plates 42, 44 and 46 may be formed in a unitary body having an I-shaped cross-section. When considering the change in thickness of the finger, it is preferable that the upper plate 44 is tilted down as it goes onward. A cylindrical coupling protrusion 48 is formed vertically at the lower surface of the lower plate 46. A screw hole (not shown) is formed at the coupling protrusion 48 in a longitudinal direction.

[0029] A depressed portion 33 is formed at the upper surface of the cover 30, in which the lower plate 46 of the handle 40 is seated. A through-hole 34 is formed at the center of the depressed portion 33, through which the coupling protrusion 48 of the handle 40 passes. A circular loop 35 is formed around the through-hole 34 at the lower surface of the cover 30. A plurality of recesses 36 is formed in a vertical direction at the outer surface of the loop 35. The recesses 36 are arranged radially along the overall outer periphery of the loop 35.

[0030] A holder 50 is located below the cover 30 while surrounding the loop 35. The holder 50 is shaped in a hollow cylinder having an opened top and a closed bottom. A through-hole 52, for passing a screw 58 therethrough, is formed at the center of the bottom plate of the holder 50. The screw 58 passes through the through-hole 52 of the holder 50 and is tightened into the screw-hole of the coupling protrusion 48 of the handle 40. Accordingly, the handle 40, the cover 30 and the holder 50 are assembled together.

[0031] Two supporting plates 54 are formed integrally at the side wall of the holder 50. The supporting plates 54 are opposed to each other. Each supporting plate 54 is partially sectioned from the side wall of the holder 50 so that the supporting plate 54 can be deformed elastically from the side wall of the holder 50. A latching convex 56 is formed at the inner surface of each supporting plate 54. The latching convex 56 extends vertically so as to be fitted in one of the recesses 36 of the loop 35. If the user rotates the handle 40 relative to the cover 30, the holder 50 fixed to the handle 40 by the screw 58 also rotates together with the handle 40. In such a case, the supporting plates 54 formed at the holder 50 are elastically deformed because of the loop 35.

Then, the latching convex 56 of each supporting plate 54 is selectively fitted into one of the recesses 36 of the loop 35. Therefore, only when the rotating force is applied to the handle 40, which is more than a predetermined force, the supporting plate 54 of the holder 50 is deformed elastically, and the latching convex 56 gets out of the present-fitted recess 36 and is selectively fitted into the other recess 36. By such structural feature, the user can freely rotate the handle 40 to any direction and put the handle 40 between the fingers in a convenient position so as to hold the hair dryer according to the user's desire when drying or styling the hair.

[0032] A power switch 60 for controlling the power supplied to the hair dryer is provided at the grip part 20. The power switch 60 is located at a position where the power switch 60 contacts the user's palm when putting the handle 40 between the fingers and holding the grip part 20. As shown in Figs. 3, 5 and 6, a switch-accommodating portion 27 is formed at the grip part 20 to accommodate the power switch 60. The power switch 60 includes: a push button 62 exposed above the grip part 20; a spring 63 located between the push button 62 and a base 27a of the switch-accommodating portion 27 and biasing the push button 62 above the grip part 20; and an operating rod 64 extending from the push button 62 toward the inside of the upper case 10. A protrusion 65 for supporting the spring 63 is formed at the lower surface of the push button 62. About half of the spring 63 is wound around the protrusion 65. A pair of restraining rods 66 are formed at the lower surface of the push button 62 and located in the switch-accommodating portion 27. Each restraining rod 66 has a hook 67 at its lower end. Provided at the base 27a of the switch-accommodating portion 27 are holes, through which the restraining rods 66 pass and progress under the base 27a. When the push button 62 is pressed down by the pressure of the user's palm holding the grip part 20, the spring 63 is compressed and the operating rod 64 also moves inside the upper case 10 through the slit 14.

[0033] A PCB (printed circuit board) 17a, on which a control unit and circuits for controlling the operation of the hair dryer are mounted, is installed inside the upper case 10. Means for sensing the movement of the operating rod 64 of the power switch 60 is installed on the PCB 17a. In this embodiment, the sensing means is a photo coupler PC. When the photo coupler PC senses the operating rod 64 moving downward together with the push button 62 pressed down, the control unit controls the hair dryer to operate in response to the signals from the photo coupler PC. When the force of pressing the push button 62 is removed, the operating rod 64 moves up away from the photo coupler PC and returns to its original position by the elastic restoring force of the spring 63. Accordingly, the power is automatically shut off and the operation of the hair dryer is stopped. At this time, because the hooks 67 of the restraining rods 66 are hitched by the switch-accommodating portion 27, the power switch 60 can stop exactly at its original position and is prevented from being separated from the switch-accommodating portion 27. In addition, at the inside the upper case 10, there is mounted another PCB 17b that is electrically connected to the manipulating buttons 11 for selecting the operating modes of the hair dryer.

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[0034] The lamp 13, which is located at the rear portion of the upper case 10, is electrically connected to the PCB 17a. The lamp 13 interlocks with the power switch 60 and emits a light during the operation of the hair dryer. The light from the lamp 13 is radiated outside through a transparent cover 28 provided at the grip part 20, thereby indicating the operating state of the hair dryer to the user.

[0035] Referring to Figs. 2 and 4, screw-holes 70a are formed at the lower case 70 for screw-coupling the lower case 70 to the upper case 10. A hollow cylindrical blowing pipe 71 is coupled to the lower case 70. The opened top of the blowing pipe 71 is faced with the filter 12 of the upper case 10. The upper end portion of the blowing pipe 71 is forcedly inserted into the lower case 70, and the remaining portion of the blowing pipe 71 extends downward outside the lower case 70. Thus, the direction of the user's palm gripping the grip part 20 is identical to the direction of wind blown from the blowing pipe 71. Preferably, the diameter of the blowing pipe 71 becomes narrower from the top to the bottom to facilitate the airflow exhausted from the air outlet of the blowing pipe 71. The blowing pipe 71 may be made from synthetic resins similar to the upper and lower cases 10 and 70, but is certainly not limited thereto.

[0036] The blowing pipe 71 provides a space in which most of the main components are installed. More specifically, a blocking grill 72 is mounted in the blowing pipe 71 near the air outlet so as to prevent extraneous substances such as dust or hair from entering into the blowing pipe 71. Preferably, the blocking grill 72 is coated with ceramics containing tourmaline or iron oxide and the like such that far-infrared ray or anion can be emitted when using the hair dryer. Above the blocking grill 72, there are provided a heater 73a for diffusing heat in high temperature and a coil bracket 73b of a heat resistant insulator. The coils of the heater 73a are supported by the coil bracket 73b. A motor 74 is located above the coil bracket 73b, while a fan 75 is located above the motor 74. The driving force of the motor 74 is transmitted to the fan 75 so that the fan 75 draws the ambient air into the upper and lower cases 10 and 70 and blows the air to the outside through the blowing pipe 71. Between the motor 74 and the fan 75, there is provided a supporting bracket 76 for supporting the motor 74 and the fan 75.

[0037] The supporting bracket 76 includes: a circular rim 76a; several arms 76b extending from the inner surface of the rim 76a toward the center of the rim 76a; and a boss 76c positioned at the center of the rim 76a and supported by the arms 76b. The rim 76a is fixed to the upper end of the blowing pipe 71 by screws. Spaces are provided between the arms 76b, through which ambient air drawn by the fan 75 can flow toward the heater 73a. A driving shaft of the motor 74 is coupled to the fan 75 through the boss 76c.

[0038] The blowing pipe 71 further contains a hollow cylindrical shielding tube 77. The shielding tube 77 accommodates the fan 75, the motor 74, the heater 73a and the coil bracket 73b. The shielding tube 77 consists of an inner layer 77a and an outer layer 77b, which is attached to the outer surface of the inner layer 77a. In order to prevent the lower case 70 and the blowing pipe 71 made of synthetic resins from being deformed due to the heat generated by the motor 74 and the heater 73a, the inner layer 77a of the shielding tube 77 may be made from a thermal-resistant mica material, but is certainly not limited thereto. In order to prevent the leakage of the electromagnetic waves from the motor 74 and the heater 73a, the outer layer 77b of the shielding tube 77 may be made from silicon steel material, but is certainly not limited thereto.

[0039] A far-infrared ray and anion generating device 78 is mounted inside the lower case 70. As shown in Fig. 7, the far-infrared ray and anion generating device 78 includes: a quartz tube 78a coated with ceramics containing tourmaline or iron oxide; a ceramic base 78c provided in the quartz tube 78a; and a heating coil 78b wound around the ceramic base 78c. Preferably, the far-infrared ray and anion generating device 78 is positioned near the heater 73a.

[0040] As shown in Fig. 8, the lower case 70 has a cable-receiving recess 79 at its lower surface. When the hair dryer is not in use, a cable C is wound around the cases 10 and 70 or the blowing pipe 71. Further, a front end portion of the cable C, which is adjacent to a plug, is fitted into the cable-receiving recess 79. To fix the cable C more securely, two opposing protrusions 79a are formed over the recess 79. The gap between the opposing protrusions 79a is slightly smaller than the thickness of the cable C.

[0041] Fig. 9 is a partial exploded perspective view showing an embodiment of an auxiliary blowing unit, which is detachably mounted to the blowing pipe 71. As shown in the drawing, an auxiliary blowing unit 80 includes: a cylindrical main body 82 having an opened top and a closed bottom; a plurality of air holes 84 distributed widely on the bottom of the main body 82; and a plurality of comb-teeth 86 extending downward from the lower surface of the main body 82. Each comb-tooth 86 is hollow and an air passage 86a is formed at the comb-tooth 86 by cutting a portion of the comb-tooth 86 longitudinally. The air passage 86a communicates with the air hole 84. Accordingly, the air and the far-infrared ray or anion exhausted out of the blowing pipe 71 and the auxiliary blowing unit 80 can be evenly spread to the hair and the scalp. Also, the hair drying and combing can be performed simultaneously by using the comb-teeth 86.

[0042] To couple the auxiliary blowing unit 80 to the blowing pipe 71, a groove 71a is formed around the outer circumference near the air outlet of the blowing pipe 71. Also, a protrusion 82a is formed corresponding to the groove 71 a along the inner peripheral surface of the main body 82 of the auxiliary blowing unit 80. Two knobs 89 are formed at the side wall of the main body 82 and are opposite to each other. The knob 89 can be elastically deformed from the side wall of the main body 82 by slits 88 formed near the knob 89 at the side wall. The slits 88

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enable the side wall of the main body 82 to be expanded partially when coupling or separating the auxiliary blowing unit 80 to or from the blowing pipe 71. Also, the knobs 89 facilitate the separation of the auxiliary blowing unit 80 from the blowing pipe 71.

[0043] Fig. 10 is a partial exploded perspective view showing another embodiment of an auxiliary blowing unit. As shown in the drawing, an auxiliary blowing unit 90 includes a main body 92 having an opened top with a circular cross-section and an opened bottom with a rectangular cross-section. The main body 92 becomes narrower as it goes from the top to the bottom. A plurality of air holes 94 is formed in a concentrated manner at the side wall of the main body 92. Such a structure is useful when concentrating the air on a certain region of the hair or the scalp.

[0044] To couple the auxiliary blowing unit 90 to the blowing pipe 71, a protrusion 92a is formed, which corresponds to the groove 71 a, along the inner peripheral surface of the main body 92 of the auxiliary blowing unit 90. Two knobs 99 are formed at the side wall of the main body 92, which are opposite to each other. The knob 99 can be elastically deformed from the side wall of the main body 92 by slits 98 formed near the knob 99 at the side wall. The slits 98 enable the side wall of the main body 92 to be expanded partially when coupling or separating the auxiliary blowing unit 90 to or from the blowing pipe 71. Also, the knobs 99 facilitate the separation of the auxiliary blowing unit 90 from the blowing pipe 71.

[0045] The auxiliary blowing unit 90 further includes a comb member 96. The comb member 96 has an opened top with a rectangular cross-section and a closed bottom. A plurality of comb-teeth 96a extends downward from the lower surface of the comb member 96. To couple the comb member 96 to the main body 92, a groove 92b is formed around the outer surface near the bottom of the main body 92. Further, a protrusion 96b is formed, which corresponds to the groove 92b, along the inner surface of the side wall of the comb member 96. Two knobs 96d are formed at the side wall of the comb member 96 and are opposite to each other. The knob 96d can be elastically deformed from the side wall of the comb member 96 by slits 96c, which are formed near the knob 96d at the side wall. The slits 96c enable the side wall of the comb member 96 to be expanded partially when coupling or separating the comb member 96 to or from the main body 92. Also, the knobs 96d facilitate the separation of the comb member 96 from the main body 92. The air and the far-infrared ray or anion exhausted through the air holes 94 of the main body 92 are concentrated on a certain region of the hair or the scalp. The hair drying and the combing can be performed simultaneously by using the comb-teeth 96a.

[0046] Fig. 11 is a control circuit diagram of the hair dryer, which is constructed according to the present invention. As shown in the drawing, while AC power is supplied through power lines 100a and 100b, a control unit 102 checks if the photo coupler PC senses the movement of the power switch 60.

[0047] If the power switch 60 is pushed down and the photo coupler PC senses the movement of the power switch 60, the control unit 102 lights the lamp 13 to indicate the operating state. According to the operations of switches SW_1, SW_2 and SW_3 of the manipulating buttons 11, the control unit 102 determines whether to blow soft or strong wind and to generate heat or not. Then, it selectively operates the photo couplers PC_1 and PC_2 and a transistor TR.

[0048] For blowing soft wind, the control unit 102 operates the photo coupler PC_2 and a triac Q_2 interlocking with the photo couple PC_2. Then, AC power is supplied to the motor 74 at a low current via a resistance R and a bridge diode BD so that the motor 74 is driven at a low speed. On the contrary, if the control unit 102 operates the photo coupler PC_1 and a triac Q_1 interlocking with the photo coupler PC_1, AC power is supplied to the motor 74 at a high current via the resistance R and the bridge diode BD. This is so that the motor 74 is driven at a high speed, thereby blowing strong wind.

To discharge heat with the soft or strong wind, the control unit 102 operates the transistor TR and a relay RY so that AC power is supplied to the heater 73a to generate heat.

[0049] As shown in Fig. 12, two power lines 100a and 100b for supplying power to the heater 73a and the motor 74 are arranged in parallel and apart from each other. Also, the directions of the electric current through the power lines 100a and 100b are opposite to each other so that a magnetic field is canceled around the power lines 100a and 100b due to the phase-inverse. Since such a magnetic field cancel effect is well known in the art, the explanation thereof is omitted herein. The gap of two power lines 100a and 100b is 3~7mm (preferably, 5mm). Also, the heater coils 73a are wired on both the power lines 100a and 100b. In the same manner, an electromagnetic wave is hardly generated around the heater coils 73a because of the phase-inverse. An experiment shows that the electromagnetic wave of only 10~40mG is generated from the heater 73a of the hair dryer according to the present invention.

[0050] Fig. 13 is a perspective view showing an operating state of the hair dryer of the present invention. As shown in the drawing, if the user puts the handle 40 between his/her fingers and holds the grip part 20 in his/her palm, the power switch 60 (refer to Fig. 1) is pushed down due to the pressure of the palm holding the grip part 20 and the power is supplied to the hair dryer. While holding the grip part 20, if the user selectively pushes one of the manipulating buttons 11 with the ends of the fingar, then soft or strong wind with/without heat is generated and blown out of the hair dryer, as explained above. When the user releases the grip part 20 from his/her palm, the power switch 60 is automatically turned off. Accordingly, although the manipulating buttons 11 are pushed down, the hair dryer does not operate.

[0051] As explained above in detail, the hair dryer ac-

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cording to the present invention is configured so that the direction of a palm of a user gripping the hair dryer is same as the direction of wind exhausted from the hair dryer. Accordingly, the direction of the wind can be easily changed with a small movement of the user's wrist. Thus, it is very convenient for the user to dry or style his/her own hair and the strain in the wrist can be minimized. Moreover, the user can freely rotate a handle in any direction so as to place the handle between the fingers in a convenient position according to his/her desire when drying or styling the hair.

[0052] Since the power switch is automatically turned off when the user releases the hair dryer from his/her palm, any unnecessary electricity consumption can be reduced and accidents such as electric shocks can be prevented.

[0053] By mounting an auxiliary blowing unit having a plurality of air holes and comb-teeth to a blowing pipe, the hair drying and combing can be performed simultaneously. In addition, soft or strong wind with/without heat, far-infrared ray and anion can be provided evenly or concentratedly on the hair or the scalp.

[0054] Also, the electromagnetic wave generated from a motor or a heater can be blocked from leaking so as not to inflict any damage to human body.

[0055] While the present invention has been described and illustrated with respect to a preferred embodiment of the invention, it will be apparent to those skilled in the art that variations and modifications are possible without deviating from the broad principles and teachings of the present invention which should be limited solely by the scope of the claims appended hereto.

Claims

1. A hair dryer, comprising:

   a case;
   a blowing pipe coupled to the case and having an air outlet at one end;
   a heater for heating air disposed inside the case;
   a fan for blowing air toward the heater and the air outlet, the fan being disposed inside the case;
   a grip part configured to be gripped by a human hand, the grip part being coupled to a portion of the case opposite to the air outlet; and
   a handle mounted to the grip part so as to prevent the grip part from being released from the hand.

2. The hair dryer as recited in Claim 1, wherein a filter is mounted to a portion of the case facing the fan and a plurality of air intakes are formed at the grip part adjacent to the filter.

3. The hair dryer as recited in Claim 2, wherein a space is formed at the grip part above the filter for removing extraneous substances from the filter and a cover is detachably coupled to the grip part to open and close the space, the handle being installed on the cover.

4. The hair dryer as recited in Claim 3, wherein the handle includes a vertical plate configured to be fitted between two fingers of the hand, a horizontal upper plate formed at the top of the vertical plate to prevent the vertical plate from slipping out of the hand, and a horizontal lower plate formed at the bottom of the vertical plate, and wherein a depressed portion is formed at the cover in which the lower plate of the handle is rotatably seated.

5. The hair dryer as recited in Claim 4, wherein a cylindrical holder is located below the cover and connected to the lower plate of the handle so as to be rotated together with the handle, the holder having at least one supporting plate sectioned partially from the side wall of the holder to be deformed elastically from the side wall and a latching convex formed at the inner surface of the supporting plate, and wherein a circular loop is formed at the lower surface of the cover and surrounded by the holder, the loop having a plurality of recesses arranged radially along the overall outer periphery of the loop, wherein when the handle is rotated, the latching convex of the supporting plate is selectively fitted in one of the recesses of the loop.

6. The hair dryer as recited in Claim 1, wherein a power switch for controlling the power supplied to the hair dryer and at least one manipulating button for selecting the operating mode are provided at the case, the power switch being pressed down by the pressure of the hand holding the grip part.

7. The hair dryer as recited in Claim 6, wherein a switch-accommodating portion for accommodating the power switch is formed at the grip part, the power switch includes a push button exposed above the grip part, a spring for biasing the push button above the grip part, an operating rod extending from the push button toward the inside of the case, and a restraining rod extending from the push button toward the inside of the switch-accommodating portion, the restraining rod having a hook at one end, and means for sensing the movement of the operating rod and a control unit for controlling the operation of the hair dryer in response to signals from the means for sensing the operating rod are provided inside the case.

8. The hair dryer as recited in Claim 1, wherein a grill for blocking extraneous substances from entering into the blowing pipe is mounted at a position near the air outlet inside the blowing pipe, the grill being coated with ceramics containing tourmaline or iron oxide.

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9. The hair dryer as recited in Claim 1, wherein a far-infrared ray and anion generating device is mounted inside the case, the far-infrared ray and anion generating device including a quartz tube coated with ceramics containing tourmaline or iron oxide, a ceramic base provided in the quartz tube, and a heating coil wound around the ceramic base.

10. The hair dryer as recited in Claim 1, wherein the hair dryer further comprises an auxiliary blowing unit detachably mounted to the blowing pipe near the air outlet, the auxiliary blowing unit having a plurality of air holes.

11. The hair dryer as recited in Claim 10, wherein the auxiliary blowing unit includes a main body having an opened top and a closed bottom having the air holes, and a plurality of comb-teeth extending from the lower surface of the bottom of the main body, each comb-tooth being hollow and provided with an air passage communicating with the air hole by cutting a portion of the comb-tooth longitudinally.

12. The hair dryer as recited in Claim 10, wherein the auxiliary blowing unit includes a main body having an opened top and an opened bottom, the main body becoming narrower as it goes from the top to the bottom, and a comb member detachably mounted to the bottom of the main body and having a plurality of comb-teeth, and wherein the air holes are formed concentratedly at the side wall of the main body.

13. The hair dryer as recited in Claim 12, wherein either a groove or a protrusion is formed around the outer surface near the bottom of the main body, and the other is formed along the inner surface of the side wall of the comb member, the protrusion being forcedly fitted in the groove, and wherein at least one knob is partially sectioned from the side wall of the comb member to be deformed elastically from the side wall.

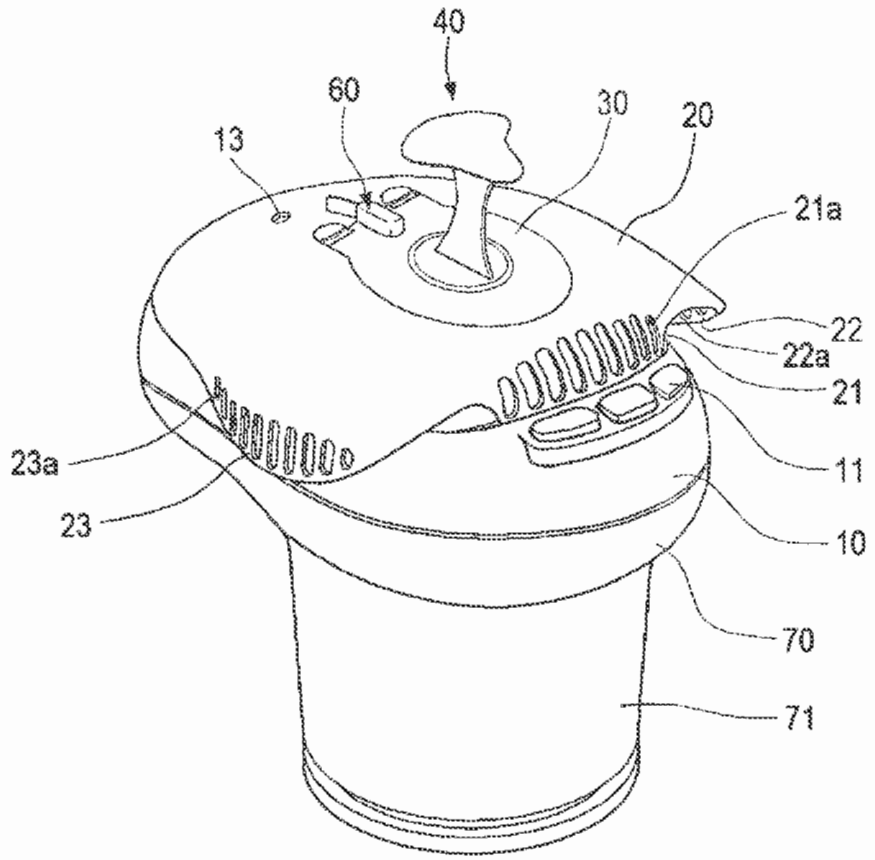
14. The hair dryer as recited in Claim 1, wherein two power lines for supplying the power to the hair dryer are provided in the case and arranged parallel apart from each other by 3~7mm, the electric current passing through the power lines in an opposite direction to each other.

15. The hair dryer as recited in Claim 14, wherein the heater includes coils and the coils are wired on both power lines.

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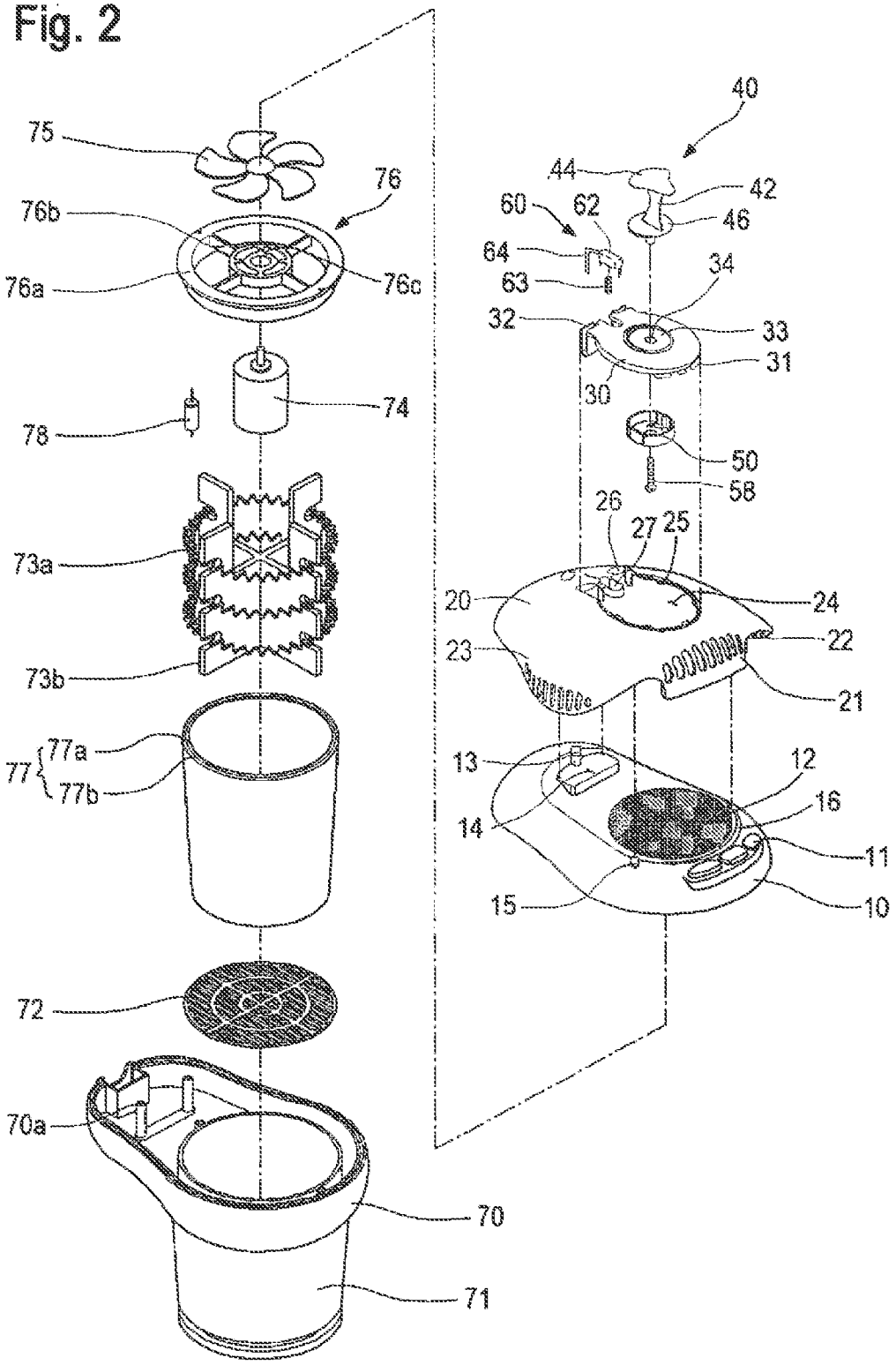
Fig. 1



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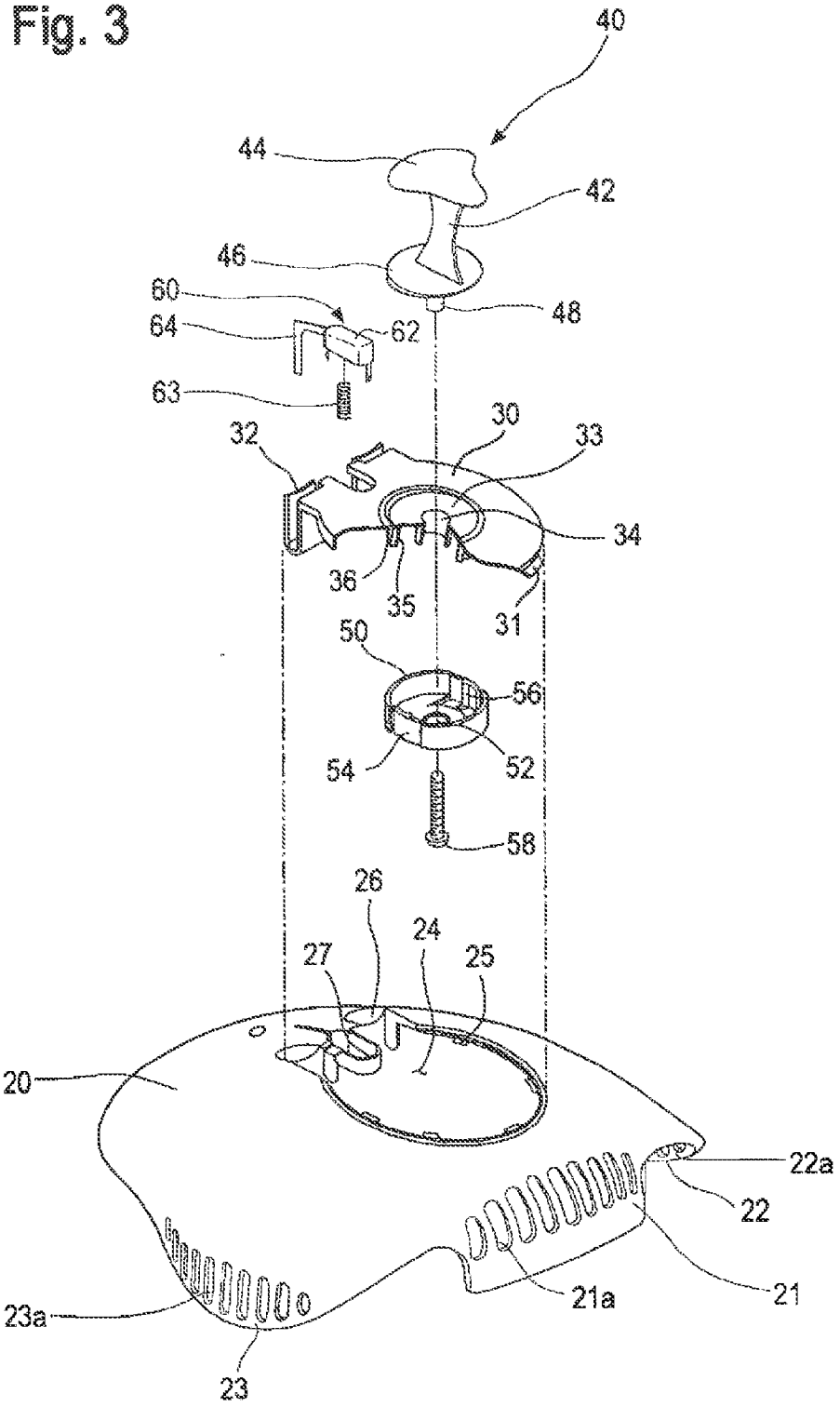
Fig. 2



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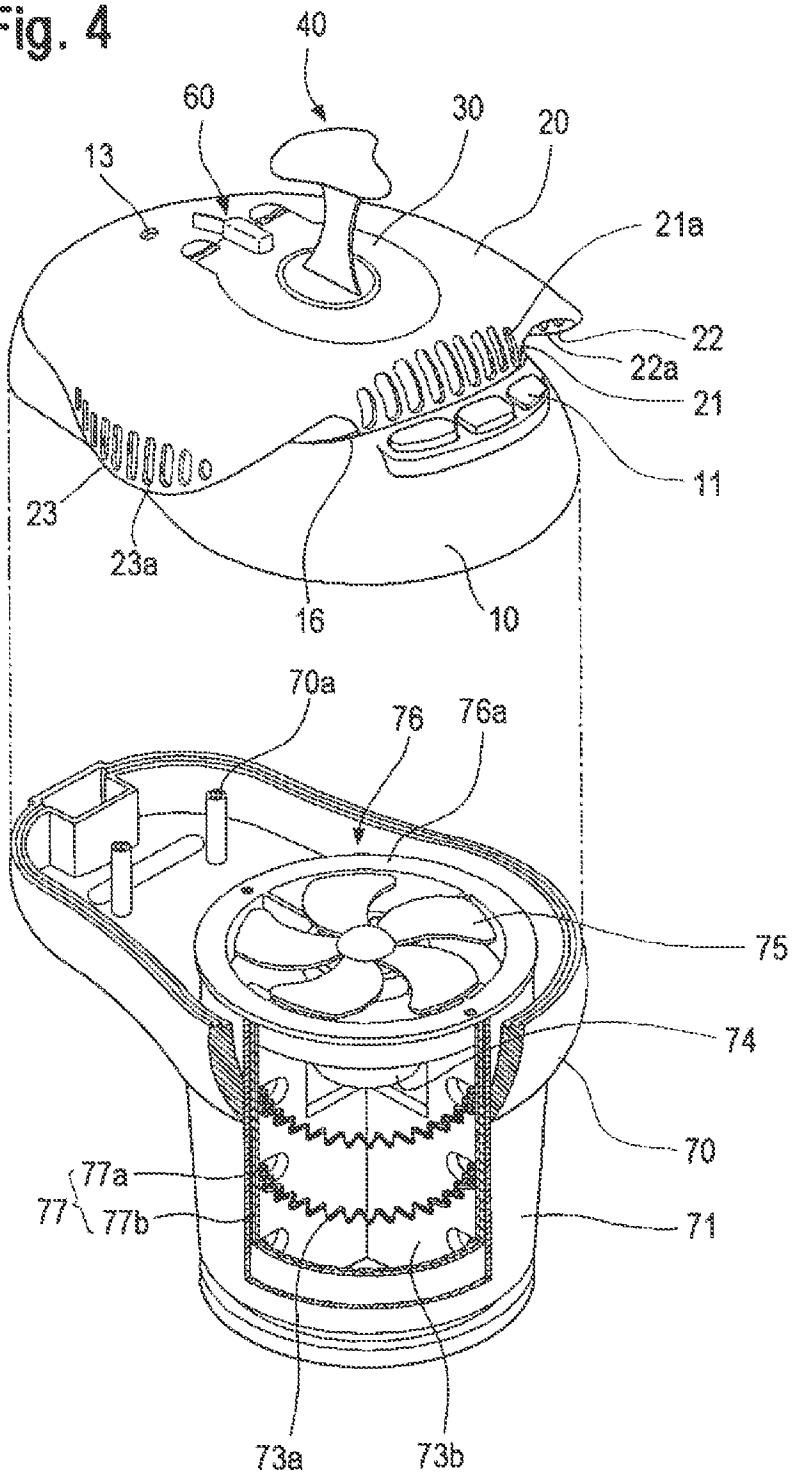
Fig. 3



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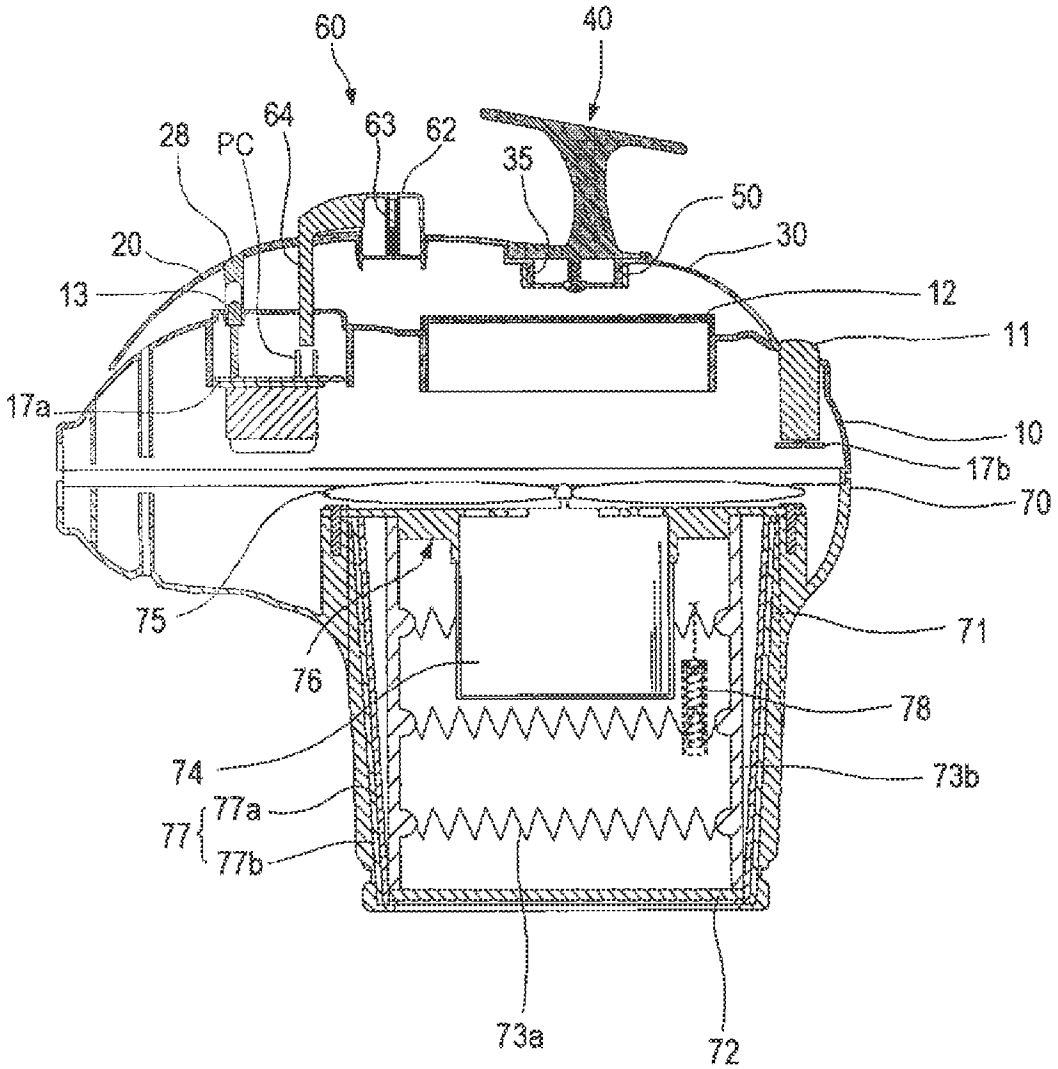
Fig. 4



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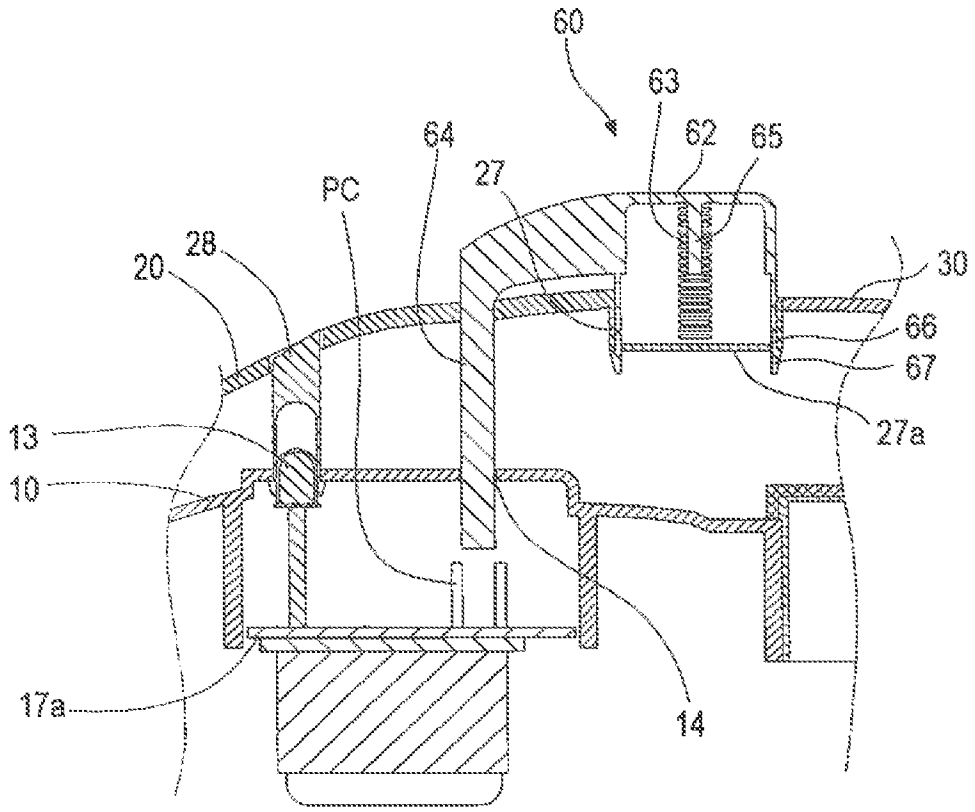
Fig. 5



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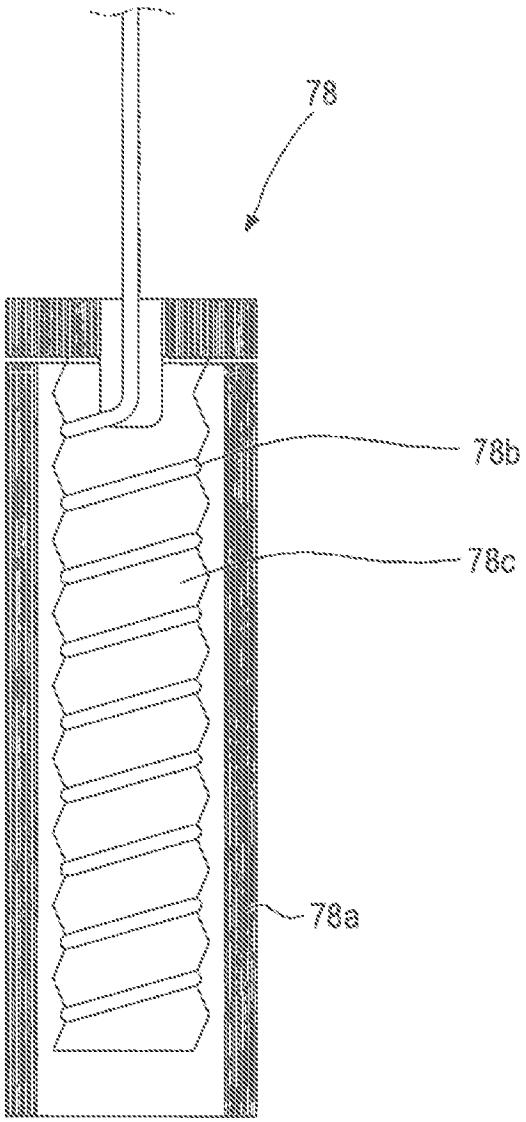
Fig. 6



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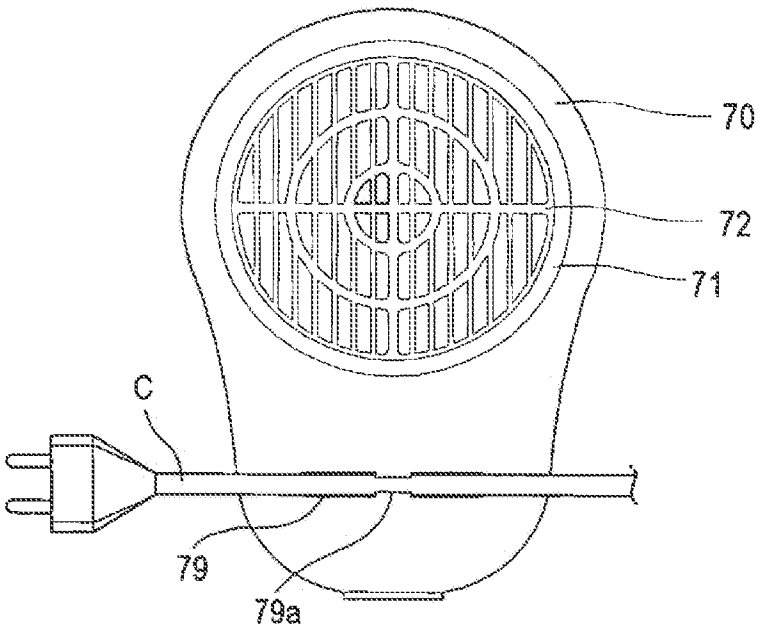
Fig. 7



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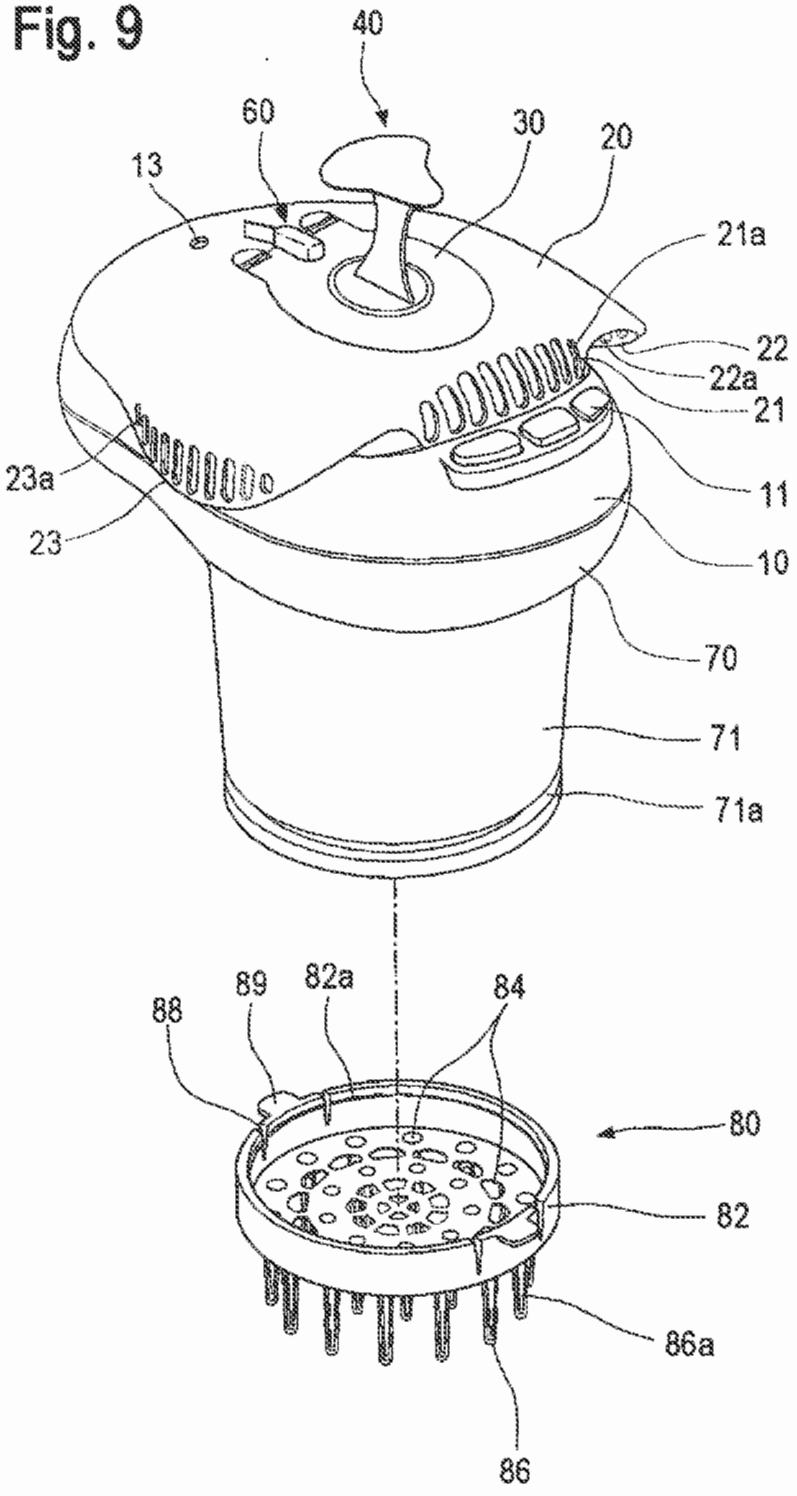
Fig. 8



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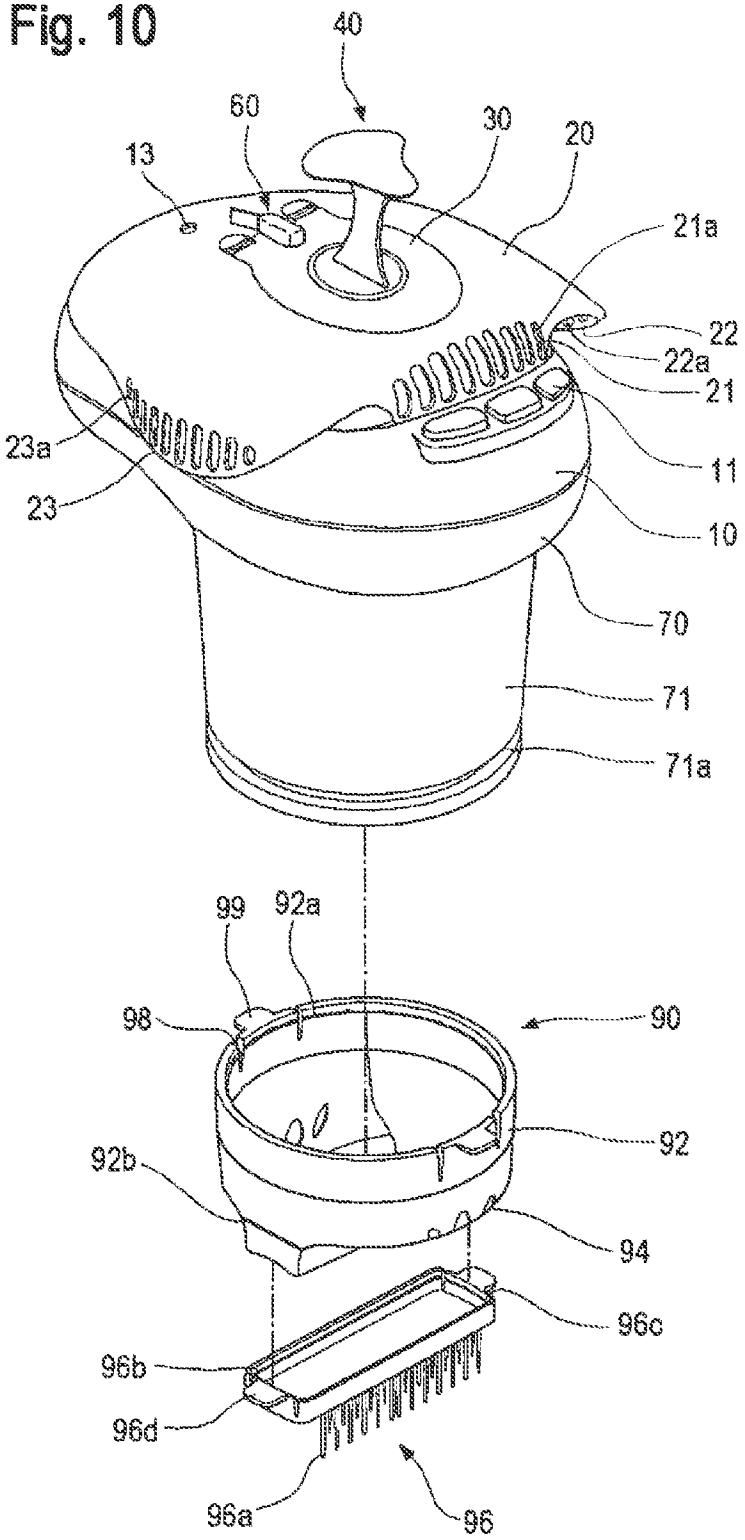
Fig. 9



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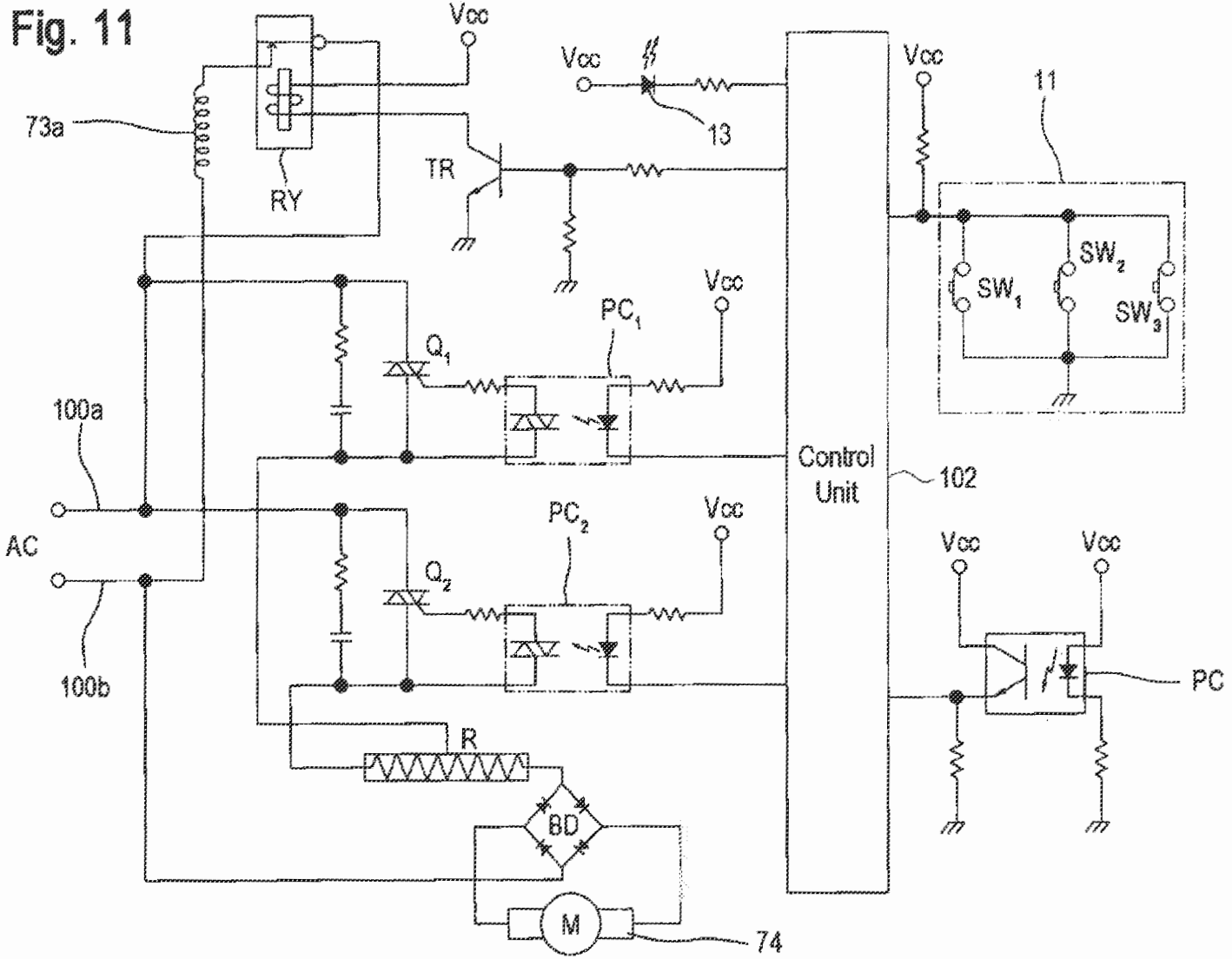
Fig. 10



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Fig. 11



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Fig. 12

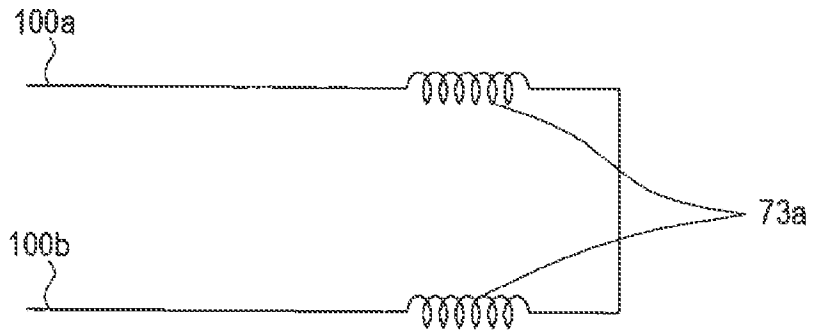
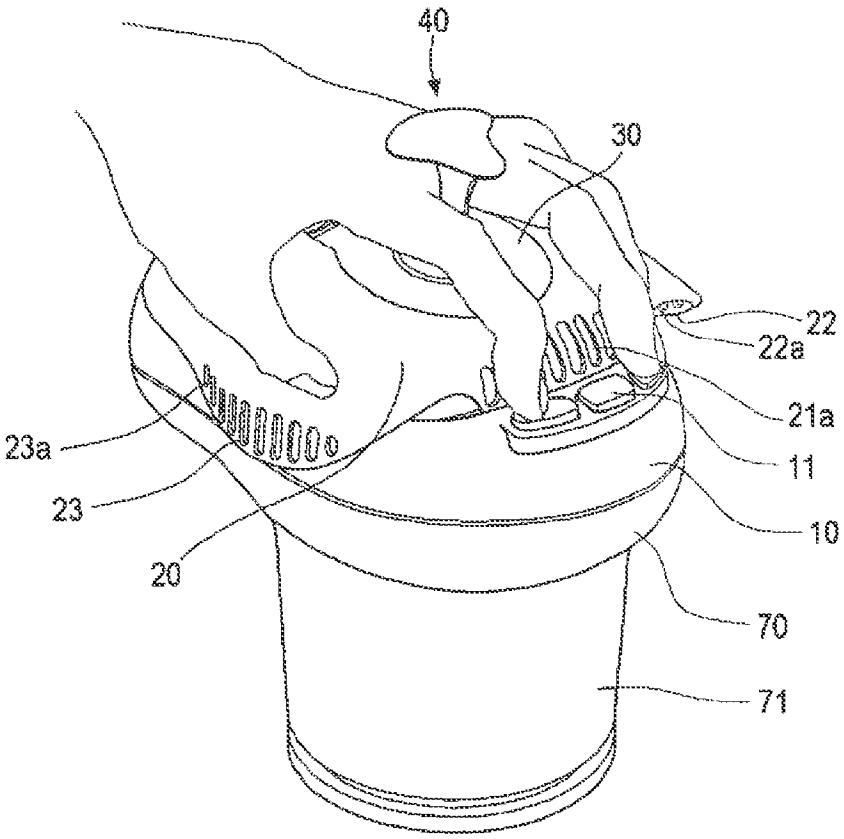


Fig. 13



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European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 02 1745

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	GB 2 226 953 A (* DIXONS GROUP PLC) 18 July 1990 (1990-07-18) * page 1, line 1 - line 3 * * page 1, line 17 - line 24 * * page 2, line 2 - line 8 * * page 2, line 19 - line 22 * * page 4, line 8 - line 11 * * page 7, line 14 - page 8, line 1; claims; figures *	1,2	A45D20/10
X	US 3 955 065 A (CHAMBON ET AL) 4 May 1976 (1976-05-04) * column 1, line 15 - line 38 * * column 4, line 35 - line 48; claims; figures *	1,2	
X	GB 2 331 011 A (PASQUALE * PROTO) 12 May 1999 (1999-05-12) * the whole document *	1,2	
A	EP 1 070 459 A (BENEVELLI, GIULIO) 24 January 2001 (2001-01-24) * paragraphs [0001], [0010] *	1-15	TECHNICAL FIELDS SEARCHED (IPC) A45D
A	US 5 058 193 A (APPIERTO ET AL) 15 October 1991 (1991-10-15) * column 1, line 6 - line 50 *	1-15	
D,A	US 6 715 215 B1 (YEUNG KI CHEONG) 6 April 2004 (2004-04-06) * the whole document *	1-15	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	7 March 2006	Acerbis, G

CATEGORY OF CITED DOCUMENTS

X particularly relevant if taken alone
Y particularly relevant if combined with another document of the same category
A technological background
O non-written disclosure
P intermediate document

T theory or principle underlying the invention
E earlier patent document, but published on, or after the filing date
D document cited in the application
L document cited for other reasons

& member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

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BNSDOCID: <EP_____1661481A1_1_>

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 02 1746

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

07-03-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2226953 A	18-07-1990	NONE	
US 3955065 A	04-05-1976	BE 819484 A1	03-03-1975
		DE 2443306 A1	13-03-1975
		DE 7430449 U	03-03-1977
		ES 429917 A1	16-09-1976
		FR 2242947 A1	04-04-1975
		GB 1481230 A	27-07-1977
		IT 1019240 B	10-11-1977
		NL 7412041 A	13-03-1975
GB 2331011 A	12-05-1999	NONE	
EP 1070459 A	24-01-2001	AU 4722100 A	25-01-2001
		BR 0003304 A	13-03-2001
		CA 2313764 A1	20-01-2001
		IT RE990074 A1	22-01-2001
		MA 25151 A1	02-04-2001
		TR 200002133 A2	21-02-2001
		US 6317998 B1	20-11-2001
		ZA 200003553 A	06-02-2001
US 5058193 A	15-10-1991	IT 217023 Z2	29-10-1991
US 6715215 B1	06-04-2004	CN 1531888 A	29-09-2004
		GB 2399751 A	29-09-2004

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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EPODOC: <EP 1661481A1 1 >

DESCRIPTION CN200973446

[0001]

Technical field

[0002]

The utility model to design a hair dryer, especially a hair dryer of the functions of the electronic components are integrated in the new design of a modular structure of the circuit board, having a group with fast, time-saving equipment effectiveness.

[0003]

BACKGROUND

[0004]

Hair dryer in each home are essential small appliances, each appliance manufacturers and according to consumer demand, design and production of a variety of hair dryers products.

A hair dryer or quasi-patent lot, such as "Buck structural improvements hairdryer" patent China Taiwan Utility Model February 1, 2005 Announcement No. M256103, comprises a group composed of two half-butt each consisting of a hollow body, and its internal set The fan motor assembly element, the ceramic heater and the pressure relief device and other equipment, characterized in that: one end of the heating heat-conductive film coating layer coating the outer surface extending into the appropriate length, is divided into a contact, then the power supply line, and in the the other end of the conductive coating extends the set to stay another contact to pick out lines connected to the diode end of the motor, to step-down operation via the appropriate length of the conductive film coating impedance, so that the heating element and the pressure-relief device hairdryer do with the body structure design, to supply security and simplify the structure of the assembly intended use.

China Taiwan Utility Model Patent No. M243986 "hair dryer structural improvement" patent September 21, 2004 announcement by the shell, handle, protective nets, multi-stage switch, fan, electric devices and high-temperature protection circuit, characterized in that : Set the front blower housing with protective net to the heat of the light transparent conductive material disposed at the center of the protective net with LED lamp, a variable used to place a variety of colors LED light that can be sent, this variable optical LED and switch circuit is connected and set switches with different segments of color, light, etc. issued through the safety net.

Common hair dryer from the above arrangement, the common hair dryers generally includes a handle having a hollow shell, a hollow portion of the motor, fan, heating element such as a hotline or ceramic heating elements, etc., including support hotline way electric alloy wire mica insulation sheet, electric alloy wire line is wound on mica insulation sheet, and set the multi-stage switch on the grip, multi-stage switching circuit connected to the motor, heater, motor and with the step-down circuit connection, and have to comply with appliance specifications used overload protection, over temperature protection and other functions of electronic components switching circuit, and the latest multi-function hair dryers and increased anion point discharge, other functional needs of electronic components such as high-voltage capacitors.

Common hair dryers its foregoing components were all using rivets, screws, welding and other combinations, have the disadvantage linked group of assembly time consuming.

More common is the biggest drawback of existing technology exists, is the industry's urgent need to overcome the problem.

[0005]

Utility Model Content

[0006]

The purpose of this utility model is proposed assembly saves time and effort when a hair dryer structure.

[0007]

Improvement in the structure of the utility model provides a hair dryer comprising a housing, inside the shell has: a motor, a fan connected to the motor, electric components, multi-switches, functions of the electronic component, characterized in that: said housing further has a substrate, the functional integration of electronic components on a substrate, the substrate further includes: quick connector with multi-stage switch connected with quick connector connected to the motor, and electric components connected quick connector.

[0008]

Structural improvements proposed by the utility model hair dryer, of course, easy to make and assembled quickly and save time, in order to reach a group with fast saves assembly time.

[0009]

Brief Description

[0010]

Figure 1 is a cross-sectional view of a preferred embodiment of the utility model.

[0011]

The main components of Legend]

[0012]

(A) a housing (2) motor (3) Fan (4) Electric Components

[0013]

(5) multi-stage switch (6) functions of the electronic components (7) of the substrate

[0014]

(80) (81) (82) Quick Coupler

[0015]

Embodiment

[0016]

The utility model preferred embodiment See Figure 1, the figure shows the utility model is mainly composed of the housing 1, motor 2, the fan 3, 4, 5, and features multi-stage switching electronic components constitute electric components 6, electric assembly 4 for hotline the ceramic heater or the like.

The utility model is characterized by improved: The housing 1 has a substrate 7, the functional integration of electronic components on a substrate 7 6; function as electronic components 6: In order to meet the specifications used appliances include overload, over-temperature protection function electronic components switch circuit, anion point discharge, other functional needs of electronic components such as high-voltage capacitors.

The utility model can also have a quick connector for connecting external components, such as connecting the power supply side of the multi-stage switch 5 quick connectors 80, 81 connected to the motor 2 quick connector, the connection of electric assembly 4 quick connector 82.

The utility model hairdryer integrate the various functions of electronic components 6 on a circuit board 7, substrate 7 is able to quickly link quick connector modular structure of each external component 8, of course, easier and assembled quickly and save time, so to reach group with fast saves assembly time.

Claims

[0001]

Improvement in the structure of a hair dryer comprising a housing, inside the shell comprising: a motor (2), the motor (2) connected to a fan (3), heating elements (4), multi-switch (5), the function of electronic components (6), characterized in that: said housing further has a base, the integration of the functions of the electronic components on a substrate, the substrate further comprising: a quick connector with a multi-stage switch (5) is connected (80), the motor Quick Connector (2) quick coupling connection (8, with the electric component (4) is connected (82).

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PN - CN200973446Y Y 20071114

TI - Improved structure for blower

AB - The utility model relates to an improved air blower structure, more particularly an air blower structure easy for assembling. The utility model includes a shell, which consists of a motor (2), a fan (3) connected with the motor (2), an electrothermal unit (4), a multisection switch (5), a functional electronic unit (6) and a base plate, on which the functional electronic unit is integrated thereon. The base plate also includes a quick coupling (80) connected with the multisection switch (5), a quick coupling (81) connected with the motor (2) and a quick coupling (82) connected with the electrothermal unit (4). The utility model has the advantages of easy, quick and time-saving combination and assembly.

PA - QIN WENLONG [CN]

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AN - 2008-A02258

TI - Hair drier, has motor placed in shell, fan coupled with motor, functional electron component integrated on base plate that containing three fast tie-in respectively coupled with multi section switch, motor and electro thermal component

AB - NOVELTY :
The drier has a motor (2) placed in a shell, fan coupled with the motor, and a functional electron component (6) integrated on a base plate. The plate has a fast tie-in (80) coupled with a multi section switch (5), another fast tie-in (81) coupled with the motor, and a third fast tie-in (82) coupled with an electro thermal component (4).
- USE :
Hair drier.
- ADVANTAGE :
The hair drier saves time, and is easy and fast to assemble.
- DESCRIPTION OF DRAWINGS :
The drawing shows a sectional view of a hair drier.
2 : Motor
4 : Electro thermal component
5 : Multi section switch
6 : Functional electron component
80-82 : Fast tie-in

PN - CN200973446Y Y 20071114 DW200801

PA - (TAIW-I) TAI W

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[19] 中华人民共和国国家知识产权局

[51] Int. Cl.
A45D 20/10 (2006.01)
A45D 20/12 (2006.01)

[12] 实用新型专利说明书

专利号 ZL 200520112349.0

[45] 授权公告日 2007 年 11 月 14 日

[11] 授权公告号 CN 200973446Y

[22] 申请日 2005.7.8

[21] 申请号 200520112349.0

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[74] 专利代理机构 北京汇泽知识产权代理有限公司

代理人 赵 军

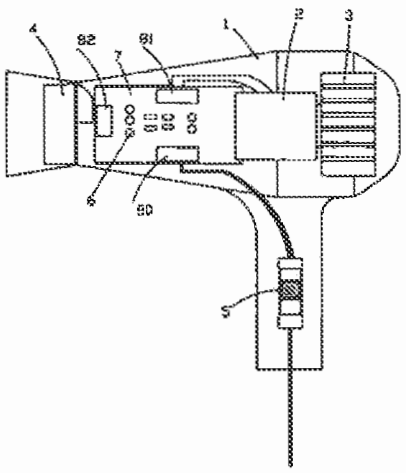
权利要求书 1 页 说明书 3 页 附图 1 页

[54] 实用新型名称

吹风机结构改良

[57] 摘要

本实用新型涉及一种吹风机结构改良，特别是指一种易于装配的吹风机结构，其包括壳体，在壳体之内具有：马达(2)、与马达(2)连接的风扇(3)、电热组件(4)、多段开关(5)、功能电子组件(6)，在所述壳体内还具有一基板，所述的功能电子组件整合在基板之上，该基板还包括：与多段开关(5)连接的快速接头(80)，与马达(2)连接的快速接头(81)，与电热组件(4)连接的快速接头(82)。本实用新型的优点是：使组合装配当然变得容易、快速而节省时间。



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BNSDOCID: <CN_____200973446Y_1_>

1．一种吹风机结构改良，包括壳体，在壳体之内具有：马达（2）、与马达（2）连接的风扇（3）、电热组件（4）、多段开关（5）、功能电子组件（6），其特征在于：在所述壳体内还具有一基板，所述的功能电子组件整合在基板之上，该基板还包括：与多段开关（5）连接的快速接头（80），与马达（2）连接的快速接头（81），与电热组件（4）连接的快速接头（82）。

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吹风机结构改良

技术领域

本实用新型设计一种吹风机，特别是指吹风机的各功能电子组件都整合在一个电路基板上的模块化结构的崭新设计，具有组配快速、节省装备时间的功效。

背景技术

在每个家庭中吹风机都是不可或缺的小家电，各家电厂商并依消费者的需求，设计生产了多样化的吹风机产品。吹风机或准的专利很多，如 2005 年 02 月 01 日公告的中国台湾实用新型第 M256103 号「吹风机的降压结构改良」专利，包含有一组由两半角相互对接组成的中空本体，及其内部置装的风扇马达、陶瓷发热体和降压装置等组装构件，其特征在于：发热体一端涂装的导电热膜涂层延伸到外环面适当长度，分设一接点，供接电源线，而于导电涂层延伸的另一端设留另一接点以接出极线到马达的二极管端连接，经由适当长度的导电膜涂层阻抗达到降压操作，使降压装置与吹风机的发热体做同体结构设计，达到供电安全及结构简化的组装使用目的。2004 年 09 月 21 日公告的中国台湾实用新型专利第 M243986 号「吹风机结构改良」专利，由壳体、手把、防护网、多段式开关、风扇、电热装置及高温保护电路组成，其特征在于：吹风机壳体前端设置有防护网，以耐热的透明导光材料制成，在防护网的圆心处设置有 LED 灯座，用来放置可发出的多种颜色的可变光 LED，将此可变光 LED 与开关电路相连

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接并设定不同段开关所配合的颜色，而透过防护网发出光线等。由以上常见的吹风机结构可知，常见的吹风机大体上包括有一个具有握把的中空外壳，中空部设置马达、风扇、发热体如电热线或陶瓷发热体等，电热线方式包括支撑电热合金线的云母绝缘片，电热合金线系绕在云母绝缘片上，并在握把上设置多段开关，多段开关的线路连结到马达、发热体，马达并与降压电路连结，并具有为符合家电规范所使用的过载保护、过温保护等功能性电子组件开关电路，而最新的多功能吹风机并增加了负离子尖端放电、高压电容等其它功能性需求的电子组件。常见的吹风机其前述各组件均系利用铆钉、螺丝、焊接等方式组合，具有连结组装配费时费工的缺点。以上即为现行常用技术存在的最大缺陷，是业界急待克服的难题。

实用新型内容

本实用新型的目的是提出一种组装省时省力的吹风机结构。

本实用新型提出的吹风机结构改良，包括壳体，在壳体之内具有：马达、与马达连接的风扇、电热组件、多段开关、功能电子组件，其特征在于：在所述壳体内还具有一基板，所述的功能电子组件整合在基板之上，该基板还包括：与多段开关连接的快速接头，与马达连接的快速接头，与电热组件连接的快速接头。

本实用新型提出的吹风机结构改良，使组合装配当然变得容易、迅速而节省时间，以此达成组配快速节省装配时间。

附图说明

图 1 是本实用新型优选实施例剖视图。

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【主要组件符号说明】

（1）壳体 （2）马达 （3）风扇 （4）电热组件

（5）多段开关 （6）功能电子组件 （7）基板

（80）（81）（82）快速接头

具体实施方式

本实用新型优选实施例请参阅图 1，由图可知本实用新型主要由壳体 1、马达 2、风扇 3、电热组件 4、多段开关 5 及功能电子组件 6 构成，电热组件 4 可为电热线或陶瓷发热体等。本实用新型改良的特征在于：该壳体 1 内具有一基板 7，各功能电子组件 6 整合在基板 7 上；功能电子组件 6 如：为符合家电规范所使用的过载包括、过温保护等功能性电子组件开关电路、负离子尖端放电、高压电容等其它功能性需求的电子组件。本实用新型可另具有用于连接外部组件的快速接头，例如连接电源侧多段开关 5 的快速接头 80、连接马达 2 的快速接头 81、连接电热组件 4 的快速接头 82。本实用新型将吹风机各功能电子组件 6 整合在一个电路基板 7 上，基板 7 是能够快速连结各外部组件的快速接头 8 的模块化结构，组合装配当然变得容易、迅速而节省时间，如此达成组配快速节省装配时间。

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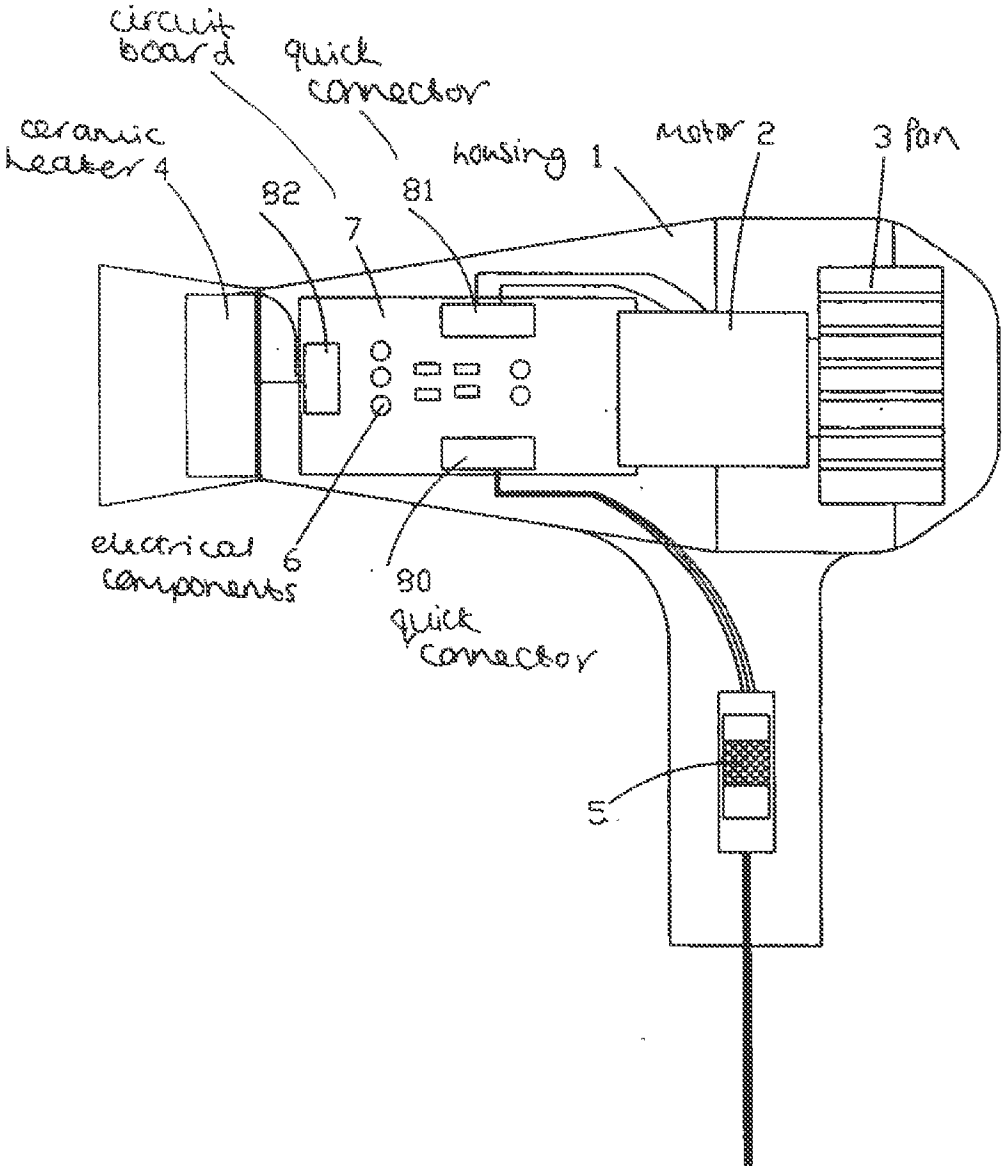


图 1

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(12) UK Patent Application (19) GB (11) 2464736 (13) A

(43) Date of A Publication: 28.04.2010

(21) Application No: 0819612.3

(22) Date of Filing: 25.10.2008

(51) INT CL:
F04D 29/70 (2006.01) *F04D 25/08* (2006.01)
F04D 29/44 (2006.01) *F04D 29/54* (2006.01)
F04F 5/20 (2006.01)

(56) Documents Cited:
JP 560167897 A US 6073881 A
US 5681685 A US 3885891 A

(58) Field of Search:
UK CL (Edition X) F1C, F1E
INT CL F04D, F04F
Other: EPODOC, WPI

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Frederic Nicolas
Peter David Gammack

(74) Agent and/or Address for Service:
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Intellectual Property Department, Tetbury Hill, MALMESBURY, Wiltshire, SN16 0RP, United Kingdom

(54) Title of the Invention: **A fan**
Abstract Title: **Fan with a filter**

(57) A fan assembly comprises a nozzle 1, means 30 for creating an air flow through the nozzle 1, and a filter 26 for removing particulates from the air flow. The nozzle 1 comprises an interior passage 10, a mouth 12 for receiving the air flow from the interior passage 10, and a Coanda surface 14 located adjacent the mouth 12 and over which the mouth 12 is arranged to direct the air flow. A filter 26 may be provided upstream and/or downstream of the means 30 for creating an air flow. The nozzle 1 may extend annularly, and/or in a loop or circle, about an axis x-x to define an opening through which air may be drawn by the air ejected from the nozzle 1. The means 30 for creating an air flow may be a DC motor driven mixed flow impeller.

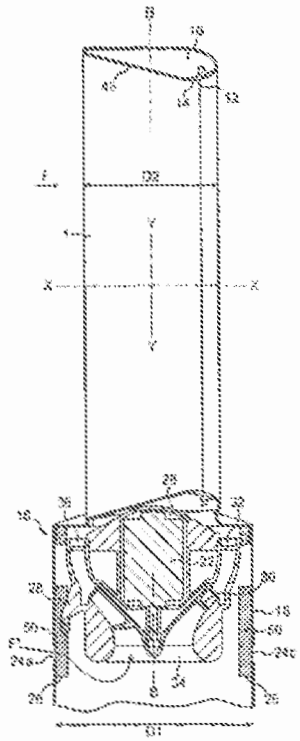


FIG. 3

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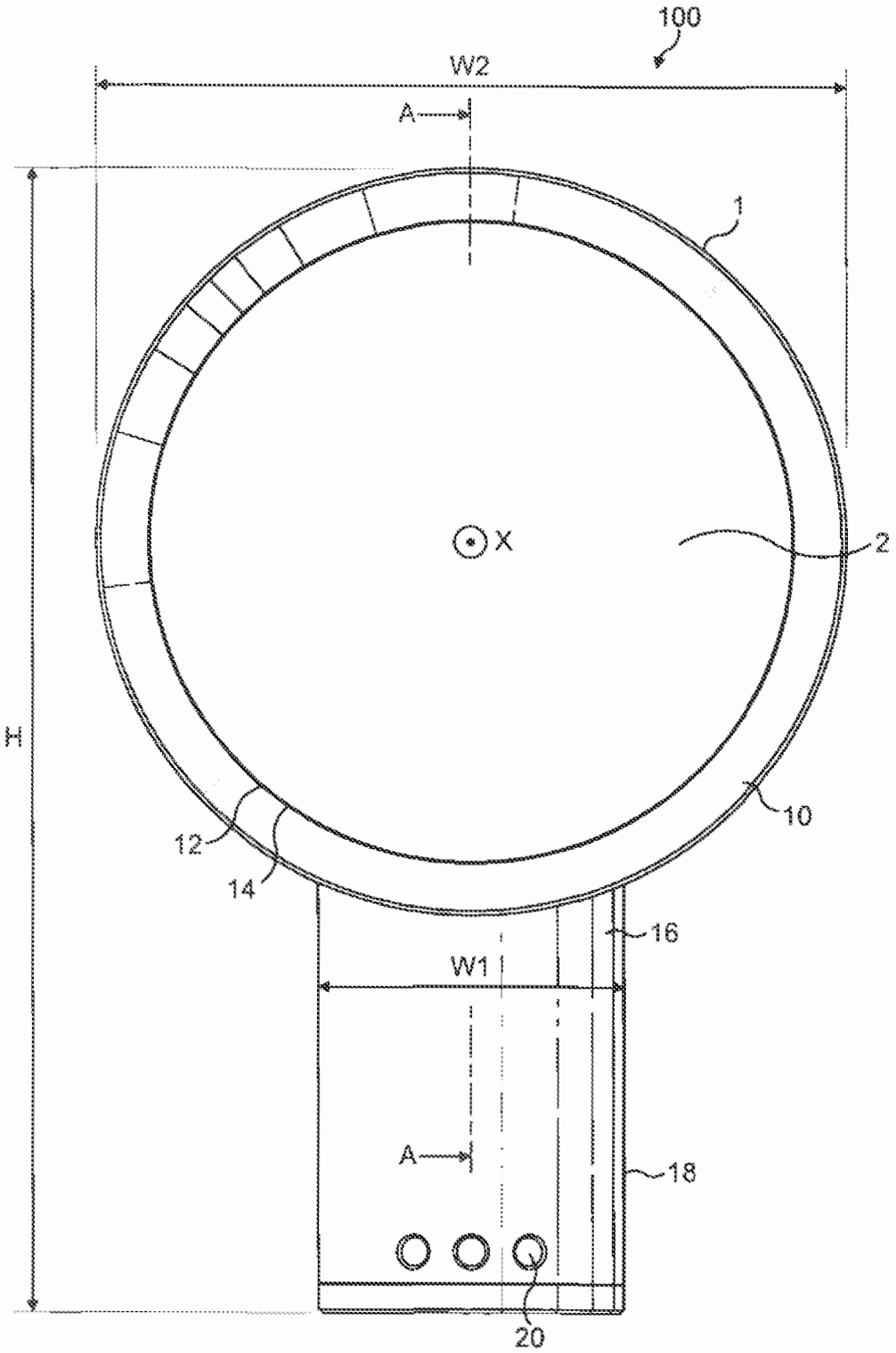


FIG. 1

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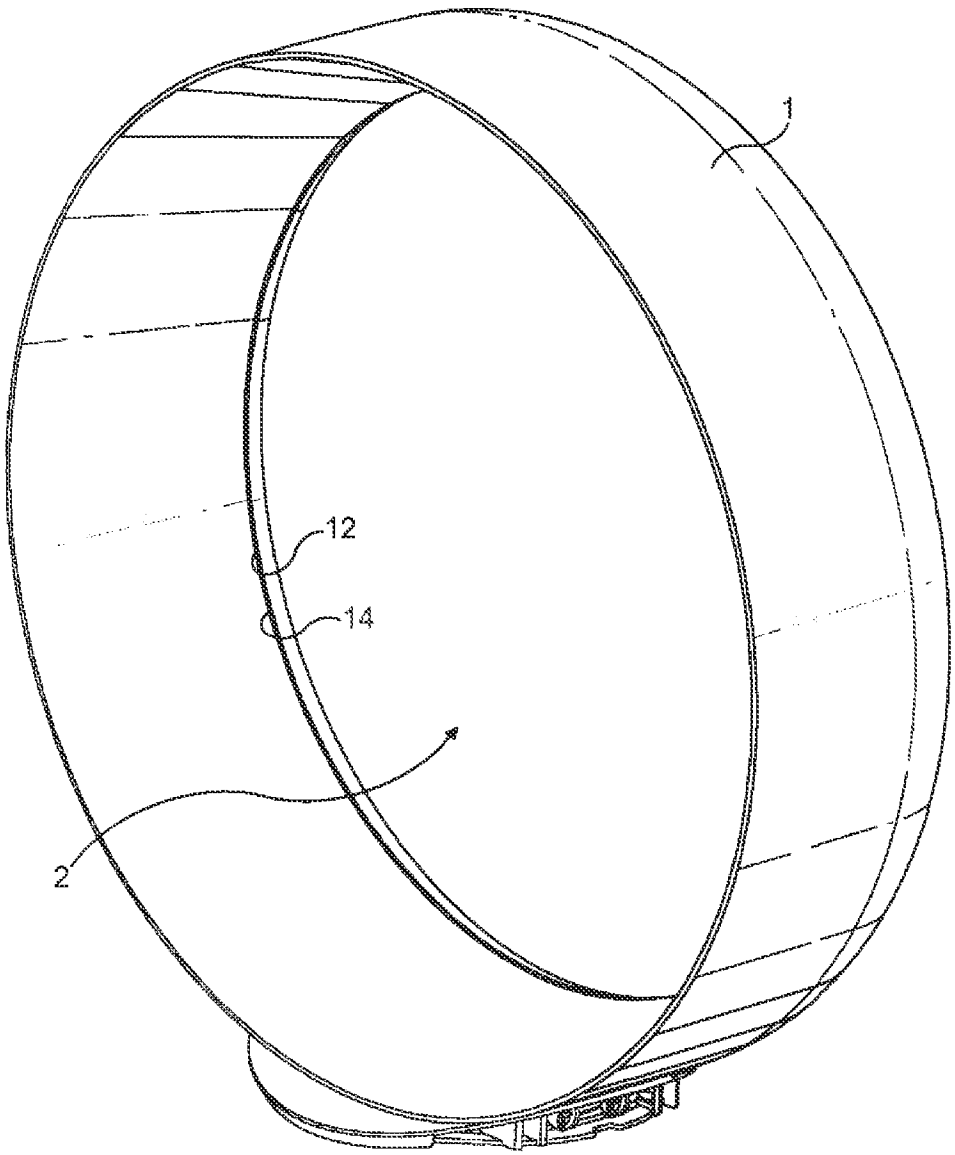


FIG. 2

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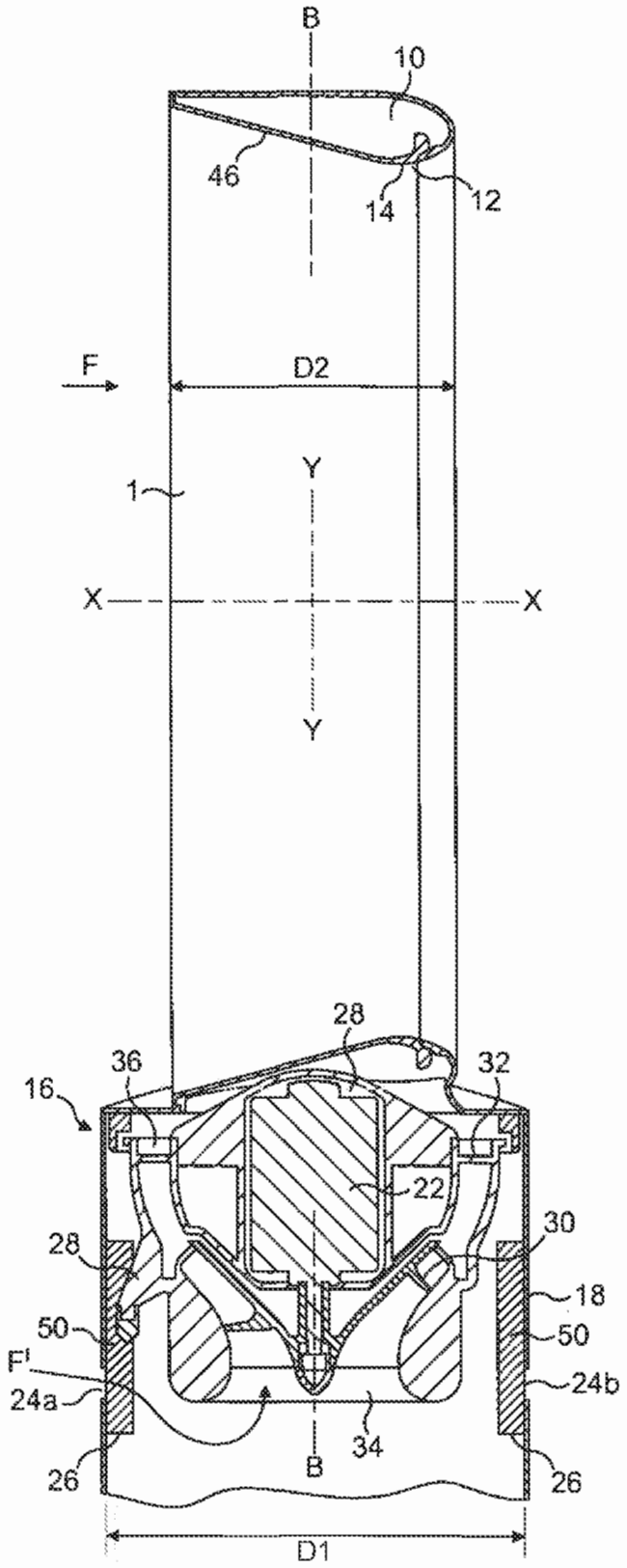


FIG. 3

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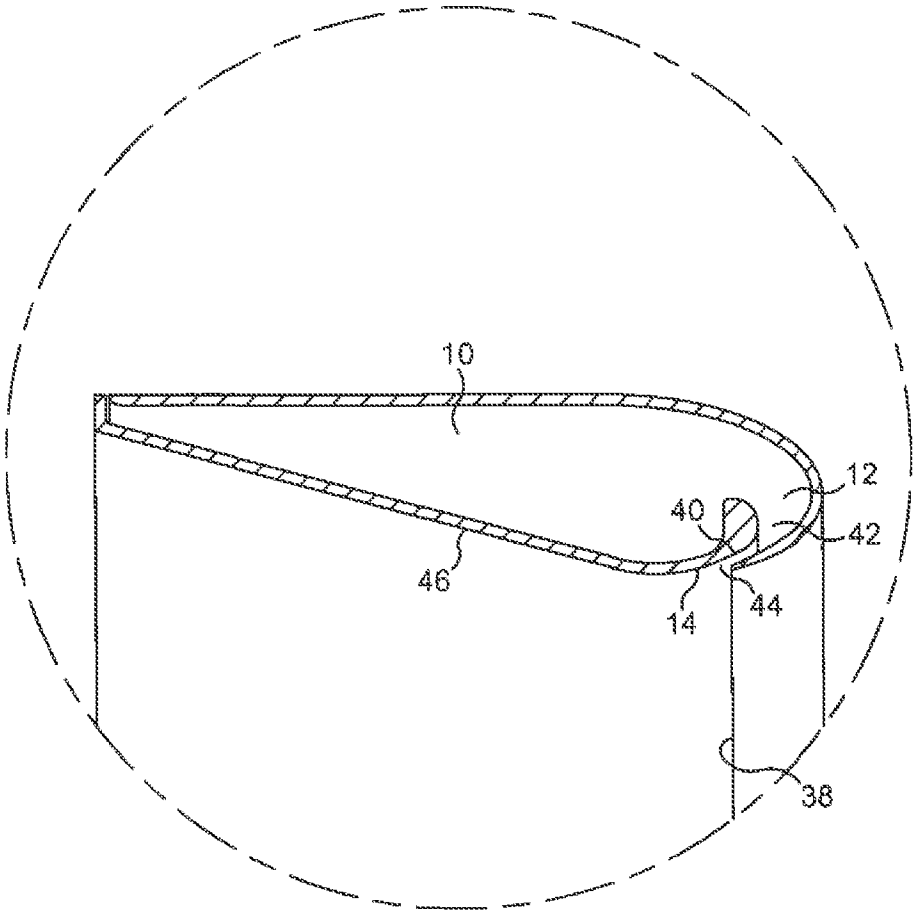


FIG. 4

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22 10 09

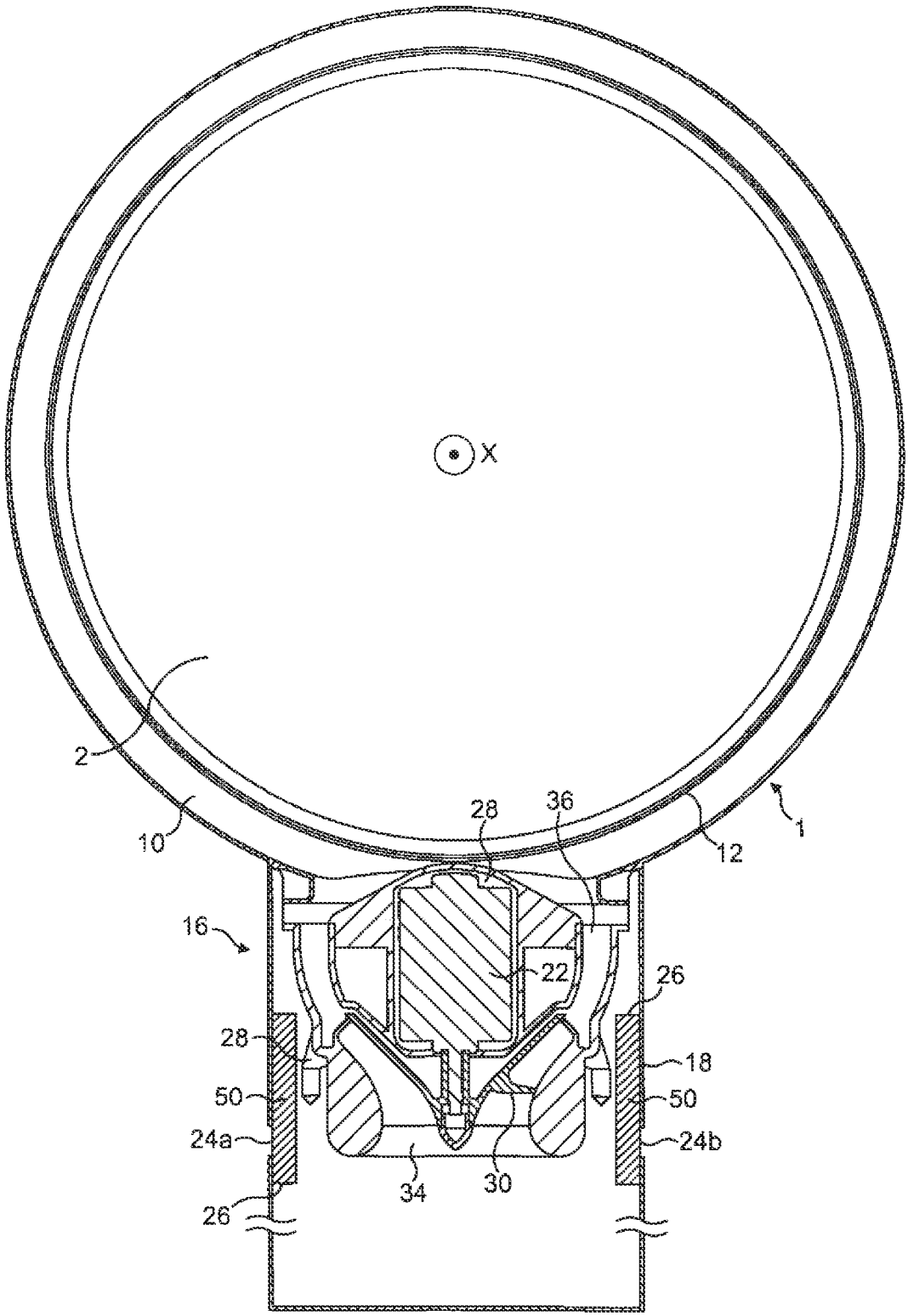


FIG. 5

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22 10 09

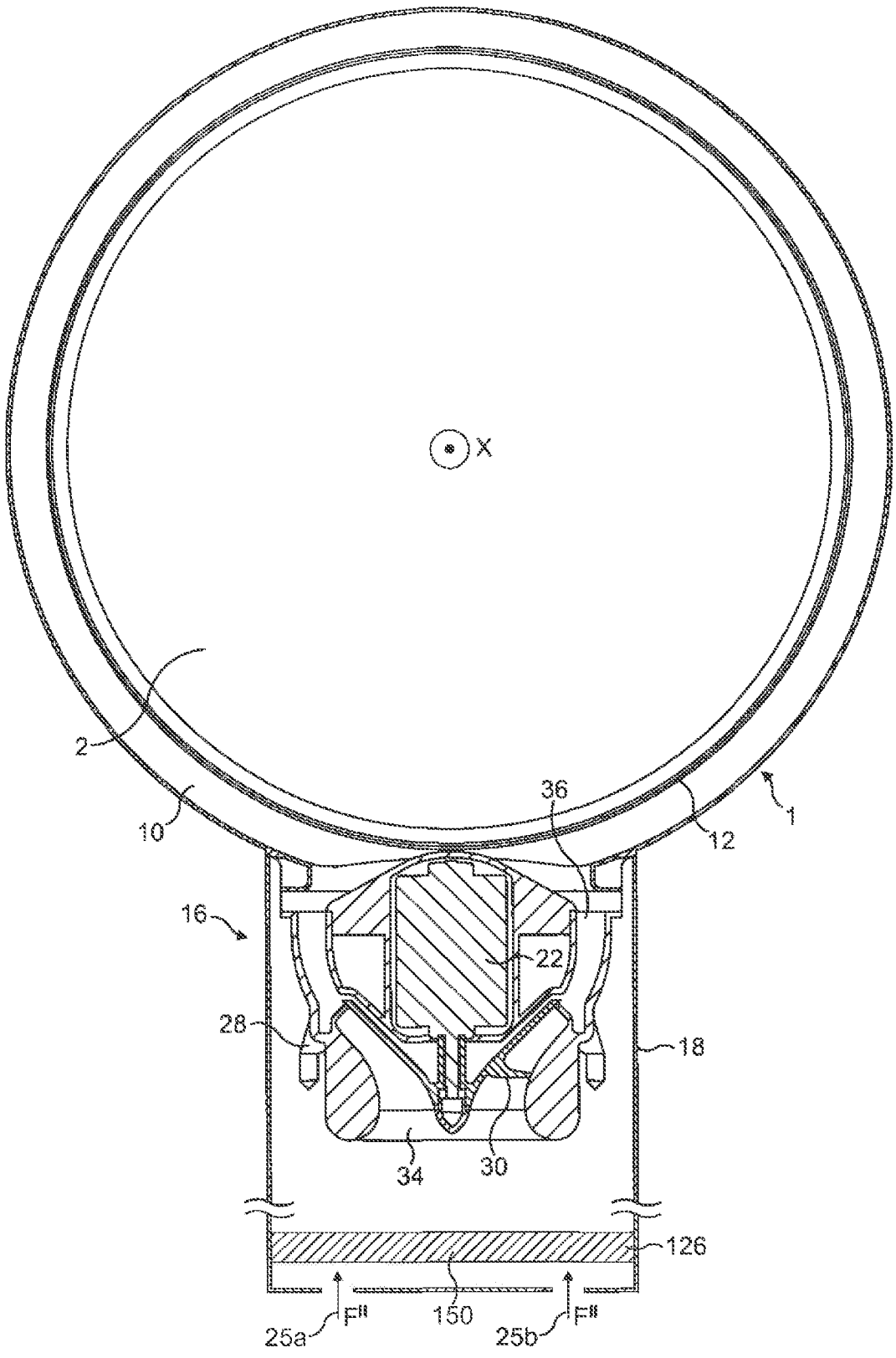


FIG. 6

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22 10 09

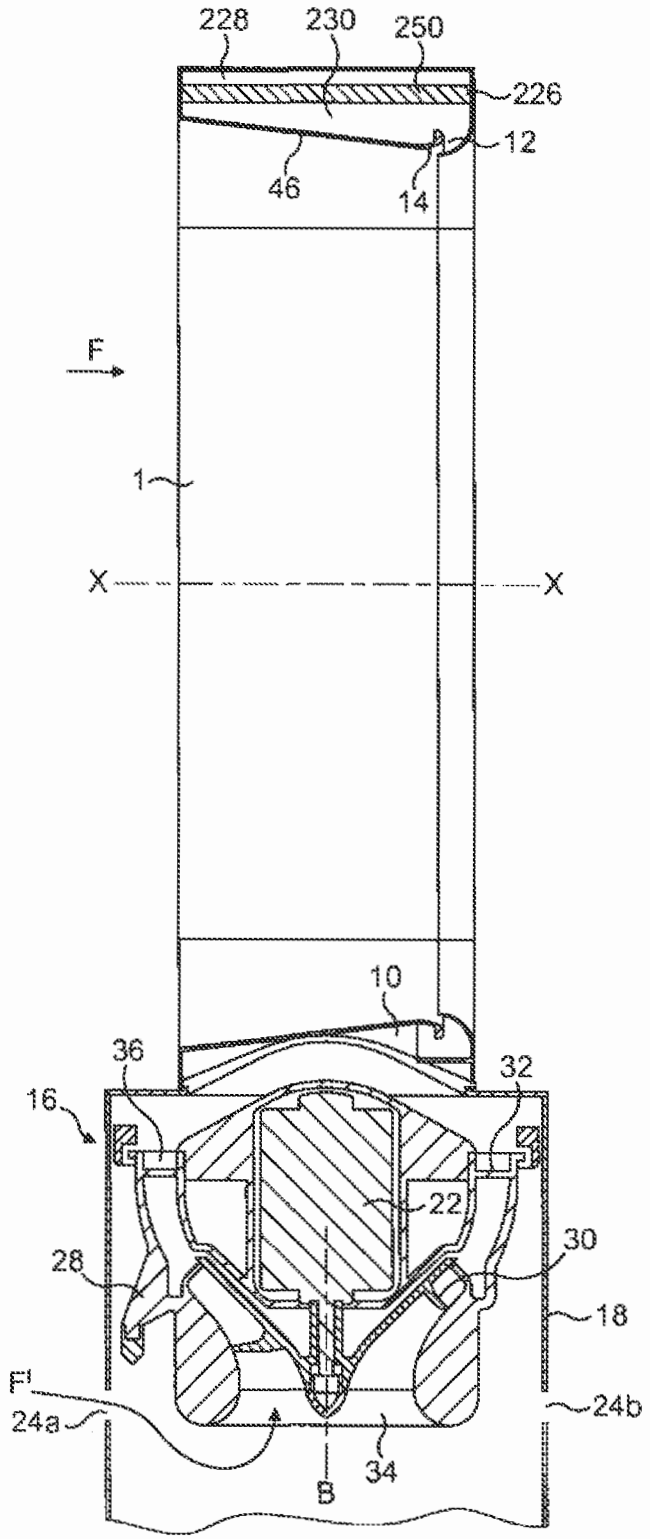


FIG. 7

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22 10 09

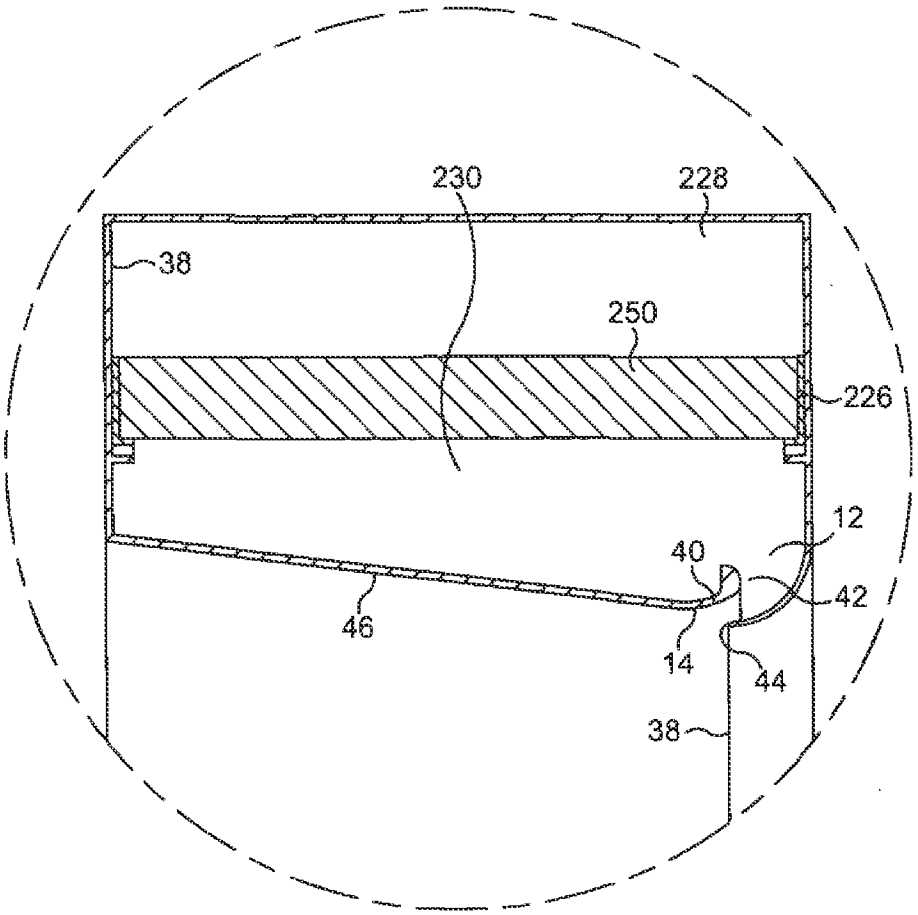


FIG. 8

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A Fan

The present invention relates to a fan appliance. Particularly, but not exclusively, the present invention relates to a domestic fan, such as a desk fan, for creating air circulation and air current in a room, in an office or other domestic environment.

A number of types of domestic fan are known. It is common for a conventional fan to include a single set of blades or vanes mounted for rotation about an axis, and driving apparatus mounted about the axis for rotating the set of blades. Domestic fans are available in a variety of sizes and diameters, for example, a ceiling fan can be at least 1 m in diameter and is usually mounted in a suspended manner from the ceiling and positioned to provide a downward flow of air and cooling throughout a room.

Desk fans, on the other hand, are often around 30 cm in diameter and are usually free standing and portable. In standard desk fan arrangements the single set of blades is positioned close to the user and the rotation of the fan blades provides a forward flow of air current in a room or into a part of a room, and towards the user. Other types of fan can be attached to the floor or mounted on a wall. The movement and circulation of the air creates a so called 'wind chill' or breeze and, as a result, the user experiences a cooling effect as heat is dissipated through convection and evaporation. Fans such as that disclosed in USD 103,476 are suitable for standing on a desk or a table. US 2,620,127 discloses a dual purpose fan suitable for use either mounted in a window or as a portable desk fan.

In a domestic environment it is desirable for appliances to be as small and compact as possible. US 1,767,060 describes a desk fan with an oscillating function that aims to provide an air circulation equivalent to two or more prior art fans. In a domestic environment it is undesirable for parts to project from the appliance, or for the user to be able to touch any moving parts of the fan, such as the blades. USD 103,476 includes a cage around the blades. Other types of fan or circulator are described in US 2,488,467,

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US 2,433,795 and JP 56-167897. The fan of US 2,433,795 has spiral slots in a rotating shroud instead of fan blades.

Some of the above prior art arrangements have safety features such as a cage or shroud around the blades to protect a user from injuring himself on the moving parts of the fan. However, caged blade parts can be difficult to clean and the movement of blades through air can be noisy and disturbing in a home or office environment.

A disadvantage of certain of the prior art arrangements is that the air flow produced by the fan is not felt uniformly by the user due to variations across the blade surface or across the outward facing surface of the fan. Uneven or 'choppy' air flow can be felt as a series of pulses or blasts of air. The uneven air flow may move and disturb dust and debris located in the vicinity of the fan, causing it to be projected towards the user. Furthermore, this type of air flow can cause lightweight items, such as papers or stationery, placed close to the fan to move or become dislodged from their location. This is disruptive in a home or office environment.

A further disadvantage is that the cooling effect created by the fan diminishes with distance from the user. This means the fan must be placed in close proximity to the user in order for the user to receive the benefit of the fan. Locating fans such as those described above close to a user is not always possible as the bulky shape and structure mean that the fan occupies a significant amount of the user's work space area. In the particular case of a fan placed on, or close to, a desk the fan body reduces the area available for paperwork, a computer or other office equipment.

The shape and structure of a fan at a desk not only reduces the working area available to a user but can block natural light (or light from artificial sources) from reaching the desk area. A well lit desk area is desirable for close work and for reading. In addition, a well lit area can reduce eye strain and the related health problems that may result from prolonged periods working in reduced light levels.

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The present invention seeks to provide an improved fan assembly which obviates disadvantages of the prior art. It is an object of the present invention to provide a fan assembly which, in use, generates air flow at an even rate over the emission output area of the fan. It is another object to provide an improved fan assembly whereby a user at a distance from the fan feels an improved air flow, improved air quality and improved cooling effect in comparison to prior art fans.

According to the invention, there is provided a fan assembly for creating an air current, the fan assembly comprising a nozzle, means for creating an air flow through the nozzle and a filter for removing particulates from the air flow, the nozzle comprising an interior passage, a mouth for receiving the air flow from the interior passage, and a Coanda surface located adjacent the mouth and over which the mouth is arranged to direct the air flow.

Advantageously, by this arrangement a filtered air flow is generated and can be projected from the fan and delivered to the user.

The filter may be located upstream of the means for creating an airflow. The benefit of this arrangement is that the means for creating an air flow is reliably protected from debris and dust that may be drawn into the appliance and which may damage the fan assembly.

Alternatively, the filter may be located downstream of the means for creating an airflow through the nozzle. Advantageously, in this position it is possible to filter and clean the air drawn through the means for creating an air flow, including any exhaust emissions from said means, prior to progression through the elements of the fan assembly and supply to the user.

The filter may be located within the nozzle. This arrangement provides filtration in the air flow path through the nozzle resulting in a reduction in wear on the parts of the fan assembly and thus a reduction in the maintenance costs. Preferably, an additional filter

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is located upstream of the means for creating an air flow. Advantageously, this arrangement provides a superior level of filtration and cleaning of the air flow in the appliance. As well as filtration of the air flow path through the nozzle, the additional filter ensures that the said means is protected from debris and dust that may be drawn into the appliance.

Preferably the fan assembly is bladeless. By this arrangement an air current is generated and a cooling effect is created without requiring a bladed fan. The bladeless arrangement leads to lower noise emissions due to the absence of the sound of a fan blade moving through the air, and a reduction in moving parts and complexity.

In the following description of fans and, in particular a fan of the preferred embodiment, the term 'bladeless' is used to describe apparatus in which air flow is emitted or projected forwards from the fan assembly without the use of blades. By this definition a bladeless fan assembly can be considered to have an output area or emission zone absent blades or vanes from which the air flow is released or emitted in a direction appropriate for the user. A bladeless fan assembly may be supplied with a primary source of air from a variety of sources or generating means such as pumps, generators, motors or other fluid transfer devices, which include rotating devices such as a motor rotor and a bladed impeller for generating air flow. The supply of air generated by the motor causes a flow of air to pass from the room space or environment outside the fan assembly through the interior passage to the nozzle and then out through the mouth.

Hence, the description of a fan assembly as bladeless is not intended to extend to the description of the power source and components such as motors that are required for secondary fan functions. Examples of secondary fan functions can include lighting, adjustment and oscillation of the fan.

The fan assembly achieves the output and cooling effect described above with a nozzle which includes a Coanda surface to provide an amplifying region utilising the Coanda effect. A Coanda surface is a known type of surface over which fluid flow exiting an

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output orifice close to the surface exhibits the Coanda effect. The fluid tends to flow over the surface closely, almost 'clinging to' or 'hugging' the surface. The Coanda effect is already a proven, well documented method of entrainment whereby a primary air flow is directed over the Coanda surface. A description of the features of a Coanda surface, and the effect of fluid flow over a Coanda surface, can be found in articles such as Reba, Scientific American, Volume 214, June 1963 pages 84 to 92.

Preferably the nozzle extends about an axis to define an opening through which air from outside the fan assembly is drawn by the air flow directed over the Coanda surface. Air from the external environment is drawn through the opening by the air flow directed over the Coanda surface. Advantageously, by this arrangement the assembly can be produced and manufactured with a reduced number of parts than those required in prior art fans. This reduces manufacturing cost and complexity.

In the present invention an air flow is created through the nozzle of the fan assembly. In the following description this air flow will be referred to as primary air flow. The primary air flow exits the nozzle via the mouth and passes over the Coanda surface. The primary air flow entrains the air surrounding the mouth of the nozzle, which acts as an air amplifier to supply both the primary air flow and the entrained air to the user. The entrained air will be referred to here as a secondary air flow. The secondary air flow is drawn from the room space, region or external environment surrounding the mouth of the nozzle and, by displacement, from other regions around the fan assembly. The primary air flow directed over the Coanda surface combined with the secondary air flow entrained by the air amplifier gives a total air flow emitted or projected forward to a user from the opening defined by the nozzle. The total air flow is sufficient for the fan assembly to create an air current suitable for cooling.

The air current delivered by the fan assembly to the user has the benefit of being an air flow with low turbulence and with a more linear air flow profile than that provided by other prior art devices. Advantageously, the air flow from the fan can be projected forward from the opening and the area surrounding the mouth of the nozzle with a

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laminar flow that is experienced by the user as a superior cooling effect to that from a bladed fan. The linear or laminar air flow with low turbulence travels efficiently out from the point of emission and loses less energy and less velocity to turbulence than the air flow generated by prior art fans. An advantage for a user is that the cooling effect can be felt even at a distance and the overall efficiency of the fan increases. This means that the user can choose to site the fan some distance from a work area or desk and still be able to feel the cooling benefit of the fan.

Advantageously, the assembly results in the entrainment of air surrounding the mouth of the nozzle such that the primary air flow is amplified by at least 15%, whilst a smooth overall output is maintained. The entrainment and amplification features of the fan assembly result in a fan with a higher efficiency than prior art devices. The air current emitted from the opening defined by the nozzle has an approximately flat velocity profile across the diameter of the nozzle. Overall the flow rate and profile can be described as plug flow with some regions having a laminar or partial laminar flow.

Preferably, the Coanda surface extends symmetrically about the axis. More preferably, the angle subtended between the Coanda surface and the axis is in the range from 7° to 20°, preferably around 15°. This provides an efficient primary air flow over the Coanda surface and leads to maximum air entrainment and secondary air flow.

Preferably the nozzle extends by a distance of at least 5 cm in the direction of the axis, more preferably the nozzle extends about the axis by a distance in the range from 30 cm to 180 cm. This provides options for emission of air over a range of different output areas and opening sizes, such as may be suitable for cooling the upper body and face of a user when working at a desk, for example.

Preferably the nozzle comprises a loop. The shape of the nozzle is not constrained by the requirement to include space for a bladed fan. In a preferred embodiment the nozzle is substantially annular. By providing an annular nozzle the fan can potentially reach a broad area. In addition, an illumination source in the room or at the desk fan location or

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natural light can reach the user through the central opening. In a further preferred embodiment the nozzle is at least partially circular. This arrangement can provide a variety of design options for the fan, increasing the choice available to a user or customer.

In the preferred embodiment the nozzle comprises a diffuser located downstream of the Coanda surface. An angular arrangement of the diffuser surface and an aerofoil-type shaping of the nozzle and diffuser surface can enhance the amplification properties of the fan assembly whilst minimising noise and frictional losses.

In a preferred arrangement the nozzle comprises at least one wall defining the interior passage and the mouth, and the at least one wall comprises opposing surfaces defining the mouth. Preferably, the mouth has an outlet, and the spacing between the opposing surfaces at the outlet of the mouth is in the range from 1 mm to 10 mm, more preferably around 5 mm. By this arrangement a nozzle can be provided with the desired flow properties to guide the primary air flow over the Coanda surface and provide a relatively uniform, or close to uniform, total air flow reaching the user.

In the preferred fan arrangement the means for creating an air flow through the nozzle comprises an impeller driven by a motor. This arrangement provides a fan with efficient air flow generation. More preferably the means for creating an air flow comprises a DC brushless motor and a mixed flow impeller. This arrangement provides an efficient motor package. In addition the arrangement reduces frictional losses from motor brushes and also reduces carbon debris from the brushes in a traditional motor. Reducing carbon debris and emissions is advantageous in a clean or pollutant sensitive environment such as a hospital or around those with allergies.

The nozzle may be rotatable or pivotable relative to a base portion, or other portion, of the fan assembly. This enables the nozzle to be directed towards or away from a user as required. The fan assembly may be desk, floor, wall or ceiling mountable. This can increase the portion of a room over which the user experiences cooling.

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Embodiments of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a front view of a fan assembly;

Figure 2 is a perspective view of a portion of the fan assembly of Figure 1;

Figure 3 is a side sectional view taken at line A-A through a portion of the fan assembly of Figure 1, illustrating a first filter arrangement

Figure 4 is an enlarged side sectional detail of a portion of the fan assembly of Figure 1;

Figure 5 is a sectional view of the fan assembly taken along line B-B of Figure 3 and viewed from direction F of Figure 3;

Figure 6 is a sectional view of the fan assembly of Figure 1, illustrating a second filter arrangement;

Figure 7 is a side sectional view taken at line A-A through a portion of the fan assembly of Figure 1, illustrating a third filter arrangement; and

Figure 8 is an enlarged side sectional detail of a portion of the fan assembly as illustrated in Figure 7.

Figure 1 shows an example of a fan assembly 100 viewed from the front of the device. The fan assembly 100 comprises an annular nozzle 1 defining a central opening 2. With reference also to Figures 2 and 3, nozzle 1 comprises an interior passage 10, a mouth 12 and a Coanda surface 14 adjacent the mouth 12. The Coanda surface 14 is arranged so that a primary air flow exiting the mouth 12 and directed over the Coanda surface 14 is amplified by the Coanda effect. The nozzle 1 is connected to, and supported by, a base

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16 having an outer casing 18. The base 16 includes a plurality of selection buttons 20 accessible through the outer casing 18 and through which the fan assembly 100 can be operated.

Figures 3, 4 and 5 show further specific details of the fan assembly 100. A motor 22 for creating an air flow through the nozzle 1 is located inside the base 16. The base 16 further comprises an air inlet 24a, 24b formed in the outer casing 18 and through which air is drawn into the base 16. A motor housing 28 for the motor 22 is also located inside the base 16. The motor 22 is supported by the motor housing 28 and held or fixed in a secure position within the base 16.

In the illustrated embodiment, the motor 22 is a DC brushless motor. An impeller 30 is connected to a rotary shaft extending outwardly from the motor 22, and a diffuser 32 is positioned downstream of the impeller 30. The diffuser 32 comprises a fixed, stationary disc having spiral blades.

An inlet 34 to the impeller 30 communicates with the air inlet 24a, 24b formed in the outer casing 18 of the base 16. The outlet 36 of the diffuser 32 and the exhaust from the impeller 30 communicate with hollow passageway portions or ducts located inside the base 16 in order to establish air flow from the impeller 30 to the interior passage 10 of the nozzle 1. The motor 22 is connected to an electrical connection and power supply and is controlled by a controller (not shown). Communication between the controller and the plurality of selection buttons 20 enable a user to operate the fan assembly 100.

The features of the nozzle 1 will now be described with reference to Figures 3 and 4. The shape of the nozzle 1 is annular. In this embodiment the nozzle 1 has a diameter of around 350 mm, but the nozzle 1 may have any desired diameter, for example around 300 mm. The interior passage 10 is annular and is formed as a continuous loop or duct within the nozzle 1. The nozzle 1 is formed from at least one wall defining the interior passage 10 and the mouth 12. In this embodiment the nozzle 1 comprises an inner wall 38 and an outer wall 40. In the illustrated embodiment the walls 38, 40 are arranged in

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a looped or folded shape such that the inner wall 38 and outer wall 40 approach one another. The inner wall 38 and the outer wall 40 together define the mouth 12, and the mouth 12 extends about the axis X. The mouth 12 comprises a tapered region 42 narrowing to an outlet 44. The outlet 44 comprises a gap or spacing formed between the inner wall 38 of the nozzle 1 and the outer wall 40 of the nozzle 1. The spacing between the opposing surfaces of the walls 38, 40 at the outlet 44 of the mouth 12 is chosen to be in the range from 1 mm to 10 mm. The choice of spacing will depend on the desired performance characteristics of the fan. In this embodiment the outlet 44 is around 5 mm wide, and the mouth 12 and the outlet 44 are concentric with the interior passage 10.

The mouth 12 is adjacent the Coanda surface 14. The nozzle 1 further comprises a diffuser portion located downstream of the Coanda surface. The diffuser portion includes a diffuser surface 46 to further assist the flow of air current delivered or output from the fan assembly 100. In the example illustrated in Figure 3 the mouth 12 and the overall arrangement of the nozzle 1 is such that the angle subtended between the Coanda surface 14 and the axis X is around 15°. The angle is chosen for efficient air flow over the Coanda surface 14. The base 16 and the nozzle 1 have a depth in the direction of the axis X. The nozzle 1 extends by a distance of around 5 cm in the direction of the axis. The diffuser surface 46 and the overall profile of the nozzle 1 are based on an aerofoil shape, and in the example shown the diffuser portion extends by a distance of around two thirds the overall depth of the nozzle 1.

The fan assembly 100 described above operates in the following manner. When a user makes a suitable selection from the plurality of buttons 20 to operate or activate the fan assembly 100, a signal or other communication is sent to drive the motor 22. The motor 22 is thus activated and air is drawn into the fan assembly 100 via the air inlet. In the preferred embodiment air is drawn in at a rate of approximately 40 to 100 litres per second, preferably around 80 l/s (litres per second). The air passes through the outer casing 18 and along the route illustrated by arrows F', F'' of Figures 3 and 6 to the inlet 34 of the impeller 30. The air flow leaving the outlet 36 of the diffuser 32 and the

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exhaust of the impeller 30 is divided into two air flows that proceed in opposite directions through the interior passage 10. The air flow is constricted as it enters the mouth 12 and is further constricted at the outlet 44 of the mouth 12. The constriction creates pressure in the system. The motor 22 creates an air flow through the nozzle 1 having a pressure of at least 300 kPa and a pressure of up to 700 kPa may be used. The air flow created overcomes the pressure created by the constriction and the air flow exits through the outlet 44 as a primary air flow.

The output and emission of the primary air flow creates a low pressure area at the air inlet with the effect of drawing additional air into the fan assembly 100. The operation of the fan assembly 100 induces high air flow through the nozzle 1 and out through the opening 2. The primary air flow is directed over the Coanda surface 14 and the diffuser surface 46, and is amplified by the Coanda effect. A secondary air flow is generated by entrainment of air from the external environment, specifically from the region around the outlet 44 and from around the outer edge of the nozzle 1. A portion of the secondary air flow entrained by the primary air flow may also be guided over the diffuser surface 46. This secondary air flow passes through the opening 2, where it combines with the primary air flow to produce a total air flow projected forward from the nozzle 1.

The combination of entrainment and amplification results in a total air flow from the opening 2 of the fan assembly 100 that is greater than the air flow output from a fan assembly without such a Coanda or amplification surface adjacent the emission area.

The amplification and laminar type of air flow produced results in a sustained flow of air being directed towards a user from the nozzle 1. In the preferred embodiment the mass flow rate of air projected from the fan assembly 100 is at least 450 l/s, preferably in the range from 600 l/s to 700 l/s. The flow rate at a distance of up to 3 nozzle diameters (i.e. around 1000 to 1200 mm) from a user is around 400 to 500 l/s. The total air flow has a velocity of around 3 to 4 m/s (metres per second). Higher velocities are achievable by reducing the angle subtended between the Coanda surface 14 and the axis

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X. A smaller angle results in the total air flow being emitted in a more focussed and directed manner. This type of air flow tends to be emitted at a higher velocity but with a reduced mass flow rate. Conversely, greater mass flow can be achieved by increasing the angle between the Coanda surface and the axis. In this case the velocity of the emitted air flow is reduced but the mass flow generated increases. Thus the performance of the fan assembly can be altered by altering the angle subtended between the Coanda surface and the axis X. Performance of the fan assembly

A first filter arrangement for the fan assembly 100 is illustrated in Figures 3 and 5. The first filter arrangement comprises a filter 26, which comprises a filter medium 50. In this filter arrangement the filter 26 is placed upstream of the motor 22 and impeller 30 of the fan assembly 100, and downstream of the air inlet 24a, 24b. Consequently air flow drawn into the base 16 through the air inlet 24a passes through the filter 26 and the filter medium 50 before entering the motor housing 28. The air flow is constricted as it enters the filter 26 and passes through the filter medium 50. The filter 26 provides a pre-motor filter in the fan assembly 100, and the motor is thereby reliably protected from dirt, dust and debris that may be drawn into the device.

In the illustrated arrangement, the filter 26 is positioned adjacent the air inlet 24a, 24b. The filter 26 is located such that it extends cylindrically about an axis Y, perpendicular to the axis X. The fan assembly 100 will include a recess or other shaping into which the filter 26 is received. The recess is preferably designed to accommodate snugly the filter 26. In addition, the filter 26 is preferably mounted and secured within the recess to establish an air-tight seal so that all of the air flow drawn into the air inlet 24a, 24b will pass through the filter medium 50. The filter 26 is preferably fixedly connected and secured within the fan assembly 100 by suitable fixings such as screw-threaded portions, fasteners, seal members or other equivalent means.

A second filter arrangement for the fan assembly 100 is illustrated in Figure 6. The second filter arrangement comprises a filter 126, which comprises a filter medium 150. The fan assembly 100 illustrated in Figure 6 differs from that illustrated in Figures 3

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and 5 in that air inlets 25a, 25b are formed in the lower surface of the outer casing 18, rather than in the cylindrical side wall thereof. The filter 126 is positioned adjacent the lower air inlets 25a, 25b and shaped so as to substantially cover the lower surface of the base 16. The filter 126 is preferably mounted and secured in a fixed arrangement within the base 16 to establish an air-tight seal so that all of the air flow drawn into air inlet 25a, 25b will pass through the filter medium 150. The filter 126 is preferably fixedly connected and secured within the fan assembly 100 by suitable fixings. As described previously, the filter 126 thus provides a pre-motor filter in the fan assembly 100, and the motor is thereby reliably protected from dirt, dust and debris that may be drawn into the device.

A third filter arrangement for the fan assembly 100 is illustrated in Figures 7 and 8. This third arrangement may be used in combination with, or separately from, any of the first and second filter arrangements. The third filter arrangement comprises a filter 226, which comprises a filter medium 250. The filter 226 is annular and is housed within the interior passage 10 of the nozzle 1 such that the filter 226 extends about the axis X. The filter 226 has a depth of around 5 cm in the direction of the axis X. The dimensions of the filter 226 are chosen so that the filter 226 is accommodated snugly within the nozzle 1. In a similar manner to the first and second filter arrangements, the filter 226 is preferably fixedly connected and secured within the interior passage 10 of the nozzle 1 by suitable fixings such as screw-threaded portions, fasteners, seal members or other equivalent means.

The interior passage 10 is divided by the filter 226 into an outer air chamber 228 and an inner air chamber 230. Each air chamber 228, 230 comprises a continuous duct or passageway within the nozzle 1. The outer air chamber 228 is arranged to receive the airflow from the base 16, and the inner air chamber 230 is arranged to convey the air flow to the mouth 12.

Thus, all of the air flow drawn into the nozzle 1 will enter the outer air chamber 228, pass through the filter medium 250 and into the inner air chamber 230 before exiting the

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nozzle 1 through the mouth 12. The filter 226 thus provides a post-motor filter in the fan assembly 100, and can thereby capture dirt and carbon debris that may be generated by motor brushes in a traditional motor or that may be drawn into the nozzle from outside the fan assembly.

In any of the above filter arrangements the filter may comprise one or any number of filters or filters assemblies in one or more locations within the fan assembly. For example, the shape and size of the filter and the type of filter material, may be altered. The filter material may comprise filter media such as foam materials, carbon, paper, HEPA (High Efficiency Particle Arrester) filter media, fabric or open cell polyurethane foam, for example. The filter material could be material having different density and thickness to that described and illustrated above. The filter may comprise a mesh or porous material located around the base and may form part of, or be mounted to, the outer casing. The filter may be suitable for removal of specific pollutants and particulates from the air flow and may be used for chemical or odour removal. Other filtration schemes or processing systems such as ionisation or UV treatment could be used in any combination within the filter and within the fan assembly.

Also the manner in which the filter arrangement is received and located within the appliance is immaterial to this invention and a skilled reader will appreciate that the location can be formed by the mating of corresponding surfaces, push or snap fittings or other equivalent means. The filter may be positioned in or formed around any part of the fan assembly, it may be located adjacent or in close proximity to the air inlet, it may surround the entire circumference or boundary of the motor or motor housing. The shape and size of the portion of the fan assembly accommodating the filter may be modified.

The invention is not limited to the detailed description given above. Variations will be apparent to the person skilled in the art. For example, the fan could be of a different height or diameter. The performance of the fan assembly may be modified by increasing the diameter of the nozzle and the area of the mouth opening, the distance

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that the nozzle extends in the direction of the axis may be greater than 5 cm, and may be up to 20 cm. The fan need not be located on a desk, but could be free standing, wall mounted or ceiling mounted. The fan shape could be adapted to suit any kind of situation or location where a cooling flow of air is desired. A portable fan could have a smaller nozzle, say 5cm in diameter. The means for creating an air flow through the nozzle can be a motor or other air emitting device, such as any air blower or vacuum source that can be used so that the fan assembly can create an air current in a room. Examples include a motor such as an AC induction motor or types of DC brushless motor, but may also comprise any suitable air movement or air transport device such as a pump or other means of providing directed fluid flow to generate and create an air flow. Features of a motor may include a diffuser or a secondary diffuser located downstream of the motor to recover some of the static pressure lost in the motor housing and through the motor.

Other shapes of nozzle are envisaged. For example, a nozzle comprising an oval, or 'racetrack' shape, a single strip or line, or block shape could be used. The fan assembly provides access to the central part of the fan as there are no blades. This means that additional features such as lighting or a clock or LCD display could be provided in the opening defined by the nozzle.

The outlet of the mouth may be modified. The outlet of the mouth may be widened or narrowed to a variety of spacings to maximise air flow. The Coanda effect may be made to occur over a number of different surfaces, or a number of internal or external designs may be used in combination to achieve the flow and entrainment required.

Other features could include a pivotable or tiltable base for ease of movement and adjustment of the position of the nozzle for the user.

BNSDOCID: <GB_____2484706A__1_>

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CLAIMS

1. A fan assembly for creating an air current, the fan assembly comprising a nozzle, means for creating an air flow through the nozzle and a filter for removing particulates from the air flow, the nozzle comprising an interior passage, a mouth for receiving the air flow from the interior passage, and a Coanda surface located adjacent the mouth and over which the mouth is arranged to direct the air flow.

2. A fan assembly as claimed in claim 1, wherein the filter is located upstream of the means for creating an airflow.

3. A fan assembly as claimed in claim 1, wherein the filter is located downstream of the means for creating an airflow.

4. A fan assembly as claimed in claim 1, wherein the filter is located within the nozzle.

5. A fan assembly as claimed in any one of claim 3 or claim 4, comprising an additional filter located upstream of the means for creating an air flow.

6. A fan assembly as claimed in any preceding claim, wherein the fan assembly is bladeless.

7. A fan assembly as claimed in any preceding claim, wherein the nozzle extends about an axis to define an opening through which air from outside the fan assembly is drawn by the air flow directed over the Coanda surface.

8. A fan assembly as claimed in claim 7, wherein the Coanda surface extends symmetrically about the axis.

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BNSDOCID: <GB_____2464706A_1_>

9. A fan assembly as claimed in claim 8, wherein the angle subtended between the Coanda surface and the axis is in the range from 7° to 20°, preferably around 15°.

10. A fan assembly as claimed in any one of claims 7, 8 or 9, wherein the nozzle extends by a distance of at least 5 cm in the direction of the axis.

11. A fan assembly as claimed in any of claims 7 to 10, wherein the nozzle extends about the axis by a distance in the range from 30 cm to 180 cm.

12. A fan assembly as claimed in any preceding claim, wherein the nozzle comprises a loop.

13. A fan assembly as claimed in any preceding claim, wherein the nozzle is substantially annular.

14. A fan assembly as claimed in any preceding claim, wherein the nozzle is at least partially circular.

15. A fan assembly as claimed in any preceding claim, wherein the nozzle comprises a diffuser located downstream of the Coanda surface.

16. A fan assembly as claimed in any preceding claim, wherein the nozzle comprises at least one wall defining the interior passage and the mouth, and wherein said at least one wall comprises opposing surfaces defining the mouth.

17. A fan assembly as claimed in claim 16, wherein the mouth has an outlet, and the spacing between the opposing surfaces at the outlet of the mouth is in the range from 0.5 mm to 10 mm, preferably around 5mm.

BNSDOCID <GB_____2464736A__1_>

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18. A fan assembly as claimed in any preceding claim, wherein the means for creating an air flow through the nozzle comprises an impeller driven by a motor.

19. A fan assembly as claimed in claim 18, wherein the means for creating an air flow comprises a DC brushless motor and a mixed flow impeller.

20. A fan assembly substantially as hereinbefore described with reference to the accompanying drawings.

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Application No: GB0819612.3 **Examiner:** Alex Swaffer

Claims searched: 1-19 **Date of search:** 20 January 2009

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-6, 14, 15, 18, 19	US6073881 A (Chen): See interior passage 15, mouth 14 and Coanda surface in figure 2, and column 6 lines 2-24 in particular.
X	1-19	JP56167897 A (Tokyo Shibaura Electric Co): See figures 1 and 2 in particular.
X	1-19	US5881685 A (Michigan State University): See figures 3-9 in particular.
X	1-19	US3885891 A (Rockwell International Corp): See figures 1-4 in particular.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[X] :

F1C; F1E

Worldwide search of patent documents classified in the following areas of the IPC

F04D; F04F

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI

International Classification:

Subclass	Subgroup	Valid From
F04D	0029/70	01/01/2006
F04D	0025/08	01/01/2006
F04D	0029/44	01/01/2006

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BNSDOCID: <GB 2456736A >

Subclass	Subgroup	Valid From
F04D	0029/54	01/01/2006
F04F	0005/20	01/01/2006

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
MJF_WOP1248A		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/GB2014/051830	13 June 2014 (13-06-2014)	5 July 2013 (05-07-2013)
Applicant		
DYSON TECHNOLOGY LIMITED		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 7 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the language, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☒ **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**

☒ the text is approved as submitted by the applicant

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

☐ the text is approved as submitted by the applicant

☒ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**

a. the figure of the drawings to be published with the abstract is Figure No. 4a

☒ as suggested by the applicant

☐ as selected by this Authority, because the applicant failed to suggest a figure

☐ as selected by this Authority, because this figure better characterizes the invention

b. ☐ none of the figures is to be published with the abstract

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2014/051830

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-12(completely); 14-25, 27-38(partially)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2014/051830

A. CLASSIFICATION OF SUBJECT MATTER
INV. A45D20/10 A45D20/50
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A45D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2013/045084 A1 (TU JINHUA [CN] ET AL) 21 February 2013 (2013-02-21) paragraph [0023] - paragraph [0048]; figures 1-3	1-12, 14-18, 21-25, 27-34
X	US 2011/079239 A1 (HALL JEFFREY P [US]) 7 April 2011 (2011-04-07) paragraph [0044] - paragraph [0055]; figures 1, 4, 57, 8, 9, 11, 13, 15	1-4, 6-12, 14-24, 27-29

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 September 2014	08/12/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Hinrichs, Wiebke

1

Form PCT/ISA/210 (second sheet) (April 2005)

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 482 548 A (DYSON TECHNOLOGY LTD [GB]) 8 February 2012 (2012-02-08) paragraph [0006] - paragraph [0048]; figures 2, 3 -----	1-11,16, 17, 19-25, 27-38

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2014/051830

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2013045084 A1	21-02-2013	CN 102305220 A	04-01-2012
		US 2013045084 A1	21-02-2013
US 2011079239 A1	07-04-2011	NONE	
GB 2482548 A	08-02-2012	AU 2011287442 A1	10-01-2013
		CA 2807574 A1	09-02-2012
		CN 102374652 A	14-03-2012
		CN 202267207 U	06-06-2012
		EP 2601452 A1	12-06-2013
		GB 2482548 A	08-02-2012
		JP 5404711 B2	05-02-2014
		JP 2012037229 A	23-02-2012
		KR 20130033434 A	03-04-2013
		RU 2013110009 A	20-09-2014
		US 2012031509 A1	09-02-2012
		WO 2012017220 A1	09-02-2012

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12(completely); 14-25, 27-38(partially)

Hair care appliance comprising a double-walled handle and an insulating layer between the two walls solving the problem of heat insulation during a hair treatment

---

2. claims: 13(completely); 14-25, 27-38(partially)

Hair care appliance comprising a double-walled handle and two fluid inlets at the second end of the handle extending partially around and through the handle solving the problem of air supply during a hair treatment

---

3. claims: 26(completely); 27-38(partially)

Hair care appliance comprising a double-walled handle comprising a non-linear fluid path inside the handle solving the problem of flow control during a hair treatment

---

4. claims: 39-50(completely); 52-63, 65-76(partially)

An appliance comprising a double-walled handle and an insulating layer between the two walls to be held in the hand solving the problem of an alternative construction of a handle of an appliance

---

5. claims: 51(completely); 52-63, 65-76(partially)

An appliance to be held in the hand comprising a double-walled handle and two fluid inlets at the second end of the handle extending partially around and through the handle solving the problem of alternative intake of fluid to an appliance

---

6. claims: 64(completely); 65-76(partially)

An appliance to be held in the hand comprising a double-walled handle comprising a non-linear fluid path inside the handle solving the problem of an alternative fluid circulation in an appliance

---

A Handheld Appliance

Disclosed is a hair care appliance comprising a handle (20), the handle comprising a wall (220) and an outer wall (200) wherein the wall defines a primary fluid flow path that extends from a primary fluid inlet (40) into the appliance and the outer wall is an external surface of the appliance. The outer wall may (200) extend substantially continuously around and along the wall (220). An insulating layer may be provided between the wall and the outer wall, the insulating layer (212) is may be substantially continuous around and along the wall and may mitigate one or more of noise, vibration and heat produced by the appliance. The handle may include a fan (70) unit for drawing fluid into the primary fluid inlet and along the primary fluid flow path.
(Figure 4a)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB2014/051830	13.06.2014	05.07.2013

International Patent Classification (IPC) or both national classification and IPC
INV. A45D20/10 A45D20/50

Applicant
DYSON TECHNOLOGY LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016	see form PCT/ISA/210	Telephone No. +31 70 340-0

Form PCT/ISA/237 (Cover Sheet) (July 2009)

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

☐ the entire international application

☒ claims Nos. 13, 26, 39-76(completely); 14-25, 27-38(partially)

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search *(specify)*:

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed *(specify)*:

☒ no international search report has been established for the whole application or for said claims Nos. 13, 26, 39-76(completely); 14-25, 27-38(partially)

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

- ☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
- ☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
- ☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13*ter*.1(a) or (b).

☐ See Supplemental Box for further details

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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has, within the applicable time limit:

   ☐ paid additional fees

   ☐ paid additional fees under protest and, where applicable, the protest fee

   ☐ paid additional fees under protest but the applicable protest fee was not paid

   ☒ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

   see separate sheet

4. Consequently, this report has been established in respect of the following parts of the international application:

   ☐ all parts.

   ☒ the parts relating to claims Nos. 1-12(completely); 14-25, 27-38(partially)

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	8, 9(completely); 18-20(partially)
	No:	Claims	1-7, 10-12(completely); 14-17, 21-25, 27-38(partially)
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-12(completely); 14-25, 27-38(partially)
Industrial applicability (IA)	Yes:	Claims	1-12(completely); 14-25, 27-38(partially)
	No:	Claims	

2. Citations and explanations

   see separate sheet

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1 **Re Item IV**

Lack of unity of invention

1.1 This Authority considers that the application does not meet the requirements of unity of invention and that there are 6 inventions covered by the claims indicated as follows:

claims: 1-12(completely); 14-25, 27-39(partially)

1. Hair care appliance comprising a double-walled handle and an insulating layer between the two walls solving the problem of insulation during a hair treatment

claims: 13(completely); 14-25, 27-39(partially)

2. Hair care appliance comprising a double-walled handle and two fluid inlets at the second end of the handle extending partially around and through the handle solving the problem of air supply during a hair treatment

claims: 26(completely); 27-39(partially)

3. Hair care appliance comprising a double-walled handle comprising a non-linear fluid path inside the handle solving the problem of flow control during a hair treatment

claims: 39-50(completely); 52-63, 65-76(partially)

4. An appliance comprising a double-walled handle and an insulating layer between the two walls to be held in the hand solving the problem of an alternative construction of a handle of an appliance

claims: 51(completely); 52-63, 65-76(partially)

5. An appliance to be held in the hand comprising a double-walled handle and two fluid inlets at the second end of the handle extending partially around and through the handle solving the problem of an alternative intake of fluid to an appliance

claims: 64(completely); 65-76(partially)

6. An appliance to be held in the hand comprising a double-walled handle comprising a non-linear fluid path inside the handle solving the problem of an alternative fluid circulation in an appliance

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1.2 The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The six groups of claims relate to different problems with different solutions, so that the groups of claims are not linked by a common or corresponding special technical features and define six different inventions not linked by a single general inventive concept

The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

2 **Re Item V**

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2.1 Reference is made to the following documents:

D1	US 2013/045084 A1 (TU JINHUA [CN] ET AL) 21 February 2013 (2013-02-21)
D2	US 2011/079239 A1 (HALL JEFFREY P [US]) 7 April 2011 (2011-04-07)
D3	GB 2 482 548 A (DYSON TECHNOLOGY LTD [GB]) 8 February 2012 (2012-02-08)
D4	CN 202 386 031 U (RUIHONG YANG) 22 August 2012 (2012-08-22)

2.2 **Independent Claim 1**

The present application does not meet the criteria of Article 33(2) PCT, because the subject-matter of claim 1 is not new.

D1 (Fig. 2) discloses:

A hair care appliance (the fan is suitable to be used for hair treatment like drying) comprising a handle (11), the handle comprising a wall (inner wall of casing 111) and an outer wall (outer wall of casing 111) wherein the wall defines a primary fluid flow path (114) that extends from a primary fluid inlet (112) into the appliance and the outer wall is an external surface of the appliance wherein an insulating layer (131) is provided between the wall and the outer wall.

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2.3 **Dependent Claims**

Dependent claims 2-12, 14-18 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step:

claims 2-7, 10-12, 14-16 (partially - solely as dependent on 1): see e.g. D1, Fig. 2

claims 8 and 9: see e.g. D2 and the use of plastic materials is well known in the state of the art

claims 17 and 18 (partially - solely as dependent on 1): see D2, Fig. 1 and Fig. 4

claims 19-25 (partially - solely as dependent on 1): see e.g. D2, Fig. 7 and 8

claims 27-38 (partially - solely as dependent on 1): see e.g. D3, Fig. 3, 4, 9 and 10

****

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 1981 of 2286

Electronic Acknowledgement Receipt

EFS ID:	22352233
Application Number:	14323937
International Application Number:	
Confirmation Number:	2130
Title of Invention:	HAND HELD APPLIANCE
First Named Inventor/Applicant Name:	Patrick Joseph William MOLONEY
Customer Number:	25227
Filer:	Bradley J. Meier/Donna Bernecker
Filer Authorized By:	Bradley J. Meier
Attorney Docket Number:	424662077100
Receipt Date:	14-MAY-2015
Filing Date:	03-JUL-2014
Time Stamp:	18:31:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		IDS_424662077100.pdf	50158 a0320038661a00bf662415b5ed23f43cdb7151a3	yes	3

	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Transmittal Letter		1	2	
	Information Disclosure Statement (IDS) Form (SB08)		3	3	
Warnings:					
Information:					
2	Foreign Reference	CH_588835.pdf	227166 5d11695c7adb18a4680baf8ca34170c9ca699871	no	8
Warnings:					
Information:					
3	Foreign Reference	EP_0306765.pdf	1591413 251e915c51d526620663851cac0852cc42be90dc	no	87
Warnings:					
Information:					
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		Total Files Size (in bytes):	4224719		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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New International Application Filed with the USPTO as a Receiving Office

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I hereby certify that this paper is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: May 14, 2015 Signature: /dbernecker/
(Donna Bernecker)

Patent
Docket No. 424662077100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Patrick Joseph William MOLONEY et al.

Application No.: 14/323,937 Confirmation No.: 2130

Filed: July 3, 2014 Art Unit: 3743

For: HAND HELD APPLIANCE Examiner: Kenneth Rinehart

INFORMATION DISCLOSURE
STATEMENT UNDER 37 C.F.R. § 1.97 & § 1.98

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

Pursuant to 37 C.F.R. § 1.97 and § 1.98, Applicants submit for consideration in the above-identified application the documents listed on the attached Form PTO/SB/08a/b. Copies of the foreign documents and non-patent literature are submitted herewith. The Examiner is requested to make these documents of record.

This Information Disclosure Statement is submitted within three months of the application filing date or before mailing of a first Office Action on the merits; accordingly, no fee or separate requirements are required.

Applicants would appreciate the Examiner initialing and returning the Form PTO/SB/08a/b, indicating that the information has been considered and made of record herein.

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 1985 of 2286

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In the unlikely event that the transmittal form is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief (such as payment of a fee under 37 C.F.R. § 1.17 (p)) is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petition and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing (424662077100). However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: May 14, 2015

Respectfully submitted,

By____/christopher gloria/_____
Christopher Gloria
Registration No.: 71,907
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 400
McLean, Virginia 22102
(703) 760-7389

va-450346

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/323,937
Filing Date	July 3, 2014
First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3743
Examiner Name	K. Rinehart
Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	US-3,265,075	08-09-1966	Edman et al.	
	2.	US-4,506,454	03-26-1985	Kerschgens	
	3.	US-5,121,463	06-09-1992	Yoshihara	
	4.	US-5,954,064	09-21-1999	Motherhead	
	5.	US-8,496,028	07-30-2013	Nelson et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	6.	NL-2001375	09-15-2009	Miriam Hendrika Johanna Margaretha Van Loon; Patricia Johanna Maria Christina van Loon (Miriam Hendrika Johanna Margaretha Van LOON et al.)	English language Abstract	

Examiner Signature		Date Considered	

*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	7.	Moloney et al. , Office Action mailed July 15, 2015, directed to U.S. Application No. 14/323,864; 9 pages	
	8.	Moloney et al., Office Action mailed July 2, 2015, directed to U.S. Application No. 13/323,785; 11 pages	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

Espacenet

Bibliographic data: NL2001375 (C1) — 2009-09-15

Decoration system for wear glasses, has two magnets provided on each side of spectacle lens, and each magnet provided with soft anti-scratch and anti-allergic layer, where one of magnets is attached with decorative

Inventor(s): LOON MIRIAM HENDRIKA JOHANNA MARGARETHA VAN [BE]; LOON PATRICIA JOHANNA MARIA CHRISTINA VAN [NL] ± (MIRIAM HENDRIKA JOHANNA MARGARETHA VAN LOON, ; PATRICIA JOHANNA MARIA CHRISTINA VAN LOON)

Applicant(s): LOON MIRIAM HENDRIKA JOHANNA MARGARETHA VAN [BE]; LOON PATRICIA JOHANNA MARIA CHRISTINA VAN [NL] ± (MIRIAM HENDRIKA JOHANNA MARGARETHA VAN LOON, ; PATRICIA JOHANNA MARIA CHRISTINA VAN LOON)

Classification: **- international:** ***G02C11/02***
- cooperative: **G02C11/02**

Application number: NL20082001375 20080314

Priority number(s): NL20082001375 20080314

Abstract of NL2001375 (C1)

The system has a frame (5) provided with two legs (7, 9). Two magnets (13, 15) i.e. super magnets, are provided on two sides of a spectacle lens (11), where one of the magnets (13) is attached with a decorative (17). Each magnet is provided with a soft anti-scratch and anti-allergic layer, which is formed by a polymer-based coating. A polymer layer is provided on a surface of the magnet (15), and a polyurethane layer is provided on outside of the magnet (15).

(19) Octrooicentrum Nederland

(11) **2001375**

(12) C **OCTROOI**[6]

(21) Aanvraagnummer: **2001375**

(51) Int.Cl.:
G02C11/02 (2006.01)

(22) Ingediend: **14.03.2008**

(41) Ingeschreven:
15.09.2009

(47) Verleend:
15.09.2009

(45) Uitgegeven:
02.11.2009

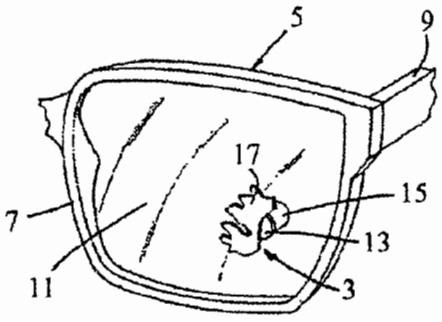
(73) Octrooihouder(s):
Miriam Hendrika Johanna Margaretha van Loon te Mol, België (BE).
Patricia Johanna Maria Christina Loon te Den Haag.

(72) Uitvinder(s):
Miriam Hendrika Johanna Margaretha van Loon te Mol (BE).
Patricia Johanna Maria Christina van Loon te Den Haag.

(74) Gemachtigde:
Ir. G.J.M. Verhees te 5674 CC Nuenen.

(54) **Decoratiesysteem voor op brillenglazen.**

(57) Een bril is voorzien van het decoratiesysteem 3 en heeft een montuur 5 voorzien van een frame 7 en twee poten 9 en in twee in het frame aanwezige brillenglazen 11. Het decoratiesysteem heeft twee magneten 13, 15, die aan weerszijde van een brillenglas 11 aangebracht zijn. Op één van de magneten 13 is een decoratie 17 bevestigd. De magneten 13, 15 zijn supermagneten en zijn voorzien van een zachte antikras- en anti-allergische laag, die om de gehele magneten aanwezig is. De laag is gevormd door een coating op polymeerbasis die op de magneten is aangebracht. De coating heeft een acrylpolymeerlaag op het oppervlak van de magneten en een polyurethaanlaag aan de buitenzijde.



NL C 2001375

Dit octrooi is verleend zonder onderzoek naar de stand van de techniek. Het octrooischrift komt overeen met de oorspronkelijk ingediende stukken.
Octrooicentrum Nederland is een agentschap van het ministerie van Economische Zaken.

Decoratiesysteem voor op brillenglazen

BESCHRIJVING:

Gebied van de uitvinding.

De uitvinding heeft betrekking op een decoratiesysteem voor op brillenglazen omvattende twee magneten die aan weerszijde van een brillenglas aangebracht dienen te worden, waarbij aan ten minste één van de magneten een decoratie is bevestigd.

Stand van de techniek.

Een dergelijk decoratiesysteem is bekend uit US-A-4.988.181.

Samenvatting van de uitvinding.

Een doel van de uitvinding is het bekende decoratiesysteem te verbeteren. Hiertoe is het decoratiesysteem volgens de uitvinding gekenmerkt, doordat de magneten zijn voorzien van een zachte anti-kras en anti-allergische laag op ten minste de tijdens gebruik naar elkaar toegekeerde zijden. Hierdoor is de kans op beschadigen van de brillenglazen bij gebruik van de decoratie veel kleiner dan bij het bekende decoratiesysteem en is ook de kans op allergische reacties bij de brillendrager veel geringer dan bij gebruik van het bekende decoratiesysteem.

Bij voorkeur is de laag om de gehele magneten aanwezig. Voorts zijn de magneten bij voorkeur supermagneten. Bij het bekende decoratiesysteem zijn de decoraties relatief klein en beperkt in gewicht. Door toepassing van supermagneten kan de artistieke vrijheid van de decoraties verhoogd worden om beter in te spelen op de verschillende consumenten en de mode.

Een uitvoeringsvorm van het decoratiesysteem volgens de uitvinding is gekenmerkt, doordat de laag is gevormd door een sok die om de magneten aanwezig is.

Een andere uitvoeringsvorm van het decoratiesysteem volgens de uitvinding

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is gekenmerkt, doordat de laag is gevormd door een coating die op de magneten is aangebracht.

Een verdere uitvoeringsvorm van het decoratiesysteem volgens de uitvinding is gekenmerkt, doordat de laag een op een polymeer gebaseerde coating is met een acrylpolymeerlaag op het oppervlak van de magneten en een polyurethaanlaag aan de buitenzijde.

Beknopte omschrijving van de tekeningen.

Hieronder zal de uitvinding nader worden toegelicht aan de hand van een in de tekeningen weergegeven uitvoeringsvoorbeeld van het decoratiesysteem volgens de uitvinding. Hierbij toont:

Figuur 1 een bril voorzien van het decoratiesysteem volgens de uitvinding;

Figuur 2 een detail van een deel van de bril met daarop het decoratiesysteem;

Figuur 3 een doorsnede van een brillenglas met daarop het decoratiesysteem; en

Figuur 4 een magneet van het decoratiesysteem.

Gedetailleerde omschrijving van de tekeningen.

In figuur 1 is een bril 1 voorzien van het decoratiesysteem 3 volgens de uitvinding weergegeven. De bril heeft een montuur 5 voorzien van een frame 7 en twee poten 9 en in twee in het frame aanwezige brillenglazen 11. Het decoratiesysteem heeft twee magneten 13, 15, die aan weerszijde van een brillenglas 11 aangebracht zijn. Op één van de magneten 13 is een decoratie 17 bevestigd. Voor de duidelijkheid is in figuur 2 een deel van de bril met daarop het decoratiesysteem 3 vergroot weergegeven en is in figuur 3 een brillenglas 11 met daarop het decoratiesysteem 3 in doorsnede weergegeven.

De magneten 13, 15 zijn supermagneten en zijn voorzien van een zachte anti-kras- en anti-allergische laag 19, die om de gehele magneten aanwezig is, zie figuur 4. De laag 19 is gevormd door een coating op polymeerbasis die op de magneten is aangebracht. De coating heeft een acrylpolymeerlaag op het oppervlak van de magneten en een polyurethaanlaag aan de buitenzijde. Als coating kan een range van polymeren die deze

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eigenschappen bezitten gebruikt worden, zoals "hydroxyl-functional fluoro polymers", "non-cross linked and pre-cross linked acrylics", "urethane polymer resins" en "silicon modified acrylics".

Hoewel in het voorgaande de uitvinding is toegelicht aan de hand van de tekeningen, dient te worden vastgesteld dat de uitvinding geenszins tot de in de tekeningen getoonde uitvoeringsvorm is beperkt. De uitvinding strekt zich mede uit tot alle van de in de tekeningen getoonde uitvoeringsvorm afwijkende uitvoeringsvormen binnen het door de conclusies gedefinieerde kader. Zo kan de laag ook gevormd zijn door een sok die om de magneten aanwezig is.

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SharkNinja et al. v. Dyson Technology Limited,
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CONCLUSIES:

1. Decoratiesysteem voor op brillenglazen omvattende twee magneten die aan weerszijde van een brillenglas aangebracht dienen te worden, waarbij aan ten minste één van de magneten een decoratie is bevestigd, met het kenmerk, dat de magneten zijn voorzien van een zachte anti-kras en anti-allergische laag op ten minste de tijdens gebruik naar elkaar toegekeerde zijden.

2. Decoratiesysteem volgens conclusie 1, met het kenmerk, dat de laag om de gehele magneten aanwezig is.

3. Decoratiesysteem volgens conclusie 1 of 2, met het kenmerk, dat de laag is gevormd door een sok die om de magneten aanwezig is.

4. Decoratiesysteem volgens conclusie 1 of 2, met het kenmerk, dat de laag is gevormd door een coating die op de magneten is aangebracht.

5. Decoratiesysteem volgens conclusie 4, met het kenmerk, dat de laag een op een polymeer gebaseerde coating is met een acrylpolymeerlaag op het oppervlak van de magneten en een polyurethaanlaag aan de buitenzijde.

6. Decoratiesysteem volgens één der voorgaande conclusies, met het kenmerk, dat de magneten supermagneten zijn.

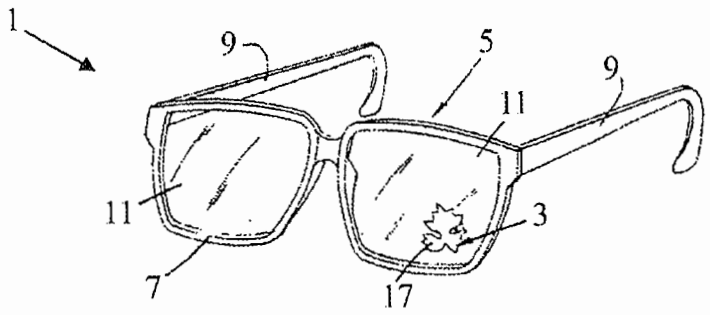


FIG. 1

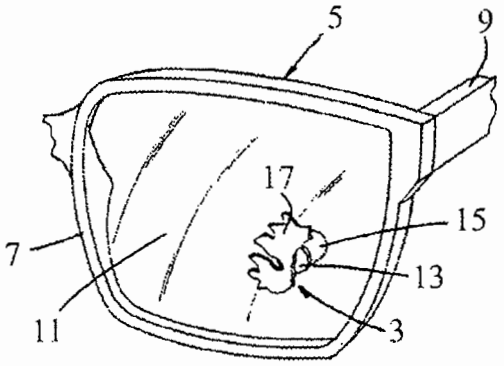


FIG. 2

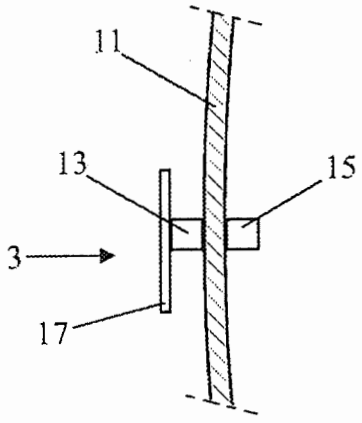


FIG. 3

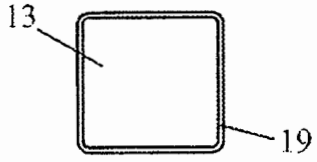


FIG. 4

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 1994 of 2286

Electronic Acknowledgement Receipt

EFS ID:	23635875
Application Number:	14323937
International Application Number:	
Confirmation Number:	2130
Title of Invention:	HAND HELD APPLIANCE
First Named Inventor/Applicant Name:	Patrick Joseph William MOLONEY
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Donna Bernecker
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662077100
Receipt Date:	29-SEP-2015
Filing Date:	03-JUL-2014
Time Stamp:	17:30:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

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Information:					
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I hereby certify that this paper is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: September 29, 2015 Signature: /dbernecker/
(Donna Bernecker)

Patent
Docket No. 424662077100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Patrick Joseph William MOLONEY et al.

Application No.: 14/323,937 Confirmation No.: 2130

Filed: July 3, 2014 Art Unit: 3743

For: HAND HELD APPLIANCE Examiner: K. Rinehart

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97 & § 1.98

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

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va-459154

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Dated: September 29, 2015

Respectfully submitted,

By /christopher gloria/
Christopher Gloria
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va-459154

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	1	of	1

Complete if Known	
Application Number	14/323,937
Filing Date	July 3, 2014
First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3744
Examiner Name	Stephen Michael Gravini
Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	US-5,555,637	09-17-1996	Montagnino	
	2.	US-6,792,692	09-21-2004	Takizawa et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	3.	JP-41-22432	11-09-1966		Partial Translation	x
	4.	JP-48-13744	04-14-1973		English Translation of Abstract	
	5.	JP-52-29579	03-01-1977		English Translation of Abstract	
	6.	JP-58-32706	03-03-1983	Yoshitaka OHARA; Kunio TAKEMORI; Junji OE	Machine Translation	x
	7.	JP-60-193408	10-01-1985		Figures	
	8.	JP-63-238807	10-04-1988		Partial Translation	x
	9.	JP-2003-153731	05-27-2003	Matsushita Electric Works Ltd. (Hisafumi KODAMA)	Machine Translation	x
	10.	JP-2005-532131	10-27-2005	Wella Aktiengesellschaft (Detlef MATTINGER et al.)	Corresponds to US-2005/0229422 previously cited	

Examiner Signature		Date Considered	

*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	11.	Moloney et al., U.S. Office Action mailed January 15, 2016, directed to U.S. Application No. 14/323,785; 13 pages	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

VA-465935

Electronic Acknowledgement Receipt

EFS ID:	24688370
Application Number:	14323937
International Application Number:	
Confirmation Number:	2130
Title of Invention:	HAND HELD APPLIANCE
First Named Inventor/Applicant Name:	Patrick Joseph William MOLONEY
Customer Number:	25227
Filer:	Nathan Schuler Vogler/Ghita Haronni
Filer Authorized By:	Nathan Schuler Vogler
Attorney Docket Number:	424662077100
Receipt Date:	21-JAN-2016
Filing Date:	03-JUL-2014
Time Stamp:	22:39:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	IDS_424662077100.pdf	25389 88187896b872a6b68a07e903c9b223de62bed895	no	2

Warnings:	
Information:	

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324

2	Foreign Reference	JP_41_22432.pdf	283846 90018d5d63e7598fabeaab2c110bb1cda2ad2e35	no	3
Warnings:					
Information:					
3	Foreign Reference	JP_48_13744.pdf	367750 11c07368973eca0470cedf02cbd383baba0a8039	no	3
Warnings:					
Information:					
4	Foreign Reference	JP_52_29579.pdf	513878 d699918115b583838be208a214e17d4a46b176ca	no	11
Warnings:					
Information:					
5	Foreign Reference	JP_58_32706.pdf	1080995 f7ade78c40155e0751ae84b5136afcc1945fee4d	no	26
Warnings:					
Information:					
6	Foreign Reference	JP_60_193408.pdf	974552 69f6c77f30c410bb245504a439d042106baf698b	no	6
Warnings:					
Information:					
7	Foreign Reference	JP_63_238807.pdf	310699 05b64491fc62e0f4686f3b1acdffcadb77cd0086	no	7
Warnings:					
Information:					
8	Foreign Reference	JP_2003_153731.pdf	659432 50362a602965bbd0c64c446ad5cd41e6f52c758c	no	15
Warnings:					
Information:					
9	Foreign Reference	JP_2005_532131.pdf	367246 c981140c67dd30cc39150332b93424f9b2043637	no	11
Warnings:					
Information:					
10	Non Patent Literature	14323785_2078700_JAN152016.pdf	513637 fd8b898ff809db5caf2b1863bb18da913ef7409c	no	13
Warnings:					
Information:					

11	Information Disclosure Statement (IDS) Form (SB08)	SB08_424662077100.pdf	29762 5a5ba3e5554bd2a1a9c415fdd995f65714fe51ac	no	1

Warnings:

Information:

This is not an USPTO supplied IDS fillable form

Total Files Size (in bytes):	5127186

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

I hereby certify that this paper is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: January 21, 2016
Electronic Signature for Ghita Haronni: /Ghita Haronni/

Patent
Docket No. 424662077100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Patrick Joseph William MOLONEY et al.

Application No.: 14/323,937 | Confirmation No.: 2130

Filed: July 3, 2014 | Art Unit: 3744

For: HAND HELD APPLIANCE | Examiner: Stephen Michael Gravini

INFORMATION DISCLOSURE
STATEMENT UNDER 37 C.F.R. § 1.97 & § 1.98

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 C.F.R. § 1.97 and § 1.98, Applicants submit for consideration in the above-identified application the documents listed on the attached Form PTO/SB/08a/b. Copies of the foreign documents and non-patent literature are submitted herewith. The Examiner is requested to make these documents of record.

Concerning a brief explanation of the relevancy of the teachings of the cited foreign prior art reference pursuant to 37 CFR 1.98(a)(3)(i), Applicants indicate on the attached Form PTO/SB/08a/b that JP-2005-532131 corresponds to US-2005/0229422 (a U.S. counterpart).

This Information Disclosure Statement is submitted within three months of the application filing date or before mailing of a first Office Action on the merits; accordingly, no fee or separate requirements are required.

va-465938

Applicants would appreciate the Examiner initialing and returning the Form PTO/SB/08a/b, indicating that the information has been considered and made of record herein.

The information contained in this Information Disclosure Statement under 37 C.F.R. § 1.97 and § 1.98 is not to be construed as a representation that: (i) a complete search has been made; (ii) additional information material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the above information constitutes prior art to the subject invention.

In the unlikely event that the transmittal form is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief (such as payment of a fee under 37 C.F.R. § 1.17 (p)) is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petition and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing (424662077100). However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: January 21, 2016

Respectfully submitted,

Electronic signature: /christopher gloria/
Christopher Gloria
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MORRISON & FOERSTER LLP
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va-465938

(Translation)

1 Japanese Utility Model Publication No.41-22432

Title: HAIR DRIER

Description

The present invention relates to an air flux changing cylinder of a hair drier, in particular an air flux changing cylinder of a hair drier characterized in that it can readily be attached to and detached from a cylindrical air discharge tube of the hair drier.

Referring to the drawings, the present invention will now be discussed. 1 denotes a cylindrical air discharge tube of the hair drier within which a heater 2 is mounted. The cylindrical air discharge tube 1 is composed of a magnetic material. 3 denotes an air flux changing cylinder to be detachably mounted over the cylindrical air discharge tube 1 and having an end comprising an extremely flattened nozzle 4 and another end or an annular tubular end having an inner peripheral surface formed with an annular groove 5 inside which a ring-like rubber magnet 7 having an inner peripheral surface provided with a multiplicity of irregularities 6 is fitted.

When the air flux changing cylinder 3 is mounted over the cylindrical air discharge tube, if the air flux changing cylinder 3 is slightly inserted, the air flux changing cylinder 3 can be mounted onto the cylindrical air discharge tube due to the magnetic material of the cylindrical air discharge tube 1 and the attractive forces of the ring-like rubber magnet 7. Since the peripheral inner surface of the ring-like rubber magnet 7 is provided with a multiplicity of irregularities 6 and thus does not completely closely contact with the cylindrical air discharge tube 1, the rubber magnet 7 is cooled by atmospheric air flowing through gaps of the irregularities 6 of the rubber magnet 7. Thus, reduction in the magnetic forces due to increase of the temperature as well as reduction in the resiliency of the rubber magnet are prevented.

As discussed above, in accordance with the present application, since the rubber magnet having a multiplicity of irregularities on its inner peripheral surface is mounted in the inner peripheral surface of the mounting portion of the flux changing cylinder to be mounted over the cylindrical air discharge tube, the flux changing cylinder can be extremely readily attached and detached and the increase in the temperature of the rubber magnet can be securely prevented. Furthermore, the mounting of the flux changing cylinder over the cylindrical air discharge tube made by means of the resilient material prevents damage to the cylindrical air discharge tube and thus is very practical.

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特　許　庁

実用新案公報

実用新案出願公告
昭41−22432
公告　昭41.11.9
（全2頁）

ヘアドライヤー

実　　願　昭　40−15754
出　願　日　昭・40．2．27
考　案　者　三宅祐司
守口市京阪本通2の18三洋電機株式会社内
出　願　人　三洋電機株式会社
守口市京阪本通2の18
代　表　者　井植歳男

図面の簡単な説明

図面は本考案の一実施例を示し、第1図はヘアドライヤーの要部断面図、第2図は風束変換筒の斜視図である。

考案の詳細な説明

本考案はヘアドライヤーの風束変換筒に関するもので、特にヘアドライヤーの吐風筒管に非常に容易に着脱が出来る特徴を有するものである。

本考案を図により説明すると、1はヘアドライヤーの吐風筒管で、その内部に発熱体2が装着されている。3は上記吐風筒管に着脱自在に装着される風束変換筒で、その先端は極めて扁平なノズル部4となつており、又その他端すなわち吐風筒管と嵌合する環状筒部の端部内周面に環状凹溝5を形成し、その環状凹溝に内周面に多数凹凸部6を有するリング状ゴム磁石7を嵌込んでなる。

今吐風筒型2に風束変換筒3を装着する場合はその風束変換筒を吐風筒管に軽るく挿入すれば、その吐風筒管は磁性体より成るためリング状ゴム磁石7の吸着力にて装着出来る。又リング状ゴム磁石7の内周面は凹凸部6を有するため吐風筒管1には完全に密着しないからその隙間を通つて吸込まれる外気によりそのゴム磁石が冷却されるので温度上昇による磁力の低下を防止すると共に熱によるゴム磁石の弾力性の低下を防止する。

以上の如く本考案は吐風筒管に装着される風束変換筒の装着部内周面に、内面に多数の凹凸部を有するゴム磁石を取付けたから風束変換筒の着脱は極めて容易でしかも確実であり、又磁石の温度上昇をも防ぎ得るものである。

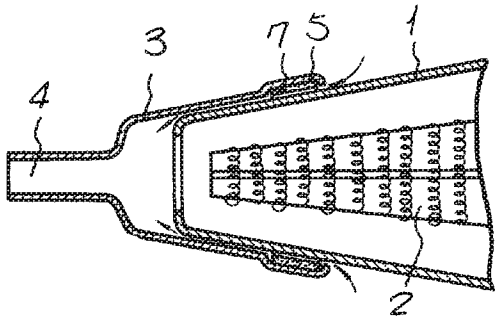
更に装着は弾性体により行われる為吐風筒管を傷つける事もなく非常に実用的である。

実用新案登録請求の範囲

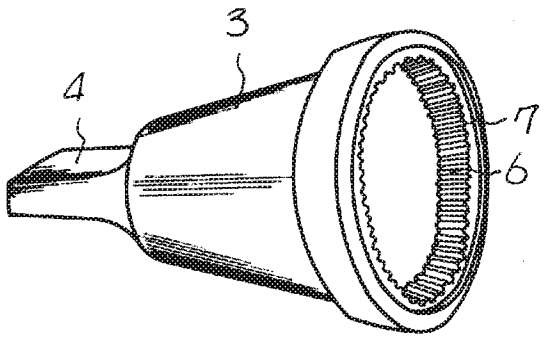
磁性体よりなる吐風筒管に着脱自在に装着される風束変換筒の装着部内周面に、内面に多数の凹凸部を有するリング状ゴム磁石を装着してなるヘアドライヤー。

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第１図



第２図



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(Translation)

5 Japanese Utility Model Publication No.48-13744

Title: HAIR DRIER

Abstract:
There is disclosed a hair drier comprising an air blow cylinder 3 and an angular partition wall 4 provided within the air blow cylinder 3 to divide the interior portion of the air blow cylinder such that a heater 5 is mounted about the partition wall 4 and such that a heater 6 is mounted within the partition wall 4 wherein the heaters 5 and 6 are adapted to be simultaneously actuated and only the heater 6 is adapted to be actuated.

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⑤Int.Cl.
A 45 d 20／10

⑤2日本分類
125 E 51

⑲日本国特許庁

⑪実用新案出願公告
昭48-13744

実用新案公報

④④公告 昭和48年(1973) 4月14日

(全2頁)

1

⑤④ヘヤードライヤー

②①実 願 昭44—77831
②②出 願 昭44（1969）8月15日
②⑦考 案 者 出願人に同じ
②①出 願 人 松田修一
京都市左京区下鴨泉川町6の38

図面の簡単な説明

第1図は、本案ドライヤーの一部断面側面図、第2図は通風筒先端部の正面図である。

考案の詳細な説明

本案は起風扇を廻動せしめ、ヒーターを介して通風筒より熱風を送出するヘヤードライヤーであつて、通風筒より熱風と冷風を、異なる通風路より同時に吐出せしめるように考案されたものである。

本案は電動機、起風扇等（図示せず）を収容した収容部1の前半部角形の通風筒3の内部に、同じく角形の筒状隔壁4を設けて、通風筒3の内部を区分し、該隔壁4の周囲にはヒーター5を取付けると共に、隔壁4の内部にはヒーター6を設けてなるものであつて、ヒーター5，6を同時に加熱することもでき、またヒーター6のみを単独に加熱することもできるようにしたヘヤードライヤーであつて、図中2は把手、7，8はいずれも通風路、9は隔壁4を保持せしめた取付具である。

なお、ヒーター5，6は電源に対して直列または並列に接続され、それぞれは適当なスイツチによりヒーター6のみは単独にまたヒーター5，6は同時に通電されるものである。

上述の構造よりなる本案において、ヒーター5，6を同時に加熱し、起風扇を廻動せしめると、風はヒーターを介して熱風となり、通風路7，8を通つて吐出される。この場合は従来公知のヘヤードライヤーによる使用効果となんら異なるものでないが、次に本案ドライヤーの特色とする使用方法についてその実施の状態を説明する。

2

まず起風扇を廻動せしめると共に、ヒーター6のみを単独に加熱する。この際ヒーター5は加熱しない。したがつて通風路7は熱風を吐出し、通風路8を通つた風は冷風のまゝ吐出される。

従来のヘヤードライヤーは、熱風または冷風がそれぞれ単独の状態で送出されるので、その熱風を使用して整髪を行なう際には、櫛またはブラシを用いて頭髪を折り曲げるが如くにして、その部分に熱風を当てゝこれを行なうが、毛髪の冷えぬうちに櫛またはブラシを離すと、毛髪の弾性のために固定しにくいので、毛髪のやゝ冷えるのを待つてこれを離すことが、整髪効果を上げるために要求されていた。それに比べて本案ヘヤードライヤーでは、中心部の通風路7より吐出される熱風によつて毛髪を型どつた後、送風口を横動せしめると、通風路8より吐出された冷風が急速に毛髪を冷やすので、毛髪を速かに効果的に固定することができるものである。

また本案は中心部を熱風吐出口とし、周囲を冷風の吐出口としてあるので、吐風口をどの方向に移動せしめても、同様な使用効果を得ることができるものである。

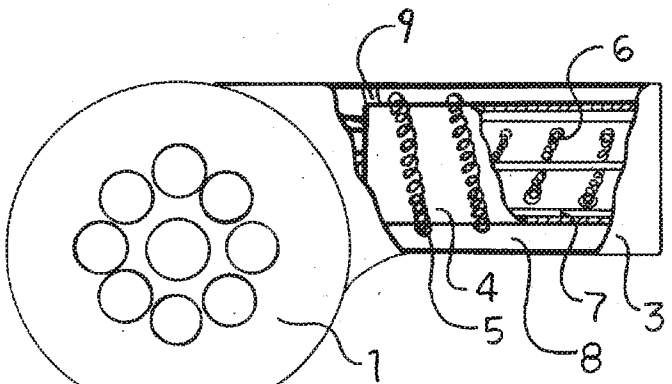
以上説明したように本案ヘヤードライヤーは、頭髪の乾燥等の際には、ヒーター5，6を同時に加熱することによつて熱風を多く得ることができ整髪の際にはヒーター6のみを加熱することによつて、熱風と冷風を同時に効果的に使用できるので、従来のヘヤードライヤーになかつた使用上の効果を得ることができる。

⑤⑦実用新案登録請求の範囲

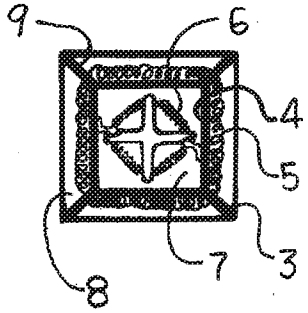
図面に示すようにヘヤードライヤーの通風筒3内に、角形の筒状隔壁4を設けて通風筒の内部を区分し、該隔壁4の周囲にはヒーター5を取付け隔壁4の内部にはヒーター6を設けて、これらのヒーター5，6は、同時に加熱することもでき、またヒーター6のみを単独に加熱することもできるようにした、ヘヤードライヤーの構造。

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第１図



第２図



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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
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(Translation)

2 Japanese Utility Model Application No.50-113919 (Japanese Utility Model Laid-Open Publication No.52-029579)

Title: HAIR DRIER

Abstract
There is disclosed and claimed a hair drier comprising a hair drier body (1) having a discharge outlet (2) and a rod-like brush body (4) including a rod body (5) and brushes (3) around the rod body (5) and having one end mounted to the discharge outlet (2) of the hair drier body (1) wherein the peripheral surface of the rod (5) of the rod-like brush (4) is provided with a plurality of escape holes (6) each having a bottom (7) and the brushes (3) are implanted in the bottoms (7) of the escape holes (6).

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⑲日本国特許庁

⑤1 Int.Cl².
A 45 D 20／12

⑤2日本分類
125 E 512

公開実用新案公報

庁内整理番号　6921－46

⑪実開昭52－29579

㊸公開　昭52(1977). 3. 1

審査請求　有

⑤4ヘアードライヤー

㉑実　　願　昭50－113919
㉒出　　願　昭50（1975）8月18日
㉒考　案　者　井原真次
門真市大字門真1048松下電工株式会社内
㉑出　願　人　松下電工株式会社
門真市大字門真1048
㉔代　理　人　弁理士　竹元敏丸　外2名

⑤7実用新案登録請求の範囲

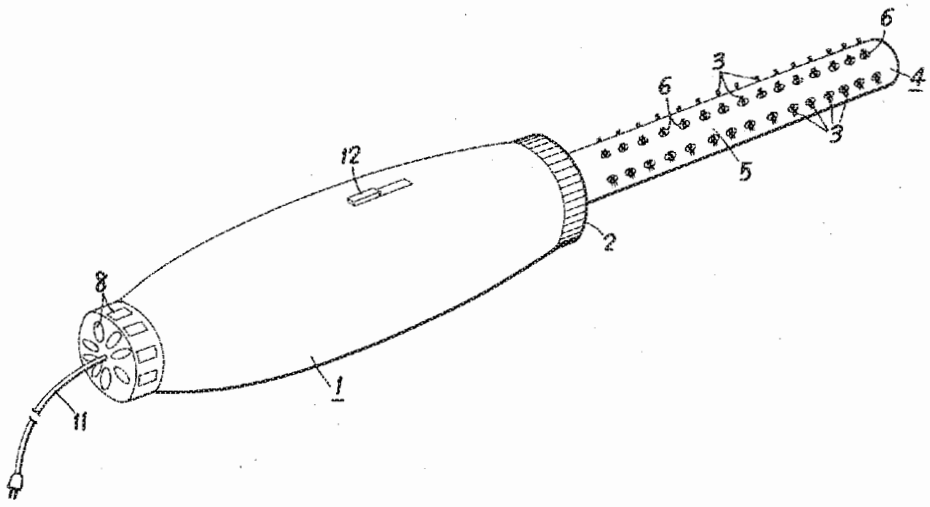
ヘアードライヤー本体1の吐出口部2に周囲にブラシ3を設けた棒状ブラシ体4の一端部を装着してなるヘアードライヤーにおいて、棒状ブラシ体4の棒体5の周面に複数個の逃げ穴6を設けると共に、該逃げ穴6の底部7にブラシ3を植設したことを特徴とするヘアードライヤー。

図面の簡単な説明

第1図は本考案に係るヘアードライヤーの一実施例を示す斜視図、第2図は上記ヘアードライヤーにおける棒状ブラシ体の横断面図、第3図は上記棒状ブラシ体における部分拡大断面図。

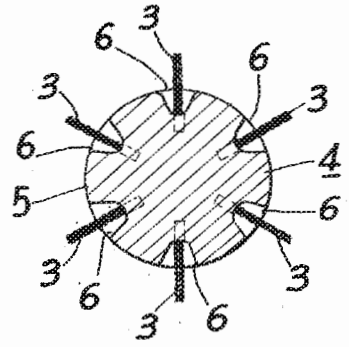
1……ヘアードライヤー本体、2……吐出口部、3……ブラシ、4……棒状ブラシ体、5……棒体、6……逃げ穴、7……逃げ穴の底部、8……吸込口、9……間隙、10……植毛穴、11……電源コード、12……スイッチ、13……毛髪。

第1図

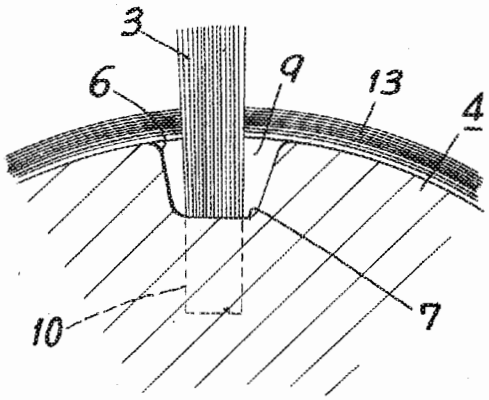


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第２図



第３図



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正

[redacted]

¥3000　実用新案登録願（ 3 ）

昭和50年8月18日

特許庁長官　殿

1　考案の名称

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　（ほか2名）

5　添付書類の目録
　（1）明細書　1通
　（2）図面　1通
　（3）委任状　1通
　（4）願書副本　1通

方式審査

50-113919

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明　細　書

1. 考案の名称　　ヘアードライヤー

2. 実用新案登録請求の範囲

ヘアードライヤー本体1の吐出口部2に周囲にブラシ3を設けた棒状ブラシ体4の一端部を装着してなるヘアードライヤーにおいて、棒状ブラシ体4の棒状体5の周面に複数個の逃げ穴6を設けると共に、該逃げ穴6の底部7にブラシ3を植設したことを特徴とするヘアードライヤー。

3. 考案の詳細な説明

本考案はヘアードライヤーに設けられた棒状ブラシ体に毛髪を巻き付け、該毛髪に風を当てるヘアードライヤーにおいて、セット終了後にブラシから毛髪を外し易いようにしたものである。

従来のこの種のヘアードライヤーの棒状ブラシ体は棒体の周面にブラシを直接植設していたから、棒状ブラシ体に巻き付けた毛髪を外すとき、ブラシの根元に挟み込まれた毛髪が外れにくく、毛髪が抜けたり又切角のセットがくずれる等の欠点があつた。

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本考案は上記の欠点を除去せんとしたものであり、以下本考案の一実施例を示す図面を参照して説明する。

図において、1はヘアードライヤー本体でありその内部にはファン、モーター、ヒーター等の部品が内蔵されており、吸込口6から風が吸い込まれ吐出口部2から冷風又は熱風が棒状ブラシ体4の軸方向に略平行に吐出されるのである。棒状ブラシ体4はその一端部を吐出口部2に着脱自在に装着されており、その構成は棒状体5の周面に複数個の逃げ穴6を設け、該逃げ穴6の底部に複数本のブラシ毛からなるブラシ3を植設したものである。このとき逃げ穴6の開口部とブラシ3との間には間隙9が形成される。10は植毛穴、11は電源コード、12はスイッチ、13は毛髪である。

上記ヘアードライヤーは棒状ブラシ体4に毛髪13を巻き付け該毛髪13に冷風又は熱風を当て該毛をセットするというものであるが、前述の如く本考案はヘアードライヤー本体1の吐出口部2に周面にブラシ3を設けた棒状ブラシ体4の一端部を

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装着してなるヘアードライヤーにおいて、棒状ブラシ体4の棒体5の周面に複数個の逃げ穴6を設けると共に、該逃げ穴6の底部7にブラシ3を植設したことを特徴とするヘアードライヤーに係るものであるから、第3図に示すように棒状ブラシ体4に巻装された毛髪13はブラシ3の根元に食い込むことはなく、従つて、棒状ブラシ体4に毛髪を強く巻き付けて良好なカール付けを行うことができると共に、セット終了後には毛髪13をブラシ3からセットをくずすことなく簡単に外すことができるという効果がある。

4. 図面の簡単な説明

第1図は本考案に係るヘアードライヤーの一実施例を示す斜視図、第2図は上記ヘアードライヤーにおける棒状ブラシ体の横断面図、第3図は上記棒状ブラシ体における部分拡大断面図。

1…ヘアードライヤー本体、2…吐出口部、3…ブラシ、4…棒状ブラシ体、5…棒体、6…逃げ穴、7…逃げ穴の底部、8…吸込口、9…間隙、10…植毛穴、11…電源コード、12…スイッチ、

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13 … 毛髪。

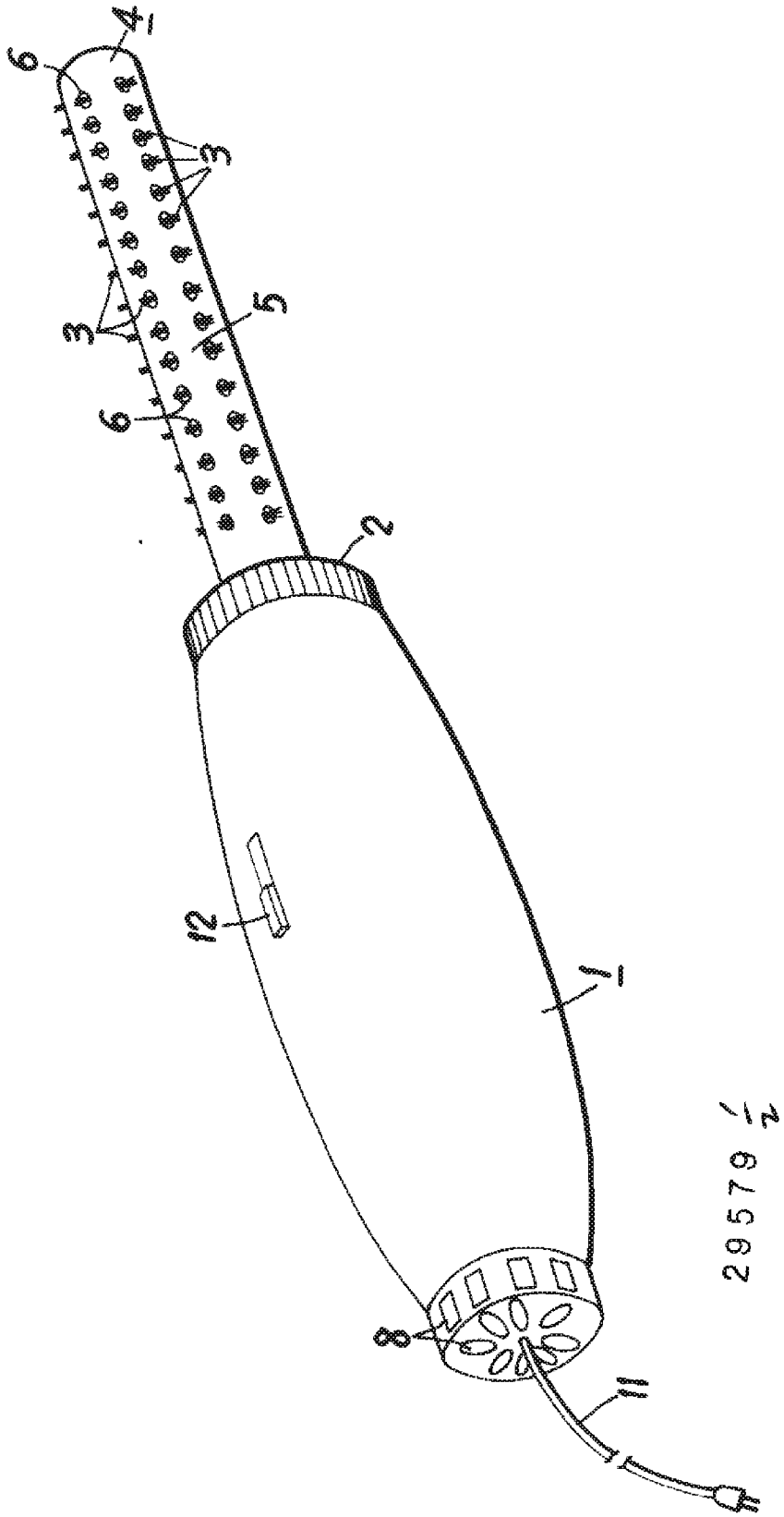
実用新案登録出願人

松下電工株式会社

代理人弁理士 竹元敏丸

（ほか2名）

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第 1 図

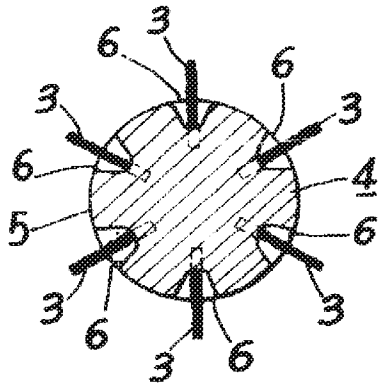
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代理人 弁理士 竹 元 敏 丸 外2名

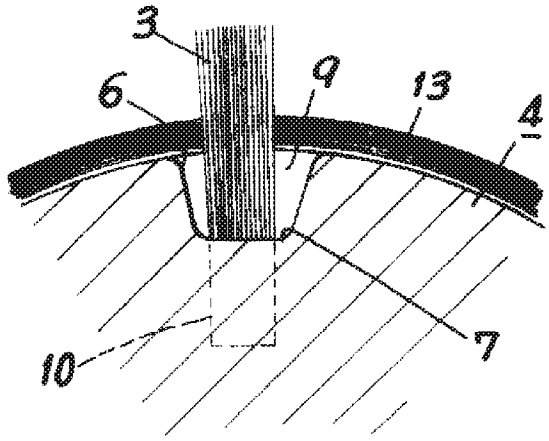
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第 2 図



第 3 図



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代理人 弁理士 竹 元 敏 丸 外2名

50-340A1198

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6　前記以外の考案者、実用新案登録出願人または代理人

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住　所

氏　名

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(Translation)

1 Japanese Utility Model Application No.56-125919 (Japanese Utility Model Laid-Open Publication No.58-032706)

1. TITLE
HAIR DRIER

2. CLAIMS
1. A hear drier comprising a hollow case body comprising an air feeding chamber formed with air intake apertures in its lower portion, a handle portion in its intermediate portion and an upper housing in its upper portion, the upper housing including an opening front face end having its opening edge portion bent inwardly and a rear end face integrally formed with an outflow portion provided with an aperture, wherein the air feeding chamber houses a motor and a fan driven in rotation by the motor, wherein the handle portion houses a heat source, wherein the case body is equipped with an air blow tube having a front end and a rear end and disposed within the outflow portion, the air blow tube extending in the front to rear direction with the front end of the air blow tube located within the inwardly bent portion and with the rear end projecting rearwardly through the aperture so as to form a gap with the inner peripheral surface of the outflow portion, and wherein the case body is mounted with a power cord for the heat source and a switch for turning on and off the supply of power to the heat source by external operation.

2. A hair drier according claim 1, wherein the heat source comprises a heater (10) wound on a cross-shaped bobbin.

3. A hair drier according to claim 1 or claim 2, wherein the fan comprises a cylindrical body formed with a multiplicity of vanes on its outer periphery.

3. Description
This invention relates to a hair drier adapted to dry hair on its inflow side without blowing a hot air.

The prior art hair driers, which are all of the type drying hair by blowing a hot air, not only give a user discomfort, but also can have a tendency to cause damage to hair and injury to the skin of the head. This tendency is increasingly influenced when switching to high temperature. The prior art hair driers also have an inconvenience that in use, the proximity distance between the outflow port and the head must be adjusted.

Thus, an object of the invention is to solve such prior art inconveniences.

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An embodiment of the present invention will be described with reference to the drawings. (1) denotes a hollow case body comprising an air feeding chamber (1a) in its lower portion in which the air feeding chamber (1a) contains a motor (2) and a fan (3) driven in rotation by the motor (2), a handle portion (1b) in its intermediate portion within which a heat source (4) is mounted, and an outflow portion (1c) within which an air blow tube (5) is mounted in an integral manner, wherein the fan (3) comprises a cylindrical body (3a) having one end which is open and the other end which is closed and formed with a multiplicity of vanes (3b), (3b) · · · · · · such as by cutting and raising on its outer periphery. The motor (2) is mounted within the cylindrical body thus formed and its rotation shaft (2') is journaled on the central portion of the closed end face via a fitting tool (6). The fan (3) within which the motor (2) is mounted is stored within the air feeding chamber (1) and the motor (2) is secured such as by a fastener or an adhesive (7). The heating source (4) comprises a heater (19) wound on a bobbin (9) comprising insulative plates having collars (8) at the upper and lower end and joined in cross shape is mounted within the handle portion (1b) of the case body (1) in the state surrounded by heat insulation material (11). The handle portion (1b) comprises a double tube comprising an inner wall (12) and an outer wall (13) on the rear side and a space (14) is formed between the inner wall (12) and the outer wall (13) for storing a wiring and the like. The outer wall (13) is mounted at its middle portion with switches (15) for switching to a high temperature air, a low temperature air and a cool air and so on and is mounted at its bottom portion with a power cord (16). The outflow portion (1c) of the case body (1) extends in a direction perpendicular to the handle portion (1b) and presents a cylindrical shape which is closed at its rear face and is open at its front face. The edge portion of its opening front face is bent inwardly in a U-shape and the rear face is formed with an aperture (17). The air blow tube (5) is mounted within the outflow portion (1c) in a coaxial manner with its front end located within the bent portion (18) and with its rear end projecting rearwardly through the aperture (17) so as to form a gap with the inner peripheral surface of the outflow portion (1c). (19) denotes apertures formed in the lower surface of the air feeding chamber (1a) of the case body (1), (20) denotes a protecting resistor and (21) denotes a thermostat. The .protecting resistor (20) and the thermostat (21) are connected to the power cord (16) together with the switch (15). (22) denotes an auxiliary member provided for covering the handle portion (1b) of the case body (1) and surrounding the outer periphery of the front portion of the outflow portion (1c) such that the heat conduction from the heat source (4) can be securely insulated. A through-hole (24) is formed in a portion of the air feeding chamber (1) of the lower portion of the case body (1) which is in communication with a flow path (23) formed in the auxiliary member and the front face portion.

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When the motor (2) is driven in rotation, the fan (3) is also driven in rotation integrally to feed atmospheric air through the apertures (19) to the heating source (4) to be heated, and hot air is passed through the gap between the outflow portion (1c) and the air blow tube (5) and through the bent portion (18) of the outflow portion (1c) and is directed to the front end face and is discharged through the rear end of the air blow tube (5).

On the other hand, the atmospheric air from the air feeding chamber (1a) passes through the flow path (23) to the upper portion and the air flowing out into its opening portion (22') is guided by the flow of the hot air through the air blow tube (5) and is discharged to the atmosphere.

In use, without the upper opening (22') of the auxiliary member (22) or the auxiliary member (22), the bent portion (18) can be moved in sliding manner on the head surface while being lightly pressed against the head. Then the water drops adhered to the portion of the head against which the bent portion (18) is pressed are vaporized by the hot air, and the vaporized moisture is entrained by the flow of the hot air and is discharged from the air blow tube. Of course, the hair drier can also be used in the same manner as the conventional hair .drier by utilizing the hot air discharged from the air blow tube (5).

Thus, in accordance with the present invention, since hair can be dried without blowing hot air as in the prior art, there is no tendency to cause damage to hair or injure to the skin. Moreover, the hair drier can be conveniently used with the case body lightly pressed against the head and there is also an advantage of solving the inconvenience of discomfort due to blowing of hot air and so on.

4. BRIEF DESCRIPTION OF THE DRAWINGS

FIG.1 is a general side view of an embodiment of the present invention;
FIG.2 is a rear view of the same;
FIG.3 is a side view with a portion in transverse section;
FIG.4 is a plan view with the handle portion in cross-section; and
FIG.5 is a plan view with the flow feeding chamber in section and the fan half cut.

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Reference D3

Utility Model:

Application No: S56-125919

Filing Date: August 27, 1981

Laid-open Disclosure No: S28-32706

Disclosure Date: March 3, 1983

Title of Invention: Hair Dryer

Applicant: Mr. Yoshitaka Ohara, et al

Abstract:

A conventional hair dryer is of the type which blows hot air against the hair. The type of hair dryer gives unpleasant feeling to a user and it causes to damage hair so it was inconvenient for the user since he/she have to adjust the distance between his/her hair and the hair dryer. The present invention is for solving the problems.

In use, the fan (3) is rotated by the motor (2) whereby air is delivered through the inlet (19) via the heater (4). After the air has been heated, the air flows the space between the air outlet section and the air delivery tube, and then, the bent section (18), to the air delivery tube (5), then to the outside through the end of the air delivery tube (5).

On the other hand, the outside air, which has come into the blowing air chamber (1a), upwardly passes through the flow passage (23) and them to the outside through the delivery tube (5).

In use, if it does not have the support member 22, a user press the curved section (18) against the head and rub thereby, whereby water droplets adhered to the head evaporates due to heat.

Reference numerals

1. case body

1a. blowing air chamber

1b. handle

1c. air outlet section
2. motor
3. fan
4. heat source
5. air delivery tube
9. bobbin
10. heater
15. switch
16. electric code
18. curved section
19. inlet
22. support member
23. flow path

(19) JAPANESE PATENT OFFICE (JP)

(11) Published Utility Model No.

(12) Utility Model Application (U)

S58-32706

(51) Int. Cl.[3]	ID Code.	Internal Filing No.
A 45 D 20/10	104	7030-3B
	102	7030-3B
	103	7030-3B

(43) Publication Date: March 3, 1983

Examination Requested: Not Requested

(Total of 2 pages [in original])

(54) Hair Dryer

(21) Utility Model Application No. S56-125919

(22) Filing Date: August 27, 1981

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(74) Agent: Patent Attorney OUCHI Toshiharu

(57) Claims of Utility Application Model

(1) A hair dryer comprising: an integrally formed hollow casing including, at a lower portion, a blowing chamber with an air hole, at a central portion, a handle portion and, at an upper portion, a discharge portion having a front end and a rear end, an edge of the front end being formed so as to curve inwards and the rear end being pierced by a hole,

the lower portion blowing chamber containing a motor and a fan driven by the motor

the handle portion containing a heat source,

the upper portion discharge portion containing an air pipe extending in a front-rear direction with a front end positioned within the curved edge and a rear end projecting rearwards through the hole, the air pipe being arranged so that a space is formed between the air pipe and an inner peripheral surface of the upper portion discharge portion; and

attached to the casing, a power cord for the heat source and a switch for switching the power to the heat source on and off according to an external operation.

(2) The hair dryer according to claim 1, wherein

the heat source is formed by winding a heater 10 on a cross-shaped bobbin.

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(3) The hair dryer according to claim 1 or claim 2, wherein

the fan is constructed from a tubular body provided with a plurality of blades around the periphery thereof,

the tubular body contains a motor and a rotating shaft of the motor is attached to the tubular body.

Brief Description of the Drawings

The drawings illustrate an embodiment of the present invention. FIG. 1 is an overall side view. FIG. 2 is a back view. FIG. 3 is a side view of a partial vertical cross-section. FIG. 4 is a plan view showing a horizontal cross-section at a position of the handle portion. FIG. 5 is a plan view showing a transverse section through the air chamber position and a section through the fan.

In the drawings 1 denotes a casing, 1a denotes an air chamber, 1b denotes a handle portion, 1c denotes a discharge portion, 2 denotes a motor, 3 denotes a fan, 4 denotes a heat source, 5 denotes an air pipe, 9 denotes a bobbin, 10 denotes a heater, 15 denotes a switch, 16 denotes a cord, 18 denotes a curved portion, 19 denotes air holes, 22 denotes a reinforcing member, and 23 denotes an airflow path.

FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

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(4,000 yen)

Utility Model Registration Application (4), no added code

August 27, 1981

Patent Office Commissioner SHIMADA Haruki

1. Title of the Invention Hair Dryer

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3. Utility Model Applicant

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(Nationality)

4. Agent

Name: (6575) Patent Attorney TAKEMORI Kunio (and 2 others)

Address: 4th Floor, Daiwa Building, 2-9-2 Nishishinbashi, Minato-ku, Tokyo

5. List of Attached Documents

FORMAT	(1) Specification	1	(2) Drawings	1
CHECK	(3) Copy of Application	1	(4) Power of Attorney	1

For the Power of Attorney, the item attached to and filed on same dates as the Utility Model Application Code (1) will be used

[DATE STAMPED: Japan Patent Office; August 27, 2013; Applications Second Section]

Comparison with 58-32706 Tatsuzawa 56 125919 52

Specification

1. Title of Invention

Hair Dryer

2. Utility Model Registration Claims

(1) A hair dryer comprising: an integrally formed hollow casing including, at a lower portion, a blowing chamber with an air hole, at a central portion, a handle portion and, at an upper portion, a discharge portion having a front end and a rear end, an edge of the front end being formed so as to curve inwards and the rear end being pierced by a hole,

the lower portion blowing chamber containing a motor and a fan driven by the motor

the handle portion containing a heat source,

the upper portion discharge portion containing an air pipe extending in a front-rear direction with a front end positioned within the curved edge and a rear end projecting rearwards through the hole, the air pipe being arranged so that a space is formed between the air pipe and an inner peripheral surface of the upper portion discharge portion; and

attached to the casing, a power cord for the heat source and a switch for switching the power to the heat source on and off according to an external operation.

(2) The hair dryer according to claim 1, wherein

the heat source is formed by winding a heater 10 on a cross-shaped bobbin.

(3) The hair dryer according to claim 1 or claim 2, wherein

the fan is constructed from a tubular body provided with a plurality of blades around the periphery thereof, and

the tubular body contains a motor and a rotating shaft of the motor is attached to the tubular body.

3. Detailed Description of the Invention

The present invention relates to a hair dryer that dries hair on an intake side without blowing warm air against the hair.

All hair dryers of the prior art are arranged so that warm air is blown against the hair to dry it. This not only causes the user discomfort but, due to the warm air being blown against the head, may also damage the hair itself or the scalp. This tendency is particularly pronounced when the warm air is switched to hot air. Further, such an arrangement is inconvenient because when the dryer is used, a short distance must be maintained between the discharge outlet for the warm air and the head of the user.

The present invention has an object of solving the above-described problems of the prior art. An embodiment of the present invention is described below with reference to the drawings. In the drawings (1) denotes an integrally formed hollow casing having, at a lower portion, a blowing chamber (1a) containing a motor (2) and a fan (3) driven by the motor (2), at a central portion, a handle portion

(1b) containing a heat source (4) and, at an upper portion, a discharge portion (1c) housing an air pipe (5) that discharges warm air rearwards. The fan is formed of a tubular body (3a) that is closed at one end, open at the other, and includes numerous blades (3b), (3b)... formed at an external periphery thereof by slitting and forming or the like. The motor (2) is housed within the tubular body (3a) and a rotating shaft (2') of the motor (2) is engaged at a central portion of the closed end of the tubular body (3a) via an installation fixture (6). When the motor (2) is integrally attached to the fan (3), the resulting arrangement is fitted within the blowing chamber (1a) and the motor (2) is fixedly attached therein via a fixture and/or adhesive agent (7). The heat source (4) is formed by winding a heater (10) onto a cross-shaped bobbin (9) formed by bonding together insulating plates with extending edges (8). The heat source (4) is wrapped in insulating material (11) and installed within the handle portion (1b) of the casing (1). The handle portion (1b) has a rear side that is a double wall formed by an inner wall (12) and an outer wall (13), a space (14) for housing wiring or the like being formed between the inner wall (12) and the outer wall (13). A switch (15) for switching between high-temperature air and low-temperature air is attached at a central portion of the outer wall (13), and a power cord (16) is provided at a lower surface of the outer wall (13). The discharge portion (1c) of the casing (1), extends in a direction perpendicular to the handle portion (1b) and has a cylindrical shape with a closed rear surface and an open front surface, the edge of the opening in the front surface including an inward-orientated U-profile curve. Further, the air pipe (5) is concentrically provided within the discharge portion (1c) in such a way that a rear end is open, the front end being positioned within the curved portion (18) in the discharge portion (1c) and the rear end protruding rearwards through a hole (17) so that a space is formed between the air pipe (5) and the inner peripheral surface of the discharge portion (1c). (19) denotes an air hole formed on a bottom surface of the blowing chamber (1a) of the casing (1), (20) denotes a protective resistor, and (21) denotes a thermostat. The protective resistor (20) and the thermostat (21) are connected to the switch (15) and the power cord (16). (22) denotes a reinforcing member provided so as to surround an outer periphery of the front end of the discharge portion (1c) and cover the front surface of the handle portion (1b) of the casing (1) to more reliably insulate the handle portion (1b) from heat conducted from the heat source (4). A through hole (24) communicating with the airflow path (23) formed by the reinforcing member and the front portion of the casing (1) opens into the lower portion blowing chamber (1a).

Thus, when the motor (2) is caused to turn via the switch (15), the fan (3) rotates and external air is drawn to the heat source (4) via the air hole (19). The air is heated and guided to the front end of the air pipe (5) through the space between the discharge portion (1c) and the air pipe (5) and the curved portion (18) of the discharge portion (1c). Thereafter, the warm air is discharged from the rear end of the air pipe (5).

External air from the blowing chamber (1a) also arrives at the upper portion via the airflow path (23) and is discharged to the opening portion (22'). The air is then guided by the flow of warm air discharged to the outside through the air pipe (5).

Hence, when a hair dryer not including the upper opening portion (22') or the reinforcing member (22) is used, the user moves the curved portion (18) of the upper portion discharge portion (1c) of the casing (1) back and forth, lightly pressing it against the surface of the head. Water droplets adhering to

the hair at the pressed position are evaporated by the warm air, and the resulting water vapor is discharged from the air pipe (5) with the flow of warm air. Here, any loose hair that has fallen from the head or the like is also sucked in and discharged from the air pipe (5). Note that by using the warm air discharged from the air pipe (5), the hair dryer can also be used in the same way as the hair dryers of the prior art.

According to the above-described invention, it is possible to dry hair without blowing warm air as in the prior art, making it possible to avoid damaging the hair or the scalp. Also, since the invention can be used by lightly touching the casing against the head, it is easy to use. A further is advantage is that the discomfort associated with the blowing of warm air is eliminated.

4. Brief Description of the Drawings

The drawings illustrate an embodiment of the present invention. FIG. 1 is an overall side view. FIG. 2 is a back view. FIG. 3 is a side view of a partial vertical cross-section. FIG. 4 is a plan view showing a horizontal cross-section at a position of the handle portion. FIG. 5 is a plan view showing a transverse section through the air chamber position and a section through the fan.

In the drawings 1 denotes a casing, 1a denotes an air chamber, 1b denotes a handle portion, 1c denotes a discharge portion, 2 denotes a motor, 3 denotes a fan, 4 denotes a heat source, 5 denotes an air pipe, 9 denotes a bobbin, 10 denotes a heater, 15 denotes a switch, 16 denotes a cord, 18 denotes a curved portion, 19 denotes air holes, 22 denotes a reinforcing member, and 23 denotes an airflow path.

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FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

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⑫ 公開実用新案公報（U）　　昭58—32706

⑤1Int. Cl.³	識別記号	庁内整理番号	④3公開　昭和58年(1983)3月3日
A 45 D 20/10	104	7030—3B	
	102	7030—3B	
	103	7030—3B	審査請求　未請求

（全 2 頁）

⑤4頭髪用ドライヤー

⑵1実　　願　昭56—125919
⑵2出　　願　昭56(1981)8月27日
⑦2考　案　者　小原良隆
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⑦4代　理　人　弁理士　大内俊治

⑤7実用新案登録請求の範囲

(1) 下部に入気孔を形成した送風室を、中間部に手持部を、上部に前端面が開口しその開口縁を内方に鬻曲状に屈曲成形すると共に、後端面に孔を開設した流出部を一体に形成した中空状のケース本体の前記下部送風室内に、モータ及びこのモータにより回転されるファンを、また前記手持部内に熱源を、また前記上部流出部内に、前端が前記鬻曲状内に位置し後端が前記孔を介して後方に突出して前後方向に延びる送気管を、前記上部流出部の内周面との間に空隙が生じるように夫々装備し、かつ前記ケース本体に、前記熱源用の電源コードと、熱源に対する通電を外部操作により切換える切換スイッチとを取付けて成る頭髪用ドライヤー。

(2) 熱源が、十字状のボビンにヒータ10を巻回して成る実用新案登録請求の範囲第1項記載の頭髪用ドライヤー。

(3) ファンを、外周囲に多数の羽根を設けた円筒体から構成し、この円筒体内に、モータを内装してその回転軸に前記円筒体を取付けて成る実用新案登録請求の範囲第1項または第2項記載の頭髪用ドライヤー。

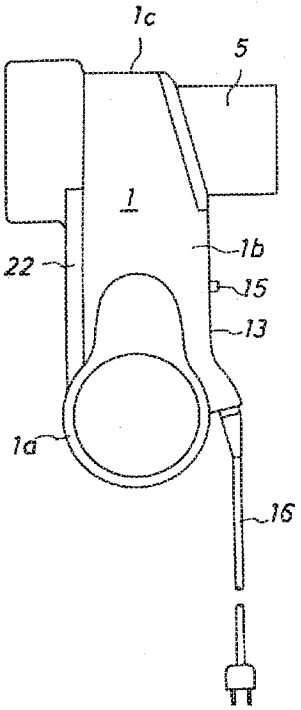
図面の簡単な説明

図面は本願の実施例を示すもので、第1図は総体側面図、第2図は同後面図、第3図は一部縦断側面図、第4図は手持部位置を横断した平面図、第5図は送風室位置を横動しかつファンを半裁した状態の平面図である。

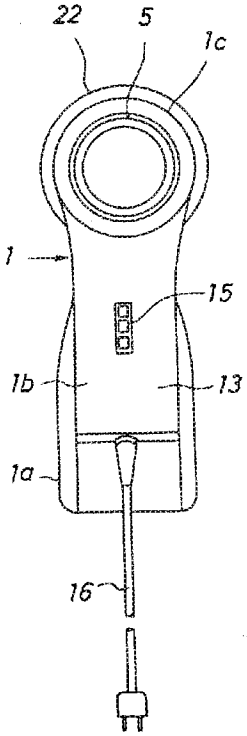
図中1はケース本体、1aは組送風室、1bは手持部、1cは流出部、2はモータ、3はファン、4は熱源、5は送気管、9はボビン、10はヒータ、15は切換スイッチ、16はコード、18は鬻曲状部、19は入気孔、22は補助部材、23は流通路である。

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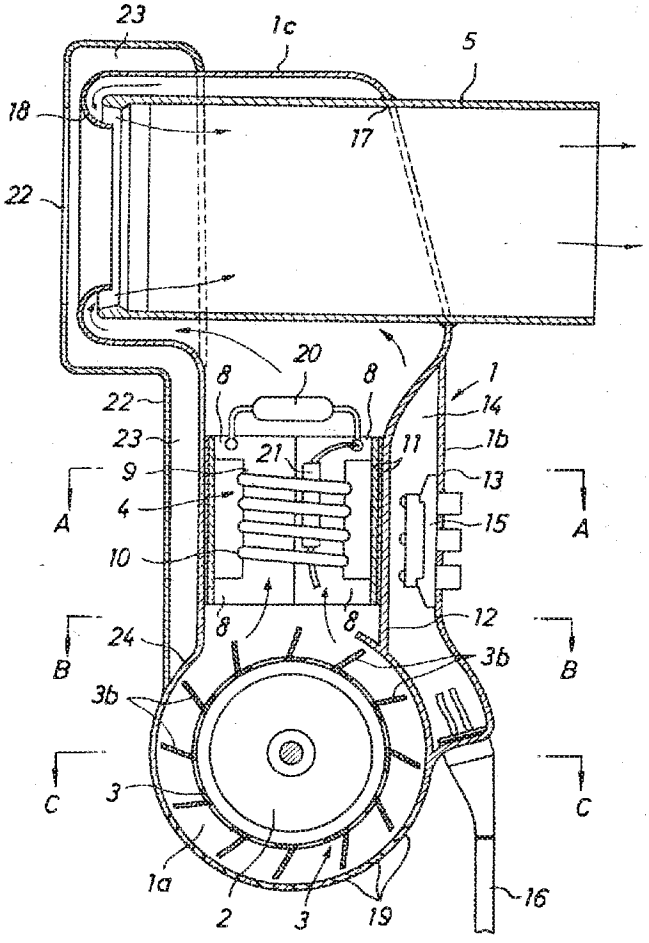
第１図



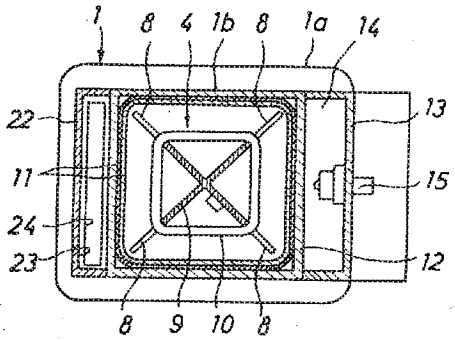
第２図



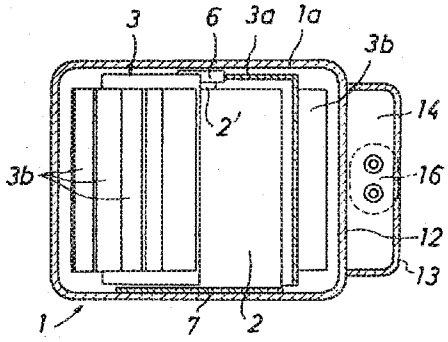
第３図



第４図



第５図



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(4,000円)

実用新案登録願(4) 後号なし

昭和56年8月27日

特許庁長官 島田春樹 殿

1. 考案の名称 顔洗用ドライヤー

2. 考案者
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5. 添付書類の目録
方式 (1) 明細書 1通 (2) 図面 1通
審査 (3) 願書副本 1通 (4) 委任状 1通

委任状は同月付出願の実用新案登録願第( )に添附したものを援用する

特許庁 56.8.27 出願第二課

実開58-32706照合済 (立)

56-125919

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明　　細　　書

1.　考案の名称

頭髪用ドライヤー

2.　実用新案登録請求の範囲

(1)　下部に入気孔を形成した送風室を、中間部に手持部を、上部に前端面が開口しその開口縁を内方に彎曲状に屈曲成形すると共に、後端面に孔を開設した流出部を一体に形成した中空状のケース本体の前記下部送風室内に、モータ及びこのモータにより回転されるファンを、また前記手持部内に熱源を、また前記上部流出部内に、前端が前記彎曲状内に位置し後端が前記孔を介して後方に突出して前後方向に延びる送気管を、前記上部流出部の内周面との間に空隙が生じるように夫々装備し、かつ前記ケース本体に、前記熱源用の電源コードと、熱源に対する通電を外部操作により切換える切換スイッチとを取付けて成る頭髪用ドライヤー。

(2)　熱源が、十字状のボビンにヒータ(10)を巻回して成る実用新案登録請求の範囲第1項記載の頭髪

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用ドライヤー。

(3) ファンを、外周囲に多数の羽根を設けた円筒体から構成し、この円筒体内に、モータを内装してその回転軸に前記円筒体を取付けて成る実用新案登録請求の範囲才1項または才2項記載の頭髪用ドライヤー。

3 考案の詳細な説明

本願は、温風を吹き付けることなくその流入側において頭髪を乾燥するようにした頭髪用ドライヤーに関するものである。

従来公知の頭髪用ドライヤーの全ては、温風を吹き付けることによつて頭髪を乾燥させる形式のものであるので、使用者に不快感を与えるばかりでなく、温風を直接に吹き付ける傾向を有するために頭髪を傷めたり或いは頭部の皮膚に障害を与えたりする惧れがあり、特にこの惧れは、温風を高温に切換えたときに大きく影響し、また使用に際しては、温風の流出口と頭部との近接距離を加減しなければならないという使用上の不便も有していた。

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そこで本願は、このような従来の不都合を解消することを目的としたもので、その実施例を以下図面について詳述すると、(1)は下部に、モータ(2)及び該モータ(2)により回転されるファン(3)を収納する送風室(1)aを、中間に、熱源(4)を内装する手持部(1)bを、上部に、温風を後面方向に送出する送気管(5)を内装する流出部(1)cを夫々一体に有した中空状のケース本体で、前記ファン(3)は、一端が閉じられ他端が開放された円筒体(3)aから成り、その外周囲に、切起しなどにより多数の羽根(3)b,(3)b,・・・・・が設けられている。そしてこの円筒体(3)a内にモータ(2)を内装すると共に、その回転軸(2)'を前記円筒体(3)aの閉端面の中心部に取付具(6)を介して軸止し、このようにしてファン(3)にモータ(2)を一体的に取付けた状態で、ケース本体(1)の送風室(1)a内に収納されたのち、例えば止具乃至接着剤(7)を介してモータ(2)が固着される。熱源(4)は、上下端に鍔(8)を有した絶縁板を十字状に結着して成るボビン(9)に、ヒータ(10)を巻回して成り、これが断熱材(11)により包囲された状態で前記ケース本体(1)

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の手持部(1)b内に装着されている。手持部(1)bは、後面側が内壁(12)と外壁(13)との二重壁から成り、この内外壁(12)と(13)との間に配線などを納めるための空間部(14)が形成され、外壁(13)の中間部には低温風，高温風及び冷風などの切換用スイッチ(15)が、また外壁(3)の下面には、電源コード(16)が取付けられている。前記ケース本体(1)の流出部(1)cは、手持部(1)bと直交する方向に延びると共に、後面が閉じられ前面が開口する円筒形状を呈しており、その前面開口縁は内方にU字状に彎曲するように屈曲成形されている。また後面には孔(17)が開設されていて、この流出部(1)c内に、前端が彎曲状部(18)内に位置し、かつ後端が前記孔(17)を貫通して後方に突出するように、しかも流出部(1)cの内周面との間に空隙が生じるように前記送気管(5)が同心円状に取付けられている。(19)は前記ケース本体(1)の送風室(1)aの下面に形成した入気孔、(20)は保護抵抗器、(21)はサーモスタットで、保護抵抗器(20)及びサーモスタット(21)は切換スイッチ(15)と共に電源コード(16)に接続されている。(22)は手持部(1)bに対する熱源(4)からの熱伝

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導をより確実に遮断するために、ケース本体(1)に手持部(1)bの前面を覆い、かつ前記流出部(1)cの前端部外周を包囲するように設けた補助部材で、これとケース本体(1)の前面部とに形成された流通路(23)に連通する通孔(24)が、ケース本体(1)の下部送風室(1)aの一部に開設されている。

しかして切換スイッチ(15)を介してモータ(2)を回転すると、ファン(3)も一体に回転して外気は入気孔(19)を介して熱源(4)に送られ、こゝで加温されたのち、流出部(1)cと送気管(5)との空隙及び流出部(1)cの彎曲状部(18)を経て送気管(5)の前端面に指向されたのち、温風は送気管(5)の後端より放出される。

一方送風室(1)aからの外気は、流通路(23)を通つて上部に至り、その開口部(23)'に流出する空気は、前記温風の流れに誘導されて送気管(5)を経て外気に放出される。

しかして使用に際し、前記補助部材(23)の上方開口部(23)'を或いは該補助部材(23)を有しないときは、ケース本体(1)の上部流出部(1)cの彎曲状部(18)を頭部に軽く押し当てながら頭部表面を擦動する。する

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と押し当てられた部分の頭髪に付着している水滴は温風により蒸発すると共に、その蒸発水分は温風の流れに伴つて送気管(5)から放出され、この場合抜毛なども吸引されて送気管(5)から排出される。なお送気管(5)より放出される温風を利用することにより、従来のドライヤーと同様の使用方法も可能であることは勿論である。

以上のように本願によれば、従来のように温風を吹き付けることなく頭髪を乾燥させることができるので、頭髪を傷めたり或いは皮膚に障害を与える惧れはなく、而もケース本体を頭部に軽く押し当てながら使用できるので使用にも便利であり、かつ温風の吹き付けによる不快感も解消し得るなどの利点を有する。

4. 図面の簡単な説明

図面は本願の実施例を示すもので、第1図は縦体側面図、第2図は同後面図、第3図は一部縦断側面図、第4図は把持部位置を横断した平面図、第5図は送風室位置を横断しかつファンを半截した状態の平面図である。

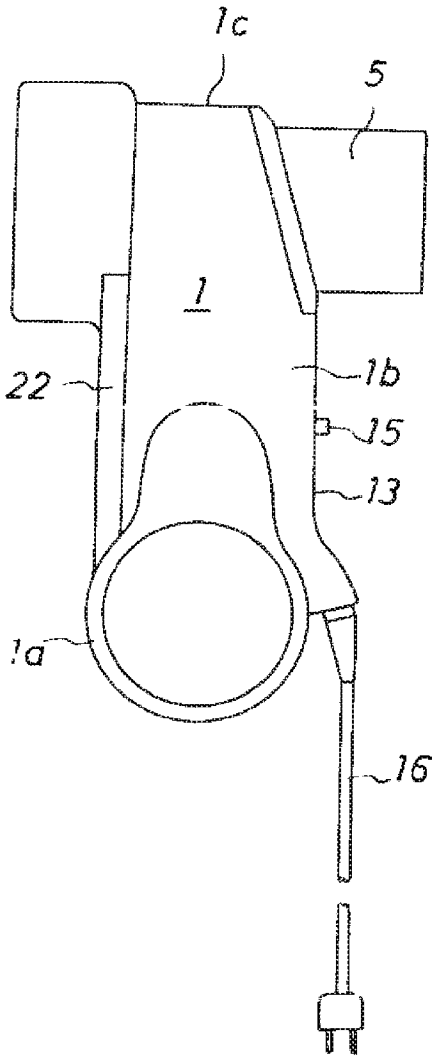
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図中(1)はケース本体、(1)aは送風室、(1)bは手持部、(1)cは流出部、(2)はモータ、(3)はファン、(4)は熱源、(5)は送気管、(9)はボビン、(10)はヒータ、(15)は切換スイッチ、(16)はコード、(18)は湾曲状部、(19)は入気孔、(22)は補助部材、(23)は流通路である。

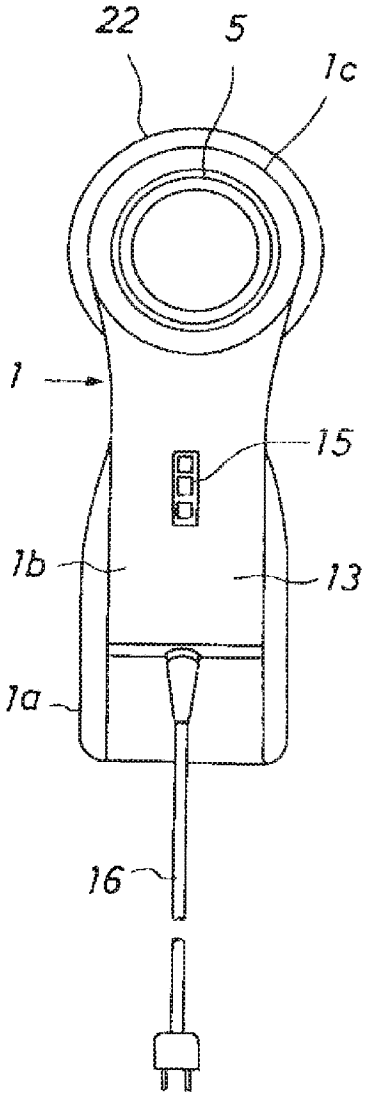
実用新案登録出願人　小原良隆
同　建守邦雄
同　大江順次
代理人弁理士　大内俊治

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第 1 図



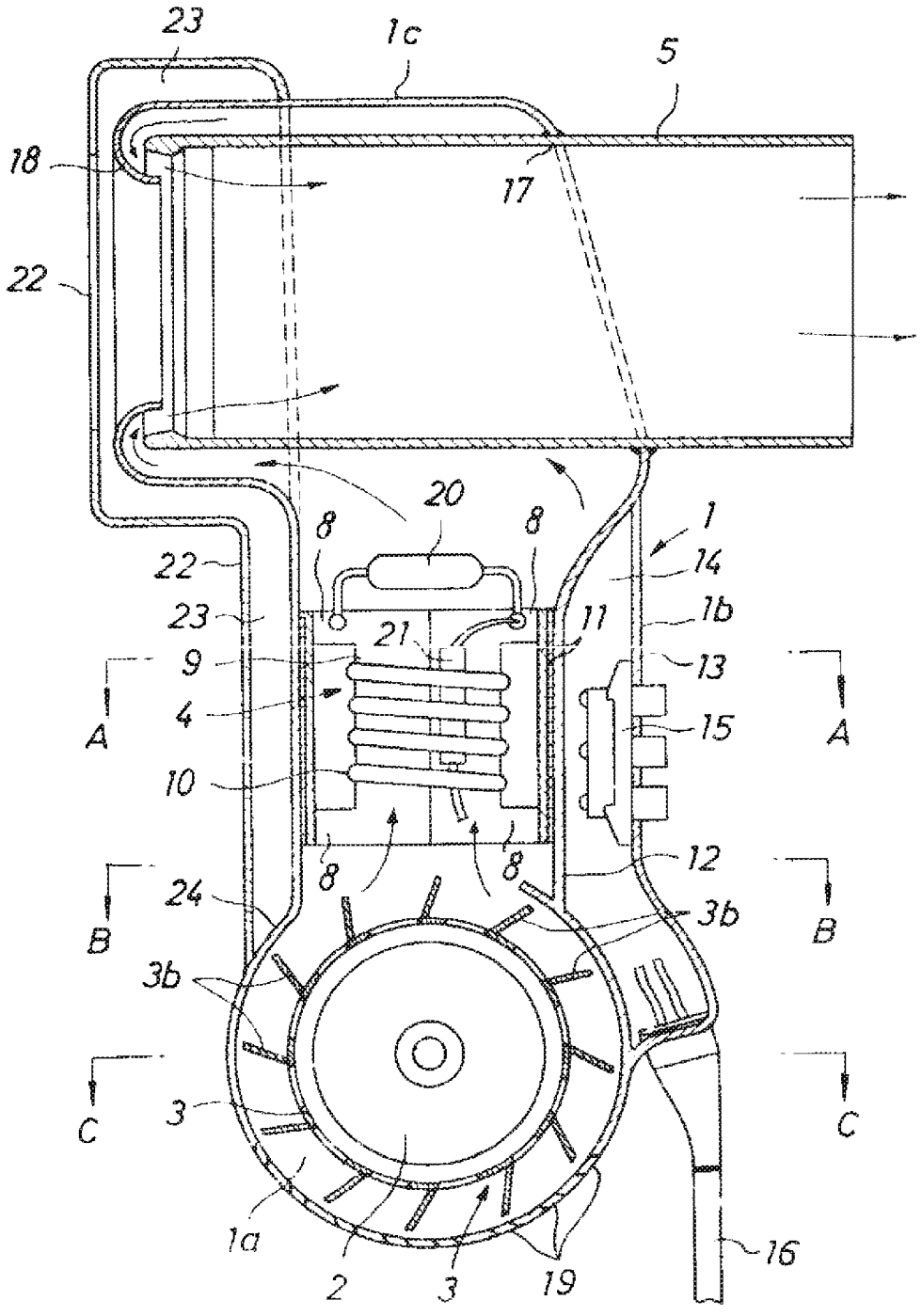
第 2 図



代理人 弁理士 大 内 俊 治

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第 3 図



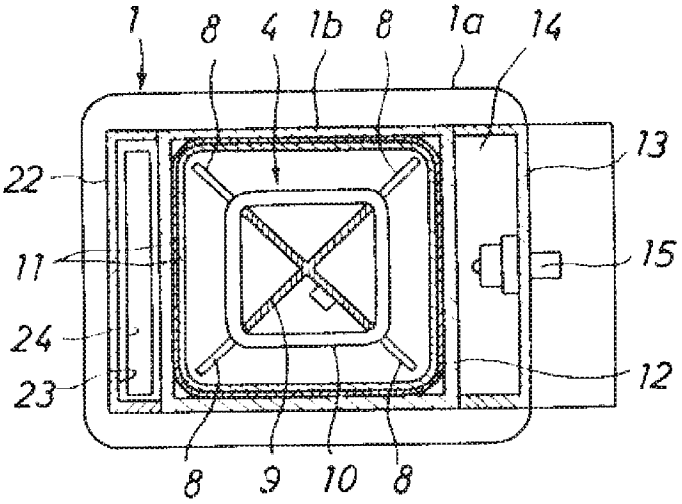
代理人 弁理士 大 内 [illegible] 治

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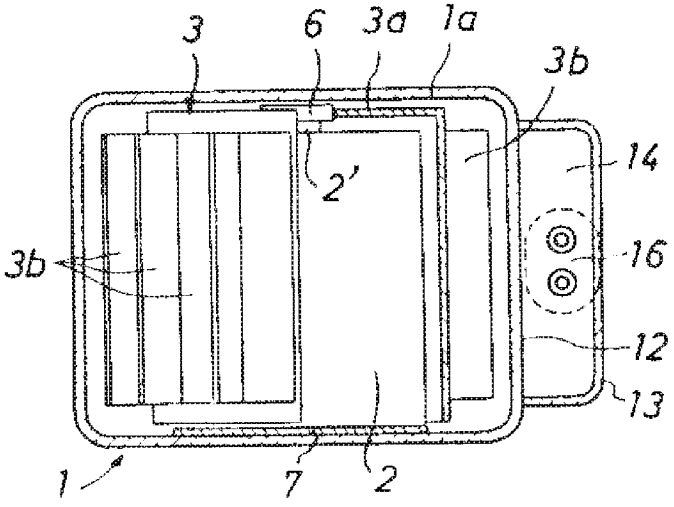
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第 4 図



第 5 図



代理人 弁理士 大 内 俊 治

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6. 前記以外の考案者及び実用新案登録出願人

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(63)

(5) 実開58-32709 (5)

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⑲日本国特許庁（JP）　⑪特許出願公開

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⑤1Int.Cl.⁴　識別記号　庁内整理番号　⑬公開　昭和60年(1985)10月1日
A 45 D 20/12　F－7715－3B

審査請求　未請求　発明の数 1　（全6頁）

⑤4発明の名称　ヘアードライヤ

⑳特　願　昭59－50678
㉒出　願　昭59(1984)3月15日

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明　細　書

1．発明の名称

ヘアードライヤ

2．特許請求の範囲

（1）筒状に形成されたボディの軸方向の後端に設けられた吸入口から吸入された空気を加熱圧縮しては前端に設けられた吐出口から熱風が吐出され、ボディの後端部にボディの軸方向と交差する形でハンドルが突設されたドライヤであって、ボディの後面とハンドルの後面とが略面一に揃えられるとともに、ボディとハンドルとの連結部にはボディの後面から前方に凹設したくびれ部が形成され、くびれ部の近傍にはハンドルの長手方向に沿って摺動するスライドスイッチの操作子が突設されたことを特徴とするヘアードライヤ。

（2）上記連結部がボディの後端部にボディの軸方向と交差する方向に突設された連結突部であって、ハンドルの一端部が連結突部に枢着されてハンドルがボディに対して折り畳み自在に連結され、上記連結突部の基部後面がハンドルの後面よりも前方に凹設して上記くびれ部が形成されるとともに、連結突部の先端部後面に上記スライドスイッチの操作子が突設されたことを特徴とする特許請求の範囲第1項記載のヘアードライヤ。

（3）上記スライドスイッチの操作子はハンドルの後面から上記くびれ部に連続する曲面に沿って摺動自在に配設されたことを特徴とする特許請求の範囲第1項記載のヘアードライヤ。

3．発明の詳細な説明

［技術分野］

本発明はヘアードライヤ、さらに詳しくは、筒状に形成されたボディの軸方向の後端に設けられた吸入口から吸入された空気を加熱圧縮しては前端に設けられた吐出口から熱風が吐出され、ボディの後端部にボディの軸方向と交差する形でハンドルが突設されたヘアードライヤに関するものである。

［背景技術］

一般にこの種のヘアードライヤにおいては、第11図および第12図に示すように、ハンドル3

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0の前面にメインスイッチの操作ボタン32を突設して熱風および冷風の吐出とオフ状態との切換を行なうようにするとともに、ハンドル30の後面にハンドル30の長手方向に沿って摺動するスライドスイッチの操作子43を突設することにより消費電力の切換を行なうようにしている。ハンドル30はヘアードライヤをコンパクトにするために短くなっており、またスライドスイッチの操作子43は親指で操作するものであるから、操作性を向上させるためにボディ10に近い位置に設けられている。ところで、従来のヘアードライヤにおいては、第11図に示すように、ボディ10の後端よりも前方からハンドル30が突設されており、スライドスイッチの操作子43がハンドル30の長手方向に摺動するものであったから、操作子43の操作をすると親指がボディ10に当たり、操作性が悪いという問題があった。また、これを解消するために操作子43をハンドル30の先端部側に位置させると親指での操作がやりにくくなるという問題があった。このため、第12図に示すように、ハンドル30の後面をボディ10の後面に略面一となるように配設することが考えられるが、この場合には操作子43を操作するときに、第13図に示すように、親指でボディ10の吸入口11の一部を塞いで吸入効率を低下させ、ヒータが過加熱になるという問題がある。

[発明の目的]

本発明は上述の点に鑑みて為されたものであって、その主な目的とするところは、ハンドルの後面側に設けられた操作子の操作性を向上させることにあり、他の目的とするところは、操作子の操作時に指でボディの吸入口を塞ぐことを防止した安全なヘアードライヤを提供することにある。

[発明の開示]

以下、本発明の実施例を図面に基づいて説明する。本発明に係るヘアードライヤは、筒状に形成されたボディ10の軸方向の後端に設けられた吸入口11から吸入された空気を加熱圧縮しては前端に設けられた吐出口12から熱風が吐出され、ボディ10の後端部にボディ10の軸方向と交差する形でハンドル30が突設されたドライヤであって、ボディ10の後面とハンドル30の後面とが略面一に揃えられるとともに、ボディ10とハンドル30との連結部40にはボディ10の後面から前方に凹没したくびれ部41が形成され、くびれ部41の近傍にはハンドル30の長手方向に沿って摺動するスライドスイッチ42の操作子43が突設されたことを特徴とするものである。本実施例においては、連結部40がボディ10の後端部にボディ10の軸方向と交差する方向に突設された連結突部であって、ハンドル30の一端部が連結突部40に枢着されてハンドル30がボディ10に対して折り畳み自在に連結され、連結突部40の基部後面がハンドル30の後面よりも前方に凹没してくびれ部41が形成されるとともに、連結突部40の先端部後面にスライドスイッチ42の操作子43が突設され、スライドスイッチ42の操作子43がハンドル30の後面からくびれ部41に連続する曲面に沿って摺動自在に配設された例を示す。

第1図ないし第3図に示すように、ボディ10は略円筒形に形成され、軸方向の前後端が開口して後端開口が吸入口11となるとともに、前端開口が吐出口12となっている。ボディ10は一対の半割体10a,10bを突き合わせて構成されており、その軸方向の前端部は第1保持リング50によって結合され、軸方向の後端部は第2保持リング60によって結合される。この第2保持リング60とボディ10との間にはパンチングメタルにより形成され吸入口11を覆う吸入口カバー13の端縁が挟装される。また、ボディ10の前端部にはノズル14が取着される。ボディ10内には送風ファン20と、送風ファン20を回転駆動するモータ21と、送風ファン20によって作り出された空気流を加熱するヒータ22とが略同軸上に配設され、ボディ10の後端に開放された吸入口11からボディ10内に導入される空気を送風ファン20により加速するとともに、ヒータ22で加熱することにより熱風として吐出口12から吐出させている。モータ21はボディ10の内

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周面に沿って配設された支持枠１７から一体に延設された複数の支持片１５によって保持された前方に開口する取付枠１６内に収納されており、支持片１５はそれぞれボディ１０の軸方向に略平行、かつボディ１０の半径方向に沿って設けられている。

ボディ１０の後端部にはボディ１０の軸方向とは交差する方向に連結突部４０が突設されこの連結突部４０にはハンドル３０が折り畳み自在に連結される。すなわち、ハンドル３０はボディ１０の軸方向とは交差する方向に突出する位置と、ボディ１０の軸方向に略平行となる位置との間で折り畳み自在となるように連結されるものであり、ハンドル３０がボディ１０から突出する位置ではハンドル３０の後面とボディ１０の後面とが略面一に揃えられる。連結突部４０はボディ１０の軸を含む平面内での断面が略円形となった円筒状であって、連結突部４０の基部はその平面内で連結部４０の最大半径部分よりも絞られて前方に凹設したくぼれ部４１を形成している。この連結突部４０内にはヒータの通電電力を切換えるスライドスイッチ４２が収容され、スライドスイッチ４２を操作する操作子４３が連結突部４０の後面から連結突部４０の周面に沿って上下方向で揺動自在となるように突出している。操作子４３は、第４図および第５図に示すように、連結突部４０の内周面に沿った弧状の外鍔４４を有しており、連結突部４０の周面に沿って略円弧上で揺動するように配設される。外鍔４４の一端部には略三角形に形成された押圧片４５が突設されており、操作子４３が上方に移動したときにこの押圧片４５がスライドスイッチ４２の操作ノブ４６を押圧することにより、スライドスイッチ４２の開閉が行なわれるようにしている。ここにおいて、操作子４３が円弧上で移動することにより、押圧片４５が操作ノブ４６に対して操作ノブ４６の押圧方向に沿って移動できるものであり、操作ノブ４６が押圧される時に押圧片４５によって摩擦されることがなく、押圧片４６および操作ノブ４６の摩耗が少なくなり、寿命が向上するものである。操作子４３の操作にあたっては、第９図に示すように、操作子４３を上動させたときに親指がくぼれ部４１内に逃がされるものであるから、親指がボディ１０に当たらず、かつ親指でボディ１０の後端に形成された吸入口１１を塞ぐことがなく吸入効率を低下させることがないものである。さらに、ハンドル３０を握るときにくぼれ部４１を親指と人差し指で保持する状態となるものであり、ハンドル３０をしっかりと握れるものであるから、落下などの事故を防止でき、安全性が向上するものである。

ところで、連結突部４０においてボディ１０を構成する一方の半割体１０ａの周壁には、第１図、第７図および第８図に示すように、切欠部４７が形成されるとともに、その半割体１０ａの側面には切欠部４７に連続して挿通孔４８が形成される。また、他方の半割体１０ｂには切欠部４７に対応して閉塞リブ４９が突設されている。閉塞リブ４９は一方の半割体１０ａの連結突部４０内に収められ、両半割体１０ａ、１０ｂを結合したときに閉塞リブ４９によって切欠部４７が閉塞されるようになっている。これにより、組み立て時にはモータ２１やヒータ２２などからの配線２３を切欠部４７を通して挿通孔４８に収め、両半割体１０ａ、１０ｂを結合したときに切欠部４７を閉塞し、配線２３が切欠部４７に噛まれてハンドル３０の回動が阻止されることがないようにしている。また、配線２３は連結突部４０の側面を通してハンドル３０内に導入されるものであり、ハンドル３０屈曲時に配線２３に屈曲力がほとんど作用せず、配線２３の断線事故などが少なくなるものである。

ハンドル３０はボディ１０と同様に左右一対の半割体３０ａ，３０ｂを結合して構成されたものであって、第２図に示すように、一方の半割体３０ａには上記連結突部４０の中央を貫通するボス３３が形成され、他方の半割体３０ｂには上記連結突部４０の側面に形成された係合部３４に係合する係合突部３５が内側面に形成され、係合突部３５を有する半割体３０ｂに設けられた透孔３６を通して上記ボス３３内にビス３７を挿通することでハンドル３０がボディ１０に連結されるように

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している。ハンドル３０内にはボディ１０内のモータ２１およびヒータ２２への通電を断続するためのメインスイッチ３１が配設されており、このメインスイッチ３１を操作するための操作ボタン３２はハンドル３０の前面に突出している。操作ボタン３２の一端部は第５図に示すように、ハンドル３０を折り畳むことにより、上記連結突部４０の外周面に当接して移動を阻止されるように構成されており、ハンドル３０を折り畳んだ状態では操作ボタン３２の押し込みが禁止されるようにしている。したがって、第６図に示すように、ハンドル３０を完全に折り畳んだ状態では操作ボタン３２がボディ１０とハンドル３０との間のスペーサとして作用し、メインスイッチ３１が不用意に投入されることがなく、かつボディ１０とハンドル３０との間に指などが挟まらないようにしている。また、ハンドル３０を折り畳んだ状態でメインスイッチ３１には応力が作用せず、メインスイッチ３１の寿命向上につながるものである。ハンドル３０の先端部からはモータ２１およびヒータ２２への電力を供給する電源線３８が延設される。上述の例においてはボディ１０に対してハンドル３０が折り畳み自在に連結された例を示したが、これに限定されるものではなく、第１０図に示すようなボディ１６とハンドル３０とが一体となったヘアードライヤに適用しても同様の効果を奏することができるものである。

［発明の効果］

本発明は上述のように、ボディの後面とハンドルの後面とが略面一に揃えられるとともに、ボディとハンドルとの連結部にボディの後面から前方に凹設したくびれ部が形成され、くびれ部の近傍にハンドルの長手方向に沿って摺動するスライドスイッチの操作子が突設されているので、ハンドルの後面に設けられた操作子を操作するときに指がくびれ部内に逃がされ、ボディに当たらないものであるから、操作子の操作性が向上するとともに、操作子の操作時に指でボディの吸入口を塞ぐことがなく、その結果、ヒータの過加熱が防止され安全であるという利点を有する。しかも、くびれ部がボディとハンドルとの連結部に設けられていることにより、使用時においてくびれ部で指が係止されることになり、ハンドルが持ちやすくなるものである。また、スライドスイッチの操作子がハンドルの後面からくびれ部に連続する曲面に沿って摺動自在に配設されたものでは、指をくびれ部内に導き易く、一層操作性が向上するものである。

４．図面の簡単な説明

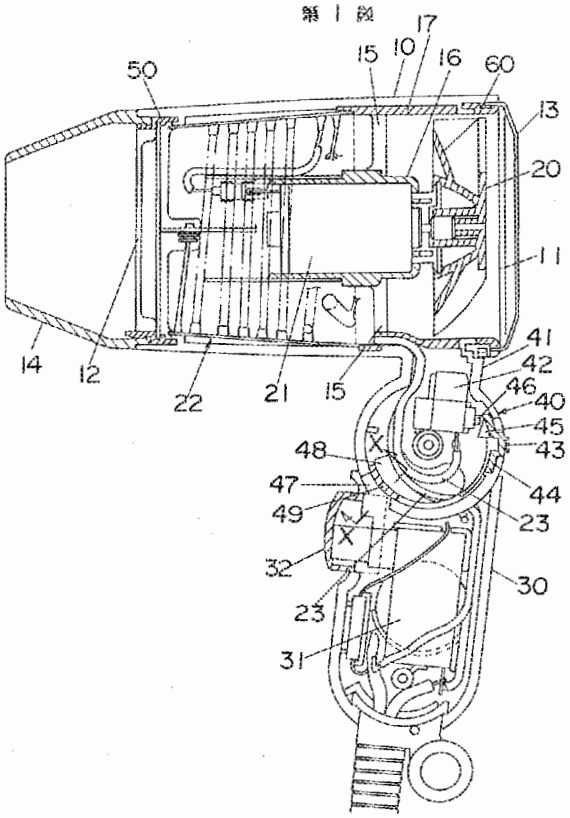
第１図は本発明の一実施例を示す縦断面図、第２図は同上の一部切欠正面図、第３図は同上の側面図、第４図は第３図の部分拡大断面図、第５図は同上のハンドルを折り畳むときの部分断面図、第６図は同上のハンドルを折り畳んだ状態の側面図、第７図は第１図中Ｘ－Ｘ線断面図、第８図は第７図中Ｙ方向矢視図、第９図は同上の操作状態を示す部分側面図、第１０図は本発明の他の実施例を示す部分側面図、第１１図は従来例を示す部分側面図、第１２図は他の従来例を示す部分側面図、第１３図は同上の背面図である。

１０はボディ、１１は吸入口、１２は吐出口、３０はハンドル、４０はハンドル、４１はくびれ部、４２はスライドスイッチ、４３は操作子である。

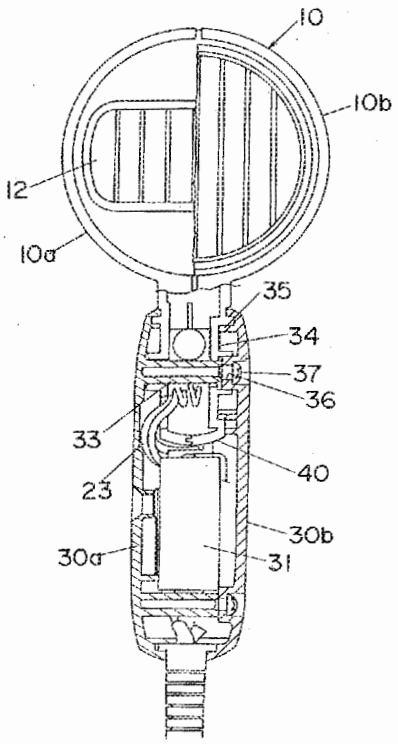
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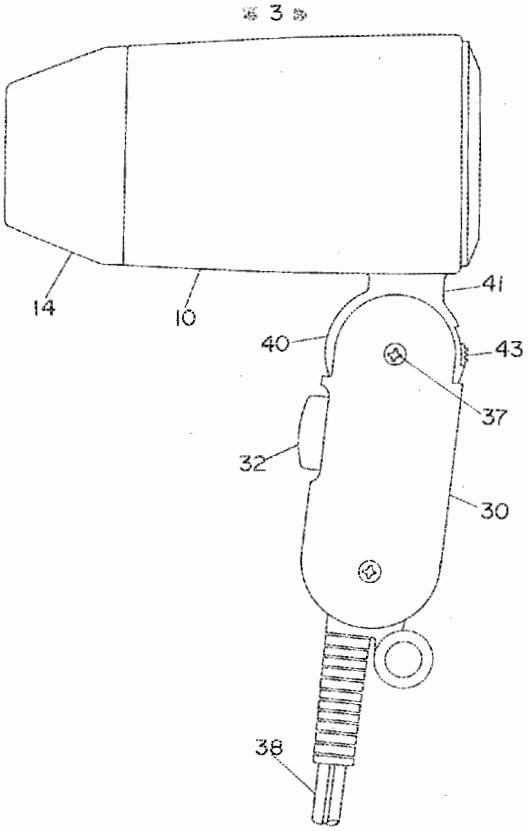
第 1 図



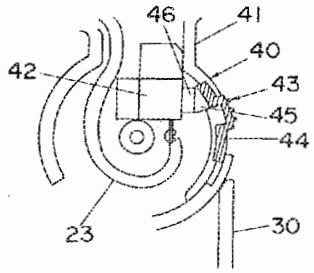
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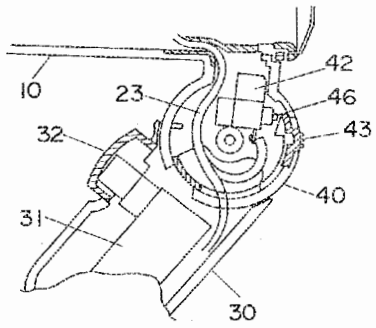
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第 4 図

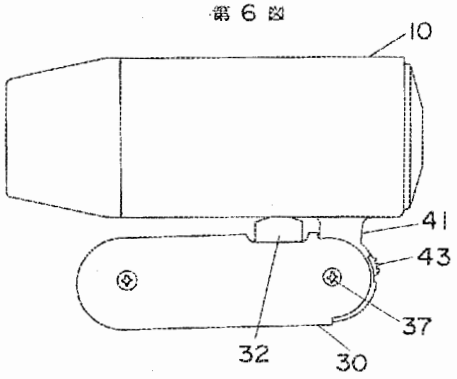


第 5 図

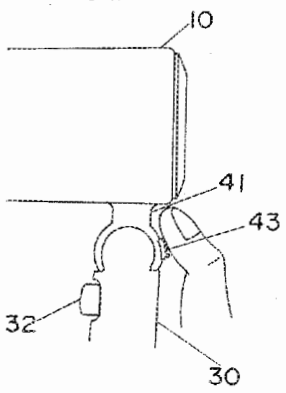


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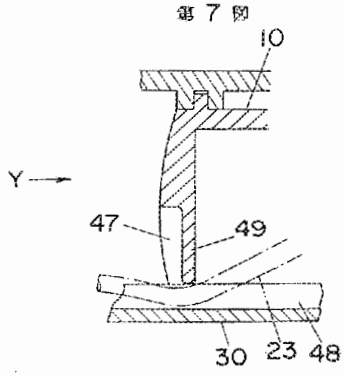
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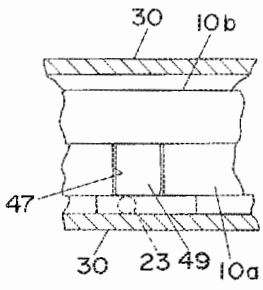
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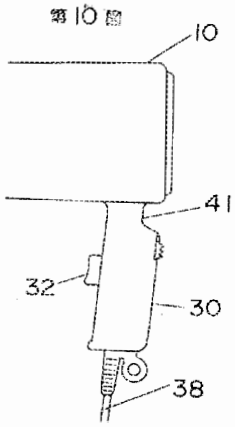
第7図



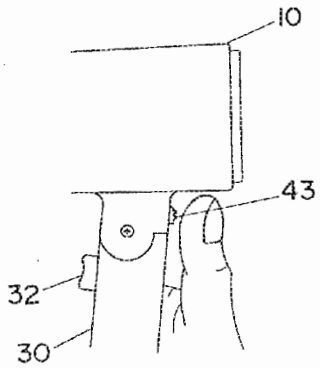
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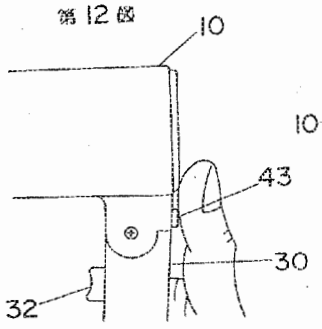
第10図



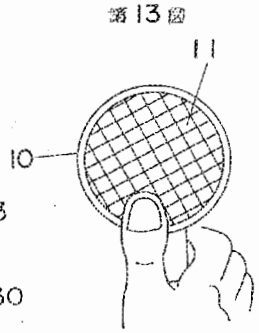
第11図



第12図



第13図



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(Translation)

1 Japanese Patent Laid-Open Publication No.63-238807

Title: LOW NOISE HAIR DRIER

the description in the upper right side column, line 11 to the lower left side column, line 2 on page 3

(Fourth Embodiment)

In the subject embodiment, as shown in FIG.4, so called a porous sound absorbing material 14 such as glass wool, urethane, felt or the like is arranged within the space 13 of the muffling element 10 and such a muffling element 10 is disposed between the intake port 6 and the fan 3 within the housing 1 as is similar to the first embodiment. The porous sound absorbing material 14 is disposed in contact with the inner tube 11. Thus, swell on the inner tube 11 due to a high speed air flow passing through the inner tube 1 is prevented and thus, noise due to the swell and increase in the flow resistance due to the swell are prevented.

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List of English language terms corresponding to all the reference numerals in the figures of Reference 1

1: housing
2: motor
3: fan
4: straightening plate
5: heater
6: intake port
7: discharge port
8: bell mouth
10: muffling element
11: inner tube of the muffling element
12: outer tube of the muffling element
13: space of the muffling element
14: porous sound absorbing material

⑲日本国特許庁（JP）　⑪特許出願公開

⑫公開特許公報（A）　昭63－238807

⑤Int.Cl.⁴	識別記号	庁内整理番号	⑬公開
A 45 D 20/12		C－7618－3B	昭和63年(1988)10月4日
20/10		Z－7618－3B	

審査請求　未請求　発明の数 1　（全5頁）

⑭発明の名称　低騒音ヘアドライヤ

⑳特　願　昭62－72326
㉒出　願　昭62(1987)3月26日

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㉑出願人　松下電工株式会社　大阪府門真市大字門真1048番地
㉔代理人　弁理士　石田　長七

明　細　書

1．発明の名称

低騒音ヘアドライヤ

2．特許請求の範囲

(1) 熱弾性を有する材料よりなる内管と、内管の外周との間に空間部を介して内管を囲む剛体の外管とからなる二重管を消音要素とし、モータ、ファン、ヒータ等が納装されたハウジングの少なくとも一部に空気が流通可能な形で消音要素が配設されたことを特徴とする低騒音ヘアドライヤ。

(2) 内管と外管との間の空間部にグラスウール、ウレタン、フェルト等の多孔質吸音材を内管に接触するように配設したことを特徴とする特許請求の範囲第1項に記載の低騒音ヘアドライヤ。

(3) ハウジングの一所に形成された吸入口からファンに至る流路上に配設され空気流を絞り込むベルマウスの一部に上記消音要素が配設されたことを特徴とする特許請求の範囲第1項に記載の低騒音ヘアドライヤ。

3．発明の詳細な説明

[技術分野]

本発明は、モータの回転音やファンの風切り音等の騒音を低減させた低騒音ヘアドライヤに関するものである。

[背景技術]

一般にヘアドライヤは、第7図に示すように、中空のハウジング1内に、駆動源であるモータ2、モータ2により回転駆動されるファン3、ファン3により加速された空気流を整流する整流板4、熱源であるヒータ5等を配設して構成され、ハウジング1の一所に設けた吸入口6からファン3の回転によりハウジング1内に導入された空気をヒータ5で加熱した後にハウジング1の他所に設けた吐出口7から熱風として吐出するようになっている。ヘアドライヤは、小型、軽量でかつ所定の風量を確保するという要求が基本性能として要求されており、このような要求を満たすために、ファン3の回転数を高めて風量を増大させることが考えられる。しかしながら、ファン3の回転数が高くなるにしたがって騒音が増大するという問題が

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生じる。このような問題を回避するために、モータ2の特性やファン3の形状を改善することにより、低回転数で所定の風量を確保する努力がなされているが、満足な結果を得るには至っていない。

［発明の目的］

本発明は上述の点に鑑みて為されたものであり、その目的とするところは、ハウジングの少なくとも一部に消音要素を配設することにより、風量を低下させることなく騒音の発生を低減させた低騒音ヘアドライヤを提供することにある。

［発明の開示］

（構成）

本発明に係る低騒音ヘアドライヤは、結弾性を有する材料よりなる内管と、内管の外周との間に空間部を介して内管を囲む剛体の外管とからなる二重管を消音要素とし、モータ、ファン、ヒータ等が納装されたハウジングの少なくとも一部に空気が流通可能な形で消音要素が配設されて成るものであり、ハウジング内で発生する騒音を低減させるものである。

ここに、Eは内管の管壁材料のヤング率、ρ_sは内管の管壁材料の密度、rは内管の内周面の半径、ρ_aは空気の密度、cは空気中の音速、tは内管の肉厚、dは内管と外管との間に形成された空間部の厚みの平均値である。

以上のようにして、消音要素10の共振周波数付近の音波が内管11内を通過すると、内管11の振動が生じるのである。したがって、内管11の形成材料としてゴムのような結弾性材料を用い、かつ音圧により容易に振動する程度の薄肉にしておけば、音波のエネルギが内管11のヒステリシス損として消費され通過音波が減衰することになる。しかも、内管11の外周は外管12で覆われているから、音波が内管11の外側に回り込んで内管11の内側を通過する音波による振動を阻害するということがないのである。

一般にヘアドライヤにおける主な騒音源はモータ2とファン3であり、騒音源より発生した騒音は主として吸入口6と吐出口7とから漏れるので、ハウジング1における騒音の伝達経路に消音要素

（基本原理）

本発明で使用される消音要素10の基本原理を以下に説明する。消音要素10は、第5図に示すように、結弾性材料よりなる内管11と、剛体よりなる外管12とを空間部13を介して配設した二重管であって、内管11は内部を通過する音波により容易に振動するようにゴム等で薄肉に形成され、外管12は通常の音圧の音波では容易に振動しないように金属や合成樹脂等により厚肉に形成されている。また、消音要素10の軸方向の両端では、内筒11と外筒12との間の空間部13に対応する部分が端板15により閉塞されており、空間部13が密閉された構造となっている。このように構成された消音要素10の内管11内を音波が通過すると、第6図に示すように、内管11の各部には消音要素10の共振周波数付近の音波に励起された半径方向の振動が生じる。内管11が円筒である場合には共振周波数frは、次式で表わすことができる。

$$fr=\frac{1}{2\pi}\sqrt{\frac{E}{r^2\cdot\rho_s}+\frac{\rho_a\cdot c^2}{\rho_s\cdot t\cdot d}}$$

10を配設することにより、騒音が低減されるという知見に基づいて本発明はなされている。

（実施例1）

第1図に示すように、ハウジング1は直管状に形成されており、ハウジング1の軸方向の一端部には吸入口6が開口する。また、吸入口6の近傍にはファン3が配設されている。上述した消音要素10は、吸入口6からファン3に至る部分でハウジング1を形成する。すなわち、ハウジング1の外殻が外筒12となり、その内側に空間部13を介して内管11が配設されるのである。この構成によりハウジング1の一部が消音要素10で形成されることになり、吸入口6から漏れるファン3の風切り音等が低減されるから、騒音が減少するのである。ここに、消音要素10の共振周波数は対象とする騒音源に含まれる音圧レベルのもっとも高い周波数成分に対応するように設定するのはもちろんのことである。また、消音要素10は筒状であるから、内部を空気が自由に通過するのであり、空気の流通を阻害することがないのであ

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る。

（実施例２）

本実施例は、第２図に示すように、モータ２により回転駆動されるファン３と吸入口６との間の部位、およびヒータ５により加熱された熱風が吐出する吐出口７の近傍の部位にそれぞれ消音要素１０が配設されている。すなわち、ハウジング１の両端に形成された吸入口６と吐出口７とにそれぞれ消音要素１０が配設されていることにより、ハウジング１内に配設されたモータ２やファン３で発生した騒音が吸入口６や吐出口７を通して外部に漏れることがなく、実施例１に比較して一層の騒音低減がなされるのである。

実施例１と実施例２とではハウジング１の一部にのみ消音要素１０を配設した構成としているが、ハウジング１の全長に亘って消音要素１０を配設してもよい。

（実施例３）

本実施例では、第３図に示すように、吸入口６の近傍でファン３との間にベルマウス８が配設されており、ベルマウス８に消音要素１０が配設されている。ベルマウス８は吸入口６側の一端部でもっとも断面積が大きく、ファン３側の一端部でもっとも断面積が小さくなるように形成されている。すなわち、吸入口６より導入される空気がファン３によって効率よく加速されるように、ファン３における加速性能の高い部分に空気を集める作用をする。このベルマウス８に消音要素１０を配設したことにより、実施例１と同様に吸入口６側での騒音の低減が行なえるのである。

（実施例４）

本実施例では、第４図に示すように、消音要素１０の空間部１３内にグラスウール、ウレタン、あるいはフェルト等のいわゆる多孔質吸音材１４を配設し、この消音要素１０を実施例１と同様に吸入口６とファン３との間の部位でハウジング１に配設したものである。多孔質吸音材１４は内管１１に接触するように配設される。したがって、内管１１内を通過する高速の空気流により内管１１にうねりが生じることが防止されるのであり、

そのうねりによる騒音が発生したり、うねりによる流通抵抗の増加が防止されるのである。

［発明の効果］

本発明は上述のように、粘弾性を有する材料よりなる内管と、内管の外周との間に空間部を介して内管を囲む網体の外管とからなる二重管を消音要素とし、モータ、ファン、ヒータ等が納装されたハウジングの少なくとも一部に空気が流通可能な形で消音要素が配設されて成るものであり、ハウジングの一部に消音要素が配設されていることにより、ハウジング内で発生する騒音を低減させることができるという利点を有する。しかも、消音要素は二重管であって内管内を通る空気の流通を妨げないから、ファンの回転数を高めても大きな騒音が発生せず、低騒音かつ風量の大きいヘアドライヤが提供できるのである。また、消音要素がハウジングの一部を形成しているから、ハウジングが大型化することがないものである。

４．図面の簡単な説明

第１図は本発明の実施例１を示す一部切欠斜視図、第２図は本発明の実施例２を示す断面図、第３図は本発明の実施例３を示す要部断面図、第４図(a)(b)はそれぞれ本発明の実施例４を示す一部切欠斜視図、および要部断面図、第５図は本発明に使用する消音要素の一部切欠斜視図、第６図は同上の動作説明図、第７図は本発明に係るヘアドライヤの一般的構成を示す断面図である。

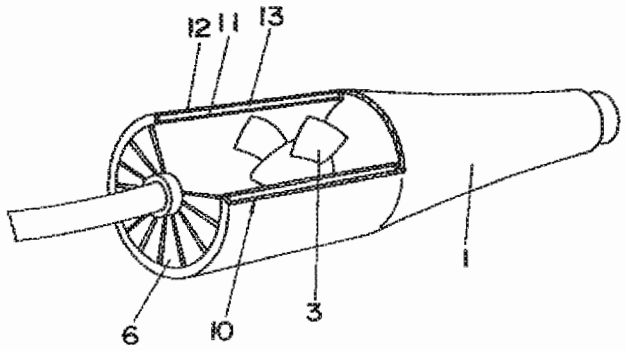
１はハウジング、２はモータ、３はファン、５はヒータ、６は吸入口、７は吐出口、８はベルマウス、１０は消音要素、１１は内管、１２は外管、１３は空間部、１４は多孔質吸音材である。

代理人　弁理士　石　田　長　七

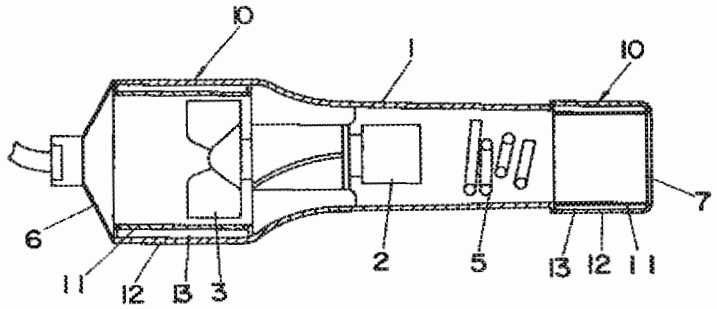
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1…ハウジング
10…消音要素
11…内管
12…外管
13…空間部

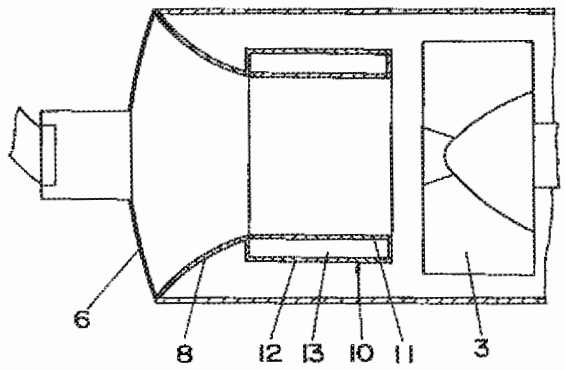
第 1 図



第 2 図



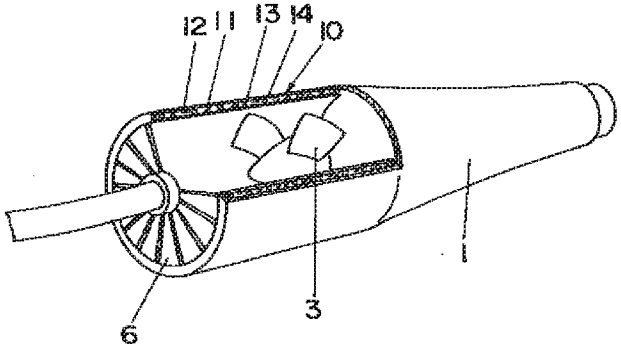
第 3 図



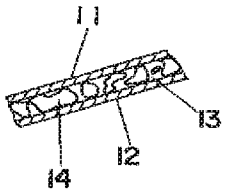
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第4図

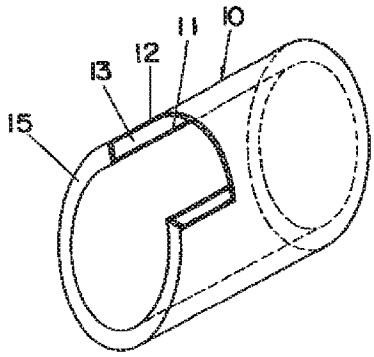
(a)



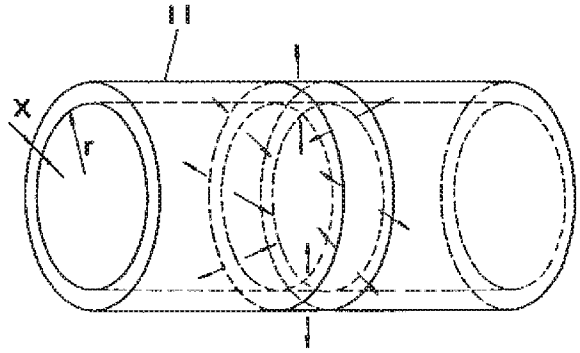
(b)



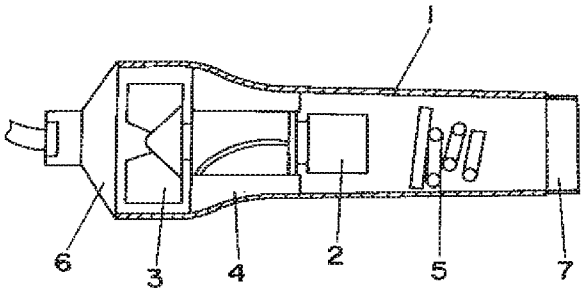
第5図



第6図



第7図



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[Claim(s)]

[Claim 1]A hair drier which sucks air from an inlet port of a body casing, attaches to an inlet port a filter frame which formed integrally gauze preliminarily formed in a hair drier which discharges warm air in insert molding of a synthetic resin, and is characterized by things from a nausea mouth.

[Claim 2]The hair drier according to claim 1 which forms a rib part of lattice shape in a filter frame, and is characterized by things.

[Claim 3]The hair drier according to claim 2 which attaches a filter frame to a body casing so that a lattice part may be formed in an inlet port of a body casing and the aforementioned lattice part may be arranged between rib parts of a filter frame, and is characterized by things.

[Claim 4]The hair drier according to claim 1 which forms gauze cylindrical and is characterized by things.

[Claim 5]The hair drier according to claim 1 which forms gauze in conical shape and is characterized by things.

[Claim 6]The hair drier according to claim 1 which forms gauze in disc-like and is characterized by things.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The present invention relates to the hair drier which discharges warm air and performs drying and the set of hair.

[0002]

[Description of the Prior Art]The hair drier which discharges warm air and performs drying and the set of hair conventionally is used, and it describes below about this hair drier.

[0003]The approximate account figure of the conventional hair drier is shown in Fig.6. This hair drier forms the airstream way 2 in the inside of the body casing 1 which carried out approximately tubed, provides the inlet port 11 at the end of the upstream of the body casing 1, and has provided the nausea mouth 12 to the downstream side of the body casing 1. And in the airstream way 2 in the body casing 1, the heater part 34 which warms air to the downstream side further is provided in the straightening vanes 33 which hold the motor 32 which drives the fan 31 to the downstream side of the inlet port 11, and drives the fan 31 to that downstream side, and this motor 32, and rectify airstream.

[0004]This hair drier turns on an electric power switch, and energizes it to the motor 32 and the heater part 34, The downstream side of the airstream way 2 is ventilated with the fan 31, the air sucked from the inlet port 11 is warmed by the heater part 34, warm air is discharged from the nausea mouth 12, and this warm air performs drying and the set of hair.

[0005]By the way, such a hair drier prevents dust and hair from attaching filter part 4' to the inlet port 11 of the body casing 1, and entering in the body casing 1 from an inlet port.

[0006]Although what forms integrally mesh fitting frame 41' and the mesh 5' in injection moulding is used well, filter part 4', It is a thing with the problem that dust and hair enter from the inlet port 11, and

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it is caught in a fan, and stops, or dust and hair burn, and there is a nasty smell by the heater part 34 since the eye of the mesh 5' is comparatively coarse if it is in this thing, In order to prevent dust and hair from entering from the inlet port 11 reliably, it was required to micronize the eye of the mesh 5', but in manufacture of a mold etc., it was technically difficult. Then, as shown in Fig.7, there is a problem that the mesh fitting frame 41' will exfoliate at the time of cleaning in the mesh 5' which carried out hot welding of the mesh 5' and the mesh fitting frame 41' which micronized eyes preliminarily in this case although what carried out hot welding came to be used well.

[0007]

[Problem to be solved by the invention]The present invention is made in view of the above-mentioned point, and the purpose, Let it be problem to provide the hair drier which can prevent gauze from exfoliating from the filter frame in which gauze was provided, being able to prevent dust and hair from micronizing the eye of the gauze which is a filter subject and entering from an inlet port well.

[0008]

[Means for solving problem]The hair drier applied to the present invention in order to solve an aforementioned problem, Air is sucked from the inlet port 11 of the body casing 1, and the filter frame 4 which formed integrally the gauze 5 formed preliminarily in the insert molding of the synthetic resin is attached to the inlet port 11 in the hair drier which discharges warm air from the nausea mouth 12. Can prevent dust and hair from micronizing the eye of the gauze 5 which is a filter subject, and entering from the inlet port 11 by having such composition, well, and. Although hot welding of the gauze 5 is carried out since the gauze 5 is integrally formed with the filter frame 4 in insert molding, it can prevent exfoliating like at the time of cleaning.

[0009]It is preferable to form the rib part 43 of lattice shape in the filter frame 4. The gauze 5 becomes much more more difficult to exfoliate than the filter frame 4, and this also becomes easy to clean by having such composition.

[0010]It is preferable to attach the filter frame 4 to the body casing 1 so that a lattice part may be formed in the inlet port 11 of the body casing 1 and the aforementioned lattice part may be arranged between the rib parts 43 of the filter frame 4. The gauze 5 becomes further much more more difficult to exfoliate than the filter frame 4, and this also becomes easy to clean by having such composition.

[0011]It is preferable to form the gauze 5 cylindrical. By having such composition, the plate-like gauze 5 is bent cylindrical by a help, and installation, then complicated work which was said are simplified by the mold.

[0012]The gauze 5 may be formed in conical shape, or it may form in disc-like, and it becomes possible to form various filter frames 4 using the gauze 5 which carried out such form.

[0013]

[Mode for carrying out the invention]Hereinafter, the present invention is described based on the embodiment shown in an accompanying drawing.

[0014]As the body casing 1 is shown in Fig.1, it is what carried out the approximate circle tubed by which the airstream way 2 is formed in an inside, the inlet port 11 which sucks air is formed in the end of the upstream, and the nausea mouth 12 which discharges air is formed in the downstream side.

[0015]The fan 31 which sends in downstream the air inhaled from the inlet port 11 from the upstream

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(namely, the inlet-port 11 side) to the airstream way 2 in the body casing 1, The straightening vanes 33 which hold the motor 32 which drives the fan 31, and the motor 32, and rectify airstream, The heater part 34 which warms air is arranged, air is taken in from the inlet port 11 by driving the motor 32 and rotating the fan 31, the downstream side is ventilated, and the air warmed by the heater part 34 is discharged from the nausea mouth 12. Body casing 1 the very thing serves as a grip part, and the electric power switch 71 is provided on the outside of the body casing 1, and such a body casing 1 has formed the power cord 72.

[0016]The brush section is provided, and it is made for hairdressing to have become possible in an about 12 nausea mouth [of the body casing 1] outer surface, making warm air project from the nausea mouth 12. In this embodiment, the attachment mounting part 13 is drilled in the downstream side of the body casing 1, The bristle 62 is protruded on this attachment mounting part 13, and the attachment 61 which punched a plurality of nausea mouths 12 is attached to the attachment mounting part 13, and the nausea mouth 12 and the brush section are formed.

[0017]And the filter frame 4 which prevents dust and hair from being mixed from the inlet port 11 is attached to the inlet port 11 of the body casing 1, the gauze 5 is formed integrally and this filter frame 4 is described below.

[0018]Knit a thin component like a fiber to mesh state, and the gauze 5 does not form it, or what was formed integrally to mesh state may be sufficient as it, and it is not limited in particular. The material in particular of the gauze 5 is not limited, either. By this embodiment, such gauze 5 is slightly formed in the cylindrical shape of a small diameter from the path of the portion of the upstream of the body casing 1 which carried out cylindrical shape, as shown in Fig.3. What was formed in truncated cone flank shape as other examples of the gauze 5 as shown in cone flank shape or Fig.4, and the thing formed in disc-like as shown in Fig.5 may be used. Various filter frames 4 can be formed using the gauze 5 which carried out such form [like]. And although the filter frame 4 is integrally formed using such gauze 5, this is formed so that the gauze 5 may be installed in the cavity of a mold and the gauze 5 may be embedded under the filter 4 frame, when injection molding the filter frame 4.

[0019]The rim 41 of the upstream the path of the portion of the upstream of the body casing 1 which the filter frame 4 made cylindrical shape as this embodiment showed to Fig.2, and of approximately the same diameter, and the rim 42 on the downstream side, The gauze 5 embedded under the rib part 43, and both the rims 41 and 42 and the rib part 43 of the lattice shape formed between both this rim 41 and 42 is integrally formed in the insert molding of a synthetic resin. When forming integrally in insert molding, the complicated work of bending the plate-like gauze 5 cylindrical and installing it in a mold by a help by having formed the gauze 5 cylindrical is simplified.

[0020]This filter frame 4 is what inserts in and attaches the rim 42 on the downstream side to the inlet port 11 currently formed in the end of the upstream of the body casing 1 which carried out cylindrical shape, The rim 41 of the upstream is inserted in the power cord connection part 73 which projects from the inlet port 11 of the body casing 1, and the upstream of the body casing 1 is blockaded by this in the filter frame 4 and the power cord connection part 73.

[0021]Since according to the above composition the gauze 5 formed preliminarily is formed integrally in the insert molding of a synthetic resin, the filter frame 4 is constituted and this filter frame 4 is attached

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to the inlet port 11 of the end of the upstream of the body casing 1, Can prevent dust and hair from micronizing the eye of the gauze 5 and entering from the inlet port 11 well, and. Since the gauze 5 is integrally formed with the filter frame 4 in insert molding, although hot welding of the gauze 5 which is a filter subject is carried out, it can prevent exfoliating like at the time of cleaning.

[0022]The gauze 5 becomes much more more difficult to exfoliate than the filter frame 4, and this also becomes easy to clean by having formed the rib part 43 of lattice shape in the filter frame 4.

[0023]Although a graphic display in particular is not carried out, a lattice part may be formed in the inlet port 11 of the body casing 1, and the filter frame 4 may be attached to the body casing 1 so that the aforementioned lattice part may be arranged between the rib parts 43 of the filter frame 4.

[0024]It is with the rib part 43 of the filter frame 4, and the lattice part of the body casing 1 arranged between this rib part 43, and the gauze 5 becomes further much more difficult to exfoliate by doing in this way.

[0025]

[Effect of the Invention]If it is in the invention of the present invention according to claim 1 as mentioned above, By sucking air from the inlet port of a body casing, from a nausea mouth, since the filter frame which formed integrally the gauze preliminarily formed in the hair drier which discharges warm air in the insert molding of the synthetic resin was attached to the inlet port, Dust and hair can be well prevented from micronizing the eye of the gauze which is a filter subject and entering from an inlet port, and although hot welding of the gauze is carried out since gauze is integrally formed with the filter frame in insert molding, it can prevent exfoliating like at the time of cleaning.

[0026]Since the rib part of lattice shape was formed in the filter frame in addition to the effect of the invention of the above-mentioned Claim 1 description if it was in the invention according to claim 2, gauze becomes much more more difficult to exfoliate than a filter frame, and this also becomes easy to clean.

[0027]If it is in the invention according to claim 3, it adds to the effect of the invention of the above-mentioned Claim 2 description, Since the filter frame was attached to the body casing so that a lattice part might be formed in the inlet port of a body casing and the aforementioned lattice part might be arranged between the rib parts of a filter frame, gauze becomes further much more more difficult to exfoliate than a filter frame, and this also becomes easy to clean.

[0028]Since gauze was formed cylindrical in addition to the effect of the invention of the above-mentioned Claim 1 description if it was in the invention according to claim 4, plate-like gauze is bent cylindrical by a help, and installation, then complicated work which was said are simplified by the mold.

[0029]moreover -- if it is in the invention according to claim 5 -- the effect of the invention of the above-mentioned Claim 1 description -- in addition, since gauze was formed in conical shape, it becomes possible to form the filter frame of other form using the gauze which carried out this conical shape.

[0030]moreover -- if it is in the invention according to claim 6 -- the effect of the invention of the above-mentioned Claim 1 description -- in addition, since gauze was formed in disc-like, it becomes possible to form the filter frame of other form using the gauze which carried out disc-like [this].

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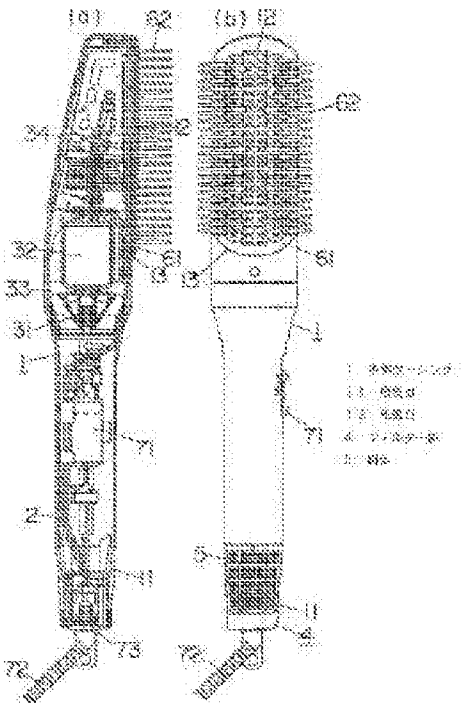
HAIR DRYER

Page bookmark	JP2003153731 (A) - HAIR DRYER
Inventor(s):	KODAMA HISAFUMI ±
Applicant(s):	MATSUSHITA ELECTRIC WORKS LTD ±
Classification:	**- international:** ***A45D20/12;*** (IPC1-7): A45D20/12
	- cooperative:
Application number:	JP20010357828 20011122
Priority number(s):	JP20010357828 20011122

Abstract of JP2003153731 (A)

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PROBLEM TO BE SOLVED: To provide a hair dryer which can prevent a net body from separating from a filter frame, on which the net body is provided, while dust and hair can be favorably prevented from entering the inside from an air suction port by making the mesh of the net body, being a filter main body, finer. SOLUTION: This dryer sucks in air from the air suction port 11 of the main body casing 1, and discharges hot air from an air-discharging port 12. In such a hair dryer, the filter frame 4 is attached to the air suction port 11. In this case, for the filter frame 4, the net body 5, which is formed in advance, is integrally molded by an insert-molding with a synthetic resin.



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DESCRIPTION JP2003153731

The present invention relates, it relates to a hair dryer to make the set and dry hair by discharging warm air.

Hair Dryer Description of the Prior Art, and perform a set of dry hair by discharging warm air is being used and will be described below this hair dryer.

I shows a schematic diagram of a hair dryer in conventional FIG.

Forming an air flow path 2 inside the main body casing 1 having a substantially cylindrical shape, provided with a suction port 11 at the upstream end of the body casing 1, the hair dryer, nausea port 12 on the downstream side of the main body casing 1 It is provided with a.

Then, the air flow path 2 of the main body casing 1, rectifying the air stream and by holding the motor 32 and the motor 32 drives the fan 31 on the downstream side of the fan 31 on the downstream side of the intake port 11 The heater unit 34 for heating the air further downstream is provided, a rectifying vanes 33.

It energizes the heater 34 and the motor 32 after the power switch is turned on, then blown to the downstream side of the air flow path 2 by 31 fan air sucked from the inlet port 11, this hair dryer, heated by the heater 34 it is one that is discharged from the outlet 12 nausea hot air, perform a set or dry hair by the hot air.

By the way, hair dryer like this is what you attach the filter unit 4 'to the inlet 11 of the casing body 1, to prevent hair and dust from entering the body casing 1 in the intake opening.

'Is, mesh mounting frame 41' filter section 4 mesh and 5 'shall be integrally formed by injection molding and is often used, but it can be in this thing, mesh 5' because relatively coarse eyes , and in which there is a problem you can stop caught on fan or hair dust from entering the intake opening 11, a strange smell and the hair dust and burnt at the heater unit 34, hair and dust intrusion the intake opening 11 In order to reliably prevent you to, making finer the eyes of mesh 5 'were required, it was as technically difficult in manufacturing such a mold.

Therefore, as shown in FIG 7, those heat-welded 'and mesh attachment frame 41' and mesh 5 of miniaturizing the eyes advance is now commonly used, but in this case, the mesh was thermally welded It was that there is a problem such as peels 'mesh mounting frame 41 when cleaning is 5'.

THE INVENTION An object of the present invention is to provide a method has been made in view of the above, and has as its object the hair and dust from the air inlet to refine the mesh body is a filter mainly While is believed to be prevented well from entering, it is therefore an object of the present invention to provide a hair dryer which can prevent the mesh member from being separated from the filter frame provided with a mesh member.

Hair dryer according to the present invention in order to achieve the above object, according to solve the above problems, in hair dryer that discharges warm air from nausea port 12 by sucking air from inlet 11 of the main body casing 1, it is characterized in that it is obtained by attaching the inlet 11 to the filter frame 4 which is integrally formed by insert molding of a synthetic resin mesh member 5 previously formed.

By such a configuration, it is possible to prevent better hair and dust from entering the intake opening 11 made fine eyes of 5 mesh member is a filter main body, by insert-molding the net assembly 5 it is possible to prevent peeling off during cleaning, such as those mesh member 5 are heat welded Because it is formed integrally with the filter frame 4.

Further, by forming the rib portion 43 of a lattice filter frame 4.

By using such a structure, and in which the mesh member 5 is easily separated from the filter frame 4 even more easily if cleaned thereby.

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Further, it is possible to form a grid unit in the intake port 11 of the body casing 1, and attached to the body casing 1 to the filter frame 4 the grating section to be located between the 43 rib portion 4 of the filter frame is preferred.

By using such a structure, and in which the mesh member 5 is easily separated from the filter frame 4 even more easily if cleaned thereby.

Further, it is formed into a cylindrical shape the netting 5.

By using such a structure, complicated operations, such as placing in a mold by bending into a cylindrical shape by hand the net body 5 of the plate is simplified.

Further, it is possible may or formed conically netting 5, even if a disk shape, to form a filter frame 4 different using a net assembly 5 having such a shape.

DESCRIPTION OF THE PREFERRED EMBODIMENTS The present invention will be described with reference to the embodiment shown in the accompanying drawings of the present invention.

As shown in FIG 1, and those having a substantially cylindrical air channel 2 is formed inside the body casing 1, Yes formed the intake port 11 for sucking the air in the upstream end, nausea port 12 for discharging air is formed at a downstream side.

The air flow path 2 of the main body casing 1, from (suction opening 11 ie) upstream, and a fan 31 to be sent to the air downstream to the inlet from the air inlet 11, a motor 32 for driving the fan 31, a motor 32 a rectifying vanes 33 for rectifying the airflow and can be held, a heater unit 34 for heating the air Yes be provided, and taking in the air from the intake port 11 by rotating the fan 31 by driving the motor 32 This is what Te blows on the downstream side, and discharges from nausea port 12 air warmed by the heater 34.

The body casing 1 as described above, the main casing 1 itself has a grip portion, a power switch 71 as well is provided on the outside of the body casing 1, the power cord 72 is formed.

Further, the outer surface 12 near nausea port of the body casing 1, the brush unit is provided, it is constituted such that the hair can while projecting the warm air from the exhalation port 12.

In this embodiment, the drilled mounting attachment portion 13 on the downstream side of the main body casing 1, attachment mounting attachment 61 perforated nausea port 12 while a plurality of projecting bristles 62 to the mounting attachment 13 Attach the unit 13, and are formed with the brush unit and vomiting port 12.

Then, the intake port 11 of the main body casing 1 is intended for mounting a filter frame 4 to prevent hair or dust from being mixed into the intake opening 11, the filter frame 4 is intended to mesh member 5 is integrally formed Yes, will be described below.

Well, netting 5 is not particularly limited as it may be formed by weaving a mesh of thin members, such as fibers, molded integrally with the mesh.

it is another object of the present invention the material of the mesh member 5 is not particularly limited.

As shown in FIG 3 in this embodiment, the mesh member 5 like this is made by forming a cylindrical shape of diameter slightly smaller than the diameter of the portion of the upstream side of the main body casing 1 having a cylindrical shape.

Further, it is also intended that as another example of the mesh member 5, formed in a truncated cone side surface shape, as shown in FIG 4 and a conical side surface shape, and formed into a disk shape as shown in FIG 5.

It is possible to form a filter frame 4 different using a net assembly 5 in the form such as these.

Further, it is to form integrally a filter frame 4 with netting 5 like this, but when injection molding the filter frame 4, which is a filter 4 by planting a 5 mesh member in the cavity of the mold it is intended to form a 5 mesh member to be embedded in the frame.

As shown in Figure 2 in the present exemplary embodiment, the filter frame 4, a circular frame 42 and a downstream circular frame 41 on the upstream side of substantially the same diameter as the diameter of the portion of the upstream side of the main body casing 1 having a cylindrical shape, I integrally formed by insert molding of synthetic resin and the rib portion 43 of the lattice is formed in both the 41 and 42 this circle frame, and netting 5, which is embedded in the ribs 41, 42 and 43 Ryoen-waku is intended.

It should be noted that in the integrally formed by insert molding, that the mesh member 5 is formed in a cylindrical shape, a complicated work of installing the mold is bent into a cylindrical shape by hand the net body 5 of the plate-shaped is simplified.

The one that is attached by fitting a circular frame 42 on the downstream side of the intake port 11 is formed at the upstream end of the body casing 1 having a cylindrical shape, the filter frame 4, the main body is circular frame 41 on the upstream side is fitted on the power cord connection portion 73 which projects from the inlet 11 of the casing 1, the upstream side of the main body casing 1 is closed and the power cord connection portion 73 and the filter frame by a factor of 4.

According to the configuration as described above, constitute the filter frame 4 is integrally molded by

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insert-molding a synthetic resin 5 mesh member previously formed in the upstream end of the main casing 1 and the filter frame 4 Because it is attached to the intake port 11, it is possible to prevent better hair and dust from entering the intake opening 11 made fine eyes 5 netting, a filter frame 4 by insert molding netting 5 Because it is formed integrally, it is possible to prevent peeling off during cleaning, such as those mesh member 5 is a filter main body are heat welded.

Further, that it is formed with ribs 43 of the lattice-shaped filter frame 4, and in which the mesh member 5 is easily separated from the filter frame 4 even more easily if cleaned thereby.

Although not specifically shown, to form a grid unit in the intake port 11 of the body casing 1, attached to the main body casing 1 the filter frame 4 the grating section to be located between the 43 rib portion 4 of the filter frame and those may be.

By doing this, it is intended by the grating portion of the body casing 1 which is disposed 43 between the ribs and the rib portion 43 of the four filter frame, the mesh member 5 is easily separated even more.

In the invention of claim 1, wherein the present invention as described above, according to the present invention, the hair dryer for discharging the hot air from nausea mouth to suck the air from the inlet of the main body casing, it has been pre-formed Because it is attached to the inlet of the filter frame with integrally molded with insert molding of synthetic resin mesh body, preventing good hair and dust from entering the intake opening to refining the mesh body is a filter mainly it is possible to prevent peeling off during cleaning, such as those mesh member is heat-welded as well may, Because it is formed integrally with the filter frame by insert-molding the net body.

Also In the invention of claim 2, in addition to the effects of the invention described in the claims, since the formation of the ribs of a lattice filter frame, the mesh member may be easily separated from the filter frame further , in which is easily cleaned if thereby.

Further, one or more embodiments of the invention according to claim 3, in addition to the effect of the invention as set forth in the preceding claims, forming a grating portion in the intake port of the main body casing, the grating portion is disposed between the ribs of the filter frame Since attached to the main body casing and the filter frame to be, and in which the mesh member is easily separated from the filter frame even more easily if cleaned thereby.

Also In the invention of claim 4, in addition to the effect of the invention of first aspect, since the cylindrical shape of the mesh member, the mold is bent into a cylindrical shape by hand the net body plate complicated work such as installing to is simplified.

Also In the invention of claim 5, in addition to the effect of the invention of first aspect, since formed on the conical mesh member, filters of other shapes by using a mesh member having a conical shape it is possible to form a frame.

Also In the invention of claim 6, in addition to the effects of the invention described in the claims, since the disc shape a mesh member, other shapes with a mesh member with the disk-shaped it is possible to form a filter frame.

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CLAIMS JP2003153731

That the hair dryer for discharging the warm air from the exhalation port to suck the air from the air inlet of the body casing, and a is attached to the air inlet filter frame and integrally molded by insert-molding a synthetic resin mesh member previously formed hair dryer that features a.

Hair dryer according to claim 1, characterized in that it is obtained by forming a rib of a lattice filter frame.

Hair dryer according to claim 2, characterized in that it forms a grating portion in the intake port of the main body casing, and a is attached to the main body casing of the filter frame of the grating section to be disposed between the ribs of the filter frame .

Hair dryer in accordance with claim 1, characterized in that it is formed into a cylindrical shape mesh member.

Hair dryer according to claim 1, characterized in that it is obtained by forming the conical mesh member.

Hair dryer in accordance with claim 1, characterized in that it is formed in a disk shape and the mesh member.

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AB - PROBLEM TO BE SOLVED: To provide a hair dryer which can prevent a net body from separating from a filter frame, on which the net body is provided, while dust and hair can be favorably prevented from entering the inside from an air suction port by making the mesh of the net body, being a filter main body, finer. SOLUTION: This dryer sucks in air from the air suction port 11 of the main body casing 1, and discharges hot air from an air-discharging port 12. In such a hair dryer, the filter frame 4 is attached to the air suction port 11. In this case, for the filter frame 4, the net body 5, which is formed in advance, is integrally molded by an insert-molding with a synthetic resin.
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AN - 2003-454259
TI - Hair dryer has filter frame which is attached to lower section of integrally molded net, such that inlet port is formed on net to discharge hot air from nausea opening
AB - NOVELTY :
A filter frame (4) is attached to the lower section of an integrally molded net (5), such that an inlet port (11) is formed on the net to discharge hot air from a nausea opening (12).
- USE :
Hair dryer.
- ADVANTAGE :
Suppresses dust encroachment by providing the filter frame which is attached to the lower section of the integrally molded net.
- DESCRIPTION OF DRAWINGS :
The figure shows (a) sectional and (b) top views of the hair dryer. (Drawing includes non-English language text).
4 : Filter frame
5 : Net
11 : Inlet port
12 : Nausea opening
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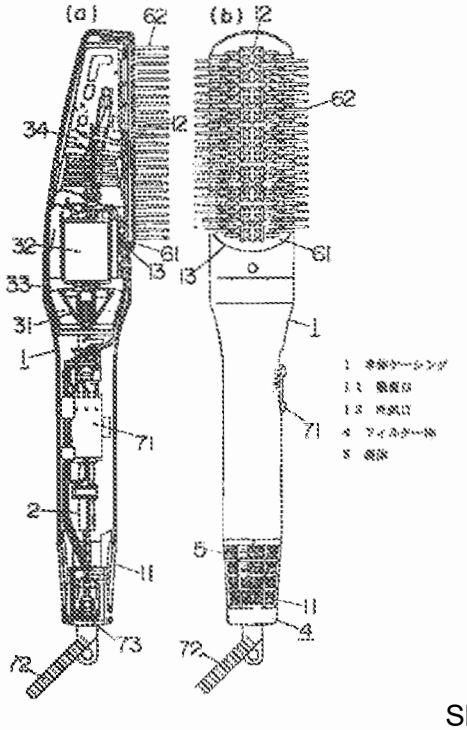
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(54)【発明の名称】　ヘアードライヤー

(57)【要約】
【課題】　フィルター主体である網体の目を微細化して埃や毛髪が吸気口より侵入するのを良く防止できるものでありながら、網体が設けられたフィルター枠から網体が剥離するのを防止できるヘアードライヤーを提供する。
【解決手段】　本体ケーシング１の吸気口１１より空気を吸入して吐気口１２より温風を吐出するヘアードライヤーにおいて、予め形成された網体５を合成樹脂のインサート成形にて一体成形したフィルター枠４を吸気口１１に取り付けた。



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【特許請求の範囲】
【請求項１】　本体ケーシングの吸気口より空気を吸入して吐気口より温風を吐出するヘアードライヤーにおいて、予め形成された網体を合成樹脂のインサート成形にて一体成形したフィルター枠を吸気口に取り付けて成ることを特徴とするヘアードライヤー。
【請求項２】　フィルター枠に格子状のリブ部を形成して成ることを特徴とする請求項１記載のヘアードライヤー。
【請求項３】　本体ケーシングの吸気口に格子部を形成し、フィルター枠のリブ部の間に前記格子部が配置されるようにフィルター枠を本体ケーシングに取り付けて成ることを特徴とする請求項２記載のヘアードライヤー。
【請求項４】　網体を円筒状に形成して成ることを特徴とする請求項１記載のヘアードライヤー。
【請求項５】　網体を円錐状に形成して成ることを特徴とする請求項１記載のヘアードライヤー。
【請求項６】　網体を円板状に形成して成ることを特徴とする請求項１記載のヘアードライヤー。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、温風を吐出して毛髪の乾燥やセットを行うヘアードライヤーに関するものである。
【０００２】
【従来の技術】従来より、温風を吐出して毛髪の乾燥やセットを行うヘアードライヤーが使用されており、このヘアードライヤーについて以下に説明する。
【０００３】図６に従来のヘアードライヤーの概略説明図を示す。このヘアードライヤーは、略筒状をした本体ケーシング１の内部に空気流路２を形成し、本体ケーシング１の上流側の端部に吸気口１１を設け、本体ケーシング１の下流側に吐気口１２を設けてある。そして、本体ケーシング１内の空気流路２には、吸気口１１の下流側にファン３１を、その下流側にファン３１を駆動するモーター３２及びこのモーター３２を保持して且つ空気流を整流する整流翼３３を、更に下流側に空気を加温するヒータ部３４が設けてある。
【０００４】このヘアードライヤーは、電源スイッチを入れてモーター３２とヒータ部３４に通電し、吸気口１１より吸入した空気をファン３１により空気流路２の下流側に送風し、ヒータ部３４で加温して温風を吐気口１２より吐出し、この温風によって毛髪の乾燥やセットを行うものである。
【０００５】ところで、このようなヘアードライヤーは、本体ケーシング１の吸気口１１にフィルター部４'を取り付けて、埃や毛髪が吸気口より本体ケーシング１内に侵入するのを防止するものである。
【０００６】フィルター部４'は、メッシュ取付枠４１'とメッシュ５'とを射出成形にて一体成形するものが良く使用されているが、このものにあっては、メッシュ５'の目が比較的粗いため、埃や毛髪が吸気口１１より侵入してファンに引っ掛かって停止したり、ヒーター部３４にて埃や毛髪が焦げて異臭がするといった問題があるもので、埃や毛髪が吸気口１１より侵入するのを確実に防止するため、メッシュ５'の目を微細化することが必要であったが、金型の製作等において技術的に困難なものであった。そこで、図７に示すように、予め目を微細化したメッシュ５'とメッシュ取付枠４１'とを熱溶着したものが良く使用されるようになったが、この場合には、熱溶着したメッシュ５'が清掃時にメッシュ取付枠４１'が剥離してしまうといった問題があるものであった。
【０００７】
【発明が解決しようとする課題】本発明は上記の点に鑑みてなされたものであり、その目的とするところは、フィルター主体である網体の目を微細化して埃や毛髪が吸気口より侵入するのを良く防止できるものでありながら、網体が設けられたフィルター枠から網体が剥離するのを防止できるヘアードライヤーを提供することを課題とするものである。
【０００８】
【課題を解決するための手段】上記課題を解決するために本発明に係るヘアードライヤーは、本体ケーシング１の吸気口１１より空気を吸入して吐気口１２より温風を吐出するヘアードライヤーにおいて、予め形成された網体５を合成樹脂のインサート成形にて一体成形したフィルター枠４を吸気口１１に取り付けて成ることを特徴とするものである。このような構成とすることで、フィルター主体である網体５の目を微細化して埃や毛髪が吸気口１１より侵入するのを良く防止することができると共に、網体５をインサート成形にてフィルター枠４と一体に形成してあるので網体５が熱溶着されているもののように清掃時に剥離するのを防止することができる。
【０００９】また、フィルター枠４に格子状のリブ部４３を形成することが好ましい。このような構成とすることで、より一層網体５がフィルター枠４より剥離し難くなり、これによって清掃もし易くなるものである。
【００１０】また、本体ケーシング１の吸気口１１に格子部を形成し、フィルター枠４のリブ部４３の間に前記格子部が配置されるようにフィルター枠４を本体ケーシング１に取り付けることが好ましい。このような構成とすることで、更に一層網体５がフィルター枠４より剥離し難くなり、これによって清掃もし易くなるものである。
【００１１】また、網体５を円筒状に形成することが好ましい。このような構成とすることで、板状の網体５を人手によって円筒状に曲げて金型に設置するといったような煩雑な作業が簡略化される。
【００１２】また、網体５を円錐状に形成したり、円板

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状に形成しても良く、このような形状をした網体５を用いて様々なフィルター枠４を形成することが可能となる。

【００１３】

【発明の実施の形態】以下、本発明を添付図面に示す実施形態に基づいて説明する。

【００１４】本体ケーシング１は、図１に示すように、内部に空気流路２が形成される略円筒状をしたもので、上流側の端部には空気を吸入する吸気口１１が形成してあり、下流側には空気を吐出する吐気口１２が形成してある。

【００１５】本体ケーシング１内の空気流路２には、上流側（即ち吸気口１１側）より、吸気口１１より吸気した空気を下流へ送るファン３１と、ファン３１を駆動するモーター３２と、モーター３２を保持して且つ空気流を整流する整流翼３３と、空気を加温するヒータ部３４とが配設してあり、モーター３２を駆動してファン３１を回転させることで吸気口１１より空気を取り入れて下流側に送風し、ヒータ部３４にて加温した空気を吐気口１２より吐出するものである。このような本体ケーシング１は、本体ケーシング１自体が把持部となっており、本体ケーシング１の外側に電源スイッチ７１が設けてあると共に、電源コード７２が形成してある。

【００１６】また、本体ケーシング１の吐気口１２近傍の外面には、ブラシ部が設けてあり、吐気口１２より温風を突出させながら整髪可能となるようにしてある。なお、本実施形態においては、本体ケーシング１の下流側にアタッチメント取付部１３を穿設し、このアタッチメント取付部１３にブリスル６２を突設すると共に複数の吐気口１２を穿孔したアタッチメント６１をアタッチメント取付部１３に取り付けて、吐気口１２及びブラシ部が形成してある。

【００１７】そして、本体ケーシング１の吸気口１１には、吸気口１１より埃や毛髪が侵入されるのを防止するフィルター枠４を取り付けるもので、このフィルター枠４は網体５が一体成形されたものであり、以下に説明する。

【００１８】網体５は、繊維のような細い部材をメッシュ状に編んで形成したり、メッシュ状に一体成形したものでもよく、特に限定されない。また、網体５の材料も特に限定されないものである。このような網体５は、本実施形態では図３に示すように、円筒状をした本体ケーシング１の上流側の部分の径より若干小径の円筒状に形成したものである。また、網体５の他例として、円錐台側面状や図４に示すように円錐台側面状に形成したもの、図５に示すように円板状に形成したものでもよい。これらのような形状をした網体５を用いて様々なフィルター枠４を形成することができる。そして、このような網体５を用いてフィルター枠４を一体に形成するのであるが、これは、フィルター枠４を射出成形する際、金型のキャビティ内に網体５を設置してフィルター４枠に網体５が埋設されるように形成するものである。

【００１９】フィルター枠４は、本実施形態では図２に示すように、円筒状をした本体ケーシング１の上流側の部分の径と略同径の上流側の円枠４１及び下流側の円枠４２と、この両円枠４１，４２間に形成される格子状のリブ部４３と、両円枠４１，４２及びリブ部４３に埋設される網体５とを合成樹脂のインサート成形にて一体に形成するものである。なお、インサート成形にて一体に形成する際、網体５が円筒状に形成してあることで、板状の網体５を人手によって円筒状に曲げて金型に設置するという煩雑な作業が簡略化される。

【００２０】このフィルター枠４は、円筒状をした本体ケーシング１の上流側の端部に形成してある吸気口１１に下流側の円枠４２を嵌め込んで取り付けるもので、上流側の円枠４１は本体ケーシング１の吸気口１１より突出する電源コード接続部７３に被嵌され、これによって本体ケーシング１の上流側はフィルター枠４と電源コード接続部７３とで閉塞される。

【００２１】以上のような構成によれば、予め形成された網体５を合成樹脂のインサート成形にて一体成形してフィルター枠４を構成し、このフィルター枠４を本体ケーシング１の上流側の端部の吸気口１１に取り付けてあるので、網体５の目を微細化して埃や毛髪が吸気口１１より侵入するのを良く防止することができると共に、網体５をインサート成形にてフィルター枠４と一体に形成してあるので、フィルター主体である網体５が熱溶着されているもののように清掃時に剥離するのを防止することができる。

【００２２】また、フィルター枠４に格子状のリブ部４３を形成してあることで、より一層網体５がフィルター枠４より剥離し難くなり、これによって清掃もし易くなるものである。

【００２３】また、特に図示はしないが、本体ケーシング１の吸気口１１に格子部を形成し、フィルター枠４のリブ部４３の間に前記格子部が配置されるようにフィルター枠４を本体ケーシング１に取り付けてもよいものである。

【００２４】このようにすることで、フィルター枠４のリブ部４３とこのリブ部４３間に配置された本体ケーシング１の格子部とで、更に一層網体５が剥離し難くなるものである。

【００２５】

【発明の効果】上記のように本発明の請求項１記載の発明にあっては、本体ケーシングの吸気口より空気を吸入して吐気口より温風を吐出するヘアードライヤーにおいて、予め形成された網体を合成樹脂のインサート成形にて一体成形したフィルター枠を吸気口に取り付けたので、フィルター主体である網体の目を微細化して埃や毛髪が吸気口より侵入するのを良く防止することができる

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と共に、網体をインサート成形にてフィルター枠と一体に形成してあるので網体が熱溶着されているもののように清掃時に剥離するのを防止することができる。

【００２６】また請求項２記載の発明にあっては、上記請求項１記載の発明の効果に加えて、フィルター枠に格子状のリブ部を形成したので、より一層網体がフィルター枠より剥離し難くなり、これによって清掃もし易くなるものである。

【００２７】また請求項３記載の発明にあっては、上記請求項２記載の発明の効果に加えて、本体ケーシングの吸気口に格子部を形成し、フィルター枠のリブ部の間に前記格子部が配置されるようにフィルター枠を本体ケーシングに取り付けたので、更に一層網体がフィルター枠より剥離し難くなり、これによって清掃もし易くなるものである。

【００２８】また請求項４記載の発明にあっては、上記請求項１記載の発明の効果に加えて、網体を円筒状に形成したので、板状の網体を人手によって円筒状に曲げて金型に設置するといったような煩雑な作業が簡略化される。

【００２９】また請求項５記載の発明にあっては、上記請求項１記載の発明の効果に加えて、網体を円錐状に形成したので、この円錐状をした網体を用いて他の形状のフィルター枠を形成することが可能となる。

【００３０】また請求項６記載の発明にあっては、上記請求項１記載の発明の効果に加えて、網体を円板状に形成したので、この円板状をした網体を用いて他の形状のフィルター枠を形成することが可能となる。

【図面の簡単な説明】

【図１】本発明の一実施形態を示し、（ａ）は断面図であり、（ｂ）は正面図である。

【図２】同上におけるフィルター枠の正面図である。

【図３】網体の斜視図である。

【図４】網体の他例の斜視図である。

【図５】網体の更に他例の斜視図である。

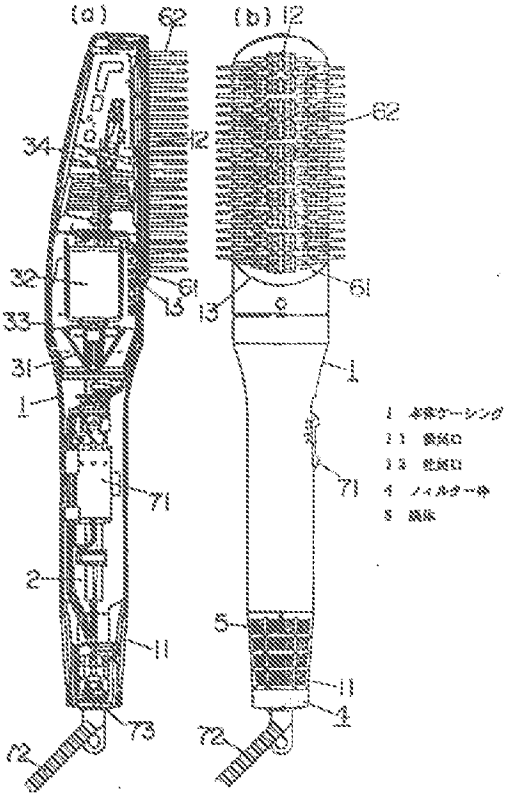
【図６】従来例のヘアードライヤーを示し、（ａ）は正面断面図であり、（ｂ）は側面図である。

【図７】従来例のフィルター部におけるメッシュのメッシュ取付枠への取り付けを説明する図を示し、（ａ）は正面図であり、（ｂ）は断面図である。

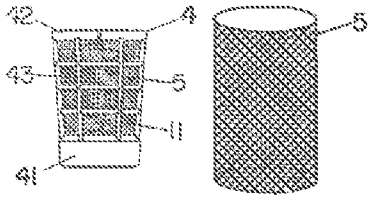
【符号の説明】

１　本体ケーシング
１１　吸気口
１２　吐気口
４　フィルター枠
５　網体

【図１】

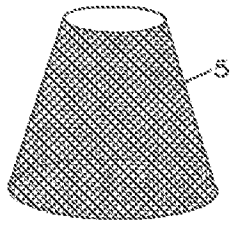


【図２】



【図３】

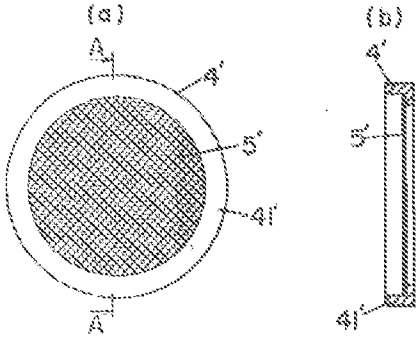
【図４】



【図５】

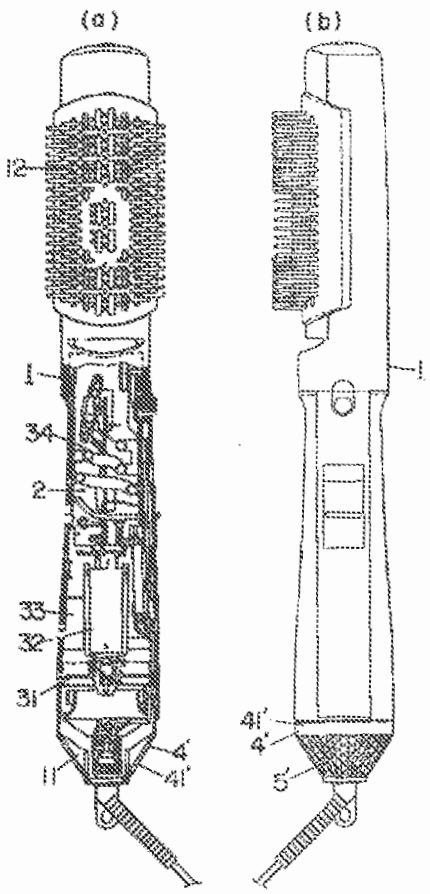


【図７】



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【図6】



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A45D 20/12	A45D 20/12	J	3B040

審査請求 未請求　予備審査請求 未請求　（全 11 頁）

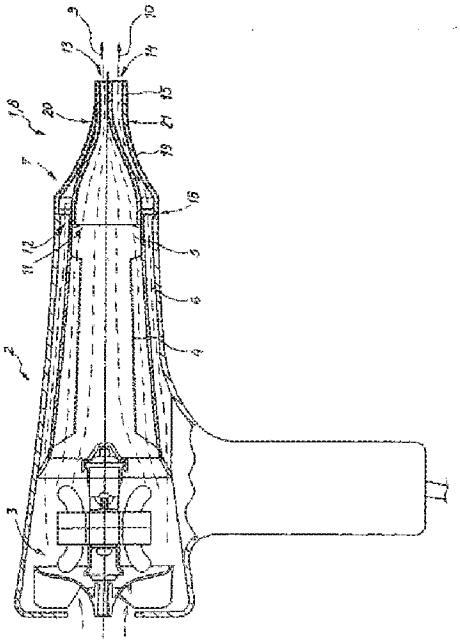
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(54)【発明の名称】温風送風機のための装置

(57)【要約】
噴出口７において中央の温風ジェット５およびそれと同心の冷風ジェット６を発生させる、ブロワ３およびヒータ４を備えた温風送風機２のための装置１では、ヒータ４の領域において、温風ジェット９と冷風ジェット１０とは隔壁２２によって分流せしめられる。この噴出口７と接続可能なように形成された送風ノズルアタッチメント８が装置１として備えられる。ここで送風ノズルアタッチメント８は、温風送風機２の中央の温風ジェット５およびそれと同心の冷風ジェット６から、相並んで配置された温風ジェット９および冷風ジェット１０を発生させる。



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【特許請求の範囲】
【請求項１】
噴出口において中央の温風ジェットおよびそれと同心の冷風ジェットを発生させる、ブロワおよびヒータを備えた温風送風機のための装置であって、
前記噴出口（７）と接続可能なように形成された送風ノズルアタッチメント（８）が備えられており、前記送風ノズルアタッチメント（８）は、前記温風送風機（２）の前記中央の温風ジェット（５）および前記同心の冷風ジェット（６）から、相並んで配置された温風ジェット（９）および冷風ジェット（１０）を発生させることを特徴とする温風送風機のための装置（１）。
【請求項２】
前記送風ノズルアタッチメント（８）は、前記噴出口（７）側に中央導管の入口（１１）およびそれと同心である導管の入口（１２）を有し、かつ、前記中央導管入口（１１）および前記同心導管入口（１２）は、それぞれ相並んで配置された温風ノズル（１３）および冷風ノズル（１４）に繋がれていることを特徴とする請求項１に記載の装置。
【請求項３】
前記温風ノズル（１３）および前記冷風ノズル（１４）は、それぞれフラットノズル（１５）として形成されており、平らな面が互いに接するように配置されていることを特徴とする請求項２に記載の装置。
【請求項４】
前記温風ノズル（１３）および前記冷風ノズル（１４）は、少なくとも略同一形状の吹出口断面（１６、１７）を有していることを特徴とする請求項２に記載の装置。
【請求項５】
前記温風ノズル（１３）は、前記冷風ノズル（１４）の吹出口断面（１７）よりも小さい吹出口断面（１６）を有していることを特徴とする請求項２に記載の装置。
【請求項６】
前記温風ノズル（１３）および前記冷風ノズル（１４）が同じ長さで終端していることを特徴とする請求項２に記載の装置。
【請求項７】
前記送風ノズルアタッチメント（８）は、前記噴出口（７）の領域において、軸回転可能かつ接続可能なように形成されていることを特徴とする請求項２に記載の装置。
【請求項８】
前記送風ノズルアタッチメント（８）は、スナップ接続（１８）によって前記噴出口（７）の領域と接続可能であることを特徴とする請求項２に記載の装置。
【請求項９】
前記送風ノズルアタッチメント（８）は耐熱プラスチック（１９）からなっていることを特徴とする請求項２に記載の装置。
【請求項１０】
前記温風ノズル（１３）および前記冷風ノズル（１４）の外側部分には、種々の視覚的な目印が付けられていることを特徴とする請求項２に記載の装置。
【請求項１１】
前記温風ノズル（１３）の外側部分（２０）には赤色の目印が付けられ、かつ前記冷風ノズル（１４）の外側部分（２１）には青色の目印が付けられていることを特徴とする請求項１０に記載の装置。
【請求項１２】
前記送風ノズルアタッチメント（８）と選択的に使用される、温風ノズルアタッチメント（２３）が備えられたことを特徴とする請求項２に記載の装置。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、噴出口において中央の温風ジェットおよびそれと同心の冷風ジェットを発生さ

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せる、ブロワおよびヒータを備えた温風送風機のための装置に関する。

【背景技術】

【０００２】

髪の毛の乾燥または他のトリートメントのための温風送風機の例としては、ＤＥ９００１１９９Ｕ１号が知られている。ここで、温風送風機の噴出口からの同心冷風ジェットは、温風ジェットによって頭皮が熱くなることを防ぐようになされている。しかしこの際、同心冷風ジェットは同時に髪の毛にも当たり、不必要な冷却を招くという弊害がある。

【特許文献１】ＤＥ９００１１９９Ｕ１号公報

【発明の開示】

【発明が解決しようとする課題】

【０００３】

従って本発明の課題は、上述の欠点を有さず、構造が単純であり、かつコスト的に有利に生産し得る同種の装置を提供することである。

【課題を解決するための手段】

【０００４】

この課題は、請求項１の特徴部分に記載の構成によって解決される。本発明の更なる好ましい構成が従属クレームから明らかとなる。

【発明を実施するための最良の形態】

【０００５】

本発明は実施例によって、より詳細に記述される。

【０００６】

図１～図６は、噴出口７において中央の温風ジェット５およびそれと同心の冷風ジェット６を発生させる、ブロワ３およびヒータ４を備えた温風送風機２のための装置１を示している。このヒータ４の領域において、温風ジェット９と冷風ジェット１０とは隔壁２２によって分流せしめられる。この噴出口７と接続可能なように形成された送風ノズルアタッチメント８が装置１として備えられる。ここで送風ノズルアタッチメント８は、温風送風機２の中央の温風ジェット５およびそれと同心の冷風ジェット６から、相並んで配置された温風ジェット９および冷風ジェット１０を発生させる。これは、送風ノズルアタッチメント８が、噴出口７側に中央の導管の入口１１およびそれと同心である導管の入口１２を有し、かつ、中央導管入口１１および同心導管入口１２が、それぞれ相並んで配置された温風ノズル１３および冷風ノズル１４に繋がれていることにより達成される。この中央導管入口１１と同心導管入口１２とは、接続ブリッジ２４によって相互に結合される。

【０００７】

温風ノズル１３および冷風ノズル１４は、それぞれフラットノズル１５として形成され、平らな面が互いに接するように配置される。ここで、温風ノズル１３および冷風ノズル１４は、少なくとも略同一形状の吹出口断面１６、１７を有している。

【０００８】

温風ノズル１３は、冷風ノズル１４の吹出口断面１７よりも小さい吹出口断面１６を有しているため、非常に良好な頭皮の冷却が可能となる。

【０００９】

実用的な理由により、温風ノズル１３および冷風ノズル１４は同じ長さで終端している。

【００１０】

送風ノズルアタッチメント８は、噴出口７の領域において軸回転可能かつ接続可能なように形成されているため、任意の角度位置に位置決めされ得る。このように、温風送風機２は取扱いが簡略化されており、特に、送風ノズルアタッチメント８を用いて側頭部の頭髪領域を最適に狙うべく取り扱われ得る。

【００１１】

送風ノズルアタッチメント８は、よく知られたスナップ接続１８（詳細は不図示）によって、噴出口７の領域と接続可能なように形成される。

【００１２】

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コスト的な理由により、送風ノズルアタッチメント８は耐熱プラスチック１９からなっている。

【００１３】

ある回転角度に調節された送風ノズルアタッチメント８を視覚的に容易にチェックするために、温風ノズル１３および冷風ノズル１４の外側部分には、例えば温風ノズル１３の外側部分２０には赤色の目印、冷風ノズル１４の外側部分２１には青色の目印というように、種々の視覚的な目印が付けられる。

【００１４】

図７は、温風ジェット９のみ用の別の温風ノズルアタッチメント２３を示している。温風ノズルアタッチメント２３は、送風ノズルアタッチメント８と選択的に使用され、温風ジェット９のみを温風送風機２に生じさせることができる。この単独温風ジェット９は、送風ノズルアタッチメント８が、同心冷風ジェット６の噴出口７を閉止するとともに、温風ジェット９のみを通過させることによって生じる。

【図面の簡単な説明】

【００１５】

【図１】送風ノズルアタッチメントとして形成された装置を備えた温風送風機の側断面図である。

【図２】図１における温風送風機の送風ノズルアタッチメントを軸方向から視た図である。

【図３】送風ノズルアタッチメントがない状態の、図１における温風送風機の前部を示す要部断面図である。

【図４】送風ノズルアタッチメントを独立部品として示す拡大図である。

【図５】送風ノズルアタッチメントを独立部品として示す拡大図である。

【図６】送風ノズルアタッチメントを独立部品として示す拡大図である。

【図７】温風のみ用の別の送風ノズルアタッチメントを示す側断面図である。

【符号の説明】

【００１６】

１　装置
２　温風送風機
３　ブロワ
４　ヒータ
５　中央の温風ジェット
６　同心の冷風ジェット
７　噴出口
８　送風ノズルアタッチメント
９　温風ジェット
１０　冷風ジェット
１１　中央導管の入口
１２　同心導管の入口
１３　温風ノズル
１４　冷風ノズル
１５　フラットノズル
１６　（温風ノズル）吹出口断面
１７　（冷風ノズル）吹出口断面
１８　スナップ接続
１９　プラスチック
２０　温風ノズルの外側部分
２１　冷風ノズルの外側部分
２２　隔壁
２３　温風ノズルアタッチメント

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２４　接続ブリッジ

【図１】

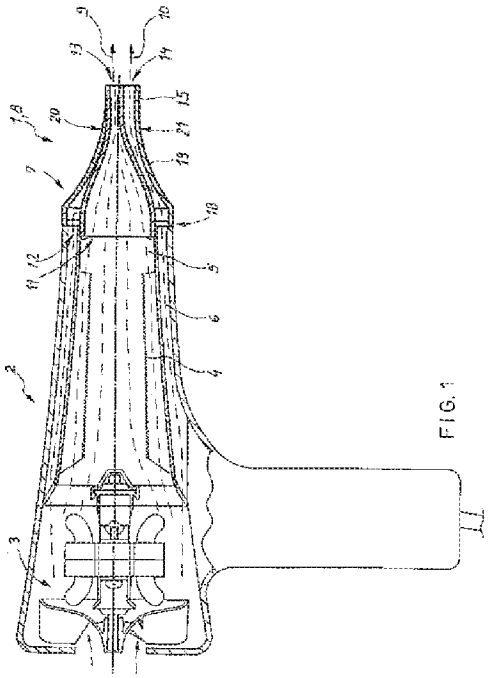


FIG. 1

【図２】

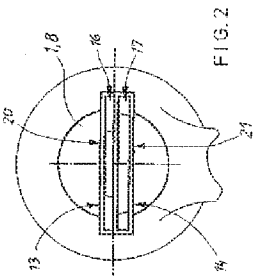


FIG. 2

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【図３】

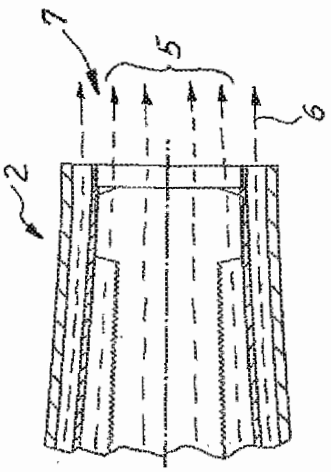


FIG.3

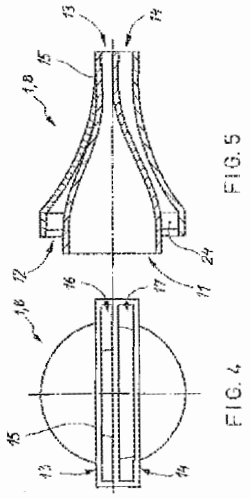


FIG.5

FIG.4

【図６】

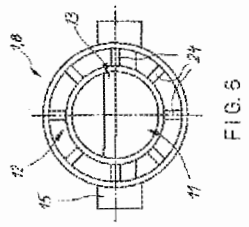


FIG.6

【図７】

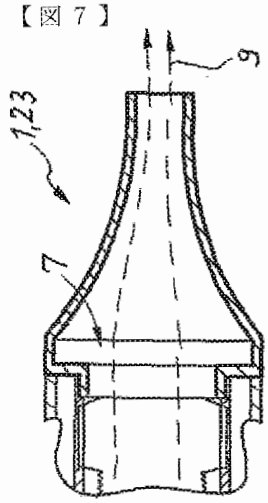


FIG.7

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【国際調査報告】

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 03/03161

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A45D20/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A45D F24H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 970 633 A (MANUFACTORY NELSON FRANCE SOCI) 12 January 2000 (2000-01-12) abstract paragraph '0023! paragraph '0051! paragraph '0053! figures 2,3A,3B	1
A		4,7-10

☐ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
5 November 2003	13/11/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Zetzsche, B

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Information on application No
PCT/EP 03/03161

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0970633 A	12-01-2000	FR 2782904 A1	10-03-2000
		AT 240061 T	15-05-2003
		AU 4624999 A	24-01-2000
		DE 69907814 D1	18-06-2003
		EP 0970633 A1	12-01-2000
		WO 0001270 A1	13-01-2000

Form PCT/ISA/210 (patent family annex) (July 1998)

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/EP 03/03161

A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES
IPK 7 A45D20/12

Nach der Internationalen Patentklassifikation (IPK) oder nach der nationalen Klassifikation und der IPK

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Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
IPK 7 A45D F24H

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Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)
EPO-Internal, WPI Data, PAJ

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	EP 0 970 633 A (MANUFACTORY NELSON FRANCE SOCI) 12. Januar 2000 (2000-01-12) Zusammenfassung Absatz '0023! Absatz '0051! Absatz '0053! Abb11dungen 2,3A,3B	1
A		4,7-10

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Datum des Abschlusses der Internationalen Recherche	Absendedatum des Internationalen Recherchenberichts
5. November 2003	13/11/2003

Name und Postanschrift der Internationalen Recherchenbehörde	Bevollmächtigter Bediensteter
Europäisches Patentamt, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Zetzsche, B

Formblatt PCT/ISA/210 (Blatt 2) (Juli 1992)

INTERNATIONALER RECHERCHENBERICHT

Angaben zu Veröffentlichungen, die zur selben Patentfamilie gehören

Internationales Aktenzeichen
PCT/EP 03/03161

Im Recherchenbericht angeführtes Patentdokument	Datum der Veröffentlichung	Mitglied(er) der Patentfamilie	Datum der Veröffentlichung
EP 0970633 A	12-01-2000	FR 2782904 A1	10-03-2000
		AT 240061 T	15-05-2003
		AU 4624999 A	24-01-2000
		DE 69907814 D1	18-06-2003
		EP 0970633 A1	12-01-2000
		WO 0001270 A1	13-01-2000

Formblatt PCT/ISA/210 (Anhang Patentfamilie)(Juli 1992)

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フロントページの続き

(81)指定国 AP(GH,GM,KE,LS,MW,MZ,SD,SL,SZ,TZ,UG,ZM,ZW),EA(AM,AZ,BY,KG,KZ,MD,RU,TJ,TM),EP(AT,BE,BG,CH,CY,CZ,DE,DK,EE,ES,FI,FR,GB,GR,HU,IE,IT,LU,MC,NL,PT,RO,SE,SI,SK,TR),OA(BF,BJ,CF,CG,CI,CM,GA,GN,GQ,GW,ML,MR,NE,SN,TD,TG),AE,AG,AL,AM,AT,AU,AZ,BA,BB,BG,BR,BY,BZ,CA,CH,CN,CO,CR,CU,CZ,DE,DK,DM,DZ,EC,EE,ES,FI,GB,GD,GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KP,KR,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,MZ,NI,NO,NZ,OM,PH,PL,PT,RO,RU,SC,SD,SE,SG,SK,SL,TJ,TM,TN,TR,TT,TZ,UA,UG,US,UZ,VC,VN,YU,ZA,ZM,ZW

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Ｆターム(参考) 3B040 CH02 CH04

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/323,937	07/03/2014	Patrick Joseph William MOLONEY	424662077100	2130

25227 7590 02/02/2016

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EXAMINER
GRAVINI, STEPHEN MICHAEL

ART UNIT	PAPER NUMBER
3744	

NOTIFICATION DATE	DELIVERY MODE
02/02/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 14/323,937	Applicant(s) MOLONEY ET AL.	
	Examiner Stephen M. Gravini	Art Unit 3744	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *July 3, 2014*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-38* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-38* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *July 3, 2014* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☒ All b)☐ Some** c)☐ None of the:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

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The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 17 is rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention. The recited "the fan" lacks a positive antecedent basis and therefore is indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

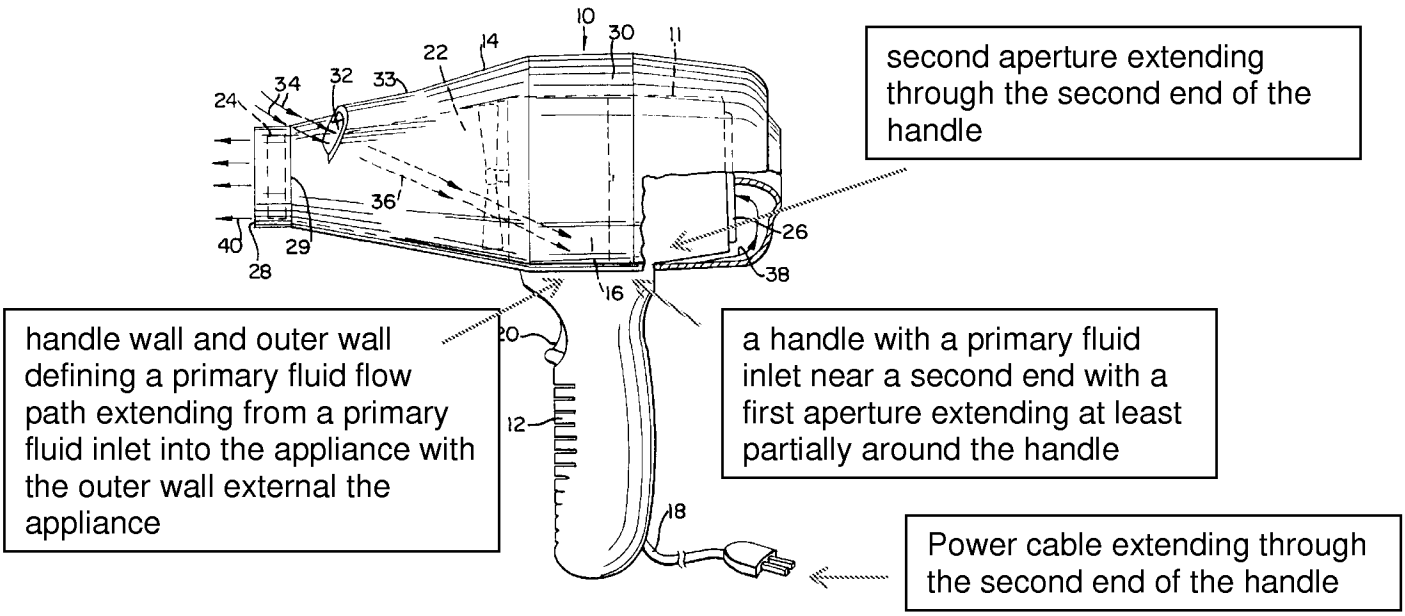
Claims 1-6 and 10-12 are rejected under 35 U.S.C. 102(a)(1) as being described in a printed publication by Rinker et al. (US 1,564,896). The claims are reasonably and

broadly construed, in light of the accompanying specification, to be disclosed by Rinker, as teaching:

a hand held appliance comprising a handle, the handle comprising a wall and an outer wall wherein the wall defines a primary fluid flow path that extends from a primary fluid inlet into the appliance (figure 2) and the outer wall is an external surface of the appliance wherein an insulating layer is provided between the wall and the outer wall (page 2 lines 19-38, especially line 31 and page 2 lines 39-105, especially lines 65-66 for the express teaching of an insulating layer). Rinker also discloses the claimed outer wall extends substantially continuously around the wall (figure 11), wherein the outer wall extends substantially along the wall (figure 14), wherein the insulating layer is substantially continuous around the wall (figure 12), wherein the insulating layer is substantially continuous along the wall (figure 3), wherein the insulating layer mitigates one or more of noise, vibration and heat produced by the appliance (page 2 lines 65-66), wherein the handle comprises a first end and a second end wherein the primary fluid inlet is at or near the second end (figure 2), wherein the primary fluid inlet comprises a first aperture extending at least partially around the handle and a second aperture extending through the second end of the handle (figure 1).

Claims 13-25 are rejected under 35 U.S.C. 102(a)(1) as being described in a printed publication by Altamore (US 6,148,537). The claims are reasonably and broadly construed, in light of the accompanying specification, to be disclosed by Altamore, as teaching:

a hand held appliance (see title and abstract) comprising:



Altamore also discloses the claimed end wall substantially orthogonal to the handle (near reference character 26 shown above), first aperture adjacent the second end of the handle (near reference character 38 above), heater (column 1 line 14), heater downstream a fan unit (column 1 lines 17-18), attachable head (disclosed air outlet **28** meets the function and structure of claimed attachable head), plurality of apertures **32** around a head **29**, primary fluid flow path substantially linear **36** through the handle and into the head, a body having a primary fluid outlet, wherein the primary fluid outlet is in fluid communication with the primary fluid inlet and the primary fluid flow path (shown by the flow arrows in figure 2), wherein the primary fluid flow path from the primary fluid inlet to the primary fluid outlet is non linear (near reference character **38** above).

Claims 26-31 and 33-34 are rejected under 35 U.S.C. 102(a)(1) as being described in a printed by Sarocchi (GB 1 417 052). The claims are reasonably and broadly construed, in light of the accompanying specification, to be disclosed by Sarocchi, as teaching:

a hair care appliance (see face of reference) comprising a handle **1**, the handle comprising a wall **10** and an outer wall **11** wherein the wall defines a primary fluid flow path that extends from a primary fluid inlet into the appliance and the outer wall is an external surface of the appliance (see the flow arrows in figure 2) wherein the primary fluid flow path from the primary fluid inlet to a primary fluid outlet is non linear (arrows showing angled non linear flow near reference character 2 in the figures). Sarocchi also discloses primary fluid flows within the handle in a first direction and within the body in a second direction (figure 4), wherein the primary fluid flow in the body is substantially orthogonal to the primary fluid flow in the handle (figure 1), wherein the body comprises a fluid flow path extending from a fluid inlet in the body to a fluid outlet (figure 2), wherein the fluid flow path merges with the primary fluid flow path within the body (figure 1), wherein fluid in the primary fluid flow path exits the body by the primary fluid outlet (figure 4), wherein the fluid flow path is defined by a duct extending through the body (figure 2), wherein the fluid flow path extends from a fluid inlet to a fluid outlet (figure 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 7-9 are rejected under 35 U.S.C. 103 as being unpatentable over Rinker in view of Keane (GB 2 431 136). Rinker discloses the claimed invention, as rejected above, except for the recited insulating material is a foam or a felt, wherein the wall is formed from a plastic material or, wherein the plastic material is one of polycarbonate, glass filled PPA, PPS, LCAP or PEEK. Keane, another hand held appliance, discloses those features in the face of that reference. It would have been obvious to one skilled in the art to combine the teachings of Rinker with the teachings of Keane for the purpose of providing an insulating polymeric layer to a hair appliance.

Claim 32 is rejected under 35 U.S.C. 103 as being unpatentable over Sarocchi in view of Hoffman (DE 310193). Sarocchi discloses the claimed invention, as rejected above, except for the recited flow entrained fan unit. Hoffman, another hand held appliance, discloses those features in the face of that reference. It would have been obvious to one skilled in the art to combine the teachings of Sarocchi with the teachings of Hoffman for the purpose of providing an airflow to a hair appliance.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled

out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 1-12 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-34 of copending Application No. 14/495,436 in view of Keane. Each of the features in the copending application are recited in the current application, except for the current application claimed insulating layer. Keane, another hair appliance teaches that it would be obvious to one skilled in the art to include that feature, as discussed in the rejection above.

Claims 13-25 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-19 of copending Application No. 14/389,166 in view of Altamore. Each of the features in the copending application are recited in the current application, except for the current application claimed second aperture extending through the second end of the handle. Altamore, another hair appliance teaches that it would be obvious to one skilled in the art to include that feature, as discussed in the rejection above.

Claims 26-39 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-2, 4-9, and 11-31 of copending Application No. 14/323,864 in view of Sarocchi. Each of the features in the copending application are recited in the current application, except for the current application claimed second non linear fluid outlet. Sarocchi, another hair appliance teaches that it

would be obvious to one skilled in the art to include that feature, as discussed in the rejection above.

This is a provisional nonstatutory double patenting rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Other prior art references cited with this action teach one or more claim features but are not relied upon in rejecting the claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Gravini whose telephone number is (571)272-4875. The examiner can normally be reached on normal weekday business hours (east coast time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz F. Jules can be reached on 571 272 6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tuesday, January 26, 2016
/Stephen M. Gravini/
Primary Examiner, Art Unit 3744

Notice of References Cited	Application/Control No. 14/323,937	Applicant(s)/Patent Under Reexamination MOLONEY ET AL.	
	Examiner Stephen M. Gravini	Art Unit 3744	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-1,564,896 A	12-1925	TRUMAN RINKER S	A45D20/10	338/305
*	B	US-8,893,400 B2	11-2014	Carme; Christian	A45D20/12	132/115
*	C	US-2015/0007855 A1	01-2015	MOLONEY; Patrick Joseph William	A45D20/10	132/271
*	D	US-2015/0007444 A1	01-2015	MOLONEY; Patrick Joseph William	A45D20/10	34/97
*	E	US-2015/0007443 A1	01-2015	GAMMACK; Peter David	A45D20/08	34/97
*	F	US-2015/0007442 A1	01-2015	GAMMACK; Peter David	A45D20/08	34/97
*	G	US-2015/0093099 A1	04-2015	SHELTON; Edward Sebert Maurice	A45D20/12	392/380
*	H	US-2015/0089828 A1	04-2015	Moloney; Patrick Joseph William	A45D20/10	34/97
*	I	US-9,173,468 B2	11-2015	Moloney; Patrick Joseph William	A45D20/10	1/1
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N	GB 1417052 A	12-1975			A45D20/52
	O	DE 3101933 A1	09-1982	DE	HOFFMANN KARL-HEINZ ING G	A45D20/12
	P	GB 2431136 A	04-2007	GB	KEANE BARRY JOHN	A45D6/18
	Q	GB 2515811 A	01-2015	GB	TAYLOR DANIEL MARTIN	A45D20/10
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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DEUTSCHES PATENTAMT

(12) **Offenlegungsschrift**

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(43) Offenlegungstag: 2. 9. 82

DE 3101933 A1

(71) Anmelder:
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Hoffmann, Karl-Heinz, Ing.(grad.), 6393 Wehrheim, DE

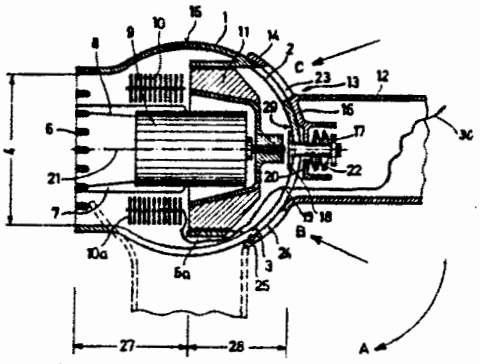
(56) Recherchenergebnis gem. § 43 Abs. 1 Satz 1 PatG:

DE-OS	25 28 478
DE-OS	26 49 805
DE-OS	27 43 743
DE-GM	73 13 649
GB	15 59 423
US	38 46 047

(54) **Haarpflegegerät mit einem Warmluftgebläse**

Bei einem Haarpflegegerät mit einem Warmluftgebläse ist das Griffteil (12) schwenkbar am Gebläsegehäuse (1) angelenkt, wobei das Gebläsegehäuse (1) eine etwa kugelige Raumform aufweist und das Lüfterrad (11) mit Gebläsemotor (9) und das Heizregister (10) umhüllt und mit einander gegenüberliegend angeordneten Öffnungen (2, 3 bzw. 4) in der Gehäusewand (1, 15) für den Lufteintritt und den Luftaustritt (2, 3 bzw. 4) versehen ist. Zur Befestigung des Griffteils (12) ist ein Anker (17) am Griffteil (12) vorgesehen, dessen Ankerhals (20) einen Schlitz (19) in der Gehäusewand (1, 15) durchgreift und dessen Ankerkopf (18) mit Hilfe einer Druckfeder (22) gegen die Gehäuseinnenwand (29) gezogen wird. Ein Kragen (14) am Griffteil (12) liegt an der Gebläsegehäuseaußenwand (15) an und weist Öffnungen (23, 24) auf, durch die die Frischluft strömen kann. Beim Verschwenken des Griffteils (12) gleitet der Ankerhals (20) in den Gehäuseschlitz (19) und hält dabei das Griffteil (12) am Gebläsegehäuse (1) fest.

(31 01 933)



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BUNDESDRUCKEREI BERLIN 07.82 220 035/100 5/80

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Patentansprüche

1. Haarpflegegerät mit einem Warmluftgebläse, dessen Griffteil schwenkbar am Warmluftgebläsegehäuse angeordnet ist dadurch gekennzeichnet, daß das die Lufteinlaß- (2, 3) und die Luftauslaßöffnung (4) aufweisende Warmluftgebläsegehäuse (1) eine etwa kugelige Raumform aufweist und das Lüfterrad (11) und/oder das Heizregister (10) und das Gehäuse des Gebläse-motors (9) umhüllt und das gebläsegehäuseseitige Ende des Griffteils (12) an der kugeligen Gebläsegehäuseaußenwand (15) anliegt und von einem die Gebläsegehäusewand (1) durchdringenden Niet oder Anker (17, 18, 20) gehalten ist.

2. Haarpflegegerät nach Anspruch 1 dadurch gekennzeichnet, daß das gebläsegehäuseseitige Ende (14) des Griffteils (12) einen federbelasteten Zuganker (17, 18, 20, 22) aufweist, dessen Wirkachse parallel der Längsachse des Griffteils (12) verläuft, wobei der Ankerhals (20) des Zugankers (17) durch einen Schlitz (19) oder Ausnehmung im Gebläsegehäuse (1) hindurchgreift und der Ankerkopf an der Gebläsegehäuseinnenwand (29) anliegt.

3. Haarpflegegerät nach den Ansprüchen 1 und 2 dadurch gekennzeichnet, daß der die Lufteinlaßöffnungen (2, 3) aufweisende Bereich der Gebläsegehäuseaußenwand (15) etwa ringförmig ausgebildet ist, wobei das Griffteil (12) in seiner Lage parallel zur Motorlängsachse (21) im Zentrum dieses ringförmigen Bereichs von Lufteinlaßöffnungen arretierbar ist.

4. Haarpflegegerät nach den Ansprüchen 1 bis 3 dadurch gekennzeichnet, daß mehrere Lufteinlaßöffnungen (3, 4) aufweisende Zonen am Gebläsegehäuse (15) vorgesehen sind, wobei diese Zonen symmetrisch zur Motorlängsachse (21) angeordnet sind.

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5. Haarpflegegerät nach einem oder mehreren der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß Lufteinlaßöffnungen (2, 3) und Luftauslaßöffnungen (4) auf einander diametral gegenüberliegenden Hälften (27, 28) des Gebläsegehäuses (1) angeordnet sind, wobei diese Hälften (27, 28) eine etwa halbkugelige Gestalt haben.

6. Haarpflegegerät nach einem oder mehreren der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß das elektrische Stromversorgungskabel (30) durch das kabelseitig offene Griffteil (12) geführt ist und in diesen zum Zwecke seiner Aufbewahrung in aufgerolltem Zustand einschiebbar ist.

7. Haarpflegegerät nach einem oder mehreren der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß das elektrische Stromversorgungskabel (30) durch das kabelseitig offene Griffteil (12) geführt ist und in diesen zum Zwecke seiner Aufbewahrung in aufgerolltem Zustand einschiebbar ist.

8. Haarpflegegerät nach einem oder mehreren der vorhergehenden Ansprüche, dadurch gekennteichnet, daß der kragenförmige Teil (14) des Griffteils (12) an der Gebläsegehäuseaußenwand (15) anliegt und Öffnungen (23, 24) für den Kalt-Luftdurchlaß aufweist.

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3101933

3

Braun Aktiengesellschaft
15.01.1981

Haarpflegegerät

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Gegenstand der Erfindung ist ein Haarpflegegerät mit einem Warmluftgebläse, dessen Griffteil schwenkbar am Warmluftgebläsegehäuse angeordnet ist.

Haarpflegegeräte, bei denen der Handgriff an dem ansaugseitigen Ende des Gebläses angeordnet ist und aus einer Stellung etwa lotrecht zur Gehäuselängsachse in eine Stellung in Verlängerung der Gehäuselängsachse schwenkbar ist, sind bekannt (DT-OS 2649805).

Der Vorteil einer solchen stabförmigen Ausgestaltung eines Haarpflegegeräts besteht darin, daß sich kamm- und bürstenartige Zusatzteile auf der Ausblasdüse des Haarpflegegeräts aufstecken lassen, die der besonderen Pflege des Kopfhaares dienen und insbesondere geeignet sind, das Haar zu formen und einzulegen. Hierzu ist es hilfreich, wenn der Handgriff des Haarpflegegeräts in eine waagerechte Stellung zum Warmluftgebläse und Gehäuse schwenkbar ist, da dies aus Gründen der Anatomie des Handgelenks des Gerätebenutzers eine Frisier- und kosmetische Anwendung des Geräts ermöglicht.

Es sind auch Warmluft- und Haarpflegegeräte bekannt (DT-OS 2815902), bei denen das Warmluftgebläsegehäuse kürzer, schwerpunktgünstiger und damit leichter handhabbar ist. Das Heizregister ist bei diesen bekannten Geräten auf Abstandshaltern um den Gebläsemotor herum angeordnet.

Der Erfindung liegt die Aufgabe zugrunde, ein Haarpflegegerät zu schaffen, dessen Griffteil schwenkbar ist und das extrem kompakt ausgebildet ist. Der Handgriff des Haarpflegegeräts soll am Gerätegehäuse so befestigt sein, daß das Gerätegehäuse möglichst nicht großvolumiger ausgebildet ist, als dies zur Ausgestaltung der Warmluftgebläseeinheit unbedingt erforderlich ist.

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Gemäß der Erfindung wird dies dadurch erreicht, daß das die Lufteinlaß- und die Luftauslaßöffnung aufweisende Warmluftgebläsegehäuse eine etwa kugelige Raumform aufweist und das Lüfterrad und/oder das Heizregister das Gehäuse des Gebläsemotors umgreift und das gebläsegehäuseseitige Ende des Griffteils an der kugelförmigen Gebläsegehäuseaußenwand anliegt und von einem die Gebläsegehäusewand durchdringenden Niet oder Anker gehalten ist.

Vorzugsweise weist hierzu das gebläsegehäuseseitige Ende des Griffteils einen federbelasteten Zuganker auf, dessen Wirksachse in Richtung der Längsachse des Griffteils verläuft, wobei der Schaft des Zugankers durch einen Schlitz im Gerätegehäuse hindurch greift und der verbreiterte Kopf des Zugankers an der Innenwandung des Gebläsegehäuses anliegt.

Mit Vorteil ist der die Lufteinlaßöffnungen aufweisende Bereich der Gebläsegehäuseaußenwand ringförmig ausgebildet, wobei das Griffteil in seiner einen Position im Zentrum diesen ringförmigen Bereiches arretierbar ist.

Um einen möglichst großen Luftdurchsatz zu gewährleisten sind vorzugsweise mehrere Lufteinlaßöffnungen aufweisende Zonen am Gebläsegehäuse vorgesehen, wobei diese Zonen symmetrisch zur Motorlängsachse angeordnet sind. In einer bevorzugten Ausführungsform sind Lufteinlaßöffnungen und Luftauslaßöffnungen auf einander diametral gegenüberliegenden halbkugelschalenförmigen Hälften des Gebläsegehäuses angeordnet. Zweckmäßigerweise weist der Griffteil des Haarpflegegerätes im Bereich des Zugankers oder Niets einen kragenförmigen oder manschettenartigen Rand auf, der an der kugeligen Gebläsegehäuseaußenwand anliegt.

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Die Erfindung läßt die verschiedensten Ausführungsmöglichkeiten zu. Eine davon ist in der anhängenden Zeichnung schematisch dargestellt.

Die Motor-Gebläseeinheit besteht im wesentlichen aus dem kugelförmigen Gebläsegehäuse 1, das mit Lufteinlaßöffnungen 2, 3 und dem Luftauslaß 4 versehen ist, dem Luftleitkanal 5, 5 a, dem Lüftergitter 6 mit daran befestigten Haltearmen 7, 8 zur Halterung des Gebläsemotors 9 und des ringförmigen Heizregisters 10, 10 a und schließlich dem Lüfterrad 11.

Das hohle Griffteil 12 ist etwa zylinderförmig ausgebildet und weist im Bereich 13 seiner Verbindungsstelle mit dem Gebläsegehäuse 1 einen etwa ringförmigen Kragen 14 auf, der dicht - manschettenartig - an der Gebläsegehäuseaußenwand 15 anliegt, und der Luftdurchlässe 23, 24 aufweist. Im Innern des Griffteils 12 ist etwa mittig an einem Arm 16, der mit dem Griffteil 12 einstückig ausgebildet ist, ein Anker 17 gelagert, der mit seinem Ankerkopf 18 durch einen Schlitz 19 am Gebläsegehäuse 1 hindurchragt. Der Schlitz 19 hat eine Breite, die dem Durchmesser des Ankerhalses 20 entspricht und ist so angeordnet, daß er zwischen den beiden Einlaßöffnungen 2, 3 liegt, wobei außerdem die Längsachse 21 des Motors 9 bzw. der Drehachse des Lüfterrades 11 durch ihn hindurchführt. Auf den Anker 17 wirkt eine Druckfeder 22 ein, die den Kragen 14 mit den Griffteilen 12 fest an die Gebläsegehäuseaußenwand 15 zieht. Da der Anker 17 durch einen Schlitz 19 greift, ist der Anker 17 zusammen mit dem Arm 16, dem Kragen 14 und dem Griffteil 12 in Pfeilrichtung A (um etwa 90^0) verschwenkbar. In der in der Zeichnung strichliert eingezeichneten, verschenkten Position gelangt der Luftdurchlaß 23 des Kragens 14 in Deckung mit der Lufteinlaßöffnung 3, während sich der Kragenteil 25 bis an den Rand des Luftauslasses 4 schiebt und das Griffteil 12 lotrecht zur Längsachse 21 steht.

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Das Lüfterrad 11 saugt bei laufendem Motor 9 die Kaltluft in Pfeilrichtung B und C an, wobei die Kaltluft durch die Lufteinlaßöffnungen in den Luftleitkanal 5 einströmt und von hieraus über das an den Haltearmen 7, 8 befestigte Heizregister 10 durch das Lüftergitter 6 nach außen strömt. Ist das Griffteil in die horizontale Position geschwenkt, so durchströmt die Kaltluft auch die Luftdurchlässe 23, 24 im Kragen 14. Ist das Griffteil in die lotrechte Position geschwenkt, so durchströmt die Kaltluft lediglich den Luftdurchlaß 24 im Kragen 14.

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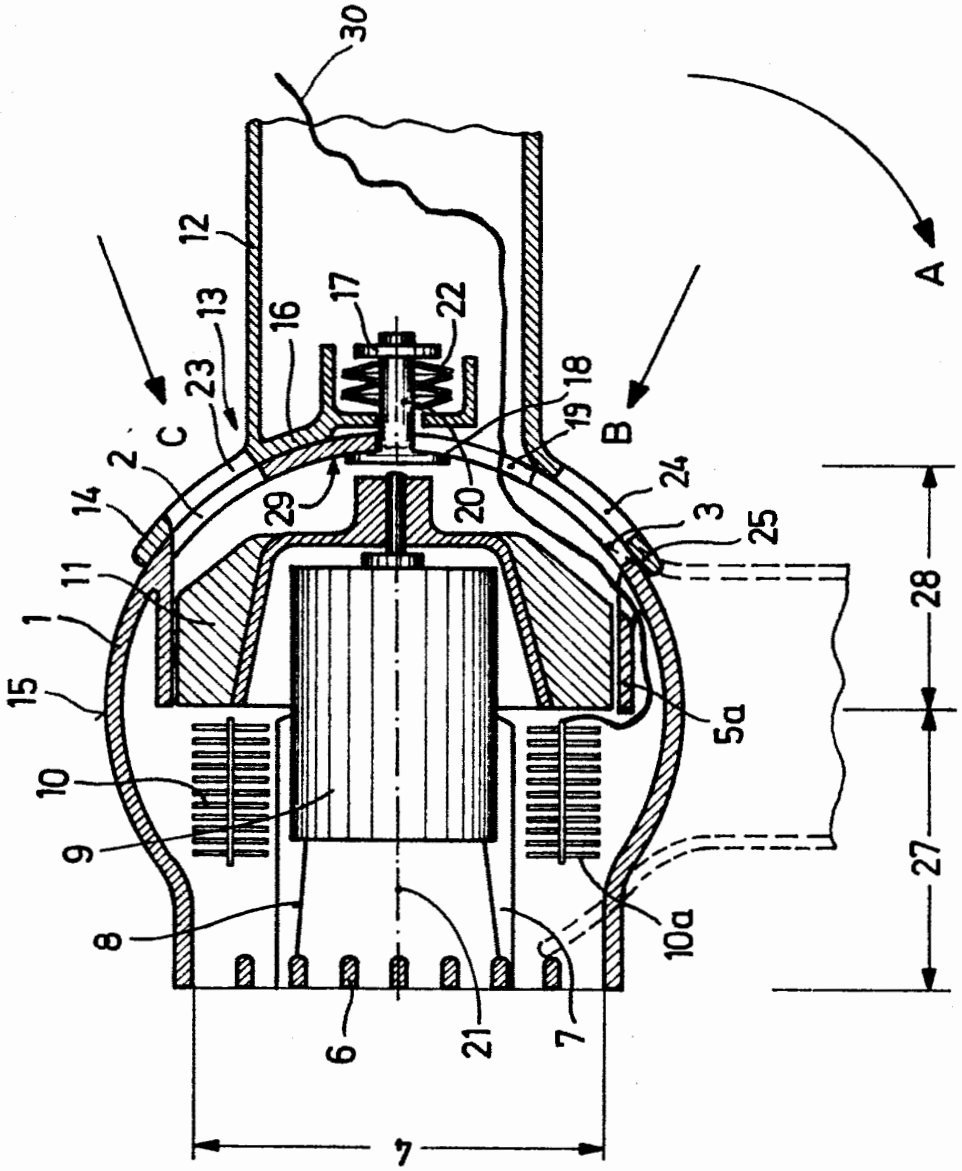
Auflistung der Einzelteile

1	Gebläsegehäuse
2	Lufteinlaßöffnung
3	Lufteinlaßöffnung
4	Luftauslaß
5	Luftleitkanal
6	Lüftergitter
7	Haltearm
8	Haltearm
9	Gebläsemotor
10	Heizregister
11	Lüfterrad
12	Griffteil
13	Verbindungsstelle
14	Kragen
15	Gebläsegehäuseaußenwand
16	Arm
17	Anker
18	Ankerkopf
19	Schlitz
20	Ankerhals
21	Längsachse
22	Druckfeder
23/24	Luftdurchlaß
25	Kragenteil
26	zylindrischer Ansatz
27	Gebläsegehäusehälfte
28	Gebläsegehäusehälfte
29	Gebläsegehäuseinnenwand
30	Stromversorgungskabel

Nummer: 3101933
Int. Cl.³: A45D 20/12
Anmeldetag: 22. Januar 1981
Offenlegungstag: 2. September 1982

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PUB-NO: DE003101933A1
DOCUMENT-IDENTIFIER: DE 3101933 A1
TITLE: Hair-care appliance with a hot-air fan
PUBN-DATE: September 2, 1982

INVENTOR-INFORMATION:

NAME	COUNTRY
HOFFMANN, KARL-HEINZ ING GRAD	DE

ASSIGNEE-INFORMATION:

NAME	COUNTRY
BRAUN AG	DE

APPL-NO: DE03101933
APPL-DATE: January 22, 1981

PRIORITY-DATA: DE03101933A (January 22, 1981)

INT-CL (IPC): A45D020/12

EUR-CL (EPC): A45D020/12

US-CL-CURRENT: 219/222 , 392/385

ABSTRACT:

CHG DATE=19990617 STATUS=O> In a hair-care appliance with a hot-air fan, the gripping part (12) is linked pivotably to the fan housing (1), said fan housing (1) having an approximately spherical shape and enclosing the fan wheel (11) with the fan motor (9) and the heating element (10) and being provided with apertures (2, 3 and 4), arranged opposite one another, in the housing wall (1, 15) for the air inlet and the air outlet (2, 3 and 4). Provided on the handle part (12) for attaching the handle part (12) is an anchor (17) whose trend (20) passes through a slot (19) in the housing wall (1, 15) and whose crown (18) is pulled against the inside wall (29) of the housing with the aid of a compression spring (22). A collar (14) on the handle part (12) bears against the outside wall (15) of the fan housing and has apertures (23, 24) through which the fresh air can flow. When the handle part (12) is pivoted, the trend (20) of the anchor slides into the slot (19) in the housing and, in so doing, fastens the handle part (12) on the fan housing (1).

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PATENT SPECIFICATION (11) 1 417 052

1 417 052

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(31) Convention Application No. 12799 (32) Filed 26 July 1972 in

(33) Italy (IT)

(44) Complete Specification published 10 Dec. 1975

(51) INT. CL.[2] A45D 20/52

(52) Index at acceptance

A5R 79D

A4K 5

(54) DEVICE FOR BRUSHING, SHAPING OR FASHIONING HAIR OR FILAMENTS

(71) I, GIUSEPPE SAROCCHI, an Italian citizen, of Via Degli Orti 22, Albenga (Savona), Italy, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an improved device for brushing, shaping or fashioning hair or filaments.

It is known that after washing natural or artificial hair, or after washing certain kinds of fabrics or fibres, it is necessary to perform the drying by means of a stream of hot air, drying the hair lock by lock and the filaments of the fabric or fibre by a hair-dryer. The hair-dryer usually comprises a distributing nozzle connected to a conduit through which is fed hot air generated in situ or coming from a suitably arranged source of heat.

At the same time the locks of hair or the filaments being dried are to be systematically brushed and raised for deep drying to their roots, and to obtain the most suitable style which will keep its shape after drying. It is therefore necessary to grip the dryer in one hand and the brush in the other.

When the brushing is to be accompanied by simultaneous lifting of the locks of hair, then a second operator is required to grip the dryer while a first operator systematically lifts the locks of hair in one hand and grips the brush in the other hand to shape the locks.

In order to avoid the necessity for two operators, it is known to use a hollow brush provided with holes and/or slots for the passage of hot air which for example may be fed to the interior of the brush through a conduit connected to the brush handle. However, such an arrangement suffers from the disadvantage that the locks to be brushed are pushed away from the brush radially, and thus away from the bristles of the brush, thus reducing the efficiency of the brushing.

[*Price 33p*]

The present invention provides a device for brushing, shaping or fashioning hair or filaments, comprising a first handle which supports the nozzle of an air heater, a guide projecting from the first handle, and a brush provided with a second handle and removably mounted on the said guide, the brush having a cavity adapted to receive the guide, the brush being slidable along and rotatable about the guide when mounted on the latter.

The invention will be further described, by way of example only, with reference to the accompainying drawings, in which:—

Figure 1 is a side view, partly in section, of a device according to the invention;

Figure 2 and Figure 3 are diagrammatic views of two components of the device shown in Figure 1;

Figure 4 is a side view, partly in section of a modified form of the device shown in Figure 1.

The device shown in Figures 1 to 3 comprises a handle 1 intended to be gripped by the left hand of an operator, which supports a displaceable nozzle 2 of a heater and is also provided with a guide 3 which extends along a continuation of the longitudinal axis of the handle 1. The guide 3 may support a brush 4 or, alternatively, when the brush is disconnected from the guide the latter may be used systematically to lift the locks of hair while the brush is gripped by the right hand to carry out independent movements. The device without the brush and the brush itself are shown separately in Figures 2 and 3 respectively. The brush is provided with a longitudinal cavity 6 adapted to receive the guide 3, and a handle 5.

The handle 1 terminates in an arm 10 which is bent through 90° and on which is slidable a cylinder 11 which supports the nozzle 2 by means of a bracket 12. The bracket 12 is fixed to a conduit 13 through which hot air is fed to the nozzle 2. Upstream of the bracket 12 a flexible conduit may be provided so as not to disturb the movements of the operator's left hand.

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The relative position of the arm 10 and the cylinder 11 may be adjusted by displacing the cylinder against the action of a compression spring 14 by means of a pin 15 which the operator may grip with one of the fingers of the hand gripping the handle 1 when he considers it necessary to decrease the distance between the nozzle 2 and the bristles of the brush 4. An abutting means may be arranged to prevent the cylinder 11 from rotating about the arm 10. Alternatively, the cylinder may be rotatable about the arm, and a resilient means may be provided to return the cylinder to its initial position when the operator releases the pin 15.

In Figures 1 and 4 the cylinder 11 is displaced as far as possible along the arm 10 against the action of the spring 14, while the undisplaced position of the cylinder is indicated by broken line in Figure 1.

The bracket 12 may advantageously comprise two sections able to rotate relative to each other. It is thus possible not only to vary the distance between the nozzle 2 and the guide 3 (or brush 4 when the latter is mounted on the guide), but also to vary the inclination angle of the nozzle with respect to a lock of hair wound onto the brush or about the guide 3. Alternatively, the nozzle 2 may be articulated to the handle 1.

In the device shown in Figure 4 the conduit 13 for feeding hot air to the nozzle extends continuously within the bracket 12, the cylinder 11, the arm 10 and the handle 1. The preferably fleflxible conduit will thus terminate at the rear end of handle 1.

Generally the arrangement shown in Figures 1 and 4 where the brush is mounted on the guide 3 is suitable for locks of filaments of short length while for longer locks or filaments it is preferred to use the brush separately as shown in Figures 2 and 3.

The guide 3 may be rotatable about an eccentric axis so as to be in position to displace the brush 4 mounted thereon with respect to the hot air stream issuing from the nozzle 2.

WHAT I CLAIM IS:—

1. A device for brushing, shaping or fashioning hair or filaments, comprising a first handle which supports the nozzle of an air heater, a guide projecting from the first handle, and a brush provided with a second handle and removably mounted on the said guide, the brush having a cavity adapted to receive the guide, the brush being slidable along and rotatable about the guide when mounted on the latter.

2. A device as claimed in claim 1 wherein the guide extends along a continuation of the longitudinal axis of the first handle.

3. A device as claimed in claim 1 or 2 wherein the first handle terminates in an arm, bent through substantially 90° with respect to the axis of the first handle, on whiuh arm is axially slidably mounted a cylinder which supports a conduit for feeding hot air to the nozzle.

4. A device as claimed in claim 3 wherein the cylinder is provided with a projecting pin on which may act one of an operator's fingers of the hand gripping the first handle so as to adjust the position of the nozzle with respect to the guide.

5. A device as claimed in claim 4 wherein a resilient means is arranged to urge the cylinder and thus the nozzle away from the guide when the operator releases the said projecting pin.

6. A device as claimed in any of claims 3 to 5 wherein an abutting means is arranged to prevent the cylinder from rotating about the arm.

7. A device as claimed in any of claims 3 to 5 wherein the cylinder is rotatable about the arm, and wherein a resilient means is provided to return the cylinder to its initial position when the operator releases the said projecting pin.

8. A device as claimed in any of claims 3 to 7 wherein the end of the conduit adjacent the nozzle is supported by the cylinder by means of a bracket.

9. A device as claimed in claim 8 wherein the bracket comprises two mutually connected sections able to rotate relative to each other in order to vary the inclination angle of the nozzle with respect to the guide.

10. A device as claimed in claim 8 or 9 wherein the conduit extends continuously within the bracket, the cylinder, the arm, and the first handle.

11. A device as claimed in any of claims 1 to 8 wherein the nozzle of the air heater is articulated to the first handle.

12. A device as claimed in any of claims 1 to 11 wherein the guide is rotatable about an eccentric axis.

13. A device according to claim 1 substantially as herein described with reference to, and as shown in, the accompanying drawings.

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1417052 COMPLETE SPECIFICATION
1 SHEET This drawing is a reproduction of the Original on a reduced scale

FIG.1.

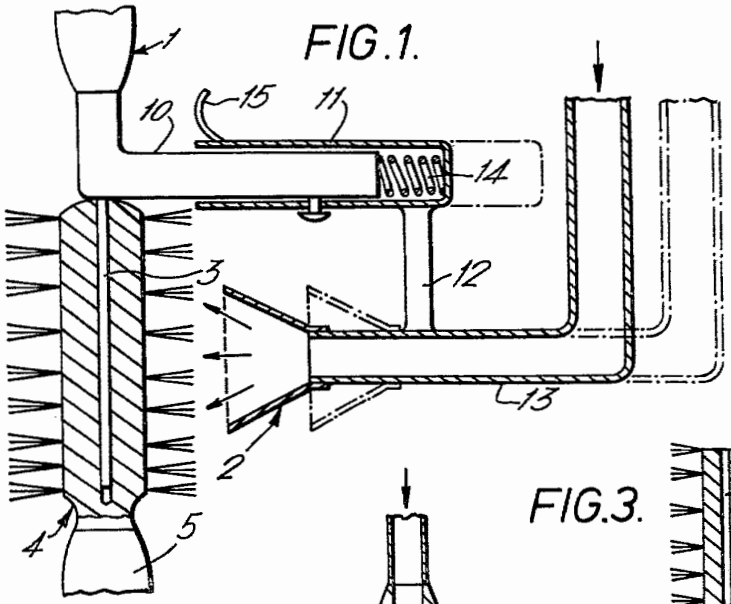


FIG.3.

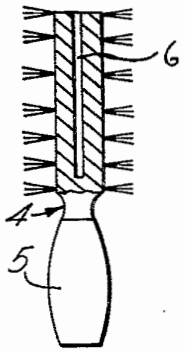


FIG.4.

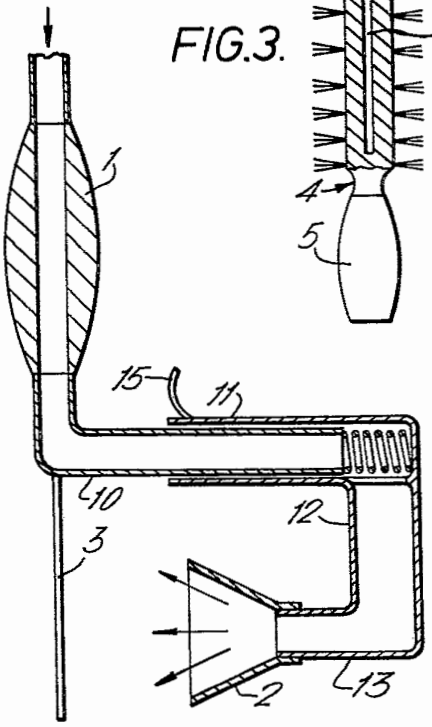
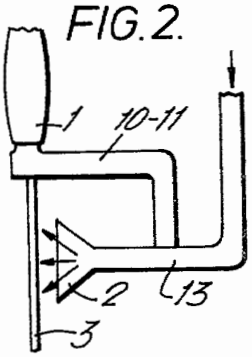


FIG.2.



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PUB-NO: GB001417052A
DOCUMENT-IDENTIFIER: GB 1417052 A
TITLE: DEVICE FOR BRUSHING SHAPING OR FASHIONING HAIR OR FILAMENTS
PUBN-DATE: December 10, 1975
PATENT-FAMILY-ID: 11143304

APPLICANT:

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APPL-NO: GB 3322473 A
APPL-DATE: July 12, 1973

PRIORITY-DATA:

PRIORITY-NO	PRIORITY-APPL-DATE
IT 1279972 A	19720726

CPC-CURRENT:

TYPE	CPC/DATE
CPCI	A45D20/52 20130101

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IPCP	A45D20/52 20060101

ABSTRACT:

1417052 Hair Dryer G SAROCCHI 12 July 1973 [26 July 1972] 33224/73 Heading A5R [Also in Division A4] An appliance for use with hair or filaments comprises a first handle 1 supporting an air nozzle 2 and a guide 3 on which a brush 4 with a second handle 5 is removably mounted, free to slide and rotate. The nozzle support may be a bent arm 10 which slidably supports a cylinder 11 from which the nozzle and the air conduit 13 are supported by a 'bracket 12. A pin 15 attached to the cylinder enables an operator to draw the nozzle towards the brush against a spring 14. The bracket 12 may be articulated to provide for swivelling the nozzle. In an alternative arrangement the air supply to the nozzle is via a hollow first handle, arm 10 and bracket 12 as in Fig. 4 (not shown). The cylinder 11 may be prevented from rotating by an abutment or alternatively may be free to rotate about the arm against a resilient means not shown for returning it

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to its initial position. The guide 3 may be rotatable about an eccentric axis.

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U1S S1124 S1404 S1405 S1789 S1801 S1814

(56) Documents Cited:
GB 2400304 A **US 6068122 A**
US 5577607 A **US 5562209 A**
US 4570792 A **US 20020121448 A1**

(58) Field of Search:
UK CL (Edition X) **B5N**
INT CL **A45D, B32B, B65D**
Other:

(54) Abstract Title: **Flexible heat retardant sheets**

(57) A flexible heat retardant sheet 10 comprises a flexible heat-resistant layer 12, and, below it, a flexible heat-insulating layer 14, possibly with another flexible heat-resistant layer on the opposite side of the insulating layer so as to sandwich the layer, the layers being sewn together such as to form a bag 16. The heat resistant layer may be a woven material formed from a heat resistant polymer such as polyamide e.g. nylon or polyaramid, or polyester with a coating of polyurethane. The heat resistant layer may comprise a heat conductive coating containing metal such as aluminium or bronze in the form of powder The heat retardant sheet may comprise a metal layer in the form of a foil. The insulating layer may be a foam such as ethylene vinyl acetate copolymer foam containing carbon black to help spread heat laterally, siloxane, silicone rubber, elastomer, styrene butadiene rubber or blended rubber, possibly with a resistance- reducing coating such as silicone wax or PTFE. The sheet may be used as a wrapper or pouch for a hot heated hair appliance 32. The sheet may be embodied in the walls of a handbag compartment. The hair appliance may be rested upon or wrapped in the sheet while being heated.

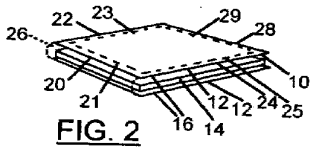


FIG. 2

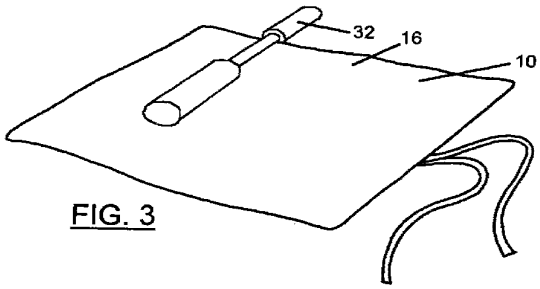


FIG. 3

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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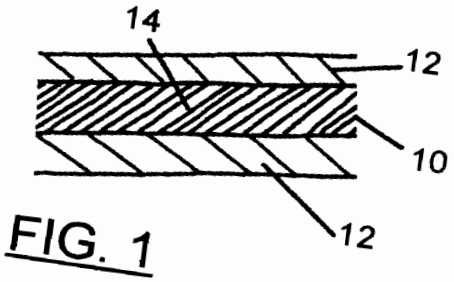


FIG. 1

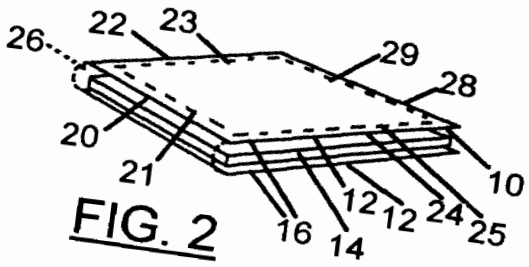


FIG. 2

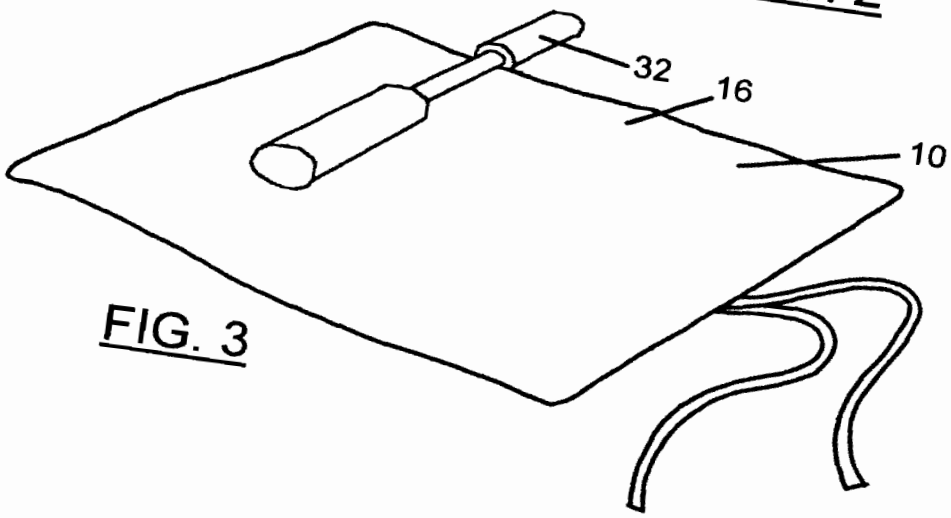


FIG. 3

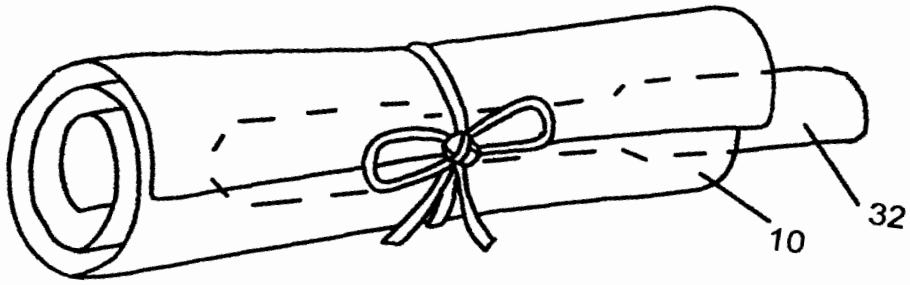


FIG. 4

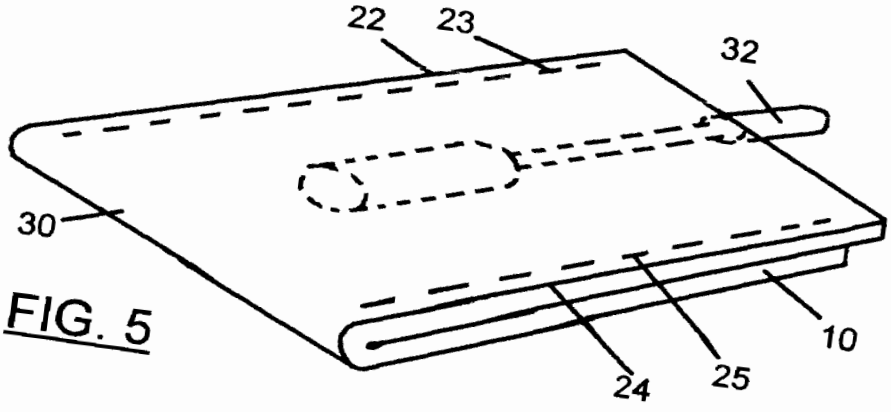


FIG. 5

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TITLE: Heat-retardant material

FIELD OF THE INVENTION

This invention relates to heat-retardant materials that are flexible, for example sufficiently to wrap around a hot object and to be opened out to allow a hot object to be placed safely upon them.

BACKGROUND TO THE INVENTION

Some hot hair appliances, e.g. curling tongs, have exposed hot parts that may reach 200 degrees Centigrade in use. After use, the user may wish to put them down on a surface and/or transport them, e.g. in a handbag. Due to their temperature, they can then cause damage. To protect such a surface, it may be covered with a so-called heat-proof mat. To transport the appliance, it must first be allowed to cool (which may take an inconveniently long time), or it must be placed in a heat-proof container. To combine both of these purposes, there is known to the present inventor a flexible so-called heat-proof material that can be used as such a mat and can then be used to wrap the hot appliance for transport. This suffers from the disadvantage that it has to be made of felted material, and it therefore deteriorates, falling apart rapidly with repeated use, and is rather too stiff to be used easily for the wrapping.

THE INVENTION

The present inventor could not find a material suitable for such a use. He then looked to the technology of flexible heat-resistant materials and found materials well able to withstand the temperatures concerned but wholly unable to prevent a dangerous throughput of heat. He found woven materials were much better in this respect. He knew that there were insulating materials that were suitably flexible, but they could not stand the high temperatures concerned. He then had the brilliant idea of combining such an insulating material with such a flexible heat-resistant material, preferably a woven one. He realised that the (preferably woven) heat-resistant material could reduce the temperature of the heat energy passing through it to a temperature that the insulating material could withstand. He further realised that the insulating material could be a more efficient insulator (e.g. per mm thickness) if in the form of a foam. A foam could also be much more durably flexible than a solid material of the same composition, i.e. have a greatly extended life under repeated flexing. He further realised that the temperature disadvantage could be much ameliorated by including a heat-conducting layer to even out the temperature gradients laterally. A safer and more versatile product is obtained if the sheet comprises another flexible heat-resistant layer on the opposite side (face) of the insulating layer.

According to one aspect of invention, there is provided a flexible heat-retardant sheet comprising a flexible heat-resistant layer and, below it, a flexible heat-insulating layer. The sheet is suitable for use as a heat-retardant wrapper for a hot heated hair appliance, e.g. flexible enough to be wrapped around it or again ready-formed as a pouch flexible enough for the appliance to be placed therein. Thus, according to another aspect of the invention, there is provided a flexible heat-retardant sheet comprising a flexible heat-resistant layer and, below it, a flexible heat-insulating layer, the sheet being suitable for use as a heat-retardant wrapper for a hot heated hair appliance.

Preferred embodiments include one or more of the following features:

- said sheet comprises another flexible heat-resistant layer on the opposite side (i.e. face) of the insulating layer.

- the two said heat-resistant layers are in the form of sheets, one on either side (i.e. face) of said insulating layer (to enclose or sandwich the latter between them).

- the two said sheets are sewn together.

- the two said heat-resistant layers are sewn together to form a bag to contain said insulating layer.

- a said heat-resistant layer comprises woven material. By "woven" is meant herein only "with warp and weft", as opposed to, for example, "woven" to describe a process, used in felting, of needle-punching adjacent layers to bond them together.

- a said heat-resistant layer comprises a heat-retardant polymer.

- a said heat-resistant layer comprises polyamide.

- a said heat-resistant layer comprises polyester.

- a said heat-resistant layer comprises polyaramid.

- at least one said heat-resistant layer comprises woven nylon fibre.

- a said heat-resistant layer comprises a coating of polyurethane.

- a said heat-resistant layer comprises means to allow or help heat to spread laterally. In practice, this will usually allow the heat to spread, usually to a more nearly substantially uniform temperature, throughout the area of said heat-resistant layer, so that the hottest heat energy can drop substantially in temperature by the time it has penetrated through this layer.

- .a said heat-resistant layer comprises a heat-conductive coating.

- said coating comprises metal.

- said metal comprises silver-coloured metal, e.g. aluminium, e.g. powder.

- said metal comprises gold-coloured metal, e.g. bronze, e.g. powder.

- said coating comprises carbon black.

- said heat-retardant sheet comprises a metal layer.

- the metal layer has the form of a sheet.

- the metal layer has the form of a sheet of foil.

- said insulating layer is in the form of a sheet.

- said insulating layer has a thickness of not more than 10 mm.

- said insulating layer has a thickness in the range of from 3 mm to 10 mm.

- said insulating layer has a thickness of substantially 3 mm.

- said insulating layer comprises foam.

- said foam is able to withstand a high temperature, e.g. at least 150 degrees Centigrade, more preferably at least 180 degrees Centigrade, possibly at least 210 degrees Centigrade, or even at least 250 degrees Centigrade.

- said foam comprises a thermally insulating copolymer.

- said foam comprises ethylene vinyl acetate copolymer (EVA)

- said foam comprises carbon black, possibly a mixture of different grades of carbon black, e.g. to allow or help heat to spread laterally as mentioned above.

- said insulating layer comprises a non-foam material.

- said insulating layer comprises a material comprising any one or more of the following properties and/or materials: any suitable siloxane; silicone rubber; an elastomer; styrene butadiene rubber (SBR); a blended rubber; a monomer elastic rubber; an ability to withstand a temperature of (i.e. of at least) 200, 210, 220, 250 or 300 degrees Centigrade, or even a temperature above 300 degrees Centigrade.

Some of the insulating layer subsances mentioned herein can be chosen sufficiently heat-resistant as well as heat-insulating not to require the heat-resistant outer layer/s of woven material. However, they tend to have high friction, like rubber, and therefore to be more difficult to handle (e.g. to insert in and to extract from a travel bag), whereas the woven materials tend to have a much lower friction co-efficient and can therefore, for example, slide much more easily into and out of a travel bag. There is a possibility suitably to coat such an insulating layer material, not having outer layers, with a resistance-reducing coating, e.g. a silicone wax and/or PTFE, e.g. that known under the trade name Teflon.

Alternatively to some of the embodiments indicated above, said heat-retardant sheet may be monolithic, with properties and possibly chemical composition varying from one side of the sheet to the opposite side of the sheet, with a heat-resistant layer and, below that, an insulating layer.

The flexibility is preferably such that the heat-retardant sheet can be used to wrap around a hot article and can be opened out sufficiently to use as a mat upon which to place a hot article. In either case, this is done with a view to retarding or preventing the heat from passing through the mat in such a manner, e.g. so quickly, or to such an extent, or at such high temperature, that it could cause damage. Thus, this embodiment provides a heat-proof (i.e. heat-retardant) material that can be used as a wrapper for a heated hair appliance so that it can be transported safely, e.g. in a handbag, and that can be opened out to be used as a mat upon which to place a hot heated hair appliance safely until it becomes cool.

Some embodiments provide a heat-proof mat that is used as protection in relation to, and/or to transport, a heated hair appliance, such as for example hair straighteners or curling tongs, when hot. The mat when open allows the user to place their hot hair appliance onto it, and thus protects the surface below. The mat is so flexible that it can also be used to wrap the hot hair appliance and allow easy transportation thereof.

Said flexible heat-resistant layer may be in the form of a sheet that is folded in half and sewn together along the two opposite sides adjacent the fold, to make a flat bag, in which is located said heat-insulating layer, and also sewn together along the side opposite the fold.

In some preferred embodiments, there is used 70 denier nylon fibre (of a grade known in the trade as 190T) coated in either silver-coloured (metallised) meta polyurethane (PU) or gold-coloured (metallised) polyurethane, woven into a fabric. This woven fabric is then, for example, folded in half and sewn together along the two opposite sides adjacent the fold, to make a flat bag into which is placed a 3mm thick piece of ethylene vinyl acetate copolymer (EVA) foam and then finished by sewing along the final side to make a mat having the form of sandwich of a layer of the foam between two layers of the woven fabric. (Instead of folding, two separate pieces

of the woven fabric may be stitched together along three adjacent sides to make the flat bag.) The resulting sandwich sheet (or indeed any other form of the heat-retardant sheet) may itself be folded in half and sewn together along the two opposite sides adjacent such fold, to make a pouch into which may be placed the hot heated hair appliance. When in the form of a pouch, the material need not be as flexible as when it is required to be wrapped around a hot article.

As variations, there can be used different thicknesses of EVA foam up to approximately 10mm. Other grades of nylon can be used, possibly coated, and/or the PU may contain, instead of bronze or aluminium powder, carbon black. The nylon can be replaced with other engineering polymer/s with good resistance to heat, e.g. a polyester or polyaramid.

There has been developed a product that can be used as a mat to rest hot hair appliances on and that can also be used to wrap and then transport said hair appliances while initially hot and as they cool down. The product is able to withstand temperatures of approximately 225 degrees Centigrade for several minutes at a time and under repeated use over a prolonged period of time (2 to 3 hours) and also to reduce heat transfer through the product. Thus, the product can be used to support the hair appliances resting on a non-heat-resistant surface and to wrap up the hair appliances as they cool down and allow easy (safe) transport. To allow the hair appliances to be wrapped up the product is suitably flexible.

Some benefits of these embodiments: They can:

- be produced at low cost; be visually and aesthetically pleasing; remain intact over prolonged use (in contrast to a felted material, which becomes frayed and messy over prolonged use); be versatile, e.g. so that they can be printed or embroidered and can be incorporated into other products, such as a handbag (known in the USA as a purse) (e.g. as a detachable mat, or again embodied in the walls of least one compartment of the handbag), as well as being used on their own; lend themselves to being made available in a range of colours (e.g. greens, blues, purples and/or pinks, or even a tartan).

Other aspects of the invention provide:

Any such heat-retardant sheet suitable for a heated hair appliance when hot to be rested upon it and suitable to serve as a wrapping for such appliance for transport thereof.

A method of using any such heat-retardant sheet, in which a heated hair appliance is rested upon the sheet and/or is wrapped in the sheet, when hot and/or while becoming hot and/or it then becomes hot, e.g. being plugged into the mains electricity supply, (i.e. it is rested upon the sheet and then becomes hot.) "Wrapped in the sheet" includes a case in which the sheet is wrapped around the hot appliance, and includes a case in which the sheet is in the form of a pouch and the hot appliance is placed therein.

A method of using a heated hair appliance in which the appliance is placed on any such heat-retardant sheet while it is being heated or while it is hot.

A method of preparing a heated hair appliance for transport, in which the appliance before and/or when being heated and/or when hot is wrapped in any such heat-retardant sheet.

A method of transporting a heated hair appliance, in which the appliance while hot is maintained during transport wrapped in any such heat-retardant sheet during transport

DESCRIPTION OF PARTICULAR EMBODIMENTS WITH REFERENCE TO THE DRAWINGS

Figure 1 is a schematic partial cross-section through a sheet embodying the invention;

Figure 2 is an exploded view of the sheet being made;

Figure 3 is a perspective view of the sheet opened out to serve as a mat;

Figure 4 is a perspective view of the sheet rolled up as it is when wrapped around a hot heated hair appliance (shown in dashed lines); and

Figure 5 is a perspective view of the sheet formed as a carrying pouch.

Referring to the drawings, a flexible heat-retardant sheet 10 comprises a flexible heat-resistant layer 12 and, below it, a flexible heat-insulating layer 14. Said sheet 10 comprises another flexible heat-resistant layer 12 on the opposite side (face) of the insulating layer 14.

The two said heat-resistant layers 12, 12 are in the form of sheets 12, 12 of woven material 12 (which may be made of any one or more of the materials mentioned above, e.g. a heat-retardant polymer) which are sewn together, one on either side of said insulating layer 14 (to enclose or sandwich the latter between them).

The two said heat-resistant layers 12, 12 are sewn together to form a flat bag 16 to contain said insulating layer 14 which has a thickness of substantially 3 mm and comprises a foam of thermally insulating ethylene vinyl acetate copolymer (EVA), or preferably styrene butadiene rubber (SBR)

Two separate pieces 12, 12 of the woven fabric are stitched together along three adjacent sides 20, 22, 24 by respective lines of stitching 21, 23, 25 to make the flat bag 16 into which is placed the 3mm thick piece of ethylene vinyl acetate copolymer (EVA) foam 14. Alternatively,as shown by dashed lines in Figure 2, the woven fabric 12 is folded in half and sewn together along the two opposite sides 22, 24 adjacent the fold 26, to make the flat bag 16. In either case, after insertion of foam 14, the material 10 is finished by sewing along the final side 28 with a line of stitching 29 to make a mat 10 having the form of sandwich of a layer 14 of the foam between two layers 12, 12 of the woven fabric. The resulting sandwich sheet 10 may, as shown in Figure 5, itself be folded in half and sewn together along the two opposite sides 22, 24 adjacent this fold 30, to make a pouch 10 into which may be placed the hot heated hair appliance 32.

In a method embodying the invention of using any such heat-retardant sheet 10, a heated hair appliance 32 is rested upon the sheet 10 and/or is wrapped in the sheet 10, when hot and/or while becoming hot and/or it then becomes hot, e.g. being plugged into the mains electricity supply.

In a method embodying the invention of using a heated hair appliance 32, the appliance 32 is placed on any such heat-retardant sheet 10 while it is being heated or while it is hot.

In another method embodying invention of preparing a heated hair appliance 32 for transport, the appliance 32 before and/or when being heated and/or when hot is wrapped in any such heat-retardant sheet 10.

In another method embodying the invention of transporting a heated hair appliance 32, the appliance 32 while hot is maintained wrapped in any such heat-retardant sheet 10 during transport.

It will be apparent to one skilled in the art, that features of the different embodiments disclosed herein may be omitted, selected, combined or exchanged and the invention is considered to extend to any new and inventive

combination thus formed. Where a preference or particularisation is stated, there is implied the possibility of its negative, i.e. a case in which that preference or particularisation is absent.

Many variations of the invention and embodiments hereinbefore described will be apparent to people skilled in the art and all such variations are to be considered as falling within the scope of the invention.

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CLAIMS

1. A flexible heat-retardant sheet comprising a flexible heat-resistant layer and, below it, a flexible heat-insulating layer.

2. A flexible heat-retardant sheet comprising a flexible heat-resistant layer and, below it, a flexible heat-insulating layer, the sheet being suitable for use as a heat-retardant wrapper for a hot heated hair appliance.

3. A sheet as claimed in claim 1 or 2, which comprises another flexible heat-resistant layer on the opposite face of the insulating layer.

4. A sheet as claimed in claim 3, in which the two said heat-resistant layers are in the form of sheets, one on either face of said insulating layer.

5. A sheet as claimed in claim 4, in which said sheets are sewn together.

6. A sheet as claimed in claim 3, 4 or 5, in which the two said heat-resistant layers are sewn together to form a bag to contain said insulating layer.

7. A sheet as claimed in any one of claims 1 to 6, in which a said heat-resistant layer comprises woven material.

8. A sheet as claimed in any one of claims 1 to 7, in which a said heat-resistant layer comprises a heat-retardant polymer.

9. A sheet as claimed in any one of claims 1 to 8, in which a said heat-resistant layer comprises polyamide.

10. A sheet as claimed in any one of claims 1 to 9, in which a said heat-resistant layer comprises polyester.

11. A sheet as claimed in any one of claims 1 to 10, in which a said heat-resistant layer comprises polyaramid

12. A sheet as claimed in any one of claims 1 to 11, in which at least one said heat-resistant layer comprises woven nylon fibre.

13. A sheet as claimed in any one of claims 1 to 12, in which a said heat-resistant layer comprises a coating of polyurethane.

14. A sheet as claimed in any one of claims 1 to 13, in which a said heat-resistant layer comprises means to allow or help heat to spread laterally.

15. A sheet as claimed in any one of claims 1 to 14, in which a said heat-resistant layer comprises a heat-conductive coating.

16 A sheet as claimed in claim 15, in which said coating comprises metal.

17. A sheet as claimed in claim 16, in which said metal comprises silver-coloured metal.

18. A sheet as claimed in claim 16 or 17, in which said metal comprises gold-coloured metal.

19. A sheet as claimed in any one of claims 15 to 18, in which said coating comprises carbon black.

20. A sheet as claimed in any one of claims 1 to 19, in which said insulating layer is in the form of a sheet.

21. A sheet as claimed in any one of claims 1 to 20, in which said insulating layer has a thickness of not more than 10 mm.

22. A sheet as claimed in claim 21, in which said insulating layer has a thickness of substantially 3 mm.

23. A sheet as claimed in any one of claims 1 to 22, in which said insulating layer comprises foam.

24. A sheet as claimed in claim 23, in which said foam is able to withstand a high temperature.

25. A sheet as claimed in claim 23 or 24, in which said foam comprises a thermally insulating copolymer.

26. A sheet as claimed in any one of claims 23 to 25, in which said foam comprises ethylene vinyl acetate copolymer (EVA)

27. A sheet as claimed in any one of claims 23 to 26, in which said foam comprises carbon black.

28. A sheet as claimed in any one of claims 1 to 22, in which said insulating layer comprises a non-foam material.

29. A sheet as claimed in any one of claims 1 to 28, in which said insulating layer comprises a material comprising any one or more of the following materials: a siloxane; silicone rubber; an elastomer; styrene butadiene rubber (SBR); a blended rubber; a monomer elastic rubber.

30. A sheet as claimed in any one of claims 1 to 29, in which said insulating layer comprises a material comprising an ability to withstand a temperature of 200 degrees Centigrade.

31. A sheet as claimed in any one of claims 1 to 30, in which said flexible heat-resistant layer is in the form of a sheet and is folded in half and sewn together along the two opposite sides adjacent the fold, to make a flat bag, in which is located said heat-insulating layer, and also sewn together along the side opposite the fold.

32. A sheet as claimed in any one of claims 1 to 32, folded in half and sewn together along the two opposite sides adjacent this fold, to make a pouch into which may be placed a hot heated hair appliance.

33. A flexible heat-retardant sheet substantially according to any embodiment hereinbefore described.

34. A flexible heat-retardant sheet substantially according to any embodiment hereinbefore described with reference to the accompanying drawings.

35. A method of using a heat-retardant sheet as claimed in any one of claims 1 to 34, in which a heated hair appliance is rested upon the sheet and/or is wrapped in the sheet, when hot and/or while becoming hot and/or it then becomes hot.

36. A method as claimed in claim 35, in which the sheet is wrapped around the hot appliance.

37. A method as claimed in claim 35, in which the sheet is in the form of a pouch and the hot appliance is placed therein.

38. A method of using a heated hair appliance in which the appliance is placed on a heat-retardant sheet as claimed in any one of claims 1 to 34 while it is being heated or while it is hot.

39. A method of preparing a heated hair appliance for transport, in which the appliance before and/or when being heated and/or when hot is wrapped in a heat-retardant sheet. as claimed in any one of claims 1 to 34.

40. A method of transporting a heated hair appliance, in which the appliance while hot is maintained during transport wrapped in a heat-retardant sheet as claimed in any one of claims 1 to 34.

41. A method of using a heat-retardant sheet, or using a heated hair appliance, or preparing a heated hair appliance for transport, or transporting a heated hair appliance, substantially according to any example hereinbefore described.

42. A method of using a heat-retardant sheet, or using a heated hair appliance, or preparing a heated hair appliance for transport, or transporting a heated hair appliance, substantially according to any example hereinbefore described with reference to the accompanying drawings.

Amendments to the claims have been filed as follows:

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AMENDED CLAIMS

1 A flexible heat-retardant sheet comprising a flexible heat-resistant layer and, below it, a flexible heat-insulating layer

2 A flexible heat-retardant sheet comprising a flexible heat-resistant layer and, below it, a flexible heat-insulating layer, the sheet being suitable for use as a heat-retardant wrapper for a hot heated hair appliance

3 A sheet as claimed in claim 1 or 2, which comprises another flexible heat-resistant layer on the opposite face of the insulating layer

4 A sheet as claimed in claim 3, in which the two said heat-resistant layers are in the form of sheets, one on either face of said insulating layer

5. A sheet as claimed in claim 4, in which said sheets are sewn together

6. A sheet as claimed in any one of claims 3 to 5, in which the two said heat-resistant layers are sewn together to form a bag to contain said insulating layer

7 A sheet as claimed in any one of claims 1 to 6, in which a said heat-resistant layer comprises woven material.

8 A sheet as claimed in any one of claims 1 to 7, in which a said heat-resistant layer comprises a heat-retardant polymer.

9 A sheet as claimed in any one of claims 1 to 8, in which a said heat-resistant layer comprises polyamide

10. A sheet as claimed in any one of claims 1 to 9, in which a said heat-resistant layer comprises polyester

11 A sheet as claimed in any one of claims 1 to 10, in which a said heat-resistant layer comprises polyaramid

12. A sheet as claimed in any one of claims 1 to 11, in which at least one said heat-resistant layer comprises woven nylon fibre.

13. A sheet as claimed in any one of claims 1 to 12, in which a said heat-resistant layer comprises a coating of polyurethane.

14 A sheet as claimed in any one of claims 1 to 13, in which a said heat-resistant layer comprises means to allow or help heat to spread laterally

15 A sheet as claimed in any one of claims 1 to 14, in which a said heat-resistant layer comprises a heat-conductive coating.

16 A sheet as claimed in claim 15, in which said coating comprises metal.

17. A sheet as claimed in claim 16, in which said metal comprises silver-coloured metal

18 A sheet as claimed in claim 16 or 17, in which said metal comprises gold-coloured metal

19 A sheet as claimed in any one of claims 15 to 18, in which said coating comprises carbon black

20 A sheet as claimed in any one of claims 1 to 19, in which said insulating layer is in the form of a sheet

21 A sheet as claimed in any one of claims 1 to 20, in which said insulating layer has a thickness of not more than 10 mm.

22 A sheet as claimed in claim 21, in which said insulating layer has a thickness of substantially 3 mm

23 A sheet as claimed in any one of claims 1 to 22, in which said insulating layer comprises foam

24 A sheet as claimed in claim 23, in which said foam is able to withstand a high temperature

25. A sheet as claimed in claim 23 or 24, in which said foam comprises a thermally insulating copolymer

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26 A sheet as claimed in any one of claims 23 to 25, in which said foam comprises ethylene vinyl acetate copolymer (EVA)

27 A sheet as claimed in any one of claims 23 to 26, in which said foam comprises carbon black.

28 A sheet as claimed in any one of claims 1 to 22, in which said insulating layer comprises a non-foam material.

29 A sheet as claimed in any one of claims 1 to 28, in which said insulating layer comprises a material comprising any one or more of the following materials a siloxane, silicone rubber; an elastomer; styrene butadiene rubber (SBR), a blended rubber; a monomer elastic rubber

30 A sheet as claimed in any one of claims 1 to 29, in which said insulating layer comprises a material comprising an ability to withstand a temperature of 200 degrees Centigrade.

31. A sheet as claimed in any one of claims 1 to 30, in which said flexible heat-resistant layer is in the form of a sheet and is folded in half and sewn together along the two opposite sides adjacent the fold, to make a flat bag, in which is located said heat-insulating layer, and also sewn together along the side opposite the fold.

32 A sheet as claimed in any one of claims 1 to 31, folded in half and sewn together along the two opposite sides adjacent this fold, to make a pouch into which may be placed a hot heated hair appliance

33. A flexible heat-retardant sheet substantially according to any embodiment hereinbefore described

34 A flexible heat-retardant sheet substantially according to any embodiment hereinbefore described with reference to the accompanying drawings

35. A method of using a heat-retardant sheet as claimed in any one of claims 1 to 34, in which a heated hair appliance is rested upon the sheet and/or is wrapped in the sheet, when hot and/or while becoming hot and/or it then becomes hot.

36 A method as claimed in claim 35, in which the sheet is wrapped around the hot appliance.

37 A method as claimed in claim 35, in which the sheet is in the form of a pouch and the hot appliance is placed therein.

38. A method of using a heated hair appliance in which the appliance is placed on a heat-retardant sheet as claimed in any one of claims 1 to 34 while it is being heated or while it is hot.

39. A method of preparing a heated hair appliance for transport, in which the appliance before and/or when being heated and/or when hot is wrapped in a heat-retardant sheet. as claimed in any one of claims 1 to 34

40 A method of transporting a heated hair appliance, in which the appliance while hot is maintained during transport wrapped in a heat-retardant sheet as claimed in any one of claims 1 to 34.

41 A method of using a heat-retardant sheet, or using a heated hair appliance, or preparing a heated hair appliance for transport, or transporting a heated hair appliance, substantially according to any example hereinbefore described.

42 A method of using a heat-retardant sheet, or using a heated hair appliance, or preparing a heated hair appliance for transport, or transporting a heated hair appliance, substantially according to any example hereinbefore described with reference to the accompanying drawings.

43 A flexible heat-retardant sheet comprising a flexible heat-resistant layer comprising non-felted woven material and, below this layer, a flexible heat-insulating layer comprising foam

44. A flexible heat-retardant sheet comprising a flexible heat-resistant layer comprising non-felted woven material and, below this layer, a flexible heat-insulating layer comprising foam, the sheet being suitable for use as a heat-retardant wrapper for a hot heated hair appliance.

45. A sheet as claimed in claim 43 or 44, which comprises another flexible heat-resistant layer on the opposite face of the insulating layer

46. A sheet as claimed in claim 45, in which the two said heat-resistant layers are in the form of sheets, one on either face of said insulating layer.

47 A sheet as claimed in claim 46, in which said sheets are sewn together.

48 A sheet as claimed in any one of claims 45 to 47, in which the two said heat-resistant layers are sewn together to form a bag to contain said insulating layer.

49 A sheet as claimed in any one of claims 45 to 48, in which said other heat-resistant layer comprises non-felted woven material.

50 A sheet as claimed in any one of claims 43 to 49, in which a said heat-resistant layer comprises a heat-retardant polymer

51 A sheet as claimed in any one of claims 43 to 50, in which a said heat-resistant layer comprises polyamide.

52. A sheet as claimed in any one of claims 43 to 51, in which a said heat-resistant layer comprises polyester.

53 A sheet as claimed in any one of claims 43 to 52, in which a said heat-resistant layer comprises polyaramid

54. A sheet as claimed in any one of claims 43 to 53, in which at least one said heat-resistant layer comprises woven nylon fibre.

55 A sheet as claimed in any one of claims 43 to 54, in which a said heat-resistant layer comprises a coating of polyurethane.

56 A sheet as claimed in any one of claims 43 to 55, in which a said heat-resistant layer comprises means to allow or help heat to spread laterally

57. A sheet as claimed in any one of claims 43 to 56, in which a said heat-resistant layer comprises a heat-conductive coating.

58 A sheet as claimed in claim 57, in which said coating comprises metal

59 A sheet as claimed in claim 58, in which said metal comprises silver-coloured metal

60 A sheet as claimed in claim 58 or 59, in which said metal comprises gold-coloured metal

61 A sheet as claimed in any one of claims 58 to 60, in which said coating comprises carbon black

62 A sheet as claimed in any one of claims 43 to 61, in which said insulating layer is in the form of a sheet.

63. A sheet as claimed in any one of claims 43 to 62, in which said insulating layer has a thickness of not more than 10 mm.

64 A sheet as claimed in claim 63, in which said insulating layer has a thickness of substantially 3 mm

65 A sheet as claimed in any one of claims 43 to 64, in which said foam is able to withstand a high temperature

66 A sheet as claimed in claim 65, in which said foam comprises a thermally insulating copolymer

67 A sheet as claimed in claim 65 or 66, in which said foam comprises ethylene vinyl acetate copolymer (EVA)

68 A sheet as claimed in any one of claims 65 to 67, in which said foam comprises carbon black

69 A sheet as claimed in any one of claims 43 to 68, in which said insulating layer comprises a material comprising any one or more of the following materials: a siloxane, silicone rubber; an elastomer; styrene butadiene rubber (SBR); a blended rubber; a monomer elastic rubber

70 A sheet as claimed in any one of claims 43 to 69, in which said insulating layer comprises a material comprising an ability to withstand a temperature of 200 degrees Centigrade

71. A sheet as claimed in any one of claims 43 to 70, in which said flexible heat-resistant layer is in the form of a sheet and is folded in half and sewn together along the two opposite sides adjacent the fold, to make a flat bag, in which is located said heat-insulating layer, and also sewn together along the side opposite the fold.

72. A sheet as claimed in any one of claims 43 to 71, folded in half and sewn together along the two opposite sides adjacent this fold, to make a pouch into which may be placed a hot heated hair appliance

73 A flexible heat-retardant sheet as claimed in claim 43 and substantially according to any embodiment hereinbefore described.

74 A flexible heat-retardant sheet as claimed in claim 43 and substantially according to any embodiment hereinbefore described with reference to the accompanying drawings.

75 A method of using a heat-retardant sheet as claimed in any one of claims 43 to 74, in which a heated hair appliance is rested upon the sheet and/or is wrapped in the sheet, when hot and/or while becoming hot and/or it then becomes hot.

76. A method as claimed in claim 75, in which the sheet is wrapped around the hot appliance

77 A method as claimed in claim 75, in which the sheet is in the form of a pouch and the hot appliance is placed therein.

78 A method of using a heated hair appliance in which the appliance is placed on a heat-retardant sheet as claimed in any one of claims 43 to 74 while it is being heated or while it is hot.

79 A method of preparing a heated hair appliance for transport, in which the appliance before and/or when being heated and/or when hot is wrapped in a heat-retardant sheet. as claimed in any one of claims 43 to 74

80 A method of transporting a heated hair appliance, in which the appliance while hot is maintained during transport wrapped in a heat-retardant sheet as claimed in any one of claims 43 to 74

81 A method of using a heat-retardant sheet, or using a heated hair appliance, or preparing a heated hair appliance for transport, or transporting a heated hair appliance, as claimed in any one of claims 75, 78, 79 or 80 and substantially according to any example hereinbefore described

82 A method of using a heat-retardant sheet, or using a heated hair appliance, or preparing a heated hair appliance for transport, or transporting a heated hair appliance, as claimed in any one of claims 75, 78, 79 or 80 and substantially according to any example hereinbefore described with reference to the accompanying drawings.

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14

Application No: GB0514193.2 **Examiner:** Robert Mirams

Claims searched: 1 to 42 **Date of search:** 20 September 2006

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	at least 1 to 4, 8, 10, 20, 21, 28, 30 and 35 to 40	GB2400304 A (MATEQUE) e.g. claim 14
X	at least 1, 2, 7, 8, 10, 14 to 16, 20, 21, 28, 30 and 35 to 40	US2002/0121448 A1 (RICHARDSON) e.g. paragraphs 0019 and 0020
X	at least 1, 2, 7, 8, 20, 21, 28, 30 and 35 to 40	US6068122 A (BURNS) e.g. figure 3 and column 4 lines 16 to 32
X	at least 1 to 9, 12, 20, 21, 28, 30 to 32 and 35 to 40	US5577607 A (DRAKE) e.g. figure 4 and column 4 lines 19 to 59
X	at least 1, 2, 8, 20, 21, 24, 30, 35 and 35 to 40	US5562209 A (JACKSON) whole document
X	at least 1, 2, 7, 8, 20, 21, 28, 30 and 35 to 40	US4570792 A (CONWAY) e.g. column 3 lines 43 to 57 and figure 4

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Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[X] :

B5N

Worldwide search of patent documents classified in the following areas of the IPC

A45D; B32B; B65D

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC, JAPIO

PUB-NO: GB002431136A
DOCUMENT-IDENTIFIER: GB 2431136 A
TITLE: Flexible heat retardant sheets
PUBN-DATE: April 18, 2007
PATENT-FAMILY-ID: 34897046

INVENTOR-INFORMATION:

NAME	COUNTRY
KEANE BARRY JOHN	GB

APPLICANT:

NAME	COUNTRY
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APPL-NO: GB 0514193 A
APPL-DATE: July 12, 2005

PRIORITY-DATA:

PRIORITY-NO	PRIORITY-APPL-DATE
GB 0514193 A	20050712

CPC-CURRENT:

TYPE	CPC/DATE
CPCI	A45D6/18 20130101
CPCI	B32B15/08 20130101
CPCI	B65D81/3888 20130101
CPCA	A45C3/001 20130101
CPCA	A45C11/20 20130101
CPCA	A45D2001/002 20130101

INT-CL-CURRENT:

TYPE	IPC/DATE
IPCP	B32B7/02 20060101
IPCS	B65D81/38 20060101
IPCS	A45D6/18 20060101
IPCS	A45D1/00 20060101
IPCN	A45C11/20 20060101

IPCN A45C3/00 20060101

REF-CITED:
PHASE-COUNTRY/NUMBER/KIND/DATE-NPL-INFO
SER US 2002121448 A1 20020905
SER US 6068122 A 20000530
SER US 5577607 A 19961126
SER US 5562209 A 19961008
SER US 4570792 A 19860218
SER GB 2400304 A 20041013

ABSTRACT:

A flexible heat retardant sheet 10 comprises a flexible heat-resistant layer 12, and, below it, a flexible heat-insulating layer 14, possibly with another flexible heat-resistant layer on the opposite side of the insulating layer so as to sandwich the layer, the layers being sewn together such as to form a bag 16. The heat resistant layer may be a woven material formed from a heat resistant polymer such as polyamide e.g. nylon or polyaramid, or polyester with a coating of polyurethane. The heat resistant layer may comprise a heat conductive coating containing metal such as aluminium or bronze in the form of powder The heat retardant sheet may comprise a metal layer in the form of a foil. The insulating layer may be a foam such as ethylene vinyl acetate copolymer foam containing carbon black to help spread heat laterally, siloxane, silicone rubber, elastomer, styrene butadiene rubber or blended rubber, possibly with a resistance- reducing coating such as silicone wax or PTFE. The sheet may be used as a wrapper or pouch for a hot heated hair appliance 32. The sheet may be embodied in the walls of a handbag compartment. The hair appliance may be rested upon or wrapped in the sheet while being heated.

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(22) Date of Filing: 05.07.2013

(51) INT CL:
A45D 20/12 (2006.01) *A45D 20/52* (2006.01)

(56) Documents Cited:
EP 0300281 A US 20110079239 A1

(58) Field of Search:
INT CL A45D
Other: EPODOC, WPI

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(54) Title of the Invention: **A handheld appliance**
Abstract Title: **A handheld appliance having a handle with an inner wall and an outer wall**

(57) A hand held appliance such as a hair dryer 10 comprises a handle 20 which has a wall 220 and an outer wall 200. The wall 220 defines a primary fluid flow path (400, fig.3) that extends from a primary fluid inlet 40 into the appliance. The outer wall 200 is an external surface of the appliance. The outer wall 200 may extend substantially continuously around and along the wall 220. An insulating layer 212, may be provided, preferably positioned between the wall 220 and the outer wall 200. The insulating layer 212 may be substantially continuous around and along the wall and may mitigate one or more of noise, vibration and heat produced by the appliance. The handle 20 may include a fan unit (70, fig. 3) for drawing fluid into the primary fluid inlet 40 and along the primary fluid flow path (400, fig.3).

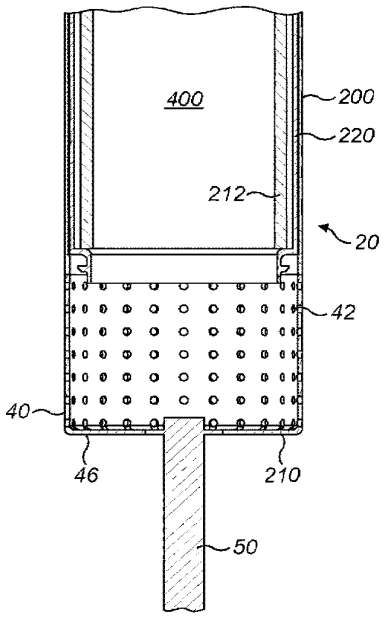


FIG. 4a

GB 2515811 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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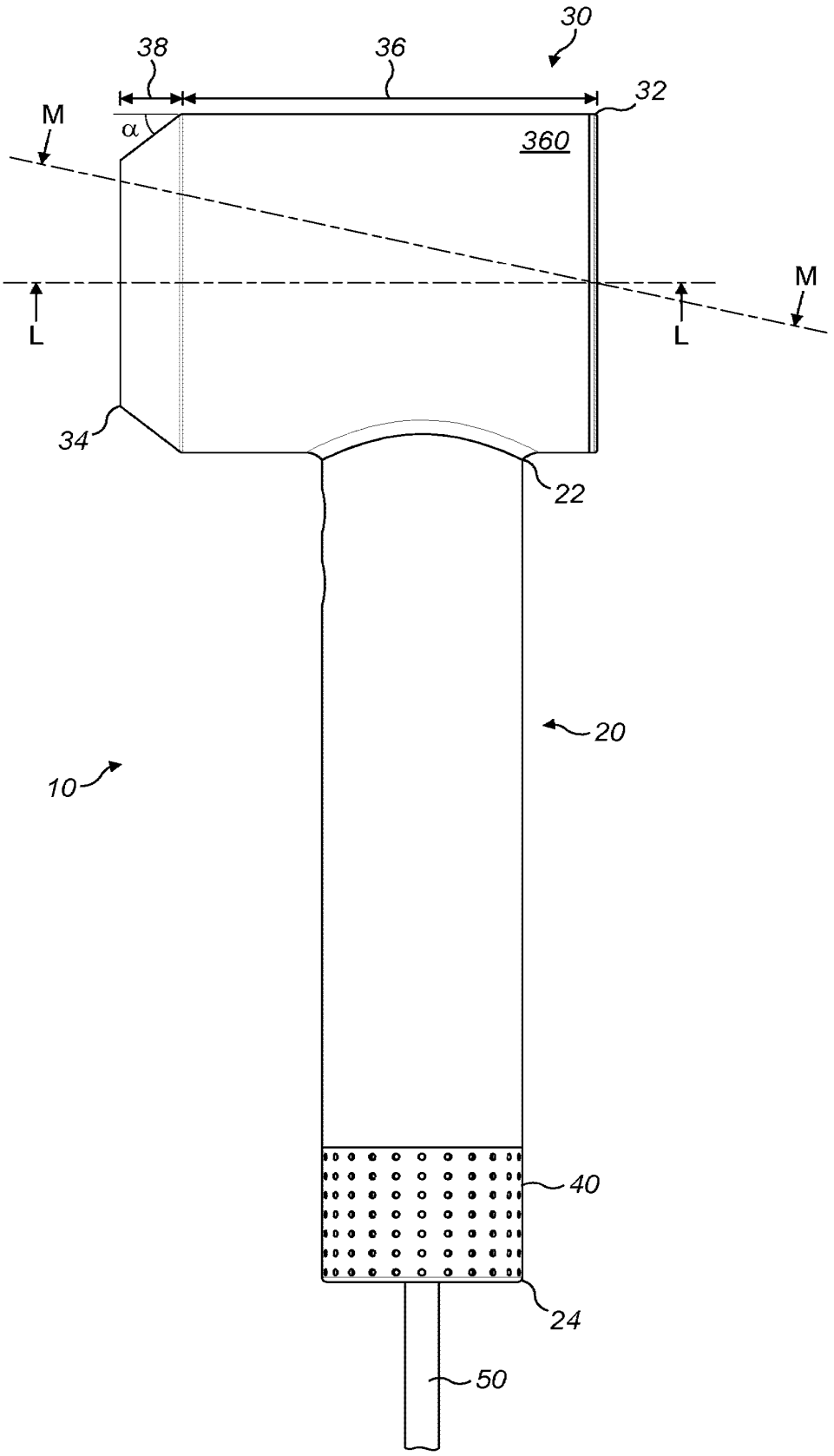


FIG. 1

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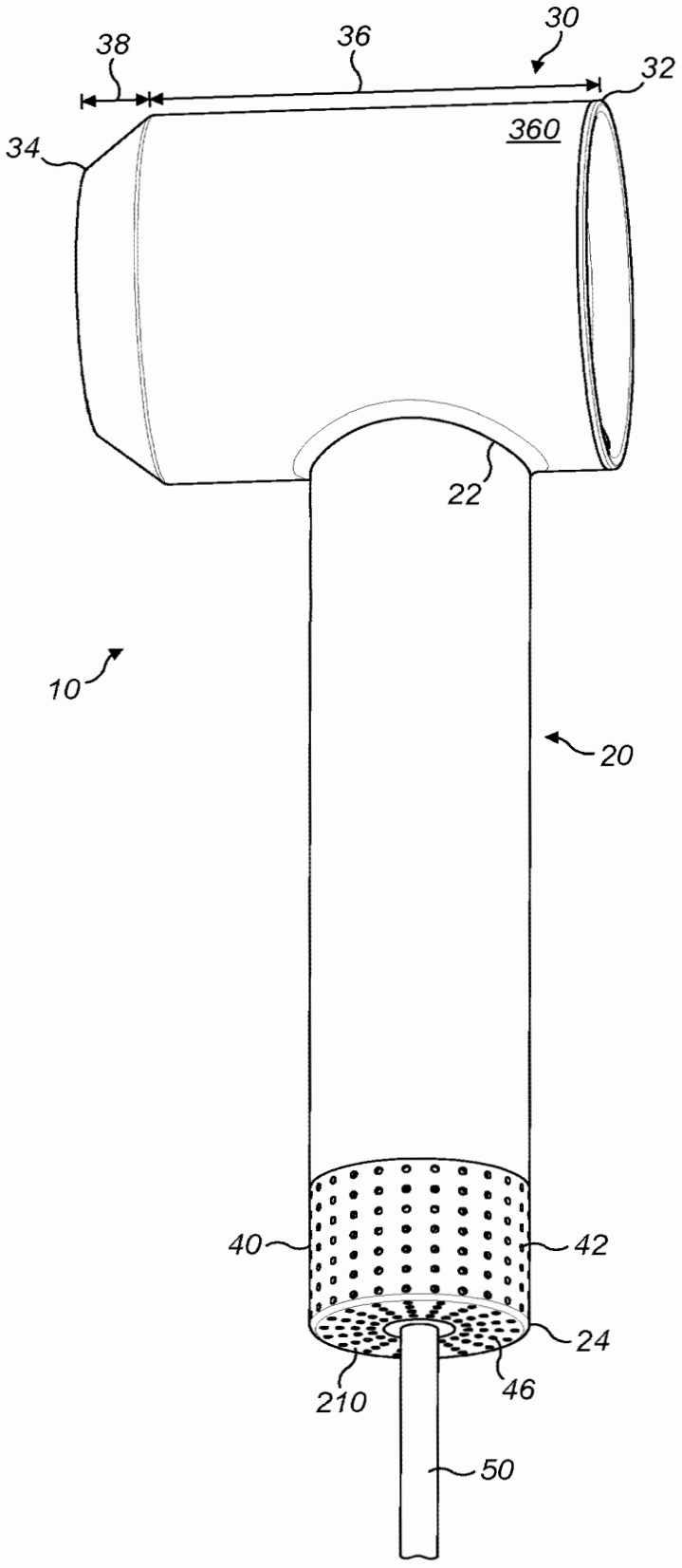


FIG. 2

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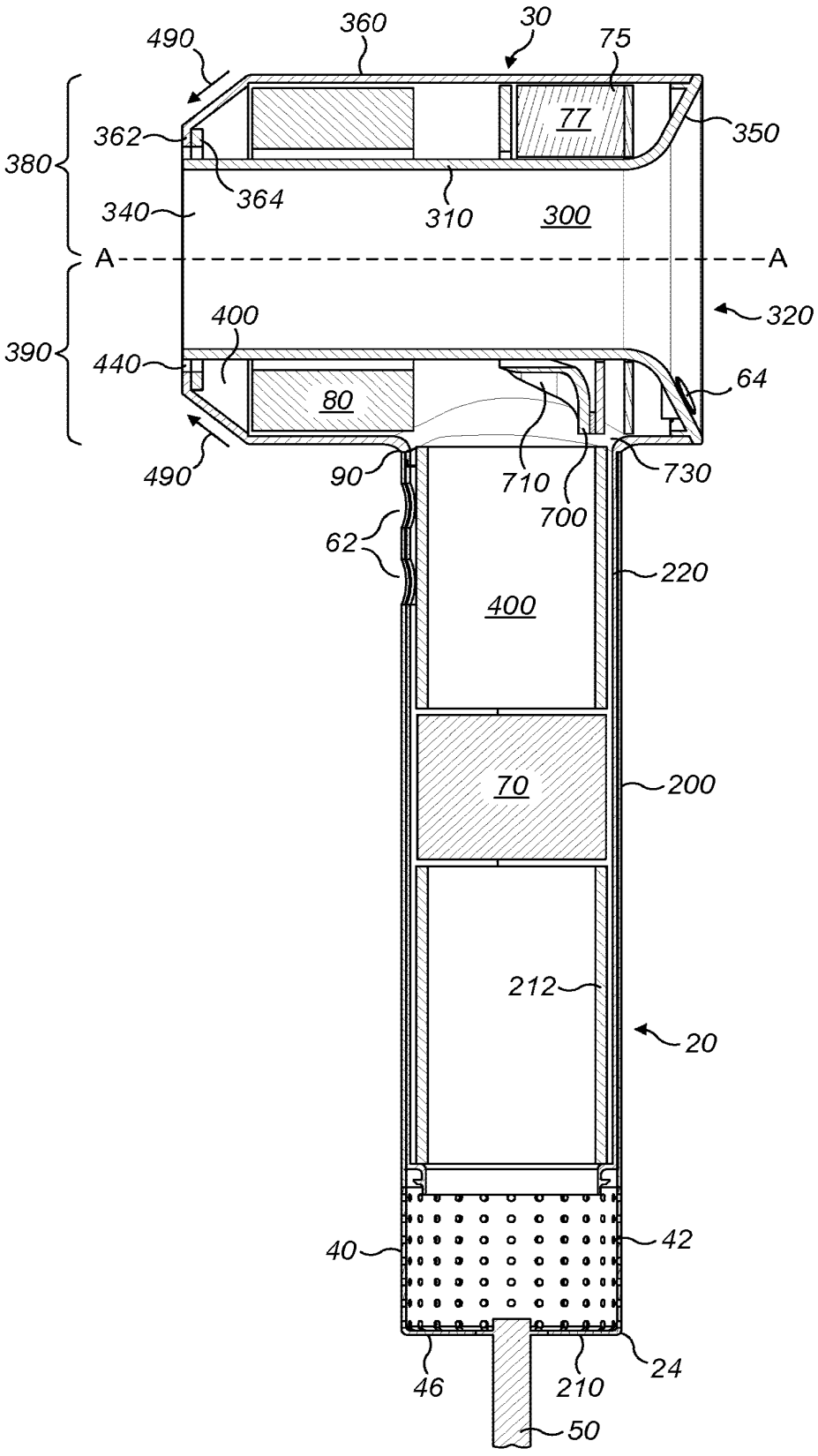


FIG. 3

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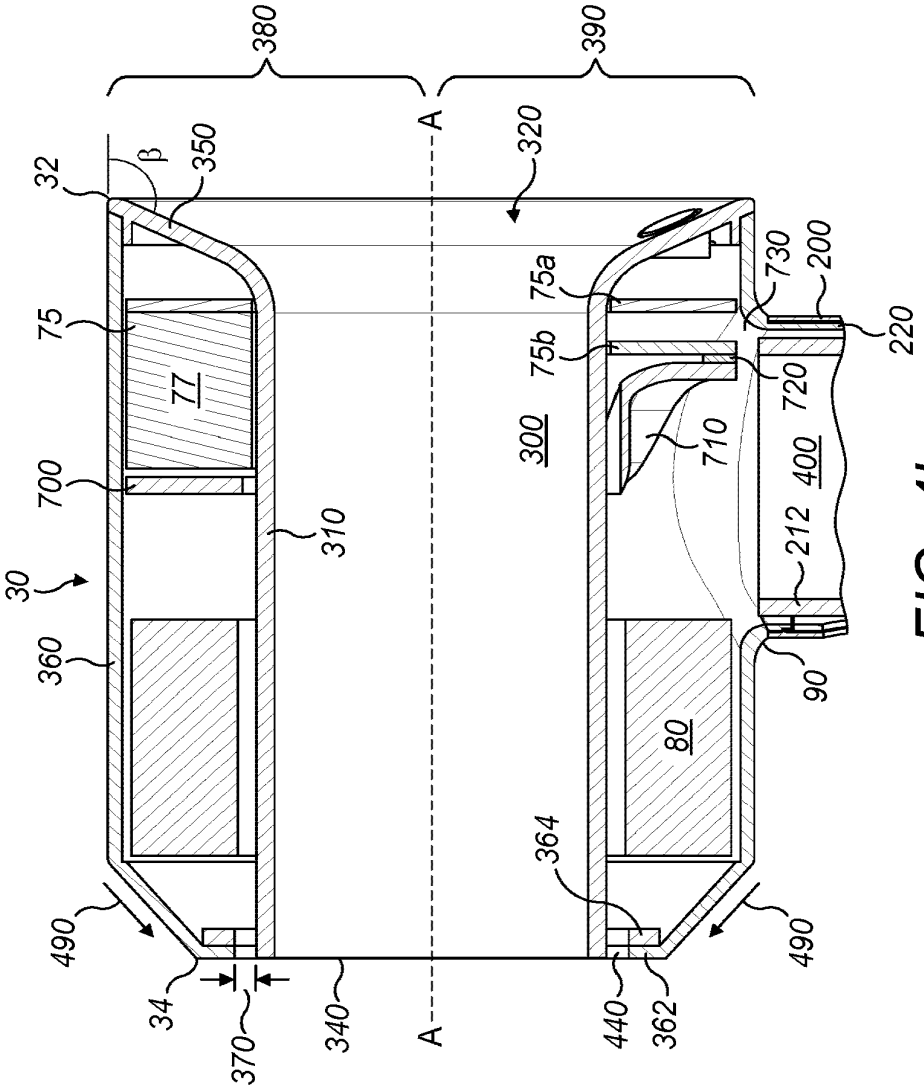


FIG. 4b

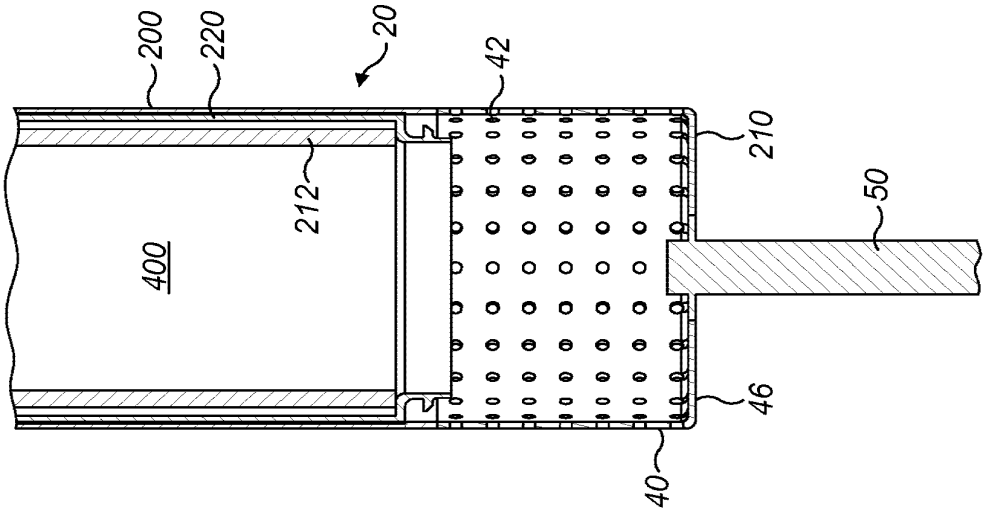


FIG. 4a

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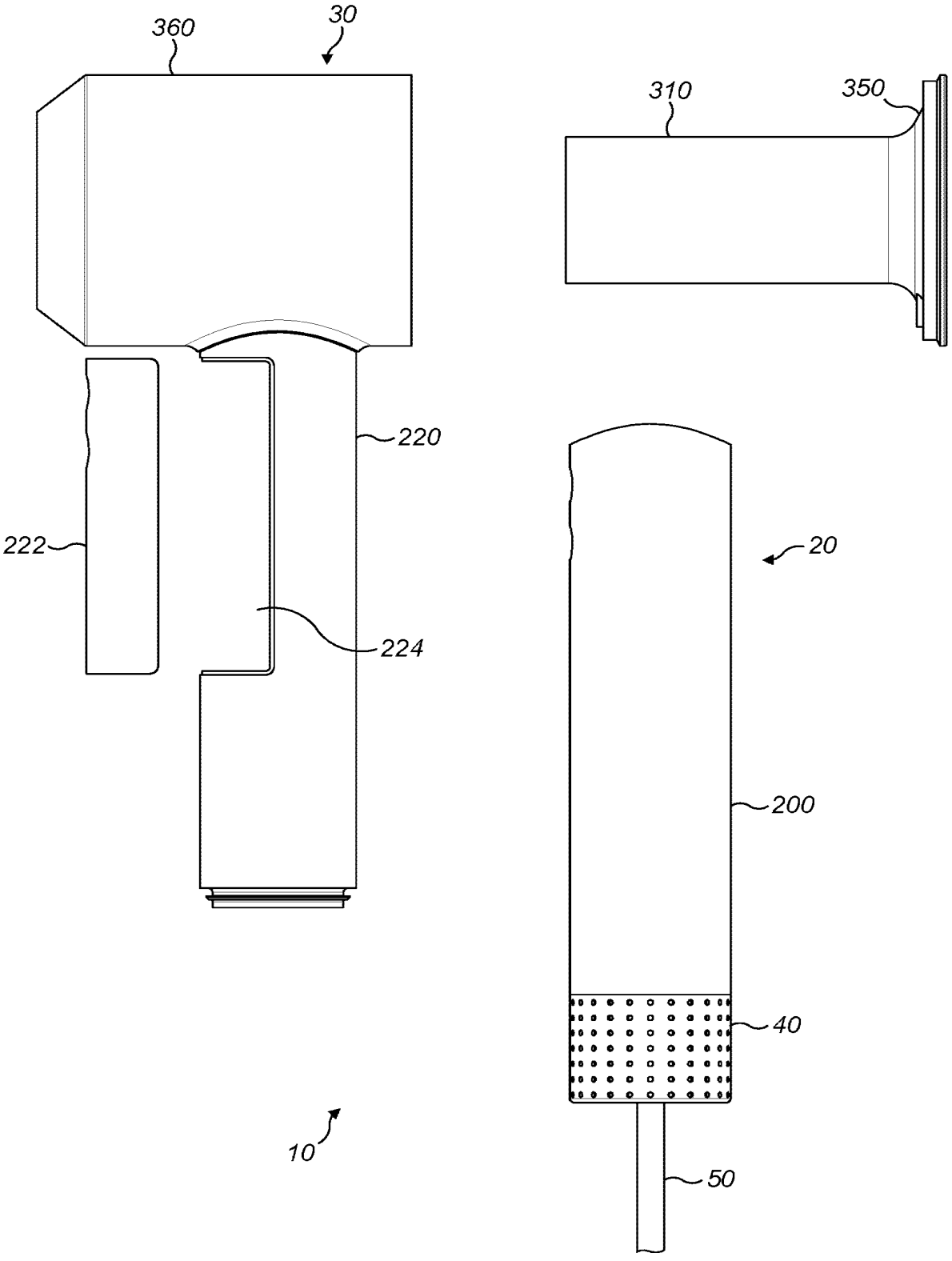


FIG. 5

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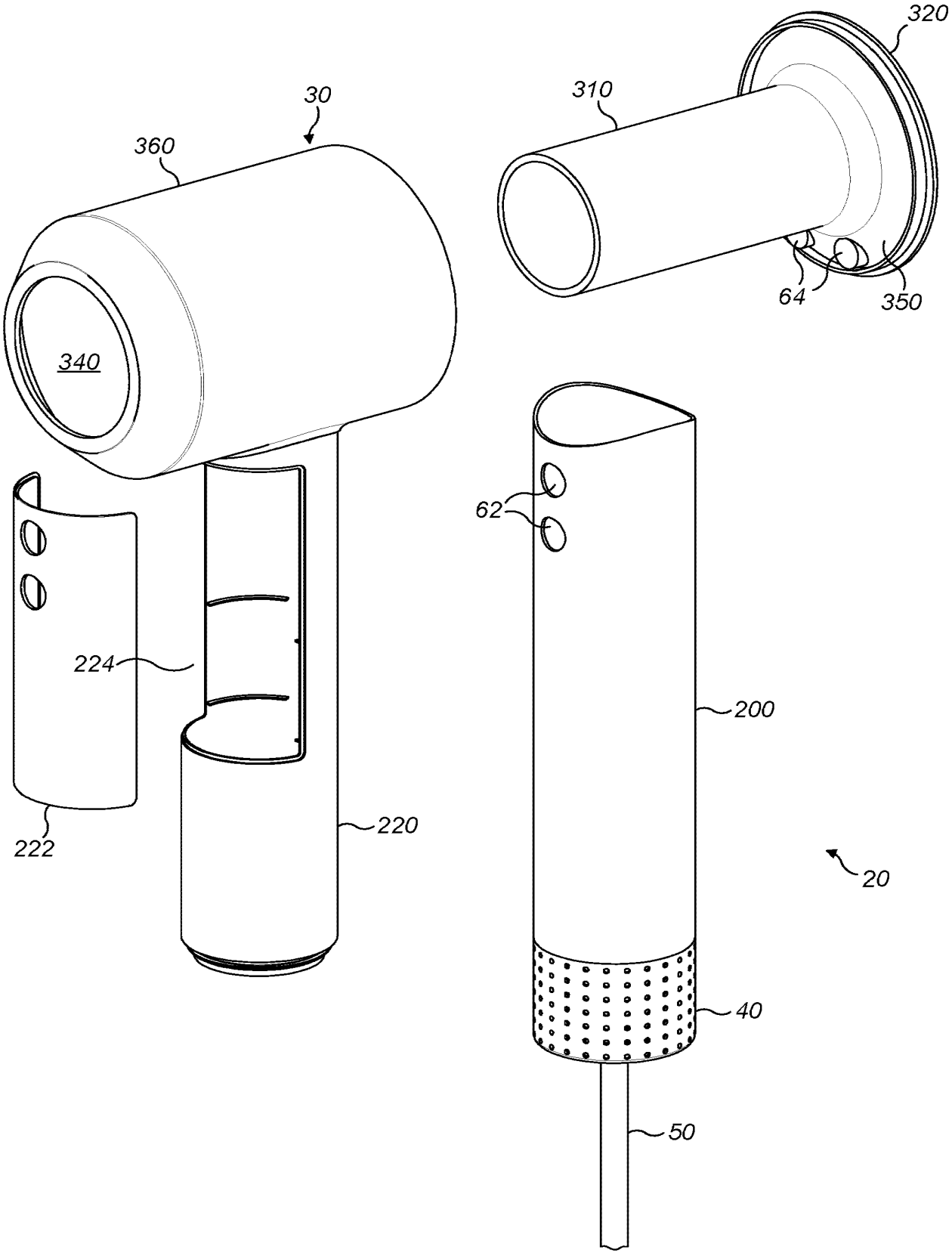


FIG. 6

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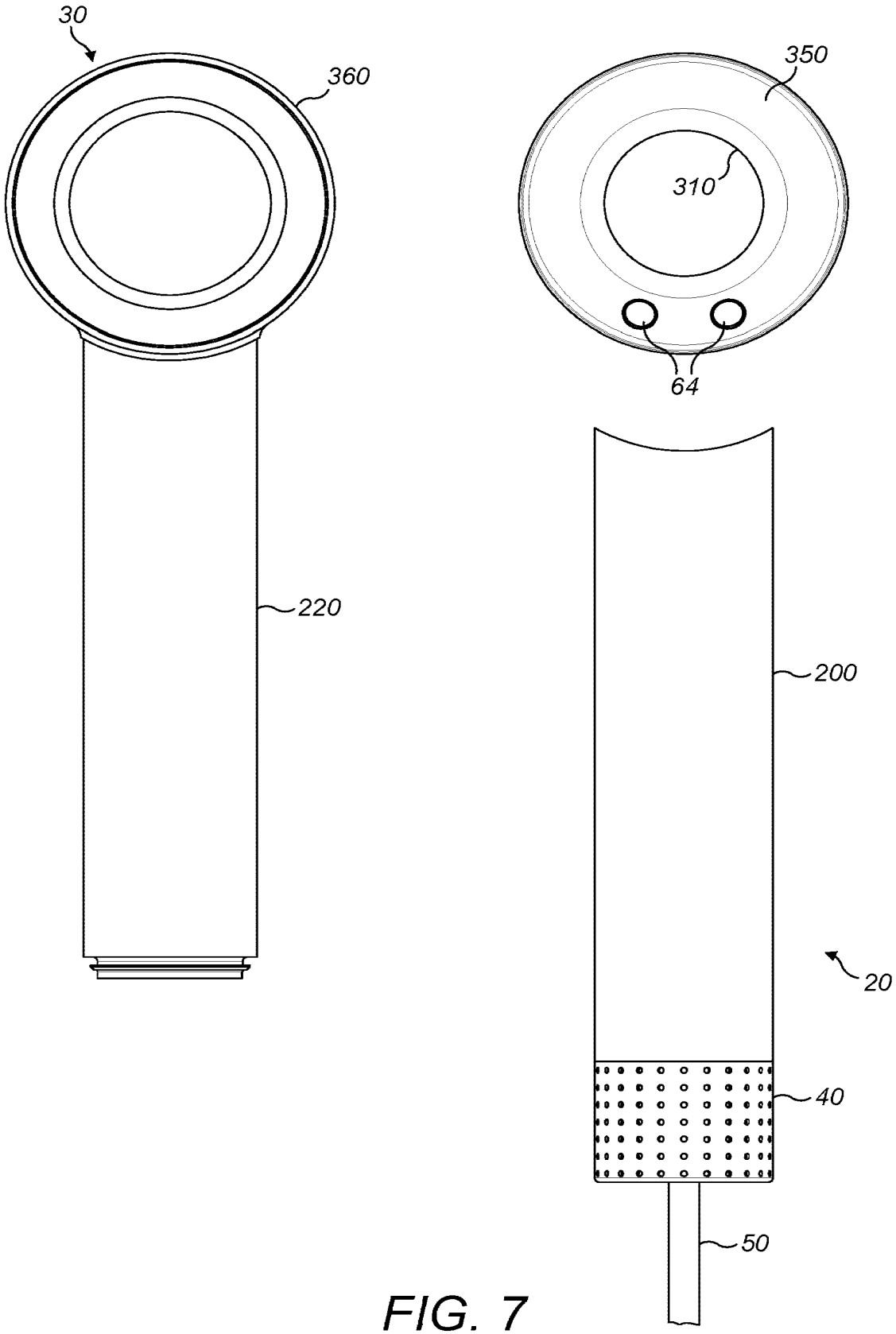


FIG. 7

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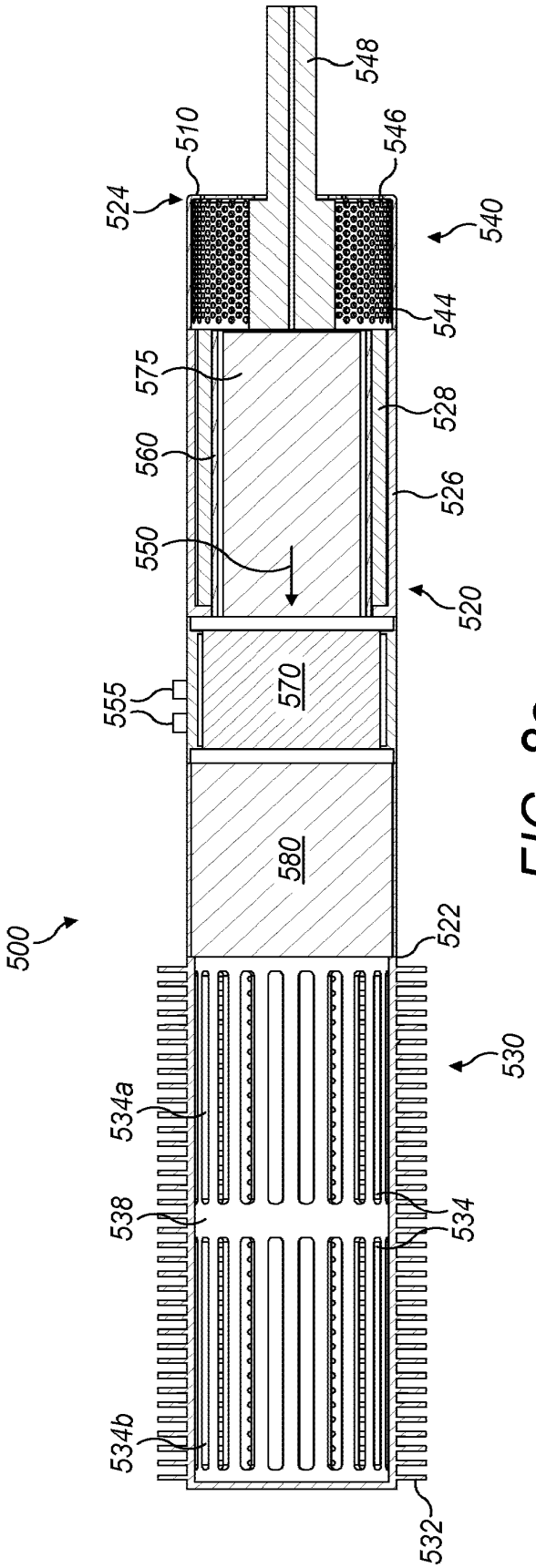


FIG. 8a

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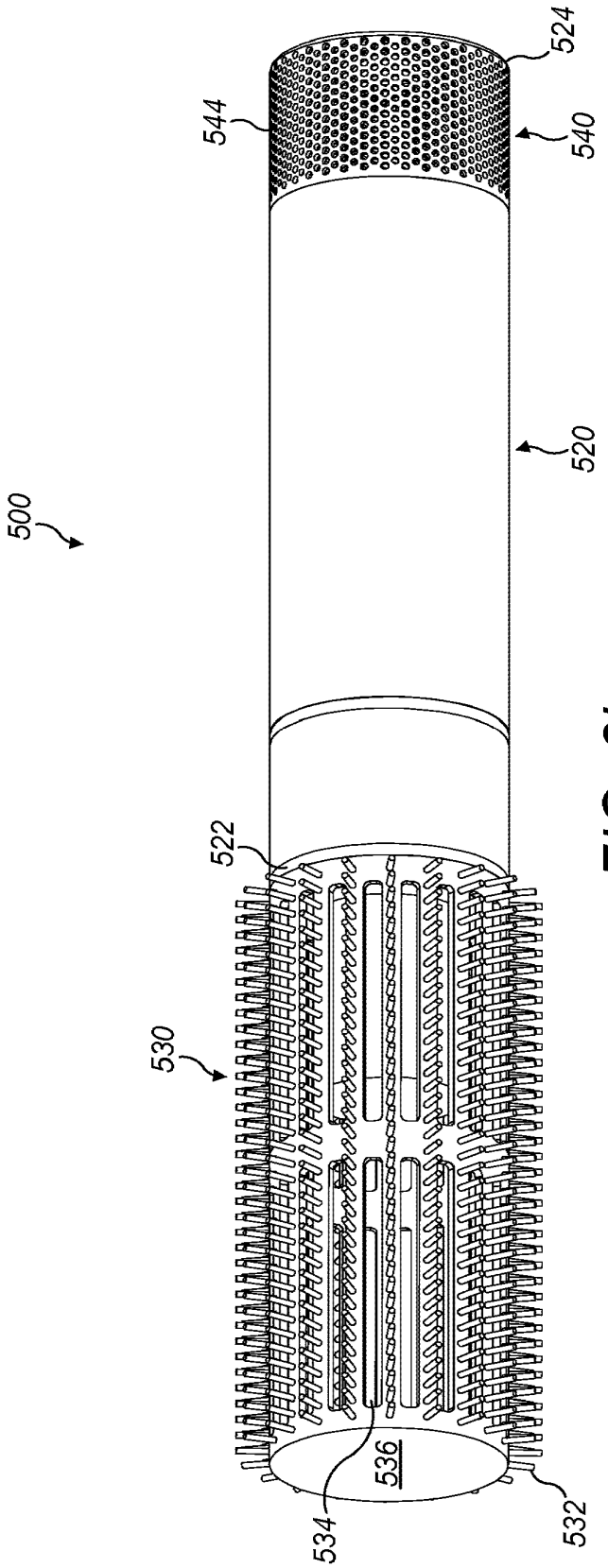


FIG. 8b

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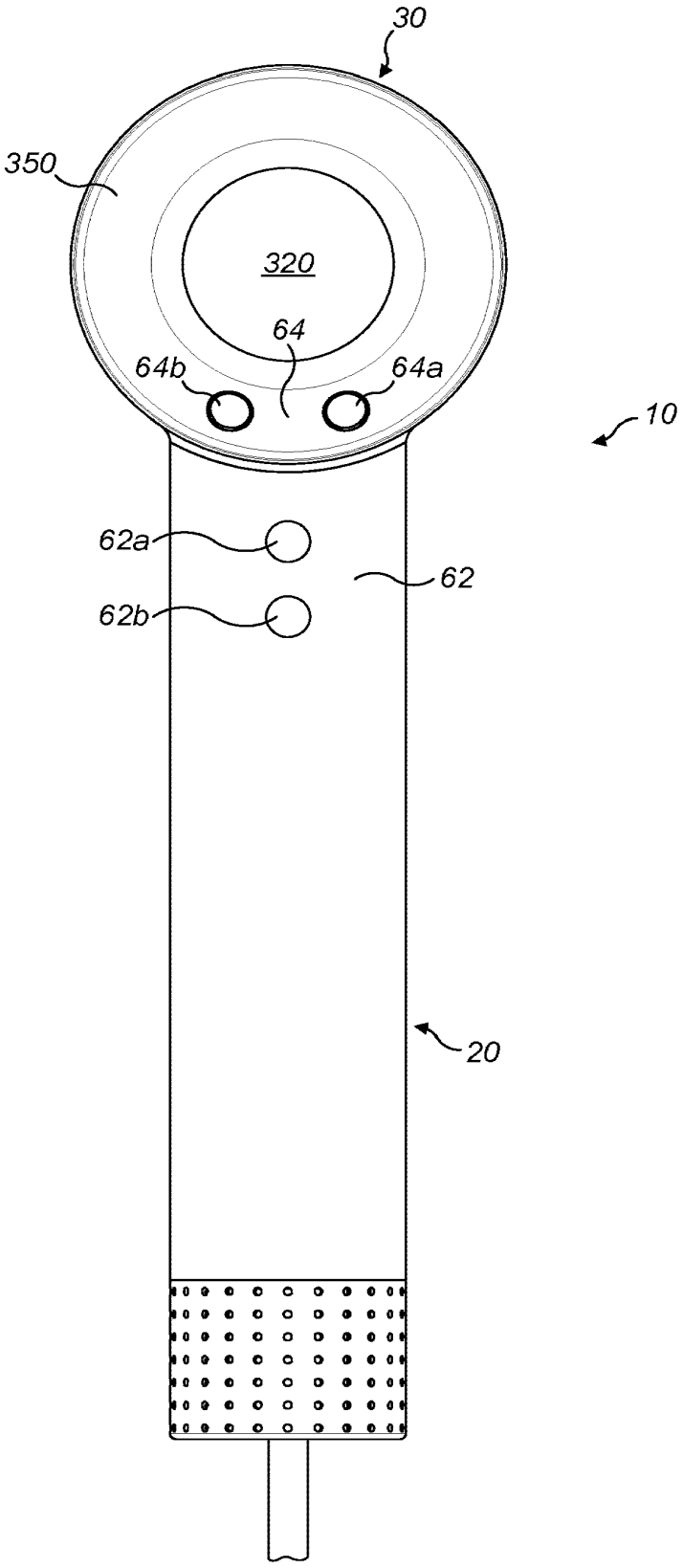


FIG. 9

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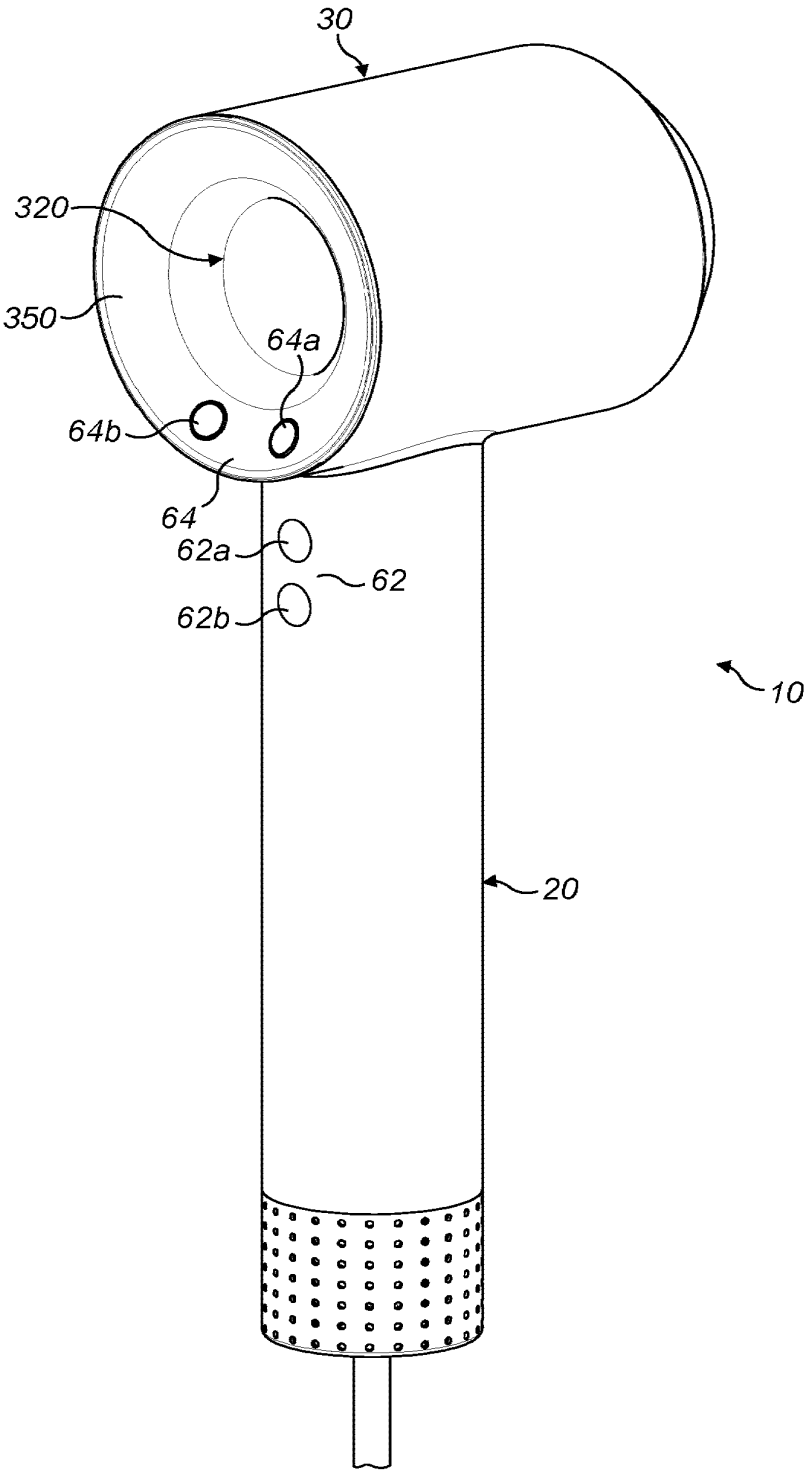


FIG. 10

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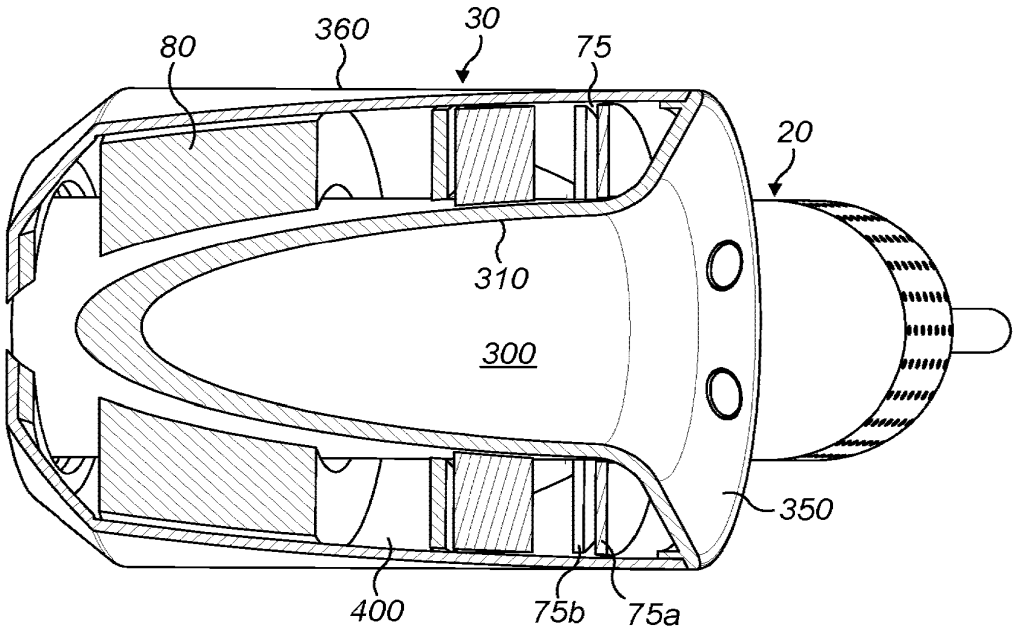


FIG. 11a

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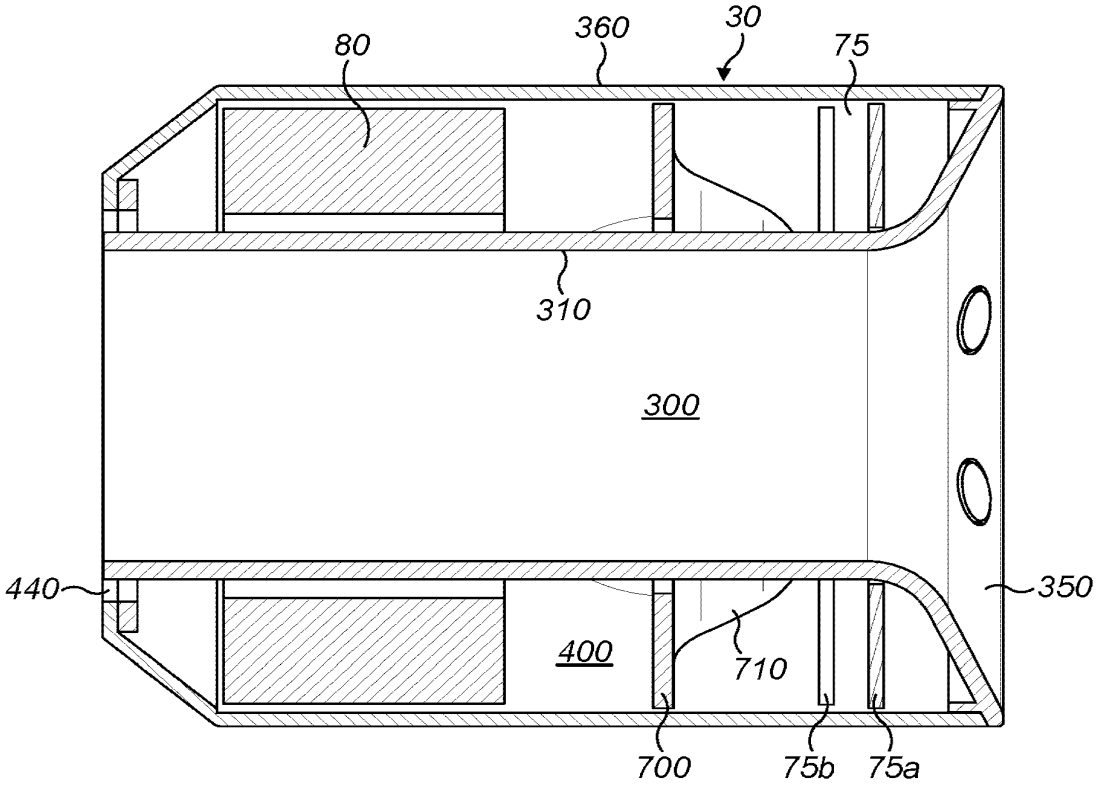


FIG. 11b

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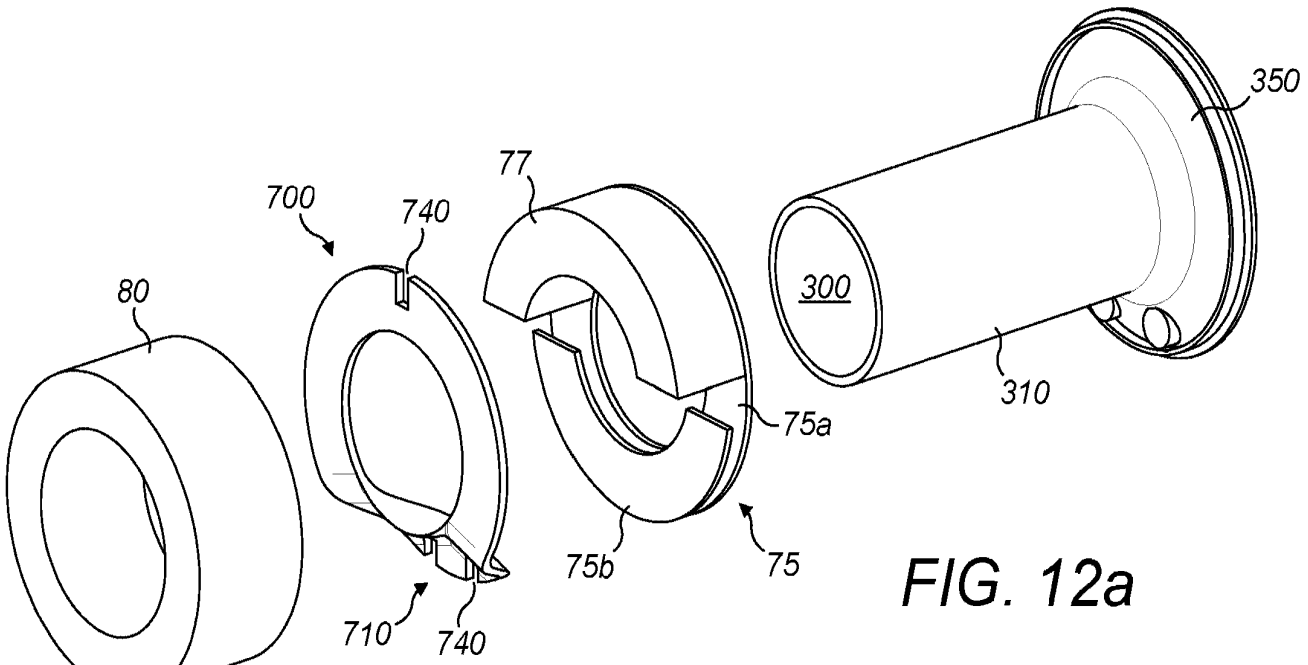


FIG. 12a

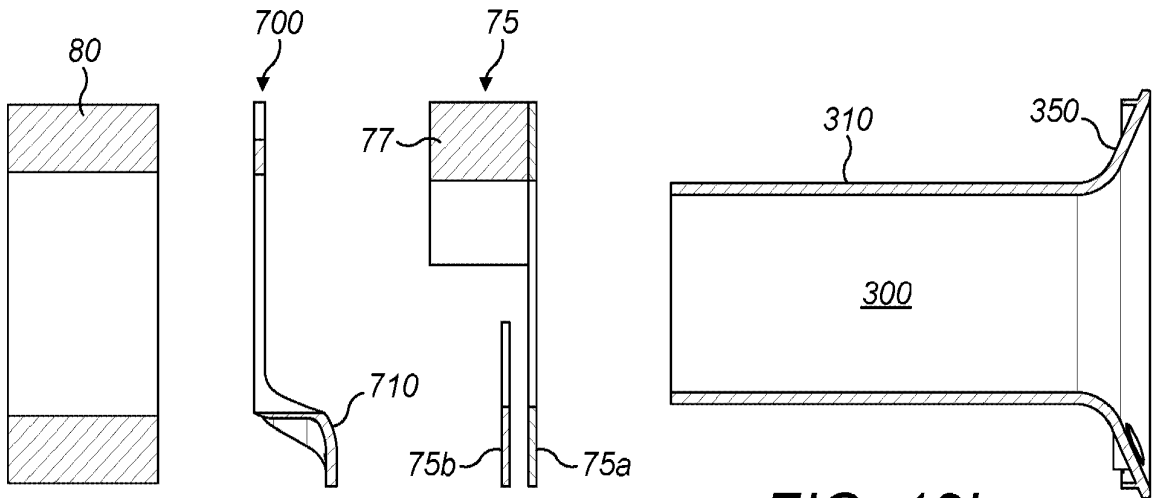


FIG. 12b

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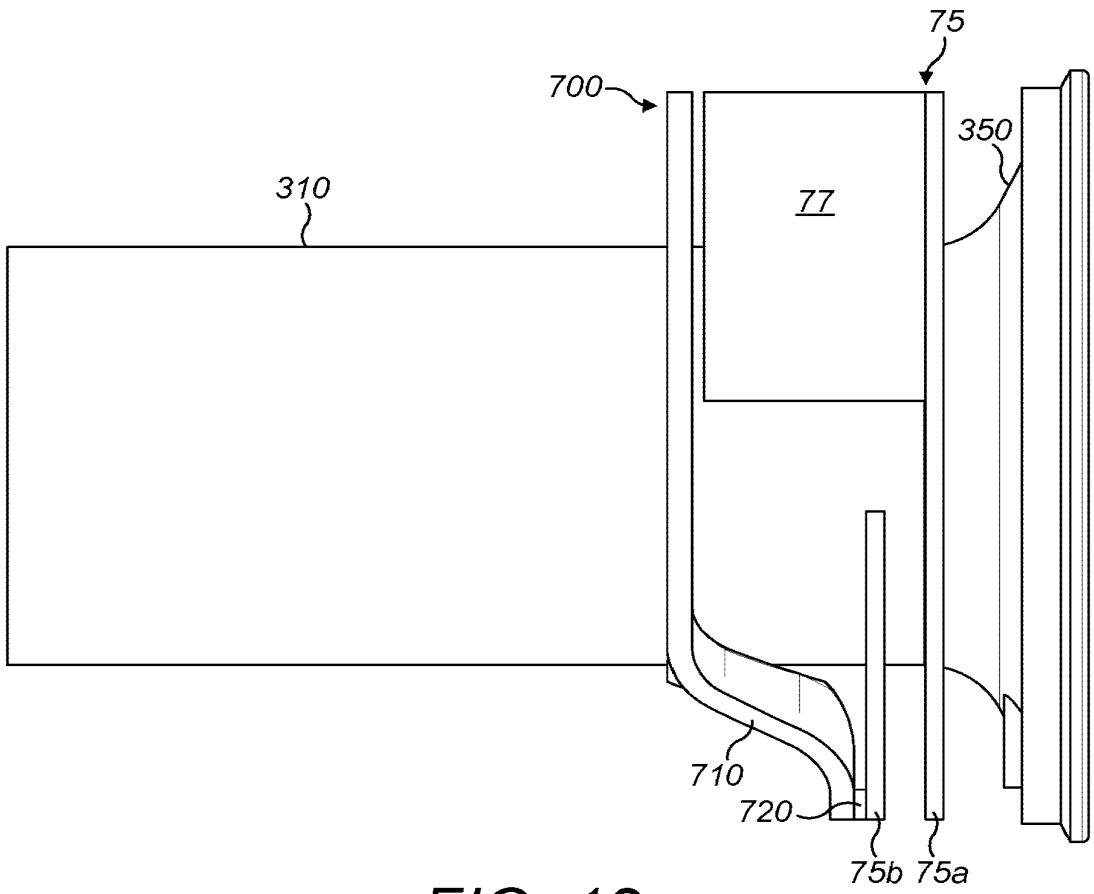


FIG. 12c

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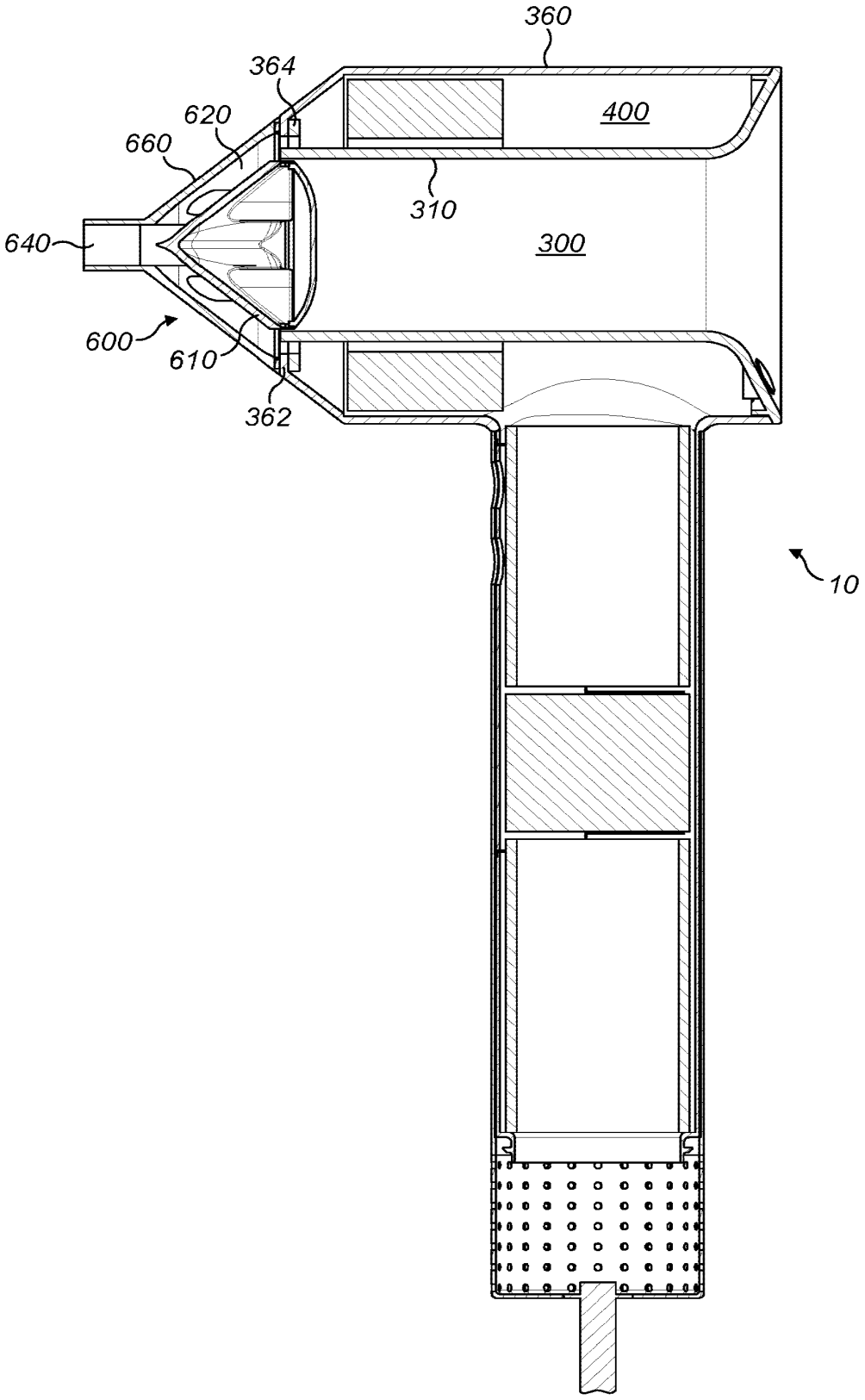


FIG. 13

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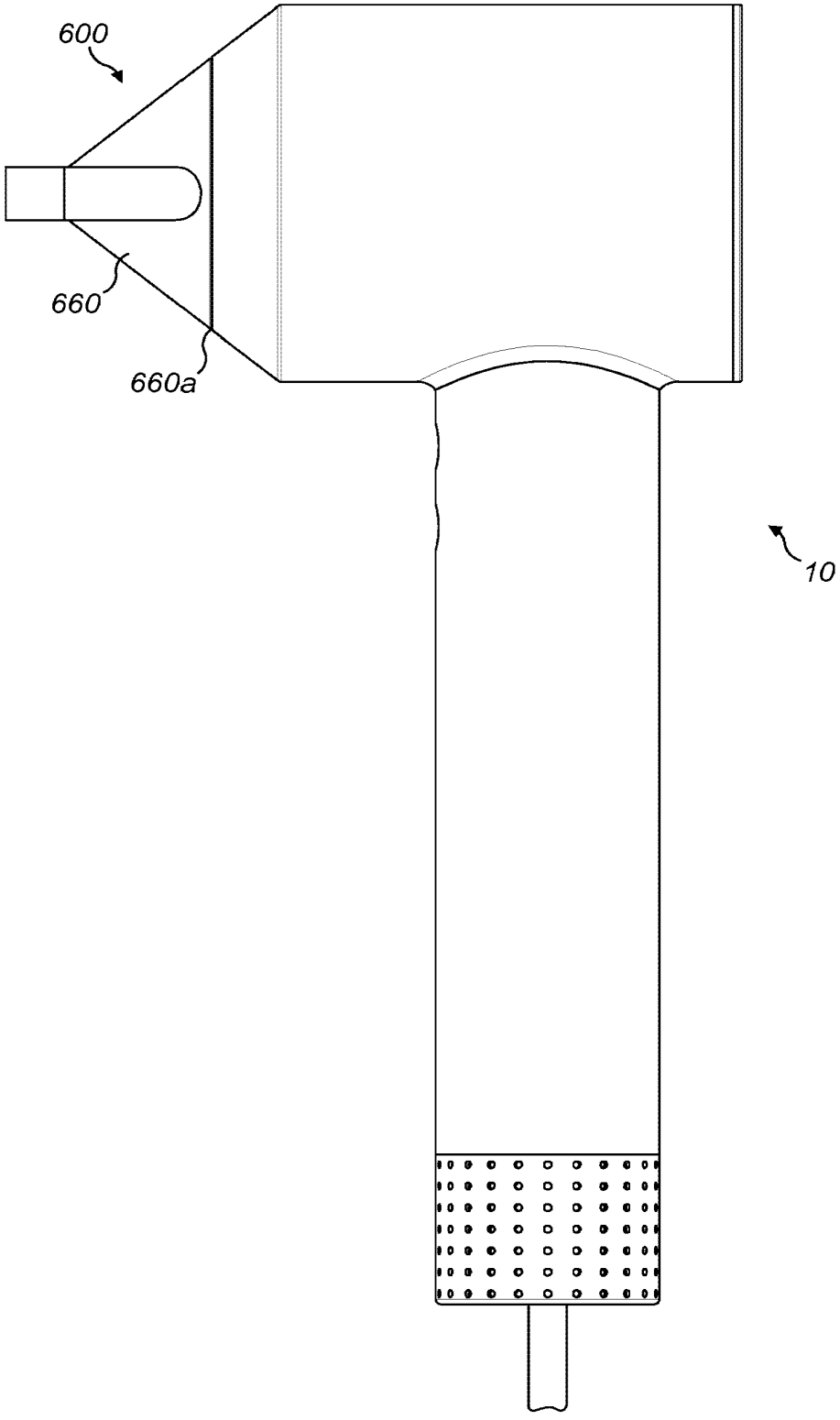


FIG. 14a

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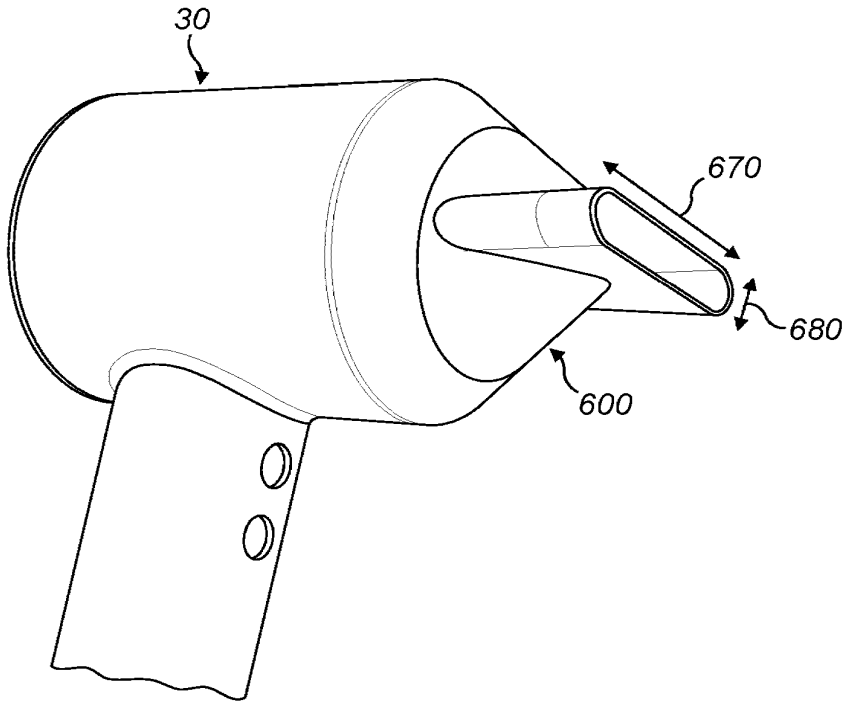


FIG. 14b

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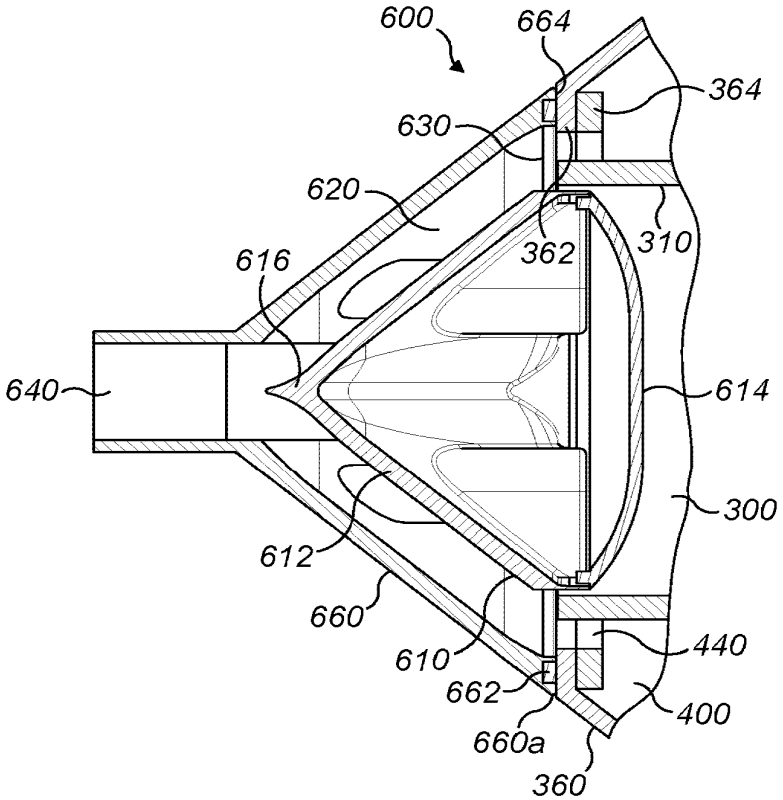


FIG. 15

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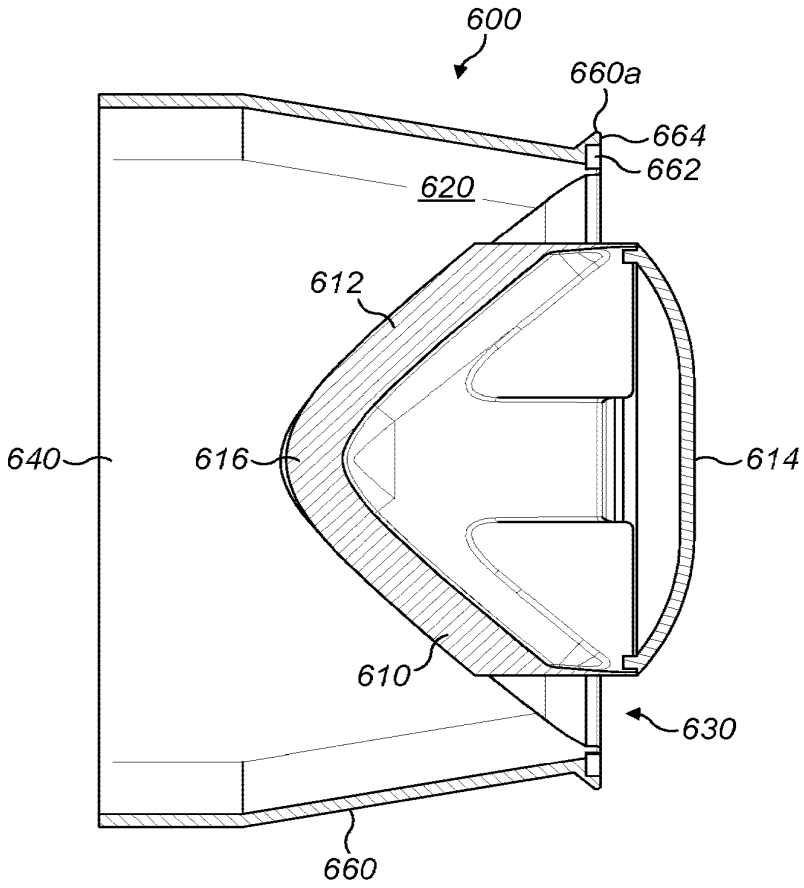


FIG. 16

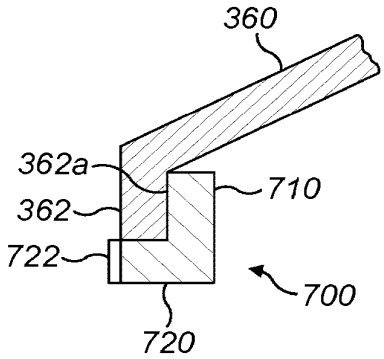


FIG. 17a

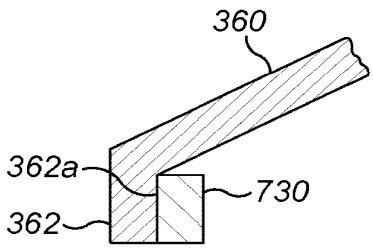


FIG. 17b

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A Handheld Appliance

This invention relates to a hand held appliance, in particular a hair care appliance such as a hairdryer or hot styling brush.

Blowers and in particular hot air blowers are used for a variety of applications such as drying substances such as paint or hair and cleaning or stripping surface layers. In addition, hot air blowers such as hot styling brushes are used to style hair from a wet or dry condition.

Generally, a motor and fan are provided which draw fluid into a body; the fluid may be heated prior to exiting the body. The motor is susceptible to damage from foreign objects such as dirt or hair so conventionally a filter is provided at the fluid intake end of the blower. Conventionally such appliances are provided with a nozzle which can be attached and detached from the appliance and changes the shape and velocity of fluid flow that exits the appliance. Such nozzles can be used to focus the outflow of the appliance or to diffuse the outflow depending on the requirements of the user at that time.

According to a first aspect, the invention provides a hair care appliance comprising: a body comprising an outer wall; and a handle comprising an outer wall and a wall disposed within the outer wall wherein, the outer wall of the body and the wall of the handle are formed as a single unit.

Forming the body and the wall of the handle as a single unit has a number of advantages. Firstly the access to at least some of the components of the appliance is made more difficult. In convention hairdryers, a clam shell construction is used and the two parts are usually screwed together. A user can relatively easily remove the screws

and access the heater and fan unit. In the present invention, as there are no joins or screws that can be removed, it is made more difficult for a user to take the product apart. Secondly, the product is visually cleaner. There are no join lines running along the length of the body and no recesses or extensions in the body that would be required in order to connect the two parts.

Preferably, the wall comprises an access aperture extending at least partially along and around the wall.

It is preferred that the wall comprises a hatch for closing the access aperture.

Preferably, the handle comprises a primary fluid inlet disposed at and/or near the distal end of the handle from the body. Preferably, the primary fluid inlet extends at least partially around and along the handle. Preferably, the primary fluid inlet comprises at least one aperture extending around the outer wall. It is preferred that the primary fluid inlet comprises at least one aperture extending along the outer wall. Preferably, the primary fluid inlet comprises at least one aperture extending across the outer wall.

Preferably, the handle comprises a primary fluid flow path flowing from the primary fluid inlet along the handle and into the body. It is preferred that the primary fluid flow path flows from the primary fluid inlet within the wall to the body.

Preferably, the handle comprises a fan unit wherein the fan unit draws fluid into the primary fluid flow path.

It is preferred that the body comprises a primary fluid outlet for the primary fluid flow path. Preferably, the primary fluid outlet is in fluid communication with the primary fluid inlet and the primary fluid flow path.

Preferably, the body comprises a first end and a second end and the primary fluid outlet is at the second end.

Preferably, the body comprises a fluid flow path. Preferably, the fluid flow path extends from a fluid inlet in the body to a fluid outlet.

It is preferred that the body comprises a duct extending within the outer wall of the body and the duct extends from the first end.

Preferably, the primary fluid flow path extends between the outer wall of the body and the duct. Preferably, the primary fluid flow path extends to a primary fluid outlet. Preferably, the primary fluid flow path extends about the duct. Preferably, the primary fluid flow path extends at least partially along the duct. Preferably, the duct extends at least partially along the body.

It is preferred that the duct defines a fluid flow path extending through the body. Preferably, the fluid flow path extends from a fluid inlet to a fluid outlet. Preferably, the fluid flow path extends within the duct. Preferably, the fluid flow path extends from a fluid inlet in the body through the duct to a fluid outlet from the body.

Preferably, the duct extends about the fluid flow path. Preferably, the fluid flow path extends through the duct. Preferably, the fluid flow path is defined by a duct extending through the body. Preferably, the fluid flow path exits the body by the fluid outlet. Preferably, the fluid flow path is provided through the duct.

It is preferred that the fluid inlet is at the first end of the body.

Preferably, the fluid flow path merges with the primary fluid flow path within the body.

Alternatively, the primary fluid flow path surrounds the fluid flow path at the second end of the body. Fluid in the primary fluid flow path exits the body by the primary fluid outlet.

Preferably, the duct is connected to the outer wall of the body by a side wall extending between the duct and the outer wall. It is preferred that the side wall is angled to both the outer wall of the body and the duct. Preferably, the side wall is disposed at the first end of the body. It is preferred that the duct and side wall are formed as a single unit. Preferably, the duct and side wall are formed from a plastic material. It is preferred that the side wall at least partially defines the fluid inlet into the fluid flow path

Preferably, the outer wall of the handle extends about the wall and partially along the wall.

It is preferred that the outer wall of the handle extends over an access hatch into the wall.

Preferably, the outer wall of the handle extends about the wall for substantially the whole length of the wall. It is preferred that the wall of the handle comprises a primary fluid inlet. Preferably, the primary fluid inlet of the outer wall of the handle is in fluid communication with the primary fluid inlet of the wall of the handle.

It is preferred that the outer wall of the body and wall of the handle are made from a plastic material.

Preferably, the outer wall of the handle is made from a different material to the wall of the handle and the outer wall of the body. Preferably, the outer wall is formed from a metal. Preferably, the outer wall of the handle is made from aluminium or an aluminium alloy.

It is preferred that the body comprises a heater. The heater is for heating fluid in the primary fluid flow path. Preferably, the heater is provided between the outer wall and the duct. It is preferred that the primary fluid flow path extends through the heater. Preferably, the heater extends along the body. It is preferred that the heater extends at least partially around the body. Alternatively, the heater extends around the body. It is preferred that the heater extends at least partially around and about the duct.

Alternatively, the heater extends around about the duct. Preferably, the heater extends at least partially along the duct. Preferably, the heater is annular.

Also provided is a hand held appliance comprising: a body comprising an outer wall; and a handle comprising an outer wall and a wall disposed within the outer wall wherein, the outer wall of the body and the wall of the handle are formed as a single unit.

According to a second aspect, the invention provides a hair care appliance comprising: a body having a duct, an outer wall extending about the duct and a side wall extending between the duct and the outer wall, wherein a control switch is provided on the side wall and wherein the outer wall, side wall and the duct are all external walls of the appliance.

Preferably, the body has an inlet end and an outlet end and the side wall is at the inlet end.

It is preferred that the duct at least partially defines a fluid flow path through the body. Preferably, duct is recessed within the outer wall at the inlet end.

It is preferred that the handle is connected to the body at a first end. Preferably, a second control switch is provided on the handle. It is preferred that the second control switch is located on the handle adjacent to the inlet end of the body.

Preferably, both the first control switch and the second control switch are accessible by a single digit.

It is preferred that the second control switch comprises two buttons.

Preferably, the handle is generally tubular and at a distal end to the body the handle comprises a primary fluid inlet. It is preferred that the handle comprises a wall and at

the distal end, the handle comprises an end wall extending across the wall. Preferably, the primary fluid inlet extends at least partially across the end wall.

It is preferred that the appliance comprises a power cable connectable to a power source at one end and extending into substantially the centre of the end wall of the handle at the other end.

Preferably, the handle comprises an outer wall and the outer wall extends at least partially along and around the wall.

Preferably, a lining material is provided between the outer wall and the wall. Preferably, the lining material is an insulating layer. Preferably, the lining material or insulating layer extends substantially continuously along and/or around the wall.

Preferably, the primary fluid outlet is at least partially defined by the duct. It is preferred that the primary fluid outlet is defined by the body and the duct.

Preferably, within the body, the primary fluid flow path and fluid flow path merge.

Preferably, the primary fluid outlet extends about the fluid flow path. Preferably, the body comprises a fluid outlet for the fluid flow path and the primary fluid outlet extends about the fluid outlet.

Preferably, the primary fluid outlet is at the outlet end of the body.

Preferably, the body decreases in diameter towards the outlet end.

Preferably, the first control switch comprises two buttons.

Also provided is a hand held appliance comprising: a body having a duct, an outer wall extending about the duct and a side wall extending between the duct and the outer wall,

wherein a control switch is provided on the side wall and wherein the outer wall, side wall and the duct are all external walls of the hand held appliance.

According to a third aspect, the invention provides a hair care appliance comprising a body, and a handle having a first end in fluid communication with the body and a second end comprising a primary fluid inlet into the appliance wherein the primary fluid inlet comprises a first aperture extending at least partially around the handle and a second aperture extending through the second end of the handle.

Having the primary fluid inlet disposed one more than one surface of the appliance is advantageous. In conventional hairdryers, the primary fluid inlet is generally located on the back end of the hairdryer and in an attempt to prevent blockage, the end is often convex. If the back end of the hairdryer is placed down on a hard surface, it will roll onto a side.

However, on a soft surface such as bedding or a long pile carpet, the inlet can still be at least partially covered or blocked. This can lead to overheating of the motor. By having the inlet on more than one surface, there is less chance of any blockage being sufficient to cause damage to the motor.

Preferably, the handle comprises an end wall at the second end and the second aperture extends through the end wall.

It is preferred that the end wall is substantially orthogonal to the handle.

Preferably, the first aperture is adjacent the second end of the handle.

It is preferred that the fan unit is upstream of the primary fluid inlet.

Preferably, the first aperture comprises a plurality of apertures extending at least partially around the handle.

It is preferred that the first aperture comprises a plurality of apertures extending at least partially along the handle.

Preferably, the second aperture comprises a plurality of apertures extending through the end of the handle.

Preferably, a power cable for supplying power to the fan unit is provided, the power cable extending through the end of the handle. It is preferred that the power cable extends substantially centrally thorough the handle at the primary fluid inlet. It is preferred that the second aperture extends at least partially around the power cable.

Preferably, a primary fluid flow path is provided from the primary fluid inlet through the handle and into the body to a primary fluid outlet.

It is preferred that the handle comprises a wall and the primary fluid flow path extends within the wall. It is preferred that the handle comprises an outer wall wherein said outer wall extends around the wall and at least partially along the wall. It is preferred that the handle comprises a layer of insulating material between the outer wall and the wall.

Preferably, the primary fluid outlet comprises a plurality of apertures extending at least partially along and around the body.

It is preferred that the primary fluid flow path is substantially linear through the handle and into the body

Alternatively, the handle is substantially orthogonal to the body.

It is preferred that the within the body the primary fluid flow path surrounds the fluid flow path.

It is preferred that the primary fluid outlet extends about the fluid flow path.

Also provided is a hand held hand held appliance comprising a body, and a handle having a first end in fluid communication with the body and a second end comprising a primary fluid inlet into the hand held appliance wherein the primary fluid inlet comprises a first aperture extending at least partially around the handle and a second aperture extending through the second end of the handle.

According to a fourth aspect, the invention provides hair care appliance comprising a handle, the handle comprising a wall and an outer wall wherein the wall defines a primary fluid flow path that extends from a primary fluid inlet into the appliance and the outer wall is an external surface of the appliance.

The provision of a double layered wall reduces the transmission of vibration and noise from within the handle. It isolates internal components of the handle from the outer wall.

Preferably, the outer wall extends substantially continuously around the wall. It is preferred that the outer wall extends substantially along the wall.

Preferably, the insulating layer mitigates one or more of noise, vibration and heat produced by the appliance. It is preferred that the insulating material is a foam or a felt.

It is preferred that the handle comprises a first end and a second end wherein the primary fluid inlet is at or near the second end.

Preferably, the handle includes a heater for heating fluid drawn into the primary fluid inlet.

Preferably, the heater is downstream of the fan unit. The heater is preferably, disposed adjacent the first end of the handle.

Preferably, the appliance comprises a head attachable to the handle, the head comprising a primary fluid outlet for the appliance. Preferably, the primary fluid outlet comprises a plurality of apertures extending at least partially along and around the head. Preferably, the primary fluid flow path is substantially linear through the handle and into the head.

Alternatively, the primary fluid flow path from the primary fluid inlet to the primary fluid outlet is non linear. It is preferred that the primary fluid flows within the handle in a first direction and within the body in a second direction. Preferably, the primary fluid flow in the body is substantially orthogonal to the primary fluid flow in the handle.

It is preferred that fluid in the fluid flow path is entrained into the body by the action of a fan unit in the primary fluid flow path.

Also provided is a hand held appliance comprising a handle, the handle comprising a wall and an outer wall wherein the wall defines a primary fluid flow path that extends from a primary fluid inlet into the hand held appliance and the outer wall is an external surface of the hand held appliance.

According to a fifth aspect, the invention provides a hair care appliance comprising a body, a fluid flow path extending through the body from a fluid inlet to a fluid outlet and a PCB extending about the fluid flow path.

Preferably, the PCB is annular. It is preferred that the PCB is isolated from the fluid flow path.

Preferably, the PCB comprises a first layer and a second layer. It is preferred that the first layer extends substantially continuously about the fluid flow path. Preferably, the second layer extends partially about the fluid flow path.

It is preferred that the second layer is adjacent the first layer. Preferably, the second layer is downstream of the first layer.

It is preferred that the PCB extends at least partially around extends about the duct.

Preferably, the primary fluid flow path is in fluid communication with the PCB.

It is preferred that the heater is downstream of the PCB.

Preferably, a thermal barrier is provided between the PCB and the heater. The thermal barrier is located fluidly between the PCB and the heater.

Preferably, comprising a handle wherein the handle attached to and extending from the body and the primary fluid inlet is in the handle is connected to the body at a first end.

It is preferred that the handle comprises a fan unit for drawing fluid into the primary fluid flow path.

Preferably, the handle comprises a second end distal to the first end, the second end comprising a primary fluid inlet,

It is preferred that the primary fluid flow path extends along the handle and into the body to a primary fluid outlet.

Preferably, the primary fluid flow path is non-linear.

It is preferred that within the handle the primary fluid flow path is generally circular.

Preferably, within the body the primary fluid flow path is generally annular.

It is preferred that where the primary fluid flow path enters the body a flow plate is provided. Preferably, the body comprises a flow plate for directing flow from the handle into the body.

Preferably, the flow plate deflects the primary flow around the duct from a circular to an annular flow.

It is preferred that the primary fluid flows through the handle in a first direction and in the body in a second direction. Preferably, the flow plate directs primary flow from the first direction to the second direction.

Preferably, the flow plate is provided in the primary fluid flow path to direct flow from a circular flow in the handle to an annular flow in the body18. Preferably, the flow plate is adjacent to the PCB.

Preferably, the flow plate is shaped around components on the PCB.

Preferably, the flow plate deflects the primary flow from a first direction of flow within the handle to a second direction of flow within the body.

Preferably, the fan unit is upstream of the PCB.

According to a sixth aspect, the invention provides a hair care appliance comprising: a body, a heater, a PCB and a primary fluid flow path extending from a primary fluid inlet into the appliance to a primary fluid outlet out of the body wherein the PCB and heater are in fluid communication with the primary fluid flow path and the PCB is upstream of the heater.

Preferably, a fan unit is provided and the fan unit is upstream of the heater.

Alternatively, a fan unit is provided and the fan unit is downstream of the PCB.

It is preferred that the thermal barrier is in thermal communication with the PCB and functions as a heat sink for the PCB. Preferably, the thermal barrier is aluminium or an alloy of aluminium.

It is preferred that the body includes a handle portion upstream of the heater. Preferably, the primary fluid inlet is in the handle portion. It is preferred that the primary fluid flow path extends linearly through the body.

Preferably, the flow plate comprises at least one aperture. It is preferred that the at least one aperture enables fluid to flow through the flow plate to the PCB.

Preferably, the flow plate is connected to the PCB. The flow plate acts as a heat sink for the PCB. It is preferred that the flow plate additionally directs primary fluid flow around the PCB.

Preferably, the flow plate is additionally one or more of a thermal barrier, heat sink and deflector plate for the PCB.

It is preferred that where the primary flow enters the body there is a region of relatively high velocity flow.

Preferably, the PCB comprises components extending outwards from a board by different amounts and the components are arranged such that components that extend further out from the board are positioned radially away from the region of relatively high velocity flow. It is preferred that at least some of the components that extend further out from the board are capacitors.

Preferably, components that extend less distance from the board are positioned in the region of relatively high velocity flow.

It is preferred that the thermal barrier is additionally a deflector plate for deflecting debris from the PCB away from the primary fluid flow path and the primary fluid outlet.

According to a seventh aspect, the invention provides a hair care appliance comprising: a body, a PCB having electrical components mounted thereon and a primary fluid flow path extending at least partially through the body and passed the PCB, wherein the primary fluid flow path has a region of relatively high velocity and a region of relatively low velocity and components mounted on the PCB are arranged so that larger components are in the region of relatively low velocity.

Preferably, the appliance comprises a handle connected to the body at a first end wherein the primary fluid flow path flows through the handle into the body.

It is preferred that the primary fluid flow path extends in a first direction within the handle and a second direction within the body.

Preferably, the body is generally tubular and has an upper half and a lower half and the handle is connected to the lower half. It is preferred that the region of relatively high velocity is in the lower half of the body. Preferably, the region of relatively low velocity is in the upper half of the body.

It is preferred that larger components of the PCB are located in the upper half of the body. Preferably, smaller components of the PCB are located in the lower half of the body. It is preferred that larger components of the PCB are components which extend the furthest from a circuit board on which they are mounted.

According to an eighth aspect, the invention provides, a hair care appliance comprising a body; a fluid flow path extending through the body from a fluid inlet through which a fluid flow enters the appliance to a fluid outlet for emitting the fluid flow from a front end of the body; ; and an attachment for adjusting at least one parameter of fluid emitted from the appliance, the attachment comprising an upstream end for attaching to the

appliance, wherein one or both of the front end of the body and the upstream end of the attachment comprises at least one magnet.

Preferably, the front end of the body comprises an end wall extending radially inwards of the body and the end wall comprises at least one magnet.

It is preferred that end wall comprises a plurality of magnets radially spaced about the end wall.

Preferably, the end wall comprises a ring of magnetic material extending around the end wall.

Preferably, the end wall comprises an outer face and an inner face, the outer face being an external surface of the appliance, wherein the at least one magnet is adjacent the inner face.
It is preferred that the at least one magnet is embedded in the end face.

Preferably, the upstream end of the attachment comprises an end face and a plurality of magnets radially spaced about the end face.

It is preferred that the upstream end of the attachment comprises a ring of magnetic material extending around the end face.

Preferably, the magnet or magnetic material is made from a polymer containing magnetic flakes.

It is preferred that an external surface of the magnet or magnetic material is coated with an anti scratch coating.

Preferably, the appliance comprises a primary fluid flow path extending at least partially through the body from a primary fluid inlet through which a primary fluid flow enters the appliance to a primary fluid outlet.

It is preferred that the appliance comprises a handle wherein the primary fluid inlet is in the handle.

Preferably, fluid flow is drawn through the fluid flow path by fluid emitted from the primary fluid outlet.

It is preferred that the primary fluid flow extends about the duct.

Preferably, the attachment is configured to inhibit emission of the fluid flow from the appliance. It is preferred that the attachment includes means to inhibit generation of a fluid flow along the fluid flow path to the fluid outlet. Preferably, the means to inhibit the generation of a fluid flow comprises a barrier which blocks the duct when the attachment is attached to the appliance.

It is preferred that the attachment is in the form of a nozzle defining a nozzle fluid flow path extending from a nozzle fluid inlet through which the primary fluid flow enters the nozzle to a nozzle fluid outlet for emitting the primary fluid flow.

Preferably, the attachment has an outer wall that substantially continues the profile of the body at the front end of the body.

It is preferred that the body reduces in diameter towards the front end of the body. Preferably, the reduction in diameter has a constant gradient.

It is preferred that the appliance comprises a body; a fluid flow path extending through the body from a fluid inlet through which a fluid flow enters the appliance to a fluid

outlet for emitting the fluid flow from a front end of the body wherein the front end of the body comprises at least one magnet.

Preferably, the front end of the body comprises an end wall extending radially inwards of the body and the end wall comprises at least one magnet.

It is preferred that the end wall comprises a plurality of magnets radially spaced about the end wall.

Preferably, the end wall comprises a ring of magnetic material extending around the end wall.

The invention also provides an attachment for adjusting at least one parameter of fluid emitted from the appliance comprising an upstream end for attaching to the appliance, wherein the upstream end of the attachment comprises at least one magnet.

According to a ninth aspect, the invention provides a hair care appliance having a handle, and a body, the body having an outer wall and a duct wherein the outer wall extends about the duct and the outer wall converges towards the duct.

Preferably, the outer wall has a first part and a second part and the first part is tubular.

It is preferred that the first part is of substantially uniform diameter.

Preferably, the second part is cone shaped.

It is preferred that the second part of the outer wall converges towards the duct at an angle of between 1 and 89°.

Preferably, the second part of the outer wall converges towards the duct at an angle of between 30 and 60°.

Preferably, the appliance comprises a fan unit for drawing fluid into the primary fluid flow path from a primary fluid inlet to a primary fluid outlet.

It is preferred that the body comprises the primary fluid outlet at one end and wherein the outer wall converges towards the duct towards the primary fluid outlet.

Preferably, the body has a first end and a second end and the outer wall converges towards the duct at the second end of the body.

Preferably, the appliance comprises a handle having a primary fluid inlet in fluid communication with the primary fluid flow path.

It is preferred that fluid is entrained into the fluid flow path by the action of a fan unit drawing fluid into the primary fluid flow path.

Preferably, the primary fluid flow path extends about the fluid flow path.

The invention will now be described by way of example with reference to the accompanying drawings, of which:

Figures 1 and 2 show different aspects of a hairdryer according to the invention;

Figure 3 shows a cross section though a hairdryer according to the invention;

Figures 4a and 4b show enlarged views of portions of the cross section of Figure 3;

Figures 5, 6 and 7 show different views of parts of a hairdryer according to the invention;

Figures 8a and 8b show respectively a cross section through and a perspective of alternate hair care appliance;

Figures 9 and 10 show different views of a hairdryer according to the invention;

Figure 11a shows a top sectional view along line M-M of Figure 1;

Figure 11b shows a top sectional view along line L-L of Figure 1;

Figures 12a, 12b and 12c show views of various internal components of the body of a hairdryer according to an invention; and

Figures 13 to 16 show various views of a hairdryer 10 having an attachment 600 for changing a parameter of fluid output from the hairdryer.

Figures 1 and 2 show a hairdryer 10 with a handle 20 and a body 30. The handle has a first end 22 which is connected to the body 30 and a second end 24 distal from the body 30 and which includes a primary inlet 40. Power is supplied to the hairdryer 10 via a cable 50.

The body 30 has a first end 32 and a second end 34 and can be considered to have two parts. A first part 36 which extends from the first end 32 which is tubular and of a generally consistent diameter and a second part 38 which extends from the second end 34 to join the first part 36. The second part 38 is cone shaped and varies in diameter along its length from the diameter of the first part 36 of the body 30 to a smaller diameter at the second end 34 of the body. In this example, the second part 38 has a constant gradient and the angle α subtended from the outer wall 360 of the first part 36 of the body 30 is around 40°.

Referring now to Figures 2, 3, 4An and 4b in particular the handle 20 has an outer wall 200 which extends from the body 30 to a distal end 24 of the handle. At the distal end 24 of the handle an end wall 210 extends across the outer wall 200. The cable 50 enters the hairdryer through this end wall 210. The primary inlet 40 in the handle 20 includes

first apertures that extend around and along 42 the outer wall 200 of the handle and second apertures that extend across 46 and through the end wall 210 of the handle 20. The cable 50 is located approximately in the middle of the end wall 210 so extends from the centre of the handle 20. The end wall 210 is orthogonal to the outer wall 200 and inner wall 220 of the handle.

It is preferred that the cable 50 extends centrally from the handle 20 as this means the hairdryer is balanced regardless of the orientation of the handle 20 in a users' hand. Also, if the user moves the position of their hand on the handle 20 there will be no tugging from the cable 50 as it does not change position with respect to the hand when the hand is moved. If the cable were offset and nearer one side of the handle then the weight distribution of the hairdryer would change with orientation which is distracting for the user.

Upstream of the primary inlet 40, a fan unit 70 is provided. The fan unit 70 includes a fan and a motor. The fan unit 70 draws fluid through the primary inlet 40 towards the body 30 through a fluid flow path 400 that extends from the primary inlet 40 and into the body 30 where the handle 20 and the body 30 are joined 90. The fluid flow path 400 continues through the body 30 towards the second end 34 of the body, around a heater 80 and to a primary fluid outlet 440 where fluid that is drawn in by the fan unit exits the primary fluid flow path 400. The primary fluid flow path 400 is non linear and flows through the handle 20 in a first direction and through the body 30 in a second direction which is orthogonal to the first direction.

The body 30 includes an outer wall 360 and an inner duct 310. The primary fluid flow path 400 extends along the body from the junction 90 of the handle 20 and the body 30 between the outer wall 360 and the duct 310 towards the primary fluid outlet 440 at the second end of the body 30.

Another fluid flow path is provided within the body; this flow is not directly processed by the fan unit or the heater but is drawn into the hairdryer by the action of the fan unit

producing the primary flow through the hairdryer. This fluid flow is entrained into the hairdryer by the fluid flowing through the primary fluid flow path 400.

The first end 32 of the body includes a fluid inlet 320 and the second end 34 of the body includes a fluid outlet 340. Both the fluid inlet 320 and the fluid outlet 340 are at least partially defined by the duct 310 which is an inner wall of the body 30 and extends within and along the body. A fluid flow path 300 extends within the duct from the fluid inlet 320 to the fluid outlet 340. At the first end 32 of the body 30, a side wall 350 extends between the outer wall 360 and the duct 310. This side wall 350 at least partially defines the fluid inlet 320. At the second end 34 of the body a gap 370 is provided between the outer wall 360 and the duct, this gap 370 defines the primary fluid outlet 440. The primary fluid outlet 440 is annular and surrounds the fluid flow path. The primary fluid outlet 440 may be internal so the primary fluid flow path 400 merges with the fluid flow path 300 within the body 30. Alternatively, the primary fluid outlet 440 is external and exits from the body 30 separately to the fluid from the fluid flow path 300 at the fluid outlet 340.

The outer wall 360 of the body converges towards the duct 310 and a centre line A-A of the body 30. Having an outer wall 360 that converges towards the duct 310 has the advantage that the primary flow exiting the primary fluid outlet 440 is directed towards the centre line A-A of the body 30. The fluid exiting the primary fluid outlet 440 will cause some external entrainment of fluid 490 from outside the hairdryer due to the movement of the fluid from the primary outlet 440. This effect is increased by the outer wall 360 converging towards the duct 310. Partly this is because the primary flow is focused rather than divergent and partly this is because of the slope of the outer wall 360 of the body 30 towards the second end 34 of the hairdryer.

The duct 310 is an internal wall of the hairdryer that can be accessed from outside the hairdryer. Thus, the duct 310 is an external wall of the hairdryer. The duct 310 is recessed within the body 30 so the side wall 350 that connects between the outer wall

360 and the duct 310 is angled with respect to the outer wall 360. The angle β is around 115° from a line subtended by the outer wall 360 of the body 30 (Figure 4b).

A PCB 75 including the control electronics for the hairdryer is located in the body 30 near the side wall 350 and fluid inlet 320. The PCB 75 is ring shaped and extends round the duct 310 between the duct 310 and the outer wall 360. The PCB 75 is in fluid communication with the primary fluid flow path 400. The PCB 75 extends about the fluid flow path 300 and is isolated from the fluid flow path 300 by the duct 310.

The PCB 75 controls such parameters as the temperature of the heater 80 and the speed of rotation of the fan unit 70. Internal wiring (not shown) electrically connects the PCB 75 to the heater 80 and the fan unit 70 and the cable 50. Control buttons 62, 64 are provided and connected to the PCB 75 to enable a user to select from a range of temperature settings and flow rates for example.

In use, fluid is drawn into the primary fluid flow path 400 by the action of the fan unit 70, is optionally heated by the heater 80 and exits from the primary fluid outlet 440. This processed flow causes fluid to be entrained into the fluid flow path 300 at the fluid inlet 320. The fluid combines with the processed flow at the second end 34 of the body. In the example shown in Figure 3, the processed flow exits the primary fluid outlet 440 and the hairdryer as an annular flow which surrounds the entrained flow that exits from the hairdryer via the fluid outlet 340. Thus fluid that is processed by the fan unit and heater is augmented by the entrained flow.

Figures 5 to 7 all show exploded views of the different parts that the hairdryer 10 is formed from. Instead of a conventional clamshell hairdryer having two outer parts which require external fixings such as screws this hairdryer is made without such external fixings.

A first piece is the outer wall 200 of the handle 20 including the primary inlet 40 and cable 50. A second piece comprises the duct 310 and side wall 350 of the body 30. A

third piece is the outer wall 360 of the body 30 and an inner wall 220 of the handle 20. The second and third pieces are manufactured as single units. This has two advantages; a first is that it enables tight tolerances to be reproduced between the duct 310 and the outer wall 360 of the body 30 and the second is that there are no unseemly joins in the body 30. By manufacturing the hairdryer out of these three main components, both the function and the form of the hairdryer are easily maintained. In addition, there is a safety aspect as an end user would find is difficult to dissemble the hairdryer using normal household tools.

The third piece comprising outer wall 360 of the body 30 and inner wall 220 of the handle 20 are moulded as a one piece unit from a plastic material. The second piece comprising the duct 310 and the side wall 350 is also moulded from a plastic material. Suitable plastic materials include polycarbonate, glass-filled PPA (Polyphthalamide), PPS (Polyphenylene Sulphide), LCAP (Liquid Crystal Aromatic Polymer) or PEEK (Polyether ether ketone) and the skilled person will appreciate that this list is not exhaustive. The outer wall 200 of the handle 20 can be made from any of a number of suitable materials but is preferably made from aluminium, an alloy of aluminium a steel or a stainless steel.

In order to assembly internal components of the hairdryer an access hatch 222 is provided in the inner wall 220 of the handle 20. This enables the fan unit 70 to be positioned and wiring that connects the fan unit 70, the heater 80, control buttons 62, 64 and PCB 75 to the cable 50 to be connected simply and with relative speed. The heater 80 and PCB 75 are located around the duct 310 which is inserted into the body 30, the wiring is connected and the access hatch 222 is placed over the corresponding hole 224 in the inner wall 220 of the handle 20. The side wall 350 seals the first end 32 of the body 30. This stops both two things, fluid being entrained into the primary fluid flow path 400 at the first end 32 of the body and fluid that has been processed by the fan unit 70 from exiting the body 30 at the first end 32.

In the example shown with respect to Figures 5, 6 and 7 the control buttons 62 on the handle are on the side of the handle that faces the fluid outlet 340.

The hatch 222 needs to be of a size large enough to enable wiring connections to be made to the electrical components and can be at any location around the handle. The hatch may extend for the whole length of the inner wall 220 and is locatable at any orientation around the inner wall 220.

Referring now particular for Figures 3, 4An and 5 to 7, the construction of the handle will be discussed. The handle 20 has an outer wall 200 and an inner wall 220. The inner wall 220 is a duct which surrounds and defines a primary fluid flow path 400 through the hairdryer. The outer wall 200 includes a grippable portion and in this example, includes the primary inlet 40 into the primary fluid flow path 400. Within the inner 220 wall, an insulting layer of material 212 is provided. The insulating layer is a foam or a felt and insulates the handle from noise produced by the fan unit 70, heat produced by the operation of the hairdryer, vibrations caused by the fan unit and noise produced within the hairdryer by the flow of fluid through the primary fluid flow path 400.

Alternatively or additionally, insulating layer of material 212 is provided between the outer wall 210 and inner wall 220. This is described in relation to Figure 8a.

As a minimum, the insulating material 212 is positioned around the fan unit 70 and preferably around the access hatch 222. However, it is preferred that the insulating material 212 is substantially continuous around the inner 220 wall and extends for the length of the inner wall 220 of the handle as this has the most impact on insulating the handle. The insulating material 212 may also extend around the primary inlet 40 to reduce any noise produced directly by fluid being drawn into the primary fluid flow path 400.

In this example, the outer wall 200 includes the primary fluid inlet 40; however it is not essential that the outer wall extends over the entire length of the inner wall 20. The outer wall 200 should extend over the access hatch 222 and the region of the handle 20 that contains the fan unit 70 for insulation purposes and for aesthetic and safety reasons to both hide and prevent access to the access hatch 222 by a user. In the event that the outer wall 200 does not extend the entire length of the inner wall 220, then either the inner wall 220 would comprise the inlet 40 at its' distal end from the junction 90 with the body 30 or a separate inlet body attachable to the outer wall 200 and/or inner wall 220 could be provided.

The outer wall 200 is positioned with respect to the inner wall 220 and then secured in place. The outer wall 200 is for example, secured by plasma welding as this prevents user removal and thus access to sensitive components and also provides a clean join.

Figures 8An and 8b show an alternate hair care appliance having a similar primary inlet 540. In this example, the hair care appliance is a hot styling brush 500 and it has a handle 520 and a detachable head 530 which is attachable at the distal end 522 of the handle 520 to the primary inlet 540.

The handle 520 has an outer wall 526 which is generally tubular and includes the primary inlet 540 at and adjacent one end 524. The primary inlet 540 comprises a first set of apertures 544 which extend radially around the handle 520 and along the outer wall 526 of the handle from the handle end 524. The handle end 524 is covered by an end wall 510 which is also perforated with a second set of apertures 546 that extend through the end wall 510 of the handle. Thus, the primary inlet 540 extends around, along and across the handle 520. The end wall 510 is orthogonal to the outer wall 526 and inner wall 560 of the handle.

The handle 520 also includes a fan unit 570 which comprises a fan and a motor which drives the fan and in use, draws fluid in through the primary inlet 540, along a fluid

flow path 550 which extends through the length of the handle 520. The fluid is optionally heater by a heater 580 before entering an inner cavity 538 of the head 530.

The head 530 includes a fluid outlet which in this example comprises two sets of parallel slots 534 each extending towards an end 536 of the head and radially around the head 530 with one set of slots 534a being upstream of a second set of slots 534b. This arrangement enables fluid to exit the head all the way around the head and for the majority of the length of the head 530 maximising a hair styling region of the product.

The head 530 also includes bristles 532 which extend radially away from the head 530. The bristles 532 are formed as parallel lines which extend radially around the head. Each set of bristles is located between two adjacent slots 534 but bristles need not be provided between every pair of slots.

In use, hair is wrapped around the head 530. The bristles 534 retain the hair whilst hot air or fluid exits through the slots drying the hair and styling the hair into curls or waves.

Power is provided to the appliance via a power cable 548 which preferably extends from a plug or other power source through the end wall 510 of the handle 520. The handle 520 also houses a PCB 575 which is electrically connected to the cable 548, the fan unit 570 and the heater 580 by internal wiring (not shown). Control buttons 555 are provided and connected to the PCB 575 to allow the user to select one of a range of temperature and flow settings. The control buttons 555 are push buttons or slide buttons, for example.

The handle 520 has an outer wall 526 and an inner wall 560. The inner wall 560 is a duct which surrounds and defines a fluid flow path 550 through the appliance. The outer wall 526 includes a grippable portion and in these examples, includes the primary inlet 540 into the fluid flow path 550. Inbetween the outer 526 and inner 560 walls, an insulting layer of material 528 is provided. The insulating layer is a foam or a felt and

insulates the handle from noise produced by the fan unit 570, heat produced by the operation of the appliance, vibrations caused by the fan unit and noise produced within the appliance by the flow of fluid through the fluid flow path 550.

As a minimum, insulating material is positioned around the fan unit 570. However, it is preferred that the insulating material 528 is substantially continuous between the outer 526 and inner 560 handles and extends for the length of the inner wall 560 of the handle as this has the most impact on insulating the handle. The insulating material 528 may also extend around the primary inlet 540 to reduce any noise produced directly by fluid being drawn into the fluid flow path 550.

The primary inlet 40, 540 comprises a plurality of apertures extending around, along and across the handle 20, 520. Having an inlet that extends in three dimensions has advantages particularly when used with hair grooming appliances. Firstly, if the appliance is placed on a surface whilst switched on only a small part of the inlet surface area will be blocked or have restricted flow of fluid into the appliance. This protects the fan unit and particularly the motor of the fan unit from running with too low a flow rate as this can cause overheating of the motor and cause damage to the motor.

Secondly, often hair care appliances are used with a styling product such as a mousse, gel or spray. These products are typically either applied by a hand or directly to the hair as a mist. After application by a hand, some of the product will be retained on the skin which is then transferred to the appliance when held. This can block at least some of the apertures 42, 544 that extend around and along the handle 20, 520. However, the apertures 44. 546 that extend under the handle and across the end wall 210, 510 of the handle will be unaffected. When a product is applied as a mist, it can settle on the appliance and again block or restrict at least some of the apertures of the primary inlet 40, 540. However, by having apertures that extend around along and across the handle 20, 520 the risk of blocking the primary inlet 40, 540 is reduced.

The apertures are preferably circular with a diameter of 0.2 to 1.6 mm. The diameter of the apertures can vary along, around and across the handle 20, 520. It is advantageous to space the apertures regularly around, along and across the primary inlet 40, 540. Not only is this visually pleasing but it also has the technical advantage that there is no weak region of the primary inlet 40, 540 where blockage of a portion is more likely or would have more impact on the flow into the primary inlet 40, 540. The inlet is designed so that the flow into the inlet is even at least around the circumference of the handle 20, 520.

It is preferred that the handle is made from a metallic material so any styling product that sticks to the handle and does block the primary inlet 40, 540 is easily removed and only temporarily blocks any apertures.

Referring now to Figures 9 and 10, the hairdryer 10 includes two sets of control buttons 62, 64. A first set 62 is provided on the handle 20 and a second set 64 on the body 30. Conveniently, the two sets of buttons 62, 64 are located so they can all be accessed by one digit. In normal use this digit is the thumb, but if the hairdryer is held differently it may be a finger. The first set 62 are provided on the handle 20 on the same side of the handle 20 as the body inlet 320. The second set 64 are provided on the side wall 350 of the body 30. An as example, the first set 62 can include an on button 62An and a cold shot button 62b and the second set 64 can include a heater control button 64An and a flow control button 64b.

One advantage of having the buttons located on one side or end of the hairdryer is that all the control buttons 62, 64 can be seen by a user at the same time making use of the hairdryer and changes to parameters such as flow rate and temperature simplified.

Another advantage is that the control electronics are in one region of the handle 20. This is particularly advantageous when the primary flow path 400 is through the handle as there are is no wiring to be routed around the handle to the front face i.e. that side of the handle 20 that faces the outlets 340, 440 of the hairdryer.

A third advantage is that the second set of control buttons 64 is mounted directly onto the PCB 75. This not only simplifies the production of the hairdryer but also improves reliability as there are fewer electrical connections within the hairdryer.

The control buttons 62, 64 can be depressible buttons or slidable controls or a mixture of differently actuated controls. It is preferred that the control buttons 62, 64 stand proud of the surface in which they are located as this enables a user to find the required button by feel alone.

The PCB 75 will now be discussed in particular with reference to Figures 3, 4b, 11a, 11b, 12a 12b, and 12c. The PCB 75 is annular or ring shaped and extends around the duct 310 and between the duct 310 and the outer wall 360. In this example, the PCB has two boards, a first board 75a which extends all the way round the duct 310 and a second board 75b adjacent of and downstream of the first board 75a. The second board 75b extends only partially around the duct 310 and about the fluid flow path 300.

The PCB 75 houses a number of different components each of which extend away from the board on which it is mounted by a different amount. Referring in particular to Figures 3, 4b, 12a 12b, and 12c, large components 77 such as capacitors, are positioned on the first board 75a radially away from the second board 75b. This has a number of advantages such as the PCB 75 is made as compact as possible as the smaller components or those which extend least away from the board on which they are mounted are double stacked whereas the larger components or those that extend the furthest from the board on which they are mounted are single stacked.

Another advantage to this arrangement on the PCB 75 in is flow management of fluid in the primary fluid flow path 400 as the primary fluid flow path moves from the handle 20 into the body 30. Referring to Figures 3, 4b 12b, and 12c, the handle 20 is generally tubular and the primary fluid flow path 400 is generally circular as it enters the junction 90 between the handle 20 and the body 30. At this point the primary fluid flow path

400 changes direction by 90° and from a circular flow to an annular flow around the duct 310 between the duct 310 and the outer wall 360 of the body 30. These changes affect the velocity of flow in the primary fluid flow path 400.

If we consider that the body 30 is generally symmetrical about a centre line A-A which extends along the length of the body 30, the duct 310 and outer wall 360 are concentric as is the heater 80 located between the duct 310 and the outer wall 360. When the fluid in the primary fluid flow path 400 reaches the junction 90 between the body 30 and the handle 20, the fluid must change both direction and shape. This creates a region of high velocity flow in the body 30 by the junction 90 and a region of lower velocity flow radially spaced within the body 30 from the junction 90. If we consider the body 30 to have an upper half 380 and a lower half 390 where the upper half 380 is radially spaced away from the handle 20 and the lower half 390 includes the junction 90 between the body 30 and the handle 20 then the lower half 390 has flow at a relatively higher velocity than the upper half 380.

The PCB 75 is orientated so that larger components 77 are located in the upper half 380 in the relative lower velocity flow radially away from the region of relatively high velocity so that their impact on the velocity of flow within the hairdryer is reduced. The double layer 75a, 75b PCB is located in the lower half 390 as this part of the PCB 75 extends less into the primary fluid flow path 400.

In addition, a flow plate 700 is provided to curve or direct the flow within the primary fluid flow path 400 over and around the PCB 75 to further minimise any pressure losses due to the location of the PCB and due to the change of direction of the primary fluid flow path 400 as it enters the body 30. The flow plate 700 is annular with a curved section 710 (Figures 3, 4b, 11a, 11b, 12a 12b, and 12c) that provides a smooth change in orientation or direction for the primary fluid flow path 400. By providing a curved surface 710 flow is directed around the corner reducing noise produced by the orthogonal change in direction and reducing any pressure loss or loss of velocity of the fluid. The entire flow plate 700 could be curved however, the benefits are seen by

merely having the part of the flow plate 700 that is located in the lower half 390 of the body 30 having a curved surface 710.

The flow plate 700 is adjacent the PCB 75 and advantageously, the flow plate 700 is connected to the PCB 75 via a connecting bridge 720. The flow plate 700 is made from a conducting material preferably a metallic material such as aluminium or an alloy thereof so this bridge 720 provides a heat sink for the PCB 75 drawing heat from the components of the PCB and conducting that heat into the fluid flowing through the fluid flow path as it passes the flow plate 700.

In addition, the flow plate 700 serves as a thermal barrier for the PCB 75 and temperature sensitive components mounted thereon. A heater 80 is located within the body 30 downstream of the junction 90 between the body 30 and the handle 20 and the PCB 75 and when fluid is flowing through the primary fluid flow path 400 i.e. when the hairdryer is switched on the majority if not all of the heat produced by the heater 80 will be taken to the primary fluid outlet 440. However, when the hairdryer is turned off or onto stand-by, the heater will emit residual heat which will radiate both upstream and downstream so the flow plate ideally also acts as a thermal barrier for the PCB 75.

The flow plate 700 does not seal the PCB 75 against fluid in the fluid flow path 400 rather it enables fluid to flow around the PCB 75 either through openings 730 (Figure 4b in particular) between the flow plate 700 and the body 30 or slots 740 within the flow plate (Figure 12a).

The flow plate 700 has another function. In the event of a failure of one or more components such as a capacitor on the PCB 75, the flow plate 700 acts as a deflector plate which deflects any debris and/or electrolyte from a component failure back towards the side wall 350 and protects against the debris and/or electrolyte from entering the primary fluid flow path 400 where it would encounter the heater 80 and the primary fluid outlet 440.

Figures 13 to 16 show various views of a hairdryer 10 having an attachment 600 for changing a parameter of fluid output from the hairdryer. The attachment 600 comprises a bung 610 and an outer wall 660. Between the bung 610 and outer wall 660 an attachment fluid flow path 620 extends from an attachment fluid inlet 630 to an attachment fluid outlet 640. At the upstream end 660a of the outer wall 660 a ring of magnetic material 662 is provided. The ring of magnetic material 662 is recessed into or embedded in an upstream face 664 of the upstream end 660a of the outer wall 660.

The hairdryer 10 includes a number of magnets 364 radially spaced around an end wall 362 at the second end 34 of the hairdryer 10 (Figures 3 and 4a). The end wall 362 extends radially inwards of the outer wall 360 of the body 30. These magnets 364 couple with the ring of magnetic material 662 when the attachment 600 is attached to the hairdryer 10.

Alternatively, the end wall 362 of the hairdryer 10 can include a ring of magnetic material and the attachment can include point magnets radially spaced around or another ring of magnetic material. Only one part of the magnetic connection needs to be magnetised, the other merely needs to be magnetically attracted to the magnetised part.

The use of a magnetic connection between the hairdryer and an attachment has a number of advantages, particularly when used with this type of hairdryer 10 i.e. one having an inner bore 300 defined by a duct 310 and components 77, 80 which extend around the bore. The spacing and maintaining the spacing between the duct 310 and the outer wall 360 of the hairdryer 10 along the length of the body 30 is important. If the duct 310 were pushed to one side within the body 30, the heater 80 could become damaged, fluid flow compromised and hot spots could appear on the outer wall 360. Thus, when an attachment is attached and removed, it is important not to introduce extra stress or strain on the hairdryer 10. Traditional push and snap fit and friction fit methods of attachment could do this. However, magnetic attachment provides consistent positioning at a known force. In addition if the product is dropped or

knocked the magnetic force attracting the two parts can be set at a level which allows the attachment to snap off.

The force between the magnets can be manipulated in a number of ways. The use of discrete or point magnets is one way. A ring of magnetic material is an alternative. This could be a solid ring of a magnetic material such as iron or could comprise flakes of magnetic material moulded within a suitable substrate such as an epoxy resin. The ring of material can be fully exposed, partially exposed or concealed behind the end wall of the hairdryer. Referring now to Figures 17An and 17b two alternative constructions are discussed. Both options have the end wall 362 extending radially inwards of the outer wall 360 of the body. Figure 17a shows an L-shaped ring of magnetic material 700 having a first leg 710 which engages the inner surface 362a of the front face 362of the outer wall and a second leg 720 which extends from the first leg 710 towards the outer surface of the end wall 362. The second leg 720 may be flush with the outer surface. Figure 17b shows an alternate construction where the ring of magnetic material 730 is positioned against the inner surface 362a of the end wall 362 and is completely concealed behind the end wall 362.

The ring of magnetic material 662 on the attachment 600 may also be fully exposed, partially concealed or fully concealed at the upstream face 664. When partially or fully exposed magnetic parts are used, both parts of the magnetic attachment 700, 662 are preferably flush with the respective end wall 362 and upstream face 664. Alternatively the two parts of the magnet are shaped to engage mechanically as well as magnetically. For example by the provision of one recessed magnet and one proud of the respective end wall and upstream face or a stepped surface to the magnets.

For the embodiments where the magnet is exposed, it is preferably covered in an anti scratch coating 722 (Figure 17a) such as PTFE. This is advantageous as it allows for the attachment to be rotated with respect to the body of the appliance without damage to mating surfaces.

In the embodiments shown and referring to Figures 13, 14a and 14b in particular, the attachment 600 is a concentrator nozzle i.e. it concentrates the flow into a smaller area. The primary fluid flow path 400 of the hairdryer has an annular primary fluid outlet 440 and this provides a relatively large cross sectional area of heated fluid. The attachment 600 has an attachment fluid outlet 640 which is generally rectangular with its' long side 670 being similar to the diameter of the primary fluid outlet 440 (it may be bigger or smaller) and the short side 680 being significantly smaller than the diameter of the primary fluid outlet 440 and the long side 670 . A concentrator nozzle 600 concentrates the flow over a smaller area providing a user with a directed flow. As the attachment 600 is rotatable with respect to the body 30 and can be positioned in any orientation with respect to the body 30, the flow from the attachment can be orientated horizontally or vertically or at any angle inbetween enabling the user to have fine control over drying.

Referring to Figures 13 to 16, when the attachment 600 is attached to a hairdryer 10, the outer wall 660 forms a continuation of the hairdryer outer wall 360. The bung 610 has two parts a cone 612 and a base 614. The cone 612 extends within the attachment 600 forming a point 616 towards the attachment fluid outlet 640 and directs flow from the primary fluid outlet 440 of the hairdryer towards the attachment fluid outlet 640. The cone 612 defines with the outer wall 660 the limits of the attachment fluid flow path 620. The base 614 is upstream of the cone 612 and limits flow from the fluid flow path 300 by extending into the end of the duct 310 forming a loose bung. The attachment fluid flow path 620 is in fluid communication with the primary fluid flow path 400 of the hairdryer 10 so fluid from the primary fluid flow path 400 is emitted from the attachment fluid outlet 640.

The invention has been described in detail with respect to a hairdryer and a hot styling brush however, it is applicable to any appliance that draws in a fluid and directs the outflow of that fluid from the appliance.

The appliance can be used with or without a heater; the action of the outflow of fluid at high velocity has a drying effect.

The attachment described has been a concentrating attachment however, magnetic attachment of any nozzle shape, size or with any function is possible.

The fluid that flows through the appliance is generally air, but may be a different combination of gases or gas and can include additives to improve performance of the appliance or the impact the appliance has on an object the output is directed at for example, hair and the styling of that hair.

The invention is not limited to the detailed description given above. Variations will be apparent to the person skilled in the art.

CLAIMS

1. A hair care appliance comprising a handle, the handle comprising a wall and an outer wall wherein the wall defines a primary fluid flow path that extends from a primary fluid inlet into the appliance and the outer wall is an external surface of the appliance.

2. An appliance according to claim 1, wherein the outer wall extends substantially continuously around the wall.

3. An appliance according to claim 1 or claim2, wherein the outer wall extends substantially along the wall.

4. An appliance according to any preceding claim, wherein an insulating layer is provided between the wall and the outer wall.

5. An appliance according to claim 4, wherein the insulating layer is substantially continuous around the wall.

6. An appliance according to claim 4 or claim 5, wherein the insulating layer is substantially continuous along the wall.

7. An appliance according to any of claims 4 to 6, wherein the insulating layer mitigates one or more of noise, vibration and heat produced by the appliance.

8. An appliance according to any of claims 4 to 7, wherein the insulating material is a foam or a felt.

9. An appliance according to any preceding claim, wherein the outer wall is formed from a metal.

10. An appliance according to claim 9, wherein the metal is aluminium or an aluminium alloy.

11. An appliance according to any preceding claim, wherein the wall is formed from a plastic material.

12. An appliance according to claim 11, wherein the plastic material is one of polycarbonate, glass filled PPA, PPS, LCAP or PEEK.

13. An appliance according to any preceding claim, wherein the handle includes a fan unit for drawing fluid into the primary fluid inlet and along the primary fluid flow path.

14. An appliance according to any preceding claim, wherein the handle comprises a first end and a second end wherein the primary fluid inlet is at or near the second end.

15. An appliance according to claim 14, wherein the primary fluid inlet comprises a first aperture extending at least partially around the handle and a second aperture extending through the second end of the handle.

16. An appliance according to claim 14 or claim 15, wherein the handle comprises an end wall at the second end and the second aperture extends through the end wall.

17. An appliance according to claim 16, wherein the end wall is substantially orthogonal to the handle.

18. An appliance according to any of claims 14 to 17, wherein the first aperture is adjacent the second end of the handle.

19. An appliance according to any of claims 14 to 18, wherein a power cable for supplying power to the fan unit is provided, the power cable extending through the second end of the handle.

20. An appliance according to claim 19, wherein the power cable extends substantially centrally thorough the second end of the handle.

21. An appliance according to any of claims 13 to 20, wherein the handle includes a heater for heating fluid drawn into the primary fluid inlet.

22. An appliance according to claim 21, wherein the heater is downstream of the fan unit

23. An appliance according to any preceding claim comprising a head attachable to the handle, the head comprising a primary fluid outlet for the appliance.

24. An appliance according to claim 23, wherein the primary fluid outlet comprises a plurality of apertures extending at least partially along and around the head.

25. An appliance according to claim 23 and 24, wherein the primary fluid flow path is substantially linear through the handle and into the head.

26. An appliance according to any of claims 1 to 22, comprising a body having a primary fluid outlet, wherein the primary fluid outlet is in fluid communication with the primary fluid inlet and the primary fluid flow path.

27. An appliance according to claim 26, wherein the primary fluid flow path from the primary fluid inlet to the primary fluid outlet is non linear.

28. An appliance according to claim 27, wherein the primary fluid flows within the handle in a first direction and within the body in a second direction.

29. An appliance according to claim 27 or claim 28, wherein the primary fluid flow in the body is substantially orthogonal to the primary fluid flow in the handle.

30. An appliance according to any of claims 26 to 29, wherein the body comprises a fluid flow path extending from a fluid inlet in the body to a fluid outlet.

31. An appliance according to claim 30, wherein the fluid flow path merges with the primary fluid flow path within the body.

32. An appliance according to claim 31, wherein fluid in the primary fluid flow path exits the body by the primary fluid outlet.

33. An appliance according to any of claims 30 to 32, wherein fluid in the fluid flow is entrained into the body by the action of a fan unit in the primary fluid flow path.

34. An appliance according to any of claims 30 to 33, wherein the fluid flow path is defined by a duct extending through the body.

35. An appliance according to any of claims 30 to 34, wherein the fluid flow path extends from a fluid inlet to a fluid outlet.

36. An appliance according to any of claims 26 to 35, wherein the body comprises a heater for heating fluid in the primary fluid flow path.

37. An appliance according to claim 36, wherein the heater extends around the duct.

38. An appliance according to claim 36 or claim 37, wherein the heater extends along the body.

39. An appliance according to any of claims 36 to 38, wherein the heater is annular.

40. A handheld appliance comprising a handle, the handle comprising a wall and an outer wall wherein the wall defines a primary fluid flow path that extends from a primary fluid inlet into the appliance and the outer wall is an external surface of the appliance.

41. An appliance according to claim 40, wherein the outer wall extends substantially continuously around the wall.

42. An appliance according to claim 40 or claim 41, wherein the outer wall extends substantially along the wall.

43. An appliance according to any of claims 40 to 42, wherein an insulating layer is provided between the wall and the outer wall.

44. An appliance according to claim 43, wherein the insulating layer is substantially continuous around the wall.

45. An appliance according to claim 43 or claim 44, wherein the insulating layer is substantially continuous along the wall.

46. An appliance according to any of claims 43 to 45, wherein the insulating layer mitigates one or more of noise, vibration and heat produced by the appliance.

47. An appliance according to any of claims 43 to 46, wherein the insulating material is a foam or a felt.

48. An appliance according to any of claims 40 to 47, wherein the outer wall is formed from a metal.

49. An appliance according to claim 48, wherein the metal is aluminium or an aluminium alloy.

50. An appliance according to any of claims 40 to 49, wherein the wall is formed from a plastic material.

51. An appliance according to claim 50, wherein the plastic material is one of polycarbonate, glass filled PPA, PPS, LCAP or PEEK.

52. An appliance according to any of claims 40 to 51, wherein the handle includes a fan unit for drawing fluid into the primary fluid inlet and along the primary fluid flow path.

53. An appliance according to any of claims 40 to 52, wherein the handle comprises a first end and a second end wherein the primary fluid inlet is at or near the second end.

54. An appliance according to claim 53, wherein the primary fluid inlet comprises a first aperture extending at least partially around the handle and a second aperture extending through the second end of the handle.

55. An appliance according to claim 53 or claim 54, wherein the handle comprises an end wall at the second end and the second aperture extends through the end wall.

56. An appliance according to claim 55, wherein the end wall is substantially orthogonal to the handle.

57. An appliance according to any of claims 54 to 56, wherein the first aperture is adjacent the second end of the handle.

58. An appliance according to any of claims 54 to 57, wherein a power cable for supplying power to the fan unit is provided, the power cable extending through the second end of the handle.

59. An appliance according to claim 58, wherein the power cable extends substantially centrally thorough the second end of the handle.

60. An appliance according to any of claims 52 to 59, wherein the handle includes a heater for heating fluid drawn into the primary fluid inlet.

61. An appliance according to claim 60, wherein the heater is downstream of the fan unit

62. An appliance according to any of claims 40 to 61 comprising a head attachable to the handle, the head comprising a primary fluid outlet for the appliance.

63. An appliance according to claim 62, wherein the primary fluid outlet comprises a plurality of apertures extending at least partially along and around the head.

64. An appliance according to claim 62 and 63, wherein the primary fluid flow path is substantially linear through the handle and into the head.

64. An appliance according to any of claims 40 to 61, comprising a body having a primary fluid outlet, wherein the primary fluid outlet is in fluid communication with the primary fluid inlet and the primary fluid flow path.

65. An appliance according to claim 64, wherein the primary fluid flow path from the primary fluid inlet to the primary fluid outlet is non linear.

66. An appliance according to claim 65, wherein the primary fluid flows within the handle in a first direction and within the body in a second direction.

67. An appliance according to claim 65 or claim 66, wherein the primary fluid flow in the body is substantially orthogonal to the primary fluid flow in the handle.

68. An appliance according to any of claims 64 to 67, wherein the body comprises a fluid flow path extending from a fluid inlet in the body to a fluid outlet.

69. An appliance according to claim 68, wherein the fluid flow path merges with the primary fluid flow path within the body.

70. An appliance according to claim 69, wherein fluid in the primary fluid flow path exits the body by the primary fluid outlet.

71. An appliance according to any of claims 68 to 70, wherein fluid in the fluid flow is entrained into the body by the action of a fan unit in the primary fluid flow path.

72. An appliance according to any of claims 68 to 71, wherein the fluid flow path is defined by a duct extending through the body.

73. An appliance according to any of claims 68 to 72, wherein the fluid flow path extends from a fluid inlet to a fluid outlet.

74. An appliance according to any of claims 68 to 73, wherein the body comprises a heater for heating fluid in the primary fluid flow path.

75. An appliance according to claim 74, wherein the heater extends around the duct.

76. An appliance according to claim 74 or claim 75, wherein the heater extends along the body.

77. An appliance according to any of claims 74 to 76, wherein the heater is annular.

Intellectual Property Office

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Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-3, 9-14, 18-26, 30, 36, 40-42, 48-53, 60-64	EP0300281 A (FORFEX) see double walled handle in figure 1
A	1	US2011/0079239 A1 (HALL) see whole document

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

A45D

The following online and other databases have been used in the preparation of this search report

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NAME	COUNTRY
DYSON TECHNOLOGY LTD	GB

APPL-NO: GB 201312068 A
APPL-DATE: July 5, 2013

PRIORITY-DATA:

PRIORITY-NO	PRIORITY-APPL-DATE
GB 201312068 A	20130705

CPC-CURRENT:

TYPE	CPC/DATE
CPCI	A45D20/10 20130101
CPCI	A45D20/50 20130101
CPCI	A45D20/00 20130101

INT-CL-CURRENT:

TYPE	IPC/DATE
IPCP	A45D20/12 20060101
IPCS	A45D20/52 20060101

REF-CITED:

PHASE-COUNTRY/NUMBER/KIND/DATE-NPL-INFO

SER US 2011079239 A1 20110407

SER EP 0300281 A1 19890125

ABSTRACT:

A hand held appliance such as a hair dryer 10 comprises a handle 20 which has a wall 220 and an outer wall 200. The wall 220 defines a primary fluid flow path (400, fig.3) that extends from a primary fluid inlet 40 into the appliance. The outer wall 200 is an external surface of the appliance. The outer wall 200 may extend substantially continuously around and along the wall 220. An insulating layer 212, may be provided, preferably positioned between the wall 220 and the outer wall 200. The insulating layer 212 may be substantially continuous around and along the wall and may mitigate one or more of noise, vibration and heat produced by the appliance. The handle 20 may include a fan unit (70, fig. 3) for drawing fluid into the primary fluid inlet 40 and along the primary fluid flow path (400, fig.3).

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Application Number	14/323,937
Filing Date	July 3, 2014
First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3743
Examiner Name	K. Rinehart
Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/S.G./	1.	US-3,265,075	08-09-1966	Edman et al.	
/S.G./	2.	US-4,506,454	03-26-1985	Kerschgens	
/S.G./	3.	US-5,121,463	06-09-1992	Yoshihara	
/S.G./	4.	US-5,954,064	09-21-1999	Motherhead	
/S.G./	5.	US-8,496,028	07-30-2013	Nelson et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
/S.G./	6.	NL-2001375	09-15-2009	Miriam Hendrika Johanna Margaretha Van Loon; Patricia Johanna Maria Christina van Loon (Miriam Hendrika Johanna Margaretha Van LOON et al.)	English language Abstract	

Examiner Signature		Date Considered	

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NON PATENT LITERATURE DOCUMENTS

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/S.G./	7.	Moloney et al. , Office Action mailed July 15, 2015, directed to U.S. Application No. 14/323,864; 9 pages	
/S.G./	8.	Moloney et al., Office Action mailed July 2, 2015, directed to U.S. Application No. 13/323,785; 11 pages	

Examiner Signature	/Stephen Gravini/	Date Considered	01/22/2016

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Examiner Name	K. Rinehart
Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

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	1.	US-2,088,189	07-27-1937	Ducart	
	2.	US-4,197,448	04-08-1980	Harigai	
	3.	US-4,232,454	11-11-1980	Springer	
	4.	US-4,250,902	02-17-1981	Ihara	
	5.	US-4,350,872	09-21-1982	Meywald et al.	
	6.	US-4,409,998	10-18-1983	Bauer	
	7.	US-4,596,921	06-24-1986	Hersh et al.	
	8.	US-4,635,382	01-13-1987	Bourdeau	
	9.	US-4,767,914	08-30-1988	Glucksman	
	10.	US-4,800,654	01-31-1989	Levin et al.	
	11.	US-5,133,043	07-21-1992	Baugh	
	12.	US-5,155,925	10-20-1992	Choi	
	13.	US-D350,413	09-06-1994	Feil	
	14.	US-D352,365	11-08-1994	Hansen et al.	
	15.	US-5,378,882	01-03-1995	Gong et al.	
	16.	US-5,444,215	08-22-1995	Bauer	
	17.	US-5,546,674	08-20-1996	Lange et al.	
	18.	US-5,572,800	11-12-1996	West	
	19.	US-5,598,640	02-04-1997	Schepisi	
	20.	US-5,681,630	10-28-1997	Smick et al.	
	21.	US-5,857,262	01-12-1999	Bonnema et al.	
	22.	US-5,875,562	03-02-1999	Fogarty	
	23.	US-5,956,863	09-28-1999	Allen	
	24.	US-5,996,243	12-07-1999	Chang et al.	
	25.	US-6,148,537	11-21-2000	Altamore	
	26.	US-2003/0041471	03-06-2003	Shaw, II	
	27.	US-6,203,349	03-20-2001	Nakazawa	
	28.	US-6,591,516	07-15-2003	Kamada et al.	
	29.	US-6,751,886	06-22-2004	Chang et al.	
	30.	US-2004/0163274	08-26-2004	Andrew et al.	
	31.	US-2004/0172847	09-09-2004	Saida et al.	
	32.	US-6,889,445	05-10-2005	Varona et al.	
	33.	US-2005/0229422	10-20-2005	Mattinger et al.	
	34.	US-2006/0075654	04-13-2006	Lin	
	35.	US-D550,813	09-11-2007	Lammel et al.	
	36.	US-2007/0294909	12-27-2007	Abdi et al.	
	37.	US-7,412,781	08-19-2008	Mattinger et al.	
	38.	US-2010/0064542	03-18-2010	Mulvaney et al.	
	39.	US-2010/0065545	03-18-2010	Chung et al.	
	40.	US-7,913,416	03-29-2011	Scieri	
	41.	US-2011/0079239	04-07-2011	Hall	
	42.	US-2011/0177711	07-21-2011	Park	

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First Named Inventor	Patrick Joseph William MOLONEY
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Examiner Name	K. Rinehart
Attorney Docket Number	424662077100

	43.	US-2011/0203128	08-25-2011	Rodrigues		
	44.	US-2011/0219636	09-15-2011	Rowling		
	45.	US-D646,354	10-04-2011	Gessi		
	46.	US-8,132,571	03-13-2012	Jackson		
	47.	US-2013/0111777	05-09-2013	Jeong		
	48.	US-D682,472	05-14-2013	Dyson et al.		
	49.	US-2013/0269200	10-17-2013	Moloney et al.		
	50.	US-2013/0269201	10-17-2013	Courtney et al.		
	51.	US-2013/0276320	10-24-2013	Courtney et al.		
	52.	US-2013/0276321	10-24-2013	Courtney et al.		
	53.	US-2013/0283630	10-31-2013	Courtney et al.		
	54.	US-2013/0283631	10-31-2013	Moloney et al.		
	55.	US-2013/0326898	12-12-2013	Quessard et al.		
	56.	US-D696,386	12-24-2013	Schoenherr et al.		
	57.	US-2014/0007448	01-09-2014	Courtney et al.		
	58.	US-2014/0007449	01-09-2014	Courtney et al.		
	59.	US-2014/0007450	01-09-2014	Yao		
	60.	US-D702,322	04-08-2014	Sieger		
	61.	US-8,782,920	07-22-2014	Marthinsen et al.		
	62.	US-D716,492	10-28-2014	Dyson et al.		
	63.	US-2015/0007442	01-08-2015	Gammack et al.		
	64.	US-2015/0007443	01-08-2015	Gammack et al.		
	65.	US-2015/0007854	01-08-2015	Moloney et al.		
	66.	US-2015/0007855	01-08-2015	Moloney et al.		

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	67.	GB-647,291	12-13-1950	Frederick George COOKE		
	68.	GB-953,057	03-25-1964	Aktiebolaget Electrolux		
	69.	FR-1387334	01-29-1965	Akihiko TERANISHI	Partial Translation	
	70.	FR-1408096	08-06-1965	Compagnie Française Thomson-Houston	Machine Translation	x
	71.	GB-1 446 385	08-18-1976	N.V. Philips' Gloeilampenfabrieken, LLC.		
	72.	GB-1 456 000	11-17-1976	Sunbeam Corporation (William R. HEMRICH et al.)		
	73.	CH-588 835	06-15-1977	Gimelli & Co. AG (Samuel GIMELLI)	Partial Translation	
	74.	DE-25 59 697	07-28-1977	Matsushita Electric Works, Ltd. (Sinji IHARA)	Corresponds to US 4,250,902 cited above	
	75.	GB 1 489 723	10-26-1977	AMP Incorporated		

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Examiner Name	K. Rinehart
Attorney Docket Number	424662077100

	76.	DE-26 18 819	11-17-1977	Dov. Z. GLUCKSMAN	Machine Translation	x
	77.	GB 1 539 485	01-31-1979	Conair Corporation		
	78.	JP-55-113408	09-02-1980	Toshiba	English language Abstract	
	79.	JP-58-32706	03-03-1983	Yoshitaka OHARA et al.	Machine Translation	x
	80.	WO-83/02753	08-18-1983	Skilten Electronics Limited (Stephen Randolph SKARSTEN et al.)		
	81.	EP-0 105 810	04-18-1984	The Bendix Corporation (Gordon Thomas COLLINS)		
	82.	JP-60-135700	07-19-1985	Matsushita Electrical Industrial Co., Ltd. (Shinichi FUJISHIMA)	Machine Translation	x
	83.	EP-0 300 281	01-25-1989	FORFEX Alfred Popp Haarpflegegeräte GmbH (Frank POPP)	English language Abstract	
	84.	EP-0 306 765	03-15-1989	Robert Krups Stiftung & Co. KG. (Hans-Dieter POWELEIT et al.)	Machine Translation	x
	85.	JP-1-27506	01-30-1989	Matsushita Electric Works Ltd.	English language Abstract	
	86.	JP-1-29208	01-31-1989	Matsushita Electric Works Ltd. (Okudaira YUZO et al.)	English language Abstract	
	87.	EP-0 400 381	12-05-1990	Attilio ZINETTI		
	88.	JP-4-221507	08-12-1992	Matsushita Electric Works, Ltd.	English language Abstract	
	89.	JP-5-7507	01-19-1993	SANYO Electric Co.; Tokyo SANYO Electric Co.	English language Abstract	
	90.	JP-5-130915	05-28-1993	Hitachi Maxell	Machine Translation	x
	91.	WO-94/23611	10-27-1994	Beautronix (Hong Kong) Limited (Harvey Edward COLLIS)		
	92.	DE-43 32 300	12-22-1994	Braun AG (Thorsten KORTMANN)	Machine Translation	x
	93.	JP-7-16113	01-20-1995	Toshiba Home Technology Corp (Tomio IURA)	Machine Translation	x
	94.	JP-3014299	08-08-1995	Kyushu Hitachi Maxel	Partial Translation	
	95.	JP-7-155219	06-20-1995	Matsushita Electric Works Ltd. (Kenji KAMATA)	Machine Translation	x

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First Named Inventor	Patrick Joseph William MOLONEY
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Examiner Name	K. Rinehart
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	96.	JP-8-343	01-09-1996	Matsushita Electric Works Ltd. (Kenji KAMATA)	Machine Translation	x
	97.	GB-2 295 056	05-15-1996	NEC Corporation (Yasuhiro KOBAYASHI et al.)		
	98.	DE-195 27 111	01-30-1997	Heike DOHMEN	Partial Translation	
	99.	GB-2 316 868	03-11-1998	Braun Aktiengesellschaft (Juergen BEHRENDT et al.)		
	100.	EP-0 970 633	01-12-2000	Manufactory Nelson France (Dominique GUENIN)	English language Abstract	
	101.	JP-2000-201723	07-25-2000	Hirokatsu NAKANO	Partial Translation	
	102.	JP-2001-37530	02-13-2001	Kiyoshi TAKESUE	Partial Translation	
	103.	JP-2002-238649	08-27-2002	Mikoma KK (Yukio MAKIDO)	Machine Translation	x
	104.	JP-2003-153731	05-27-2003	Matsushita Electric Works Ltd. (Hisafumi KODAMA)	Machine Translation	x
	105.	JP-2004-312	01-08-2004	Kyushu Hitachi Maxell KK	Partial Translation	
	106.	WO-2004/006712	01-22-2004	WELLA AKTIENGESELLSCHAFT (Detlef MATTINGER et al.)	English language Abstract	
	107.	JP-2004-113402	04-15-2004	Tescom KK (Yutaka AKITA)	Machine Translation	x
	108.	JP-2004-208935	07-29-2004	Matsushita Electric Works, Ltd. (Itaru SAIDA et al.)	Machine Translation - Corresponds with US 2004/0172847 cited above	x
	109.	EP-1 433 401	08-25-2004	Matsushita Electric Works, Ltd. (Itaru SAIDA et al.)		
	110.	JP-2004-293389	10-21-2004	Kyushu Hitachi Maxell Ltd. (Kenji ENDO)	Machine Translation	x
	111.	JP-2004-357763	12-24-2004	Kyushu Hitachi Maxell KK	Partial Translation	
	112.	JP-2005-546	01-06-2005	Matsushita Electric Works Ltd (K. ITO et al)	Partial Translation	
	113.	WO-2005/120283	12-22-2005	UKI International S.R.L. (Matteo MALETTI)		
	114.	EP-1 616 500	01-18-2006	Muster e Dikson Service S.p.A (Roberto COLOMBO)		
	115.	JP-2006-51181	02-23-2006	Hitachi Maxell (Hironobu NAGANO et al.)	Machine Translation	x
	116.	JP-2006-130181	05-25-2006	Masaharu NAKAMURA	Partial Translation	
	117.	JP-2006-181265	07-13-2006	Hitachi Maxell (Kenji ENDO)	Machine Translation	x
	118.	WO-2007/043732	04-19-2007	MALKEUN ELECTRONICS CO., LTD. (Jung Soon PARK)		

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First Named Inventor	Patrick Joseph William MOLONEY
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Examiner Name	K. Rinehart
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	119.	JP-2007-136121	06-07-2007	Toshifumi HIRAYAMA	Machine Translation	x
	120.	CN-200973446	11-14-2007	Qin WENLONG	Partial Translation	
	121.	CN-100353882	12-12-2007	Wella AG (Detlef MATTINGER et al.)	Corresponds to US 7,412,781 cited above	
	122.	FR-2 906 980	04-18-2008	SEB SA Societe Anonyme (Marc LEGRAIN et al.)	Machine Translation	x
	123.	FR-2 907 642	05-02-2008	SEB SA Societe Anonyme (Marc LEGRAIN)	Machine Translation	x
	124.	WO-2008/053099	05-08-2008	SEB S.A. (Marc LEGRAIN)	English language Abstract	
	125.	EP-2 000 042	12-10-2008	Tae-Jun OH		
	126.	CN-201328477	10-21-2009	Quan HONGYUN	Machine Translation	x
	127.	CN-201341553	11-11-2009	Shenzhen Shenchuang Electrical Appliance Co., Ltd.	Partial Translation	
	128.	CN-101292806	10-06-2010	Shanghai Superman Electric Co., LTD. (Ying PINGXIANG)	Machine Translation	x
	129.	EP-2 255 692	12-01-2010	Ondal Friseurtechnik GmbH (Andreas Göbel et al.)		
	130.	JP-2010-274050	12-09-2010	Haruyuki KITANO	Partial Translation	
	131.	GB-2472240	02-02-2011	Brian COOMBES		
	132.	CN-201774080	03-23-2011	Jianqiang HE	Partial Translation	
	133.	DE-10 2009 049 838	04-21-2011	Marion PERPLIES	Partial Translation	
	134.	CN-201948229	08-31-2011	Liu SHIQIANG	Machine Translation	x
	135.	GB-2478927	09-28-2011	Dyson Technology Limited (Nicholas Gerald FITTON et al.)		
	136.	EP-2 392 223	12-07-2011	Han Hian YOE		
	137.	EP-2 401 939	01-04-2012	Panasonic Electric Works Co., Ltd. (Noriyuki YASUI et al.)		
	138.	GB-2482547	02-08-2012	Dyson Technology Limited (John David WALLACE et al.)		
	139.	GB-2482548	02-08-2012	Dyson Technology Limited (John David WALLACE et al.)		
	140.	GB-2482549	02-08-2012	Dyson Technology Limited (John David WALLACE et al.)		
	141.	CN-202146022	02-22-2012	Yu FENG	Machine Translation	x
	142.	JP-2012-45178	03-08-2012	Sharp Kabushiki Kaisha (S. HORIMOTO)	Partial Translation	

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Application Number	14/323,937
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First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3743
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Attorney Docket Number	424662077100

	143.	WO-2012/059700	05-10-2012	Velecta Paramount (Roland QUESSARD et al.)	English language Abstract	
	144.	WO-2012/069983	05-31-2012	Maria Rosanna Pellegrino (Marco MAGAGNINI)		
	145.	WO-2012/076885	06-14-2012	JEMELLA LIMITED (Robert Alexander WEATHERLY)		
	146.	CN-202386031	08-22-2012	Ruihong YANG	Machine Translation	x
	147.	CN-202536440	11-21-2012	Ningbo University (Lang JIANKANG et al.)	Machine Translation	x
	148.	KR-10-1229109	02-05-2013	Hae Kyung JEONG et al.	Corresponds to US 2013/0111777 cited above	
	149.	CN-202774786	03-13-2013	Ningbo Shunshuai Electrical Appliances Co., Ltd. (Leisheng ZHOU)	Machine Translation	x
	150.	GB-2500798	10-02-2013	Dyson Technology Limited (Stephen Benjamin COURTNEY et al.)		
	151.	GB-2500800	10-02-2013	Dyson Technology Limited (Stephen Benjamin COURTNEY et al.)		
	152.	GB-2503684	01-08-2014	Dyson Technology Limited (Stephen Benjamin COURTNEY et al.)		
	153.	GB-2503685	01-08-2014	Dyson Technology Limited (Stephen Benjamin COURTNEY et al.)		
	154.	GB-2503686	01-08-2014	Dyson Technology Limited (Stephen Benjamin COURTNEY et al.)		

Examiner Signature	/Stephen Gravini/	Date Considered	01/22/2016

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				First Named Inventor	Patrick Joseph William MOLONEY
				Art Unit	3743
				Examiner Name	K. Rinehart
Sheet	7	of	**7**	Attorney Docket Number	424662077100

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	155.	Search Report dated November 28, 2013, directed to GB Application No. 1312068.8; 1 page	
	156.	Courtney et al., Office Action mailed September 24, 2014, directed to U.S. Application No. 13/853,739; 12 pages	
	157.	Moloney et al., Office Action mailed November 14, 2014, directed to U.S. Application No. 13/853,835; 7 pages	
	158.	Reba, I. (1966). "Applications of the Coanda Effect," Scientific American 214:84-92	
Examiner Signature	/Stephen Gravini/	Date Considered	01/22/2016

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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L5	54	((Edward) near2 (SHELTON)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/01/26 06:35
L6	176	((Stephen) near2 (COURTNEY)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/01/26 06:35
L7	249	((Daniel) near2 (TAYLOR)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/01/26 06:35
L8	10	((Patrick) near2 (MOLONEY)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/01/26 06:35
L9	6	((Edward) near2 (SHELTON)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/01/26 06:35
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L11	39	((Daniel) near2 (TAYLOR)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/01/26 06:35
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SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited, IPR2023-01324

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L19	54	((Edward) near2 (SHELTON)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/01/26 06:35
L20	176	((Stephen) near2 (COURTNEY)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/01/26 06:35

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited, IPR2023-01324

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L22	10	((Patrick) near2 (MOLONEY)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/01/26 06:35
L23	6	((Edward) near2 (SHELTON)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/01/26 06:35
L24	69	((Stephen) near2 (COURTNEY)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/01/26 06:35
L25	39	((Daniel) near2 (TAYLOR)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/01/26 06:35
L26	277	("Dyson Technology Limited").AANM.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/01/26 06:35
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S2	54	((Edward) near2 (SHELTON)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/01/25 07:23

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited, IPR2023-01324

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S4	249	((Daniel) near2 (TAYLOR)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/01/25 07:23
S5	10	((Patrick) near2 (MOLONEY)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/01/25 07:23
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S8	39	((Daniel) near2 (TAYLOR)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/01/25 07:23
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SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited, IPR2023-01324

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S18	249	((Daniel) near2 (TAYLOR)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/01/25 11:17
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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324

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S27	29	(S15 S16 S17 S18 S19 S20 S21 S22 S23 S24) and (appliance and hand and insulat$3)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2016/01/25 11:17
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SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited, IPR2023-01324

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EAST Search History (Interference)

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ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application Number	14/323,937
				Filing Date	July 3, 2014
				First Named Inventor	Patrick Joseph William MOLONEY
				Art Unit	3743
(Use as many sheets as necessary)				Examiner Name	K. Rinehart
Sheet	1	of	1	Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/S.G./	1.	US-2013/0045084	02-21-2013	Tu et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
/S.G./	2.	CH-588 835	06-15-1977	Gimelli & Co. AG (Samuel GIMELLI)		X
/S.G./	3.	EP-0 306 765	03-15-1989	Robert Krups Stiftung & Co. KG (Hans-Dieter POWELEIT et al.)	Machine Translation	X
/S.G./	4.	EP-1 661 481	05-31-2006	K.I.C.A. Inc. (Tai Cheul KIM)		
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/S.G./	6.	GB-2464736	04-28-2010	Dyson Technology Ltd. (Kevin John SIMMONDS et al.)		

Examiner Signature	/Stephen Gravini/	Date Considered	01/22/2016

*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
/S.G./	7.	International Search Report and Written Opinion mailed December 8, 2014, directed to International Application No. PCT/GB2014/051830; 14 pages	

Examiner Signature	/Stephen Gravini/	Date Considered	01/22/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/323,937
Filing Date	July 3, 2014
First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3744
Examiner Name	Stephen Michael Gravini
Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/S.G./	1.	US-5,555,637	09-17-1996	Montagnino	
/S.G./	2.	US-6,792,692	09-21-2004	Takizawa et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
/S.G./	3.	JP-41-22432	11-09-1966		Partial Translation	x
/S.G./	4.	JP-48-13744	04-14-1973		English Translation of Abstract	
/S.G./	5.	JP-52-29579	03-01-1977		English Translation of Abstract	
/S.G./	6.	JP-58-32706	03-03-1983	Yoshitaka OHARA; Kunio TAKEMORI; Junji OE	Machine Translation	x
/S.G./	7.	JP-60-193408	10-01-1985		Figures	
/S.G./	8.	JP-63-238807	10-04-1988		Partial Translation	x
/S.G./	9.	JP-2003-153731	05-27-2003	Matsushita Electric Works Ltd. (Hisafumi KODAMA)	Machine Translation	x
/S.G./	10.	JP-2005-532131	10-27-2005	Wella Aktiengesellschaft (Detlef MATTINGER et al.)	Corresponds to US-2005/0229422 previously cited	

Examiner Signature		Date Considered	

*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
/S.G./	11.	Moloney et al., U.S. Office Action mailed January 15, 2016, directed to U.S. Application No. 14/323,785; 13 pages	

Examiner Signature	/Stephen Gravini/	Date Considered	01/23/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

VA-465935

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/323,937	07/03/2014	Patrick Joseph William MOLONEY	424662077100	2130

25227 7590 02/22/2016

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER
GRAVINI, STEPHEN MICHAEL

ART UNIT	PAPER NUMBER
3744	

NOTIFICATION DATE	DELIVERY MODE
02/22/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

EOfficeVA@mofo.com
PatentDocket@mofo.com

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2218 of 2286

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/323,937	MOLONEY ET AL.	
	Examiner	Art Unit	
	Stephen M. Gravini	3744	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Stephen M. Gravini*. (3)_____.

(2) *Rebecca Bernacher (sp?)*. (4)_____.

Date of Interview: *17 February 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *13-15*.

Identification of prior art discussed: *of record*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

This interview summary updates the Office action double patenting rejecting using applicant's copending application identified as 13/389166 such that it should be identified as 13/389,160. It was misidentified in the substantive Office action, but correctly cited as reference H in the PTO-892 Notice of references cited..

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/Stephen M. Gravini/ Primary Examiner, Art Unit 3744	

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
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Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/323,937
Filing Date	July 3, 2014
First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3744
Examiner Name	S. M. Gravini
Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	US-2,432,067	12-02-1947	Morse	
	2.	US-5,784,800	07-28-1998	Santhouse et al.	
	3.	US-6,367,162	04-09-2002	Fukumoto et al.	
	4.	US-9,144,286	09-29-2015	Courtney et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
	5.	GB 972,682	10-14-1964	Stanley Bridges Limited (George Newington BRIDGES)		
	6.	KR-2003-0074490	09-19-2003	Kang Su PARK	English language Abstract	

Examiner Signature		Date Considered	

*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
	7.	Gammack et al., U.S. Office Action mailed February 8, 2016, directed to U.S. Application No. 14/323,848; 11 pages	
	8.	Gammack et al., U.S. Office Action mailed February 9, 2016, directed to U.S. Application No. 14/323,739; 10 pages	
	9.	Moloney et al., U.S. Office Action mailed February 25, 2016, directed to U.S. Application No. 14/323,864; 9 pages	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

972,682

PATENT SPECIFICATION

DRAWINGS ATTACHED

972,682

Inventor: GEORGE NEWINGTON BRIDGES

Date of filing Complete Specification: May 8, 1961.

Application Date: Jan. 24, 1961. No. 2742/61.

Complete Specification Published: Oct. 14, 1964.

© *Crown Copyright 1964.*

Index at acceptance:—A5 R(32, 79D)

International Classification:—A 45 d, A 61 m

COMPLETE SPECIFICATION

Improvements in or relating to Hair Dryers

We, STANLEY BRIDGES LIMITED, formerly S. N. Bridges & Company Limited, of York Road, Battersea, London, S.W.11, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention concerns an improved form of hair dryer which can be used (a) as a portable hair dryer, that is, it can be held by the hand of a user and manipulated so as to direct an air stream as required, (b) as a dryer which can be placed in different positions on a horizontal supporting surface, e.g. a table so as to direct air in required different directions, (c) as a dryer which can be held suspended on a wall or like vertical surface, or (d) as a dryer which can be fitted with a head-enveloping hood or helmet and supported in a vertically adjustable manner on a pedestal of a stand.

Broadly, according to the present invention, there is provided a hair dryer comprising a substantially U-shape casing wherein one of the side limbs constitutes a handle or hand-grip and the other limb a housing for an electric motor, fan and heater, the outer end of the latter limb constituting an air discharge outlet, the said handle and the base of the "U" being formed or provided with flat portions either of which can be used as a stand or a base by which the dryer can be placed in one of two alternative positions on a supporting surface with the limb formed with the air discharge outlet at different angles.

To enable the dryer to be suspended from a hook or the equivalent on a vertical supporting surface, e.g. a wall, the base of the "U" at a position adjacent to the handle is fitted with a spring-loaded clip which will retain the dryer with the base part of the handle flush against the wall. This spring-loaded clip also permits the dryer to be suspended in a similar position from a bracket mounted for vertical adjustment at the upper end of a telescopic stand or pedestal.

To permit the dryer to be fitted with a head-enveloping hood or helmet when it is supported by a stand, the air-discharge nose of the dryer is adapted to be engaged by spring clips carried by an adaptor fitted to the hood. Alternatively, the hood may be a snap fit on said nose of the dryer.

To enable the invention to be clearly understood a preferred embodiment thereof will now be described by way of example with reference to the accompanying drawings wherein:—

Figure 1 is a perspective view of the dryer.

Figure 2 is a side elevation.

Figure 3 is a view showing the dryer placed upon a supporting surface in one position.

Figure 4 is a similar view showing the dryer supported in an alternative position.

Figure 5 is a view showing how the dryer may be suspended from a hook on a wall.

Figure 6 is a view drawn to a larger scale and showing the dryer in section suspended from the top of a pedestal and fitted with a hood, and

Figure 7 is a view illustrating a modified connection between the dryer and the hood.

Referring to the drawings, the dryer comprises a substantially U-shape hollow casing which the side limbs 1 and 2 diverge slightly from the base 3 so that said casing can also be regarded as being of truncated V-like form. The side limb 1 of this casing accommodates an electric motor 4 driving a fan 5 and the outer end 6 of this limb 1 constitutes an air discharge nozzle in which is accommodated an electric heating element 7 which can be brought into use as and when required. This heater 7 is preferably provided with a manually re-settable cut-out 8 to safeguard the dryer from over heating.

The other side limb 2 of the casing is smaller in cross section than the first mentioned limb 1 and this second limb consti-

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tutes a handle by which the dryer can be held in the hand of a user and manoeuvred about to suit requirements. This handle 2 conveniently accommodates electric leads and switch mechanism for controlling the motor 4 and heater 7.

The said handle 2 and the base 3 of the "U" are formed with flat faces 9 and 10 respectively constituting bases upon which the dryer may be supported on a horizontal surface so that the angular position of the limb 1 incorporating the air discharge nozzle 6 can be changed so as to direct an airstream in one of two alternative directions. When the dryer is placed on the base-forming part 9 of the handle 2 as shown in Figure 3 the nozzle 6 is directed so that an air stream is directed upwardly at an angle of roughly 30°. When the dryer is supported on the flat surface 10 on the base 3 of the "U" (Figure 4) the airstream is directed upwardly at a very slight angle from the vertical.

To enable the dryer to be supported from say a hook extending horizontally from a wall or other vertical surface as shown in Figure 5 the casing of the dryer is fitted with a spring-loaded clip 11 positioned adjacent to where the base 10 of the "U" meets the flat surface 9 of the handle 2 and the casing at this position is formed with a well 12 in which the clip 11 can be accommodated when the latter is not being used.

This clip 11 also constitutes a means by which the dryer can be detachably secured to a bracket 13 which is slidably supported at the upper end of a tubular pedestal 14 comprising telescopic sections the lowermost one of which (not shown) is connected at its lower end to a base. The said bracket 13 is vertically adjustable on the upper end of the pillar 14 so as to support the dryer at the required height.

To enable the air discharge nose 6 of the dryer to be fitted to a hood 15 of the helmet type, the latter is formed with an adaptor comprising an annular disc 16 carrying springy clips 17 which can be snapped over an annular ledge 18 adjacent the extremity of the nose or air discharge end of the dryer. The hood 15 is fitted where it is adapted to be connected to the dryer with a deflector 19 for distributing the stream of air emerging from the nose of the dryer so that said air is displaced about the interior of the hood.

It will be appreciated that the hood 15 can be fitted to the nose 6 of the dryer and removed therefrom in a quick and simple manner and that the dryer itself can be quickly and easily connected to the upper end of said pillar or pedestal.

The portable hair dryer can thus also serve as a prime mover for a stationary hood or helmet type of hair dryer.

According to a small modification illustrated by Figure 7, the nose of the dryer can be formed with a rounded bead 20 and the hood 15 can be made of a soft springy plastic material, such as polythene or polystyrene formed with a complementary bead 21 which can be snapped over the bead 20 on the dryer nose so that the hood is retained on the dryer in a readily detachable manner.

The dryer with the hood 15 attached thereto may of course be suspended from a hook on a wall instead of from the upper end of a pedestal.

Although it is preferred to form the hollow casing of the dryer itself with the flat base-forming portions 9 and 10, the limbs of the dryer may be of any desired shape and adapted to be fitted with or have clamped thereto adaptor blocks or plates themselves having flat faces constituting the base-forming portions.

WHAT WE CLAIM IS:—

1. A hair dryer comprising a substantially U-shape casing wherein one of the side limbs constitutes a handle or handgrip and the other limb a housing for an electric motor, fan and heater, the outer end of the latter limb constituting an air discharge outlet, the said handle and the base of the "U" being formed or provided with flat portions either of which can be used as a stand or a base by which the dryer can be placed in one of two alternative positions on a supporting surface with the limb formed with the air discharge outlet at different angles.

2. A hair dryer according to Claim 1, wherein to enable the dryer to be suspended from a hook or the equivalent on a vertical supporting surface e.g. a wall, the base of the "U" at a position adjacent to the handle is fitted with a spring-loaded clip which will retain the dryer with the base part of the handle flush against the wall.

3. A hair dryer according to Claim 1 or 2, wherein the air discharge outlet is adapted to be fitted with a readily detachable head-enveloping hood or helmet.

4. A hair dryer according to Claim 3, wherein the air discharge outlet is formed with an annular ledge over which can be snapped springy fixing clips provided on said hood.

5. A hair dryer according to Claim 3, wherein the air discharge outlet is formed with a rounded bead over which can be snapped a complementary bead formed on said hood.

6. The combination of a hair dryer as claimed in any of the preceding Claims 2 to 5 with a supporting pedestal provided at its upper end with a vertically adjustable bracket having a flat supporting part for engagement by the flat base part of the handle and with a hook for engagement by said suspension clip.

7. A modification of the dryer claimed in any of the preceding Claims, wherein the limbs of the casing are adapted to be fitted with blocks or plates formed with flat faces constituting the base-forming portions.

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8. A hair dryer constructed substantially as hereinbefore described with reference to and as illustrated by the accompanying drawings.

MARKS & CLERK,
Chartered Patent Agents,
Agents for the Applicants.

Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press (Leamington) Ltd.—1964. Published by The Patent Office, 25 Southampton Buildings, London, W.C.2, from which copies may be obtained.

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2224 of 2286

972682 COMPLETE SPECIFICATION
2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

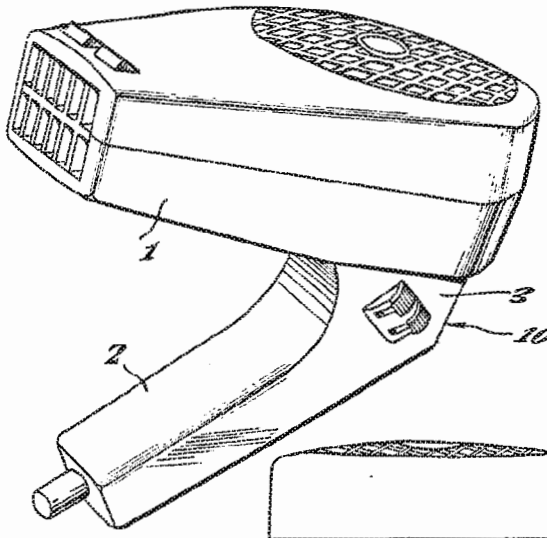


Fig. 1.

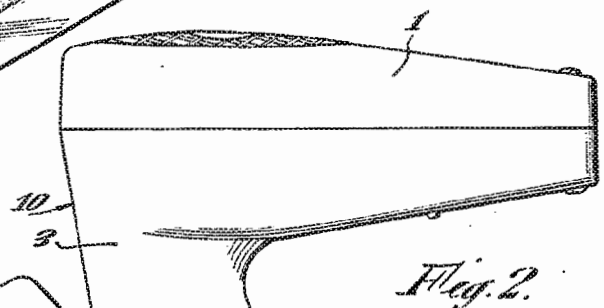


Fig. 2.

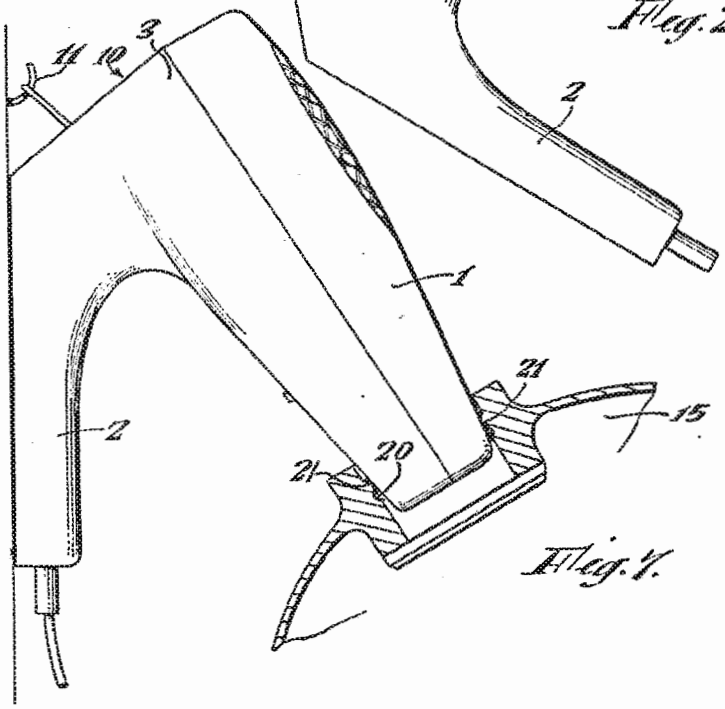


Fig. 4.

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2225 of 2286

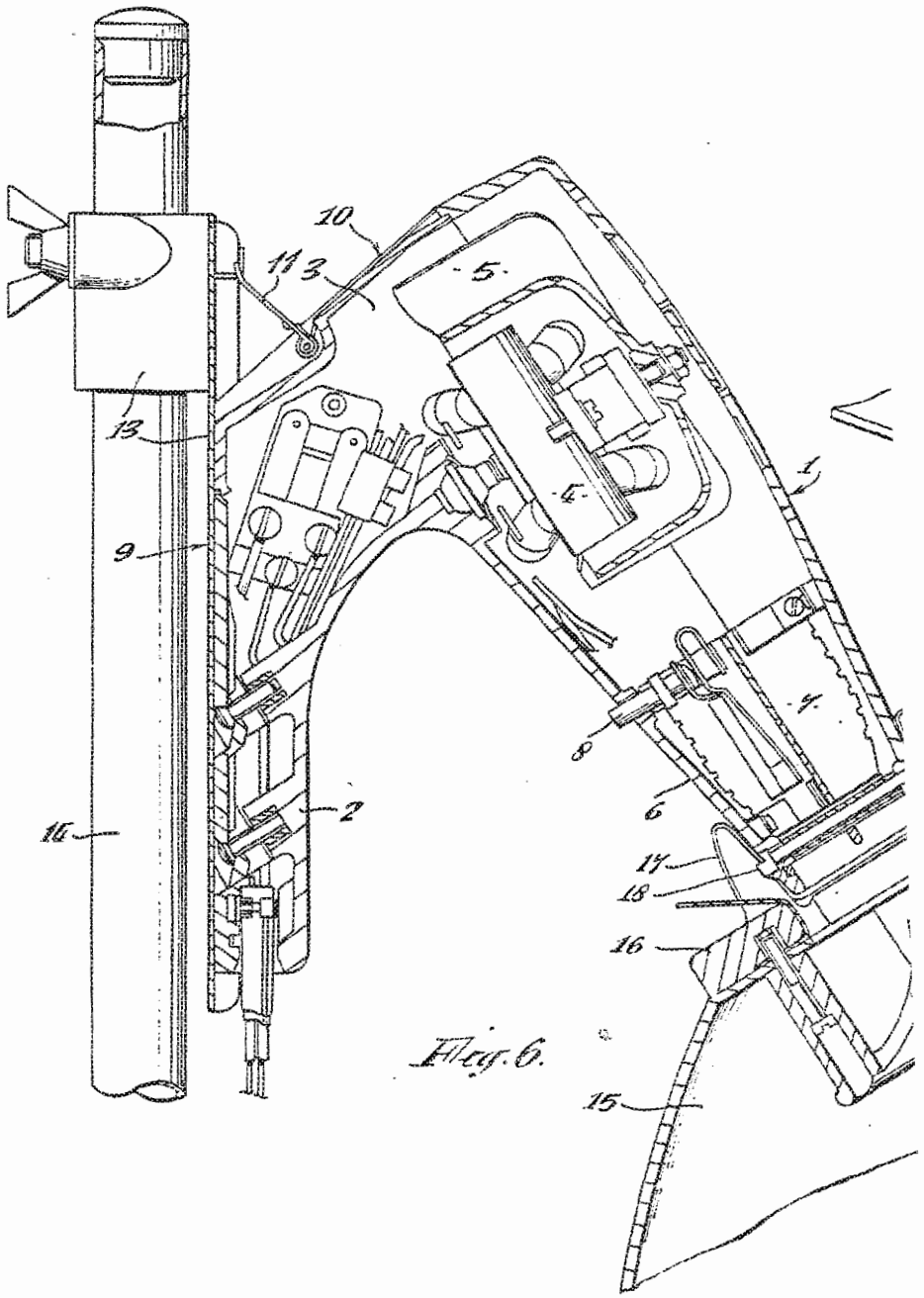


Fig. 6.

972682 COMPLETE SPECIFICATION
2 SHEETS This drawing is a reproduction of the Original on a reduced scale
Sheet 2

Fig. 3.

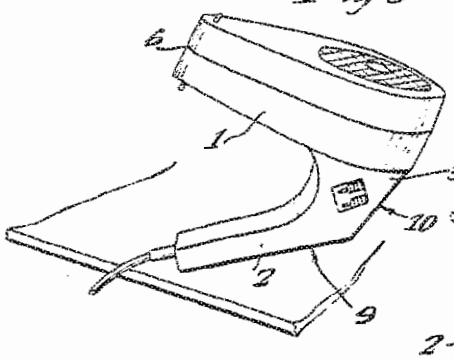
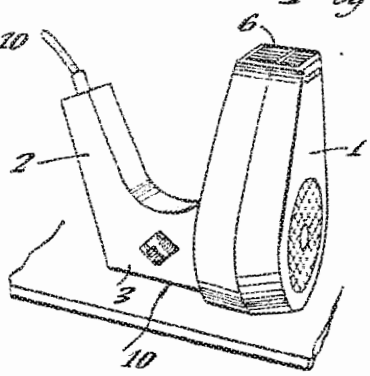
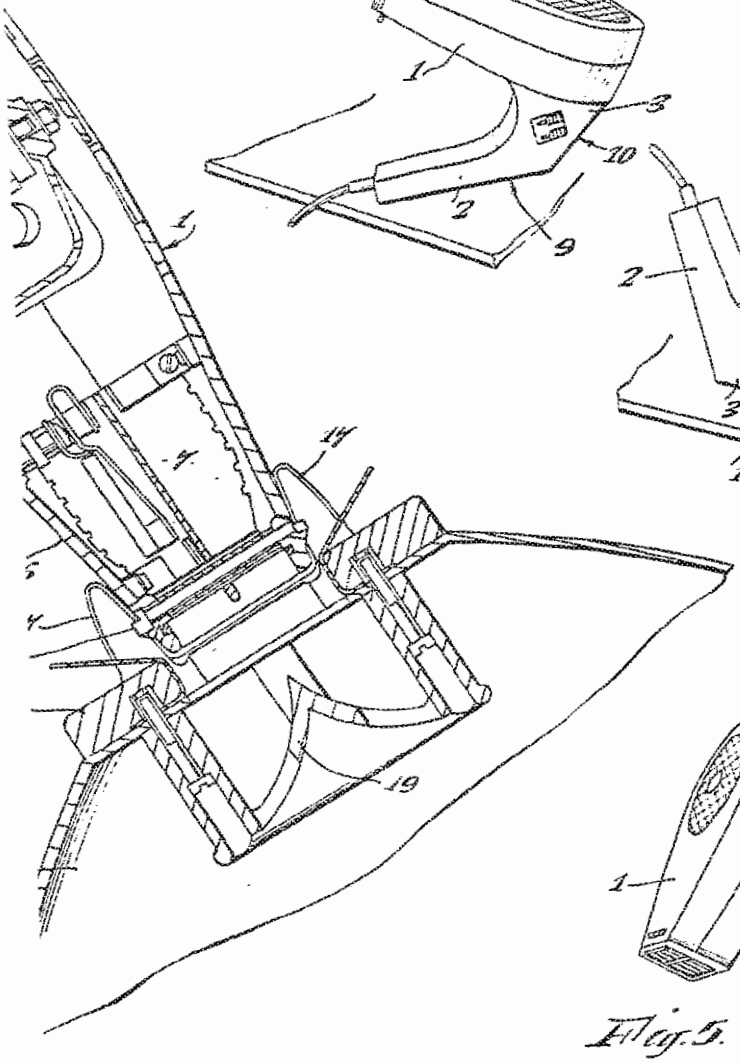


Fig. 4.





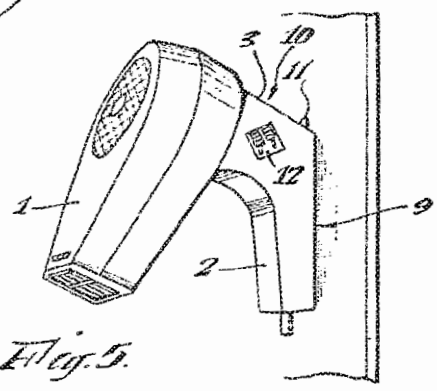


Fig. 5.

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972662 COMPLETE SPECIFICATION
2 SHEETS This drawing is a reproduction of the Original on a reduced scale
Sheet 2

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PUB-NO: GB000972682A
DOCUMENT-IDENTIFIER: GB 972682 A
TITLE: Improvements in or relating to hair dryers
PUBN-DATE: October 14, 1964
PATENT-FAMILY-ID: 9745029

INVENTOR-INFORMATION:

NAME	COUNTRY
BRIDGES GEORGE NEWINGTON	

APPLICANT:

NAME	COUNTRY
STANLEY BRIDGES LTD	

APPL-NO: GB 274261 A
APPL-DATE: January 24, 1961

PRIORITY-DATA:

PRIORITY-NO	PRIORITY-APPL-DATE
GB 274261 A	19610124

CPC-CURRENT:

TYPE	CPC/DATE
CPCI	A45D20/12 20130101
CPCI	A45D20/22 20130101
CPCI	F24H3/0423 20130101
CPCA	A45D2020/128 20130101

INT-CL-CURRENT:

TYPE	IPC/DATE
IPCP	A45D20/12 20060101
IPCS	F24H3/04 20060101
IPCS	A45D20/22 20060101

ABSTRACT:

972,682. Hair driers. STANLEY BRIDGES Ltd. May 8, 1961 [Jan. 24, 1961], No. 2742/61. Heading A5R. A hair drier comprises a substantially U- shaped casing of which one limb

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constitutes a handle while the other houses a motor, fan and heater with its outer end forming the air discharge outlet. The handle and the base of the U have flat portions on either of which the drier can be stood on a supporting surface. In the embodiment described, the body comprises a handle 2 and motor and heater housing 1, set at an acute angle to each other, with flat faces 9, 10 formed on the handle and rear of the casing respectively. The drier may be stood on either of these surfaces on a horizontal surface so that air is directed upwardly at a small angle or substantially vertically. The rear part of the casing also has a spring-loaded loop by means of which it may be supported from a hook on a wall or pedestal 14 and the discharge nozzle has a bead or other projection 18 by which a hood 15 can be attached. Such a hood has a deflector 19 adjacent its air inlet.

PUB-NO: KR20030074490A
DOCUMENT-IDENTIFIER: KR 20030074490 A
TITLE: HAIR DRY APPARATUS USING HEATED FLUID AS HEATING SOURCE
PUBN-DATE: September 19, 2003

INVENTOR-INFORMATION:

NAME	COUNTRY
PARK KANG SU	KR

APPLICANT:

NAME	COUNTRY
PARK KANG SU	KR

APPL-NO: KR 20030025145 A
APPL-DATE: April 21, 2003

PRIORITY-DATA:

PRIORITY-NO	PRIORITY-APPL-DATE
KR 20030025145 A	20030421

INT-CL-CURRENT:

TYPE	IPC/DATE
IPCP	A45D20/08 20060101

ABSTRACT:

PURPOSE: Provided is a hair dry apparatus using a heated fluid as a heating source which effectively conducts hair styling by maintaining a uniform temperature and prevents hair damage by preventing over-rising of temperature. CONSTITUTION: The hair dry apparatus includes: a steam; a steam generator(200) to generate steam by supply of electric power; a steam supply pipe(300); a hair dryer body. The steam generator has a plurality of steam supply ports(210) and steam supply switches(212) and a plurality of steam inlets(220) and counter-current protection valves. The steam supply pipe is connected to the steam supply port and the steam inlet to emit heat while the steam moves in the pipe. The hair dryer body having opening(402) includes a main body having the steam supply pipe and a fan(410) to discharge hot air heated while passing through the steam supply pipe and a handle(420) connected to the main body.

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(19)대한민국특허청(KR)
(12) 공개특허공보(A)

(51) 。Int. Cl.[7]
A45D 20/08

(11) 공개번호 특2003-0074490
(43) 공개일자 2003년09월19일

(21) 출원번호 10-2003-0025145 (이중출원)
(22) 출원일자 2003년04월21일
(62) 원출원 실용신안 실2002-0006869
원출원일자 : 2002년03월08일

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(74) 대리인 김원준

심사청구 : 있음

(54) 가열된 유체를 열원으로 하는 헤어드라이장치

요약

본 발명은 모발을 가열하는 열원으로서 가열된 유체를 사용하는 헤어드라이장치에 관한 것으로, 열전달용 유체와, 유체를 가열하는 유체가열부재와, 가열된 유체를 이송시켜 열을 방출시키는 방열부재와, 방열부재를 고정하며 방열부재의 열을 송풍하는 팬을 갖는 드라이어를 포함하는 가열된 유체를 열원으로 하는 헤어드라이장치로서, 모발을 가열하는 열원으로서 가열된 유체를 사용함으로써, 균일한 온도를 유지하여 미용을 효율적으로 할 수 있으며, 온도의 과상승을 방지하여 모발의 손상을 방지할 수 있는 효과가 있다.

대표도

도 1

색인어

유체, 헤어드라이

명세서

도면의 간단한 설명

도 1은 본 발명의 제 1실시예에 따른 헤어드라이장치의 사시도.

도 2는 도 1에 도시한 헤어드라이장치의 단면도.

도 3은 본 발명의 제 2실시예에 따른 헤어드라이장치의 사시도.

도 4는 도 3에 도시한 헤어드라이장치의 단면도.

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〈도면의 주요부분에 대한 부호의 설명〉

200: 스팀발생기 210: 스팀공급구

212: 스팀공급 스위치 220: 스팀흡입구

230: 전원코드 232: 전원 스위치

300: 스팀공급관 400: 본체

410: 팬 412: 스위치

414: 전원코드 420: 손잡이

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 가열된 유체를 열원으로 하는 헤어드라이장치에 관한 것으로, 특히 모발을 가열하는 열원으로서 가열된 유체를 사용함으로써, 균일한 온도를 유지하여 미용을 효율적으로 할 수 있도록 하고, 온도의 과상승을 방지하여 모발의 손상을 예방하기 위한 것이다.

일반적으로 모발가열용으로 사용되고 있는 헤어드라이장치는, 전원의 공급에 의해 열을 발생시키는 열선코일 히터를 열원으로 하고, 이 히터로부터 발생된 열에 의해 가열된 공기를 팬으로 송풍하여 모발을 가열하고 있다.

그런데 이와 같이 열선코일 히터를 열원으로 사용하는 일반적인 헤어드라이장치는, 사용도중 온/오프의 과정에서 온도가 불균일하게 되는데, 이 경우 미용효율이 저하되는 문제점이 있다. 또한 사용도중 히터가 지나치게 가열되는 경우가 있는데, 이때에는 모발이 고온에 의해 손상되는 문제점이 있다.

발명이 이루고자 하는 기술적 과제

본 발명은 상기와 같은 문제점을 해결하기 위하여 안출한 것으로, 본 발명의 목적은 모발을 가열하는 열원으로서 가열된 유체를 사용함으로써, 균일한 온도를 유지하여 미용을 효율적으로 할 수 있도록 하고, 온도의 과상승을 방지하여 모발의 손상을 예방하기 위한 것이다.

발명의 구성 및 작용

상기와 같은 목적을 달성하기 위한 본 발명은, 열전달용 유체; 상기 유체를 가열하는 유체가열부재; 가열된 상기 유체를 이송시켜 열을 방출시키는 방열부재; 및 상기 방열부재를 고정하며 상기 방열부재의 열을 송풍하는 팬을 갖는 드라이어;를 포함하는 가열된 유체를 열원으로 하는 헤어드라이장치를 제공한다.

이하에서는 본 발명에 따른 가열된 유체를 열원으로 하는 헤어드라이장치의 제 1실시예를 설명한다.

도 1은 제 1실시예에 따른 헤어드라이장치의 사시도이고, 도 2는 도 1에 도시한 헤어드라이장치의 단면도이다.

본 실시예에서 유체는, 스팀으로 한다. 스팀은 100℃~150℃까지 온도가 상승하므로 모발을 충분히 가열할 수 있고, 이 온도에서는 모발이 손상되지 않는다.

그리고 유체가열부재는, 전원의 공급에 의해 스팀을 발생시키고, 다수의 스팀공급구(210) 및 스팀공급 스위치(212)를 가지며, 다수의 스팀흡입구(220) 및 역류방지밸브를 갖는 스팀발생기(200)로 한다. 역류방지밸브는 스팀흡입구(2

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20)로 스팀이 방출되는 것을 방지하기 위한 것이다.

이러한 스팀발생기(200)에는 전원의 연결을 위한 전원코드(230)와, 전원의 개폐를 위한 전원 스위치(232)가 구비된다.

그리고 방열부재는, 스팀공급구(210) 및 스팀흡입구(220)에 연결되어 스팀이 이동하는 도중 열을 발산하는 스팀공급관(300)으로 이루어진다. 이러한 스팀공급관(300)은 용이하게 열을 방출시킬 수 있도록 코일과 같은 형상으로 권선한다.

또한 스팀공급관(300)은 스팀이 공급되면 뜨거워져서 인체에 접촉할 경우 화상을 입을 염려가 있으므로, 외부로 드러나는 부분에는 표면에 단열처리를 하여 화상의 피해를 예방한다.

그리고 드라이어는, 스팀공급관(300) 및 팬(410)이 고정되고 스팀공급관(300)을 지나는 데워진 공기가 배출되는 투출구(402)가 형성된 본체(400)와, 본체(400)에 고정되는 손잡이(420)로 이루어진다.

이러한 본체(400)에는 팬(410)에 전원을 공급하기 위한 전원코드(414) 및 팬(410)의 구동을 개폐하기 위한 스위치(412)가 구비된다.

스팀발생기(200)에 다수의 스팀공급구(210)와 스팀흡입구(220)를 구비하면, 다수의 스팀공급관(300)을 연결할 수 있게 되어, 여러사람이 드라이어를 동시에 이용하는 것이 가능해진다. 따라서 이러한 헤어드라이장치는 영업장소 또는 공중이 이용하는 장소에서 사용하기 적합하다.

이하에서는 상기와 같은 구성으로 된 헤어드라이장치의 작용을 설명한다.

먼저, 스팀발생기(200)의 전원 스위치(232)를 온시켜 내부에서 스팀이 발생되도록 하고, 스팀공급관(300)을 스팀공급구(210) 및 스팀흡입구(220)에 결합시킨다.

그리고 해당 스팀공급 스위치(212)를 온시키면, 스팀발생기(200)로부터 스팀이 해당 스팀공급구(210)를 통하여 스팀공급관(300)으로 이동하게 된다.

스팀은 스팀공급관(300)을 지나는 동안, 특히 본체(400) 내부에서 코일형식 으로 권선된 부분에서 열을 방출하게 된다.

이때 사용자는 본체(400)의 전원코드(414)를 전원 플러그에 연결하고, 손잡이(420)를 잡고 스위치(412)를 온시키면 팬(410)이 회전하여 스팀공급관(300)이 권선된 부분으로 송풍하여 스팀공급관(300)의 표면의 열을 모발측으로 이동시킨다. 따라서 모발의 미용작업이 이루어진다.

한편, 스팀공급관(300)을 지난 스팀은 다시 스팀흡입구(320)를 지나 스팀발생기(200)로 들어가게 된다. 스팀발생기(200)에 구비되는 역류발지밸브는 스팀이 스팀배출구(220)로 빠져나가는 것을 방지하고, 흡입되는 스팀만 인입되게 한다.

이하에서는 본 발명에 따른 가열된 유체를 열원으로 하는 헤어드라이장치의 제 2실시예를 설명한다.

도 3은 본 발명의 제 2실시예에 따른 헤어드라이장치의 사시도이고, 도 2는 도 1에 도시한 헤어드라이장치의 단면도이다.

제 2실시예의 유체는, 액체(110)로 한다. 이러한 액체(110)는 물이나 오일 등 열전달이 가능한 액체(110)이면 된다.

그리고 유체가열부재는, 전원의 공급에 의해 열을 발생시키는 히터(250)로 한다. 이러한 히터(250)에는 별도의 스위치(412)를 둘 수 있으며, 전원을 공급받기 위한 전원코드(414)가 구비된다.

그리고 방열부재는, 유체 및 히터(250)를 내장하는 금속의 발열수조(350)로 한다. 발열수조(350)의 주위에는 열을 효율적으로 방출시키기 위한 방열핀(352)을 형성한다.

그리고 드라이어는, 발열수조(350) 및 팬(410)이 고정되고 발열수조(350)를 지나는 데워진 공기가 배출되는 투출구(402)가 형성된 본체(400)와, 본체(400)에 고정되는 손잡이(420)로 이루어진다.

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이러한 헤어드라이장치는 제 1실시예와 달리 유체가열부재와 방열부재와 드라이어가 일체형으로 이루어져 휴대가 간편하므로, 가정용 및 개인용으로 사용하기 적합하다.

이하에서는 상기와 같은 구성으로 된 헤어드라이장치의 작용을 설명한다.

먼저, 전원코드(414)를 통하여 히터(250)에 전원이 공급되면, 히터(250)는 발열수조(350)내의 액체(110)를 가열하여 발열수조(350)를 통하여 열을 방출시킨다.

이때 사용자는 손잡이(420)를 잡고 스위치(412)를 온시키면 팬(410)이 회전하여 발열수조(350)측으로 송풍하여 발열수조(350)의 표면의 열을 모발측으로 이동시킨다. 따라서 모발의 미용작업이 이루어진다. 발열수조(350) 주위의 방열핀(352)는 열의 방출을 용이하게 한다.

발명의 효과

이상에서 설명한 바와 같이 본 발명은, 열전달용 유체와, 유체를 가열하는 유체가열부재와, 가열된 유체를 이송시켜 열을 방출시키는 방열부재와, 방열부재를 고정하며 방열부재의 열을 송풍하는 팬을 갖는 드라이어를 포함하는 가열된 유체를 열원으로 하는 헤어드라이장치로서, 모발을 가열하는 열원으로서 가열된 유체를 사 용함으로써, 균일한 온도를 유지하여 미용을 효율적으로 할 수 있으며, 온도의 과상승을 방지하여 모발의 손상을 방지할 수 있는 효과가 있다.

이상에서는 본 발명을 하나의 실시예로써 설명하였으나, 본 발명은 상기한 실시예에 한정되지 아니하며, 청구범위에서 청구하는 본 발명의 요지를 벗어남이 없이 당해 발명이 속하는 분야에서 통상의 지식을 가진 자라면 누구든지 다양한 변형이 가능할 것이다.

(57) 청구의 범위

청구항 1.
스팀;

전원의 공급에 의해 상기 스팀을 발생시키고, 다수의 스팀공급구(210) 및 스팀공급 스위치(212)를 가지며, 다수의 스팀흡입구(220) 및 역류방지밸브를 갖는 스팀발생기(200);

상기 스팀공급구(210) 및 상기 스팀흡입구(220)에 연결되어 상기 스팀이 이동하는 도중 열을 발산하는 스팀공급관(300);

상기 스팀공급관(300) 및 상기 팬(410)이 고정되고 상기 스팀공급관(300)을 지나는 데워진 공기가 배출되는 토출구(402)가 형성된 본체(400)와, 상기 본체(400)에 고정되는 손잡이(420)를 포함하여 이루어지는 드라이어;를 포함하는 것을 특징으로 하는 가열된 유체를 열원으로 하는 헤어드라이장치.

청구항 2.
액체(110);

전원의 공급에 의해 상기 액체(110)를 가열시키는 히터(250);

상기 유체 및 상기 히터(250)를 내장하는 금속의 발열수조(350);

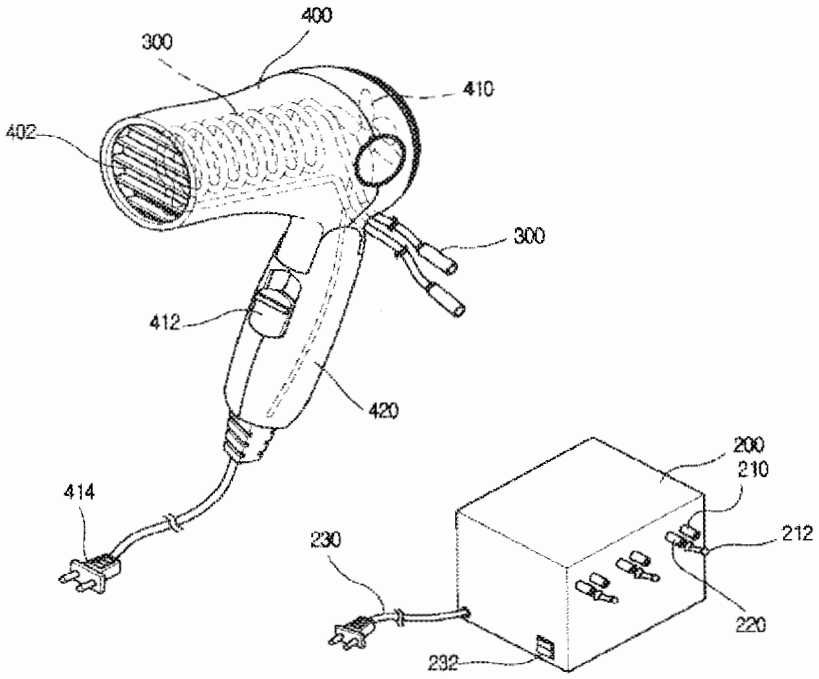
상기 발열수조(350) 및 상기 팬(410)이 고정되고 상기 발열수조(350)를 지나는 데워진 공기가 배출되는 토출구(402)가 형성된 본체(400)와, 상기 본체(400)에 고정되는 손잡이(420)를 포함하여 이루어지는 드라이어;를 포함하는 것을 특징으로 하는 가열된 유체를 열원으로 하는 헤어드라이장치.

청구항 3.
청구항 2에 있어서, 상기 발열수조(350)의 주위에는 방열핀(352)이 형성된 것을 특징으로 하는 가열된 유체를 열원으로 하는 헤어드라이장치.

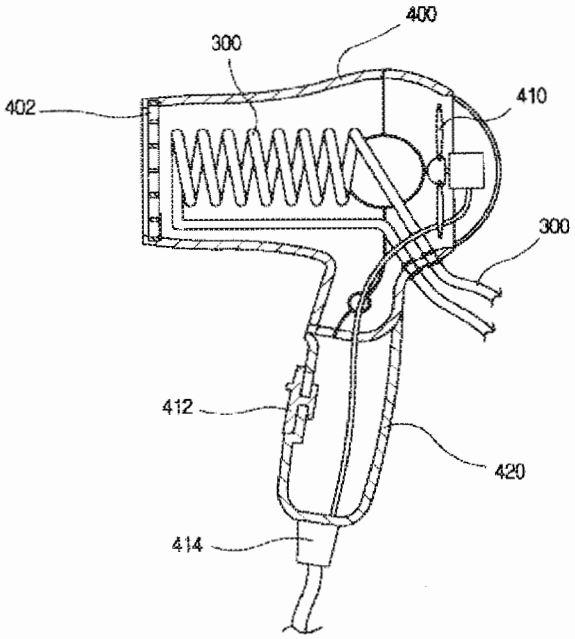
도면

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2236 of 2286

도면1

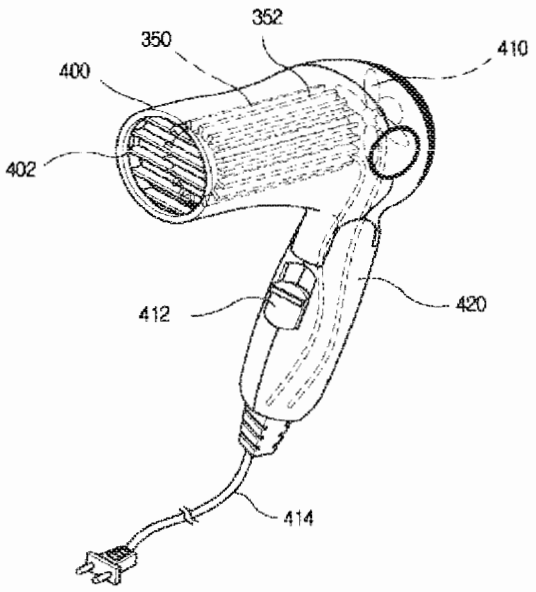


도면2

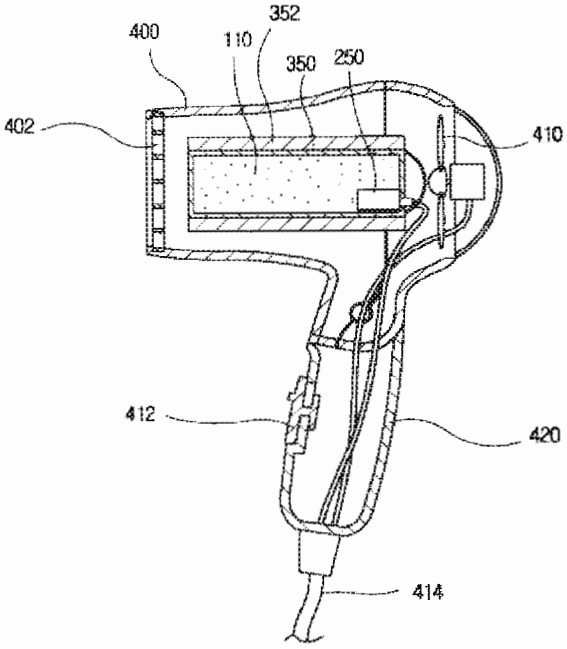


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SharkNinja et al. v. Dyson Technology Limited,
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도면3



도면4



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IPR2023-01324
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Electronic Patent Application Fee Transmittal

Application Number:	14323937
Filing Date:	03-Jul-2014
Title of Invention:	HAND HELD APPLIANCE
First Named Inventor/Applicant Name:	Patrick Joseph William MOLONEY
Filer:	Christopher Elmose Gloria/Donna Bernecker
Attorney Docket Number:	424662077100

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2239 of 2286

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	25529570
Application Number:	14323937
International Application Number:	
Confirmation Number:	2130
Title of Invention:	HAND HELD APPLIANCE
First Named Inventor/Applicant Name:	Patrick Joseph William MOLONEY
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Donna Bernecker
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662077100
Receipt Date:	19-APR-2016
Filing Date:	03-JUL-2014
Time Stamp:	15:26:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	2403
Deposit Account	031952
Authorized User	GLORIA, CHRISTOPHER

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Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324

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Charge any Additional Fees required under 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		IDS_424662077100.pdf	46729 3dfc94e5dbefc69083414ac64beac9e3a664451f	yes	3
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Transmittal Letter		1	2	
	Information Disclosure Statement (IDS) Form (SB08)		3	3	
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Information:					
2	Foreign Reference	GB_972682.pdf	1111093 992a7fbe1e19fdd025e7e5d15dc60c15b337a828	no	9
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Information:					
3	Foreign Reference	KR_2003_0074490.pdf	700410 b03e3ad0194d400c572fab9f5eaff7a61cbc5f50	no	8
Warnings:					
Information:					
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Information:					
5	Non Patent Literature	14323739_Feb092016_2077900.pdf	1056818 490bf9b7c4db5200bf10a69b05769ec7db90fc2a	no	10
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Information:					
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Warnings:					
Information:					

7	Fee Worksheet (SB06)	fee-info.pdf	30709 a75e17d87091268a3acafa8eba642e85a99da04a	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	4922596

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

I hereby certify that this paper is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: April 19, 2016
Electronic Signature for Donna Bernecker: /dbernecker/

Patent
Docket No. 424662077100

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Patrick Joseph William MOLONEY et al.

Application No.: 14/323,937 | Confirmation No.: 2130

Filed: July 3, 2014 | Art Unit: 3744

For: HAND HELD APPLIANCE | Examiner: Stephen M. Gravini

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97 & § 1.98

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 C.F.R. § 1.97 and § 1.98, Applicants submit for consideration in the above-identified application the documents listed on the attached Form PTO/SB/08a/b. Copies of the foreign documents and non-patent literature are submitted herewith. The Examiner is requested to make these documents of record.

This Information Disclosure Statement is submitted after receipt of a first Office Action on the merits but before mailing of a final Office Action or Notice of Allowance. The required fee is submitted herewith.

Applicants would appreciate the Examiner initialing and returning the Form PTO/SB/08a/b, indicating that the information has been considered and made of record herein.

va-471882

The information contained in this Information Disclosure Statement under 37 C.F.R. § 1.97 and § 1.98 is not to be construed as a representation that: (i) a complete search has been made; (ii) additional information material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the above information constitutes prior art to the subject invention.

In the unlikely event that the transmittal form is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief (such as payment of a fee under 37 C.F.R. § 1.17 (p)) is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petition and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing (424662077100). However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: April 19, 2016

Respectfully submitted,

Electronic signature: /christopher gloria/
Christopher Gloria
Registration No.: 71,907
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 400
McLean, Virginia 22102
(703) 760-7389

va-471882

Electronic Acknowledgement Receipt

EFS ID:	25529570
Application Number:	14323937
International Application Number:	
Confirmation Number:	2130
Title of Invention:	HAND HELD APPLIANCE
First Named Inventor/Applicant Name:	Patrick Joseph William MOLONEY
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Donna Bernecker
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662077100
Receipt Date:	19-APR-2016
Filing Date:	03-JUL-2014
Time Stamp:	15:26:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	2403
Deposit Account	031952
Authorized User	GLORIA, CHRISTOPHER

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Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324

Charge any Additional Fees required under 37 CFR 1.19 (Document supply fees)

Charge any Additional Fees required under 37 CFR 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		IDS_424662077100.pdf	46729 3dfc94e5dbefc69083414ac64beac9e3a664451f	yes	3
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Transmittal Letter		1	2	
	Information Disclosure Statement (IDS) Form (SB08)		3	3	
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Information:					
2	Foreign Reference	GB_972682.pdf	1111093 992a7fbe1e19fdd025e7e5d15dc60c15b337a828	no	9
Warnings:					
Information:					
3	Foreign Reference	KR_2003_0074490.pdf	700410 b03e3ad0194d400c572fab9f5eaff7a61cbc5f50	no	8
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Information:					
4	Non Patent Literature	14323848_Feb082016_2076800.pdf	1099144 9e66171178ad33e3bac01490b3925be3e2169acb	no	11
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5	Non Patent Literature	14323739_Feb092016_2077900.pdf	1056818 490bf9b7c4db5200bf10a69b05769ec7db90fc2a	no	10
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6	Non Patent Literature	14323864_Feb252016_2077000.pdf	877693 147158231b34fbace29c89ba838db7fcc2b82fd3	no	9
Warnings:					
Information:					

7	Fee Worksheet (SB06)	fee-info.pdf	30709 a75e17d87091268a3acafa8eba642e85a99da04a	no	2

Warnings:	
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I hereby certify that this paper is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4).

Dated: May 2, 2016
Electronic Signature for Donna Bernecker: /dbernecker/

Docket No.: 424662077100
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Patrick Joseph William MOLONEY et al.

Application No.: 14/323,937 Confirmation No.: 2130

Filed: July 3, 2014 Art Unit: 3744

For: HAND HELD APPLIANCE Examiner: Stephen M. Gravini

AMENDMENT UNDER 37 CFR 1.111

Mail Stop AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Action dated February 2, 2016, please amend this application as follows.

Amendments to the claims begin on page 2.

Remarks begin on page 6.

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AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A hand held appliance comprising a handle, the handle comprising [[a]] an inner wall and an outer wall, wherein the inner wall is disposed radially inwardly from the outer wall and defines a primary fluid flow path that extends from a primary fluid inlet into the appliance, wherein [[and]] the outer wall is an external surface of the appliance, and wherein an insulating layer is provided between the inner wall and the outer wall.

2. (Original) The appliance of claim 1, wherein the outer wall extends substantially continuously around the wall.

3. (Original) The appliance of claim 1, wherein the outer wall extends substantially along the wall.

4. (Original) The appliance of claim 1, wherein the insulating layer is substantially continuous around the wall.

5. (Original) The appliance of claim 1, wherein the insulating layer is substantially continuous along the wall.

6. (Original) The appliance of claim 1, wherein the insulating layer mitigates one or more of noise, vibration and heat produced by the appliance.

7. (Original) The appliance of claim 1, wherein the insulating material is a foam or a felt.

8. (Original) The appliance of claim 1, wherein the wall is formed from a plastic material.

9. (Original) The appliance of claim 8, wherein the plastic material is one of polycarbonate, glass filled PPA, PPS, LCAP or PEEK.

10. (Original) The appliance of claim 1, wherein the handle includes a fan unit for drawing fluid into the primary fluid inlet and along the primary fluid flow path.

11. (Original) The appliance of claim 1, wherein the handle comprises a first end and a second end wherein the primary fluid inlet is at or near the second end.

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12. (Original) The appliance of claim 11, wherein the primary fluid inlet comprises a first aperture extending at least partially around the handle and a second aperture extending through the second end of the handle.

13. (Currently Amended) A hand held appliance comprising a handle, the handle comprising [[a]] an inner wall and an outer wall, wherein the inner wall is disposed radially inwardly from the outer wall and defines a primary fluid flow path that extends from a primary fluid inlet into the appliance, wherein [[and]] the outer wall is an external surface of the appliance, wherein the handle comprises a first end and a second end, wherein the primary fluid inlet is at or near the second end, and wherein the primary fluid inlet comprises a first aperture extending at least partially around the handle and a second aperture extending through the second end of the handle.

14. (Original) The appliance of claim 13, wherein the handle comprises an end wall at the second end and the second aperture extends through the end wall.

15. (Original) The appliance of claim 14, wherein the end wall is substantially orthogonal to the handle.

16. (Original) The appliance of claim 13, wherein the first aperture is adjacent the second end of the handle.

17. (Currently Amended) The appliance of claim 13, wherein a power cable for supplying power to [[the]] a fan unit is provided, the power cable extending through the second end of the handle.

18. (Original) The appliance of claim 17, wherein the power cable extends substantially centrally through the second end of the handle.

19. (Original) The appliance of claim 10, wherein the handle includes a heater for heating fluid drawn into the primary fluid inlet.

20. (Original) The appliance of claim 19, wherein the heater is downstream of the fan unit.

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
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21. (Original) The appliance of claim 1, comprising a head attachable to the handle, the head comprising a primary fluid outlet for the appliance.

22. (Original) The appliance of claim 21, wherein the primary fluid outlet comprises a plurality of apertures extending at least partially along and around the head.

23. (Original) The appliance of claim 21, wherein the primary fluid flow path is substantially linear through the handle and into the head.

24. (Original) The appliance of claim 1, comprising a body having a primary fluid outlet, wherein the primary fluid outlet is in fluid communication with the primary fluid inlet and the primary fluid flow path.

25. (Original) The appliance of claim 24, wherein the primary fluid flow path from the primary fluid inlet to the primary fluid outlet is non linear.

26. (Currently Amended) A hair care appliance comprising a body and a handle, the handle comprising [[a]] an inner wall and an outer wall, wherein the inner wall is disposed radially inwardly from the outer wall and defines a primary fluid flow path that extends from a primary fluid inlet into the appliance, wherein [[and]] the outer wall is an external surface of the ~~appliance~~ handle, and wherein the primary fluid flow path from the primary fluid inlet to a primary fluid outlet from the body is non linear.

27. (Original) The appliance of claim 26, wherein the primary fluid flows within the handle in a first direction and within the body in a second direction.

28. (Original) The appliance of claim 26, wherein the primary fluid flow in the body is substantially orthogonal to the primary fluid flow in the handle.

29. (Original) The appliance of claim 24, wherein the body comprises a fluid flow path extending from a fluid inlet in the body to a fluid outlet.

30. (Original) The appliance of claim 29, wherein the fluid flow path merges with the primary fluid flow path within the body.

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2252 of 2286

31. (Original) The appliance of claim 30, wherein fluid in the primary fluid flow path exits the body by the primary fluid outlet.

32. (Original) The appliance of claim 29, wherein fluid in the fluid flow is entrained into the body by the action of a fan unit in the primary fluid flow path.

33. (Original) The appliance of claim 29, wherein the fluid flow path is defined by a duct extending through the body.

34. (Original) The appliance of claim 29, wherein the fluid flow path extends from a fluid inlet to a fluid outlet.

35. (Original) The appliance of claim 24, wherein the body comprises a heater for heating fluid in the primary fluid flow path.

36. (Original) The appliance of claim 35, wherein the heater extends around the duct.

37. (Original) The appliance of claim 35, wherein the heater extends along the body.

38. (Original) The appliance of claim 35, wherein the heater is annular.

39. (Original) The appliance of claim 1, wherein the appliance is a hair care appliance.

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2253 of 2286

REMARKS

Claims 1-39 are currently pending. Claims 1, 13, 17, and 26 have been amended. Support is found at least in FIG. 3 and paragraph [0170] of the published application. No new matter has been added.

With respect to all claim amendments, Applicants have not dedicated to the public or abandoned any unclaimed subject matter. These amendments have been made only in the interest of progressing the prosecution of this application, and do not indicate that these amendments are necessary for patentability. Moreover, Applicants have not acquiesced to any rejections and/or objections made by the Patent Office. Applicants reserve the right to pursue prosecution of any presently excluded claim embodiments in a future continuation and/or divisional application.

Applicants' representative, Christopher Gloria, thanks Examiner Gravini for the courtesies extended during the telephonic interview held on April 28, 2016. During the interview, participants discussed the differences between the claims and the applied references. The Examiner agreed that the clarifying amendments presented herein would overcome the rejections.

Claim 17 is rejected under 35 USC 112(b) as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventors regard as the invention. Claim 17 has been amended to address the Examiner's concerns. Accordingly, Applicants respectfully request that this rejection be withdrawn.

Claims 1-6 and 10-12 are rejected under 35 USC 102(a)(1) on Rinker (US 1,564,896). Claims 7-9 are rejected under 35 USC 103 over Rinker in view of Keane (GB 2 431 136). Claim 1 has been amended, in part, to clarify that "the inner wall is disposed radially inwardly from the outer wall." Rinker fails to disclose or suggest this feature. Accordingly, Applicants

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respectfully request that the rejections of claim 1, as amended, and the claims depending therefrom be withdrawn.

Claims 13-25 are rejected under 35 USC 102(a)(1) on Altamore (US 6,148,537). Claim 13 has been amended in similar fashion to claim 1. Altamore fails to disclose or suggest that "the inner wall is disposed radially inwardly from the outer wall." Accordingly, Applicants respectfully request that the rejections of claim 13, as amended, and the claims depending therefrom be withdrawn.

Claims 26-31 and 33-34 are rejected under 35 USC 102(a)(1) on Sarocchi (GB 1 417 052). Claim 32 is rejected under 35 USC 103 over Sarocchi in view of Hoffman (DE 3101933). Claim 26 has been amended to recite that "the inner wall is disposed radially inwardly from the outer wall" and that "the outer wall is an external surface of the handle." Sarocchi fails to disclose or suggest these features. Accordingly, Applicants respectfully request that the rejections of claim 26, as amended, and the claims depending therefrom be withdrawn.

Claims 1-12 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-34 of copending Application No. 14/495,436 in view of Keane. Claims 13-25 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-19 of copending Application No. 14/389,166 in view of Altamore. Claims 26-39 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-2, 4-9 and 11-31 of copending Application No. 14/323,864 in view of Sarocchi. Applicants respectfully request that these provisional rejections be held in abeyance until the application is otherwise in condition for allowance.

Early action allowing claims 1-39 is solicited.

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In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, Applicants petition for any required relief, including extensions of time, and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **424662077100**.

Dated: May 2, 2016

Respectfully submitted,

Electronic signature: /christopher gloria/
Christopher Gloria
Registration No. 71,907
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 400
McLean, Virginia 22102
(703) 760-7389

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2256 of 2286

Electronic Acknowledgement Receipt

EFS ID:	25657215
Application Number:	14323937
International Application Number:	
Confirmation Number:	2130
Title of Invention:	HAND HELD APPLIANCE
First Named Inventor/Applicant Name:	Patrick Joseph William MOLONEY
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Donna Bernecker
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662077100
Receipt Date:	02-MAY-2016
Filing Date:	03-JUL-2014
Time Stamp:	16:15:31
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Amend_424662077100.pdf	38721 443f2d780255a6d4b14b1e88398268b211d09baa	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	8
Warnings:			
Information:			
	Total Files Size (in bytes):	38721	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/323,937	Filing Date 07/03/2014	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **05/02/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 39	Minus	** 39	= 0	X $80 =	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/KIMBERLY PANNELL/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/323,937	07/03/2014	Patrick Joseph William MOLONEY	424662077100	2130

25227 7590 05/05/2016

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER
GRAVINI, STEPHEN MICHAEL

ART UNIT	PAPER NUMBER
3744	

NOTIFICATION DATE	DELIVERY MODE
05/05/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

EOfficeVA@mofo.com
PatentDocket@mofo.com

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2260 of 2286

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/323,937	MOLONEY ET AL.	
	Examiner	Art Unit	
	Stephen M. Gravini	3744	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Stephen M. Gravini*. (3)_____.

(2) *Christopher E. Gloria*. (4)_____.

Date of Interview: *28 April 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1,13 and 26*.

Identification of prior art discussed: *of record*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

distinguishing the recited claim wall and outer wall such that it more clearly defines over the rejecting prior art of record both structurally and functionally will place the application in condition for allowance.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☒ Attachment

/Stephen M Gravini/ Primary Examiner, Art Unit 3744	PTO 413A 20160428 PTOSB439 20160428 IDS 20160419 & 20160121

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SharkNinja et al. v. Dyson Technology Limited,
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Page 2261 of 2286

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/323,937
Filing Date	July 3, 2014
First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3744
Examiner Name	S. M. Gravini
Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/S.G./	1.	US-2,432,067	12-02-1947	Morse	
/S.G./	2.	US-5,784,800	07-28-1998	Santhouse et al.	
/S.G./	3.	US-6,367,162	04-09-2002	Fukumoto et al.	
/S.G./	4.	US-9,144,286	09-29-2015	Courtney et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
/S.G./	5.	GB 972,682	10-14-1964	Stanley Bridges Limited (George Newington BRIDGES)		
/S.G./	6.	KR-2003-0074490	09-19-2003	Kang Su PARK	English language Abstract	

Examiner Signature	/Stephen Gravini/	Date Considered	04/29/2016

*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
/S.G./	7.	Gammack et al., U.S. Office Action mailed February 8, 2016, directed to U.S. Application No. 14/323,848; 11 pages	
/S.G./	8.	Gammack et al., U.S. Office Action mailed February 9, 2016, directed to U.S. Application No. 14/323,739; 10 pages	
/S.G./	9.	Moloney et al., U.S. Office Action mailed February 25, 2016, directed to U.S. Application No. 14/323,864; 9 pages	

Examiner Signature	/Stephen Gravini/	Date Considered	04/29/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

ALTERNATIVE TO PTO/SB/08A/B
(Based on PTO 08-08 version)

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	14/323,937
Filing Date	July 3, 2014
First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3744
Examiner Name	Stephen Michael Gravini
Attorney Docket Number	424662077100

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/S.G./	1.	US-5,555,637	09-17-1996	Montagnino	
/S.G./	2.	US-6,792,692	09-21-2004	Takizawa et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T[6]
/S.G./	3.	JP-41-22432	11-09-1966		Partial Translation	x
/S.G./	4.	JP-48-13744	04-14-1973		English Translation of Abstract	
/S.G./	5.	JP-52-29579	03-01-1977		English Translation of Abstract	
/S.G./	6.	JP-58-32706	03-03-1983	Yoshitaka OHARA; Kunio TAKEMORI; Junji OE	Machine Translation	x
/S.G./	7.	JP-60-193408	10-01-1985		Figures	
/S.G./	8.	JP-63-238807	10-04-1988		Partial Translation	x
/S.G./	9.	JP-2003-153731	05-27-2003	Matsushita Electric Works Ltd. (Hisafumi KODAMA)	Machine Translation	x
/S.G./	10.	JP-2005-532131	10-27-2005	Wella Aktiengesellschaft (Detlef MATTINGER et al.)	Corresponds to US-2005/0229422 previously cited	

Examiner Signature		Date Considered	

*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
/S.G./	1.	Moloney et al., U.S. Office Action mailed January 15, 2016, directed to U.S. Application No. 14/323,785; 13 pages	

Examiner Signature	/Stephen Gravini/	Date Considered	01/26/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

VA-465935

Doc Code: ECOMM.AUTH/ECOMM.WTDW
Doc Description: Internet Communications Authorized/Internet Communications Authorization Withdrawn

PTO/SB/439 (11-15)

AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT APPLICATION OR REQUEST TO WITHDRAW AUTHORIZATION FOR INTERNET COMMUNICATIONS

Application No.	14/323,937
Filing Date	07/03/2014
First Named Inventor	Patrick Joseph William MOLONEY
Art Unit	3744
Examiner Name	GRAVINI, STEPHEN MICHAEL
Practitioner Docket No.	424662077100

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I. To authorize permission for Internet Communications.

☑ Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned and practitioners in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via video conferencing, instant messaging, or electronic mail. I understand that a copy of these communications will be made of record in the application file. (MPEP 502.03)

II. To withdraw authorization for Internet Communications.

☐ The authorization given on _____, to the USPTO to communicate with the undersigned and any practitioner in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via Internet communications such as video conferencing, instant messaging, or electronic mail is hereby withdrawn. I understand that the withdrawal is effective when approved rather than when received.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 71907.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/christopher gloria/ — Signature

4/26/2016 — Date

Christopher Gloria — Typed or printed name

7037607389 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Juristic entities must be represented by a patent practitioner (see 37 CFR 1.31, which is applicable to any paper filed on or after September 16, 2012, that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Doc Code: M865 or FAI.REQ.INTV

PTOL-413A (08-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Applicant Initiated Interview Request Form

Application No.: 14/323,937 First Named Applicant: Patrick Joseph William MOLONEY
Examiner: S.M. Gravini Art Unit: 3744 Status of Application: PENDING

Tentative Participants:

(1) Examiner Stephen M. Gravini **(2)** Christopher Gloria

(3) _____ **(4)** _____

Proposed Date of Interview: April 28, 2016 **Proposed Time:** 10:00am **(AM/PM)**

Type of Interview Requested:

(1) [x] **Telephonic** **(2)** [ ] **Personal** **(3)** [ ] **Video Conference**

Exhibit To Be Shown or Demonstrated: [ ] **YES** [x] **NO**

If yes, provide brief description: _____

Issues To Be Discussed

Issues (Rej., Obj., etc)	Claims/ Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) 102 Rej.	Claim 1	Rinker	[ ]	[ ]	[ ]
(2)			[ ]	[ ]	[ ]
(3)			[ ]	[ ]	[ ]
(4)			[ ]	[ ]	[ ]

[ ] Continuation Sheet Attached [ ] Proposed Amendment or Arguments Attached

Brief Description of Arguments to be Presented: Applicant's representative seek to explore potential amendments to overcome the current rejections.

An interview was conducted on the above-identified application on _____

NOTE: This form should be completed and filed by applicant in advance of the interview (see MPEP § 713.01). If this form is signed by a registered practitioner not of record, the Office will accept this as an indication that he or she is authorized to conduct an interview on behalf of the principal (37 CFR 1.32(a)(3)) pursuant to 37 CFR 1.34. This is not a power of attorney to any above named practitioner. See the Instruction Sheet for this form, which is incorporated by reference. By signing this form, applicant or practitioner is certifying that he or she has read the Instruction Sheet. After the interview is conducted, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible. This application will not be delayed from issue because of applicant's failure to submit a written record of this interview.

/christopher gloria/
Applicant/Applicant's Representative Signature

Christopher Gloria
Typed/Printed Name of Applicant or Representative

71,907
Registration Number, if applicable

/Stephen Gravini/
Examiner/SPE Signature

va-472161

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

25227 7590 05/25/2016
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER
GRAVINI, STEPHEN MICHAEL

ART UNIT	PAPER NUMBER
3744	

DATE MAILED: 05/25/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/323,937	07/03/2014	Patrick Joseph William MOLONEY	424662077100	2130

TITLE OF INVENTION: HAND HELD APPLIANCE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	08/25/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2268 of 2286

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

25227 7590 05/25/2016
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/323,937	07/03/2014	Patrick Joseph William MOLONEY	424662077100	2130

TITLE OF INVENTION: HAND HELD APPLIANCE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	08/25/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
GRAVINI, STEPHEN MICHAEL	3744	034-097000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/323,937	07/03/2014	Patrick Joseph William MOLONEY	424662077100	2130

25227 7590 05/25/2016

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

EXAMINER	
GRAVINI, STEPHEN MICHAEL	
ART UNIT	PAPER NUMBER
3744	

DATE MAILED: 05/25/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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SharkNinja et al. v. Dyson Technology Limited,
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Page 2270 of 2286

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/323,937	Applicant(s) MOLONEY ET AL.	
	Examiner Stephen M. Gravini	Art Unit 3744	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *papers filed through May 2, 2016*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-39*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☒ All b) ☐ Some *c) ☐ None of the:
   1. ☒ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/Stephen M Gravini/
Primary Examiner, Art Unit 3744

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Page 2272 of 2286

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BIB DATA SHEET

CONFIRMATION NO. 2130

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/323,937	07/03/2014 RULE	034	3744	424662077100

APPLICANTS

Dyson Technology Limited, Wiltshire, UNITED KINGDOM;

INVENTORS

Patrick Joseph William MOLONEY, Swindon, UNITED KINGDOM;
Edward Sebert Maurice SHELTON, Swindon, UNITED KINGDOM;
Stephen Benjamin COURTNEY, Bath, UNITED KINGDOM;
Daniel Martin TAYLOR, Bristol, UNITED KINGDOM;

**** CONTINUING DATA ***************************

**** FOREIGN APPLICATIONS ***************************

UNITED KINGDOM 1312068.8 07/05/2013

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

07/17/2014

Foreign Priority claimed	☑ Yes ☐ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☑ Yes ☐ No		UNITED KINGDOM	18	39	3
Verified and Acknowledged	/STEPHEN MICHAEL GRAVINI/ Examiner's Signature	Initials				

ADDRESS

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102
UNITED STATES

TITLE

HAND HELD APPLIANCE

FILING FEE RECEIVED		
3260	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2273 of 2286

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	48	((Patrick) near2 (MOLONEY)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/05/18 07:32
L2	55	((Edward) near2 (SHELTON)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/05/18 07:32
L3	188	((Stephen) near2 (COURTNEY)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/05/18 07:32
L4	253	((Daniel) near2 (TAYLOR)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/05/18 07:32
L5	10	((Patrick) near2 (MOLONEY)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/05/18 07:32
L6	6	((Edward) near2 (SHELTON)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/05/18 07:32
L7	69	((Stephen) near2 (COURTNEY)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/05/18 07:32
L8	39	((Daniel) near2 (TAYLOR)).INV.	EPO; JPO; DERWENT	OR	OFF	2016/05/18 07:32
L9	324	("Dyson Technology Limited").AANM.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/05/18 07:32
L10	0	("Dyson Technology Limited").AANM.	EPO; JPO; DERWENT	OR	OFF	2016/05/18 07:32
L11	75	("20030041471" | "20040163274" | "20040172847" | "20050229422" | "20060075654" | "20070294909" | "20100064542" | "20100065545" | "20110079239" | "20110177711" | "20110203128" | "20110219636" | "20130111777" | "20130269200" | "20130269201" | "20130276320" | "20130276321" | "20130283630" | "20130283631" | "20130326898" | "20140007448" | "20140007449" | "20140007450" | "20150007442" | "20150007443" | "20150007854" | "20150007855" | "5378882" | "5444215" | "5546674" | "5572800" | "5598640" | "5681630" | "5857262" | "5875562" | "5956863" | "5996243" | "6148537" | "6203349" | "6591516" | "6751886" | "6889445" | "7412781" | "7913416" |	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 07:33

		"8132571" | "8782920" | "D352365" | "D550813" | "D646354" | "D682472" | "D696386" | "D702322" | "D716492").PN.				
L12	10	("3265075" | "4506454" | "5121463" | "5954064" | "8496028").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 07:33
L13	3	("5555637" | "6792692").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 07:33
L14	23	("1564896" | "20150007442" | "20150007443" | "20150007444" | "20150007855" | "20150089828" | "20150093099" | "8893400" | "9173468").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 07:33
L15	18	("2432067" | "5784800" | "6367162" | "9144286").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 07:33
L16	19	(1 2 3 4 5 6 7 8 9 10) and (body and handle and inner and outer and wall and fluid and flow and path and primary and (non-linear non adj linear nonlinear))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 10:00
L17	0	(1 2 3 4 5 6 7 8 9 10) and (body and handle and inner and outer and wall and fluid and flow and path and primary and (non-linear non adj linear nonlinear)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 10:00
L18	14	(11 12 13 14 15) and (body and handle and inner and outer and wall and fluid and flow and path and primary and (non-linear non adj linear nonlinear))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 10:01
L19	0	(11 12 13 14 15) and (body and handle and inner and outer and wall and fluid and flow and path and primary and (non-linear non adj linear nonlinear)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 10:01
L20	0	(11 12 13 14 15) and (body and handle and inner and outer and wall and fluid and flow and path and primary and (non-linear non adj linear nonlinear)).ab.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO	OR	OFF	2016/05/18 10:01

5/18/2016 11:25:08 AM

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2276 of 2286

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14323937	MOLONEY ET AL.
	Examiner	**Art Unit**
	STEVE M GRAVINI	3744

CPC						
Symbol					**Type**	**Version**
A45D		20	/	10	F	2013-01-01
A45D		20	/	50	I	2013-01-01
A45D		20	/	00	I	2013-01-01
			/			
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			/			
			/			
			/			
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			/			
			/			
			/			

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	39	
/STEPHEN M GRAVINI/ Primary Examiner.Art Unit 3744	05/18/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14323937	MOLONEY ET AL.
	Examiner	**Art Unit**
	STEVE M GRAVINI	3744

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION											
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED						
34	97	A	4	5	D	20 / 00 (2006.01.01)							

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
132	271				
138	37				
392	384				

NONE	Total Claims Allowed:	
(Assistant Examiner) (Date)	39	
/STEPHEN M GRAVINI/ Primary Examiner.Art Unit 3744 05/18/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner) (Date)	1	3

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14323937	MOLONEY ET AL.
	Examiner	**Art Unit**
	STEVE M GRAVINI	3744

☒ **Claims renumbered in the same order as presented by applicant** ☐ **CPA** ☐ **T.D.** ☐ **R.1.47**

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	39	
/STEPHEN M GRAVINI/ Primary Examiner.Art Unit 3744	05/18/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

SharkNinja Ex. 1002
SharkNinja et al. v. Dyson Technology Limited,
IPR2023-01324
Page 2279 of 2286

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14323937	MOLONEY ET AL.
	Examiner	Art Unit
	STEVE M GRAVINI	3744

CPC- SEARCHED		
Symbol	Date	Examiner
F26B 11/00, 19/00, 21/00, 21/06	5/18/2016	smg
A45D 20/00, 20/50, 20/12	5/18/2016	smg
F24H 3/00, 3/0423	5/18/2016	smg

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
A45D 20/00	5/18/2016	smg

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
34	97, 98, 99, 100	5/18/2016	smg
392	380, 384, 385	5/18/2016	smg
132	271	5/18/2016	smg
138	37	5/18/2016	smg

SEARCH NOTES		
Search Notes	Date	Examiner
considered similar applications from same inventive entity, including prosecution history, of applications: 14495436, 14323864, 14323785, 14323848, 14323739, 13853835, 13853739, 13934692	5/18/2016	smg
EAST US and foreign patent databases searches including US interference databases searches	5/18/2016	smg

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
see search notes	and areas searched (all the same here)	5/18/2016	smg

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SharkNinja et al. v. Dyson Technology Limited,
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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

MORRISON & FOERSTER LLP
1650 Tysons Boulevard
Suite 400
McLean, Virginia 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/323,937	07/03/2014	Patrick Joseph William MOLONEY	424662077100	2130

TITLE OF INVENTION: HAND HELD APPLIANCE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	08/25/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
GRAVINI, STEPHEN MICHAEL	3744	034-097000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Morrison & Foerster LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Dyson Technology Limited

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Malmesbury, Wiltshire, United Kingdom

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☒ Advance Order - # of Copies 2

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number **03-1952** (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /christopher gloria/ Date July 11, 2016

Typed or printed name Christopher Gloria Registration No. 71,907

Electronic Patent Application Fee Transmittal

Application Number:	14323937
Filing Date:	03-Jul-2014
Title of Invention:	HAND HELD APPLIANCE
First Named Inventor/Applicant Name:	Patrick Joseph William MOLONEY
Filer:	Christopher Elmose Gloria/Donna Bernecker
Attorney Docket Number:	424662077100

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
Printed Copy of Patent - No Color	8001	2	3	6
		Total in USD ($)		**966**

Electronic Acknowledgement Receipt

EFS ID:	26305674
Application Number:	14323937
International Application Number:	
Confirmation Number:	2130
Title of Invention:	HAND HELD APPLIANCE
First Named Inventor/Applicant Name:	Patrick Joseph William MOLONEY
Customer Number:	25227
Filer:	Christopher Elmose Gloria/Donna Bernecker
Filer Authorized By:	Christopher Elmose Gloria
Attorney Docket Number:	424662077100
Receipt Date:	11-JUL-2016
Filing Date:	03-JUL-2014
Time Stamp:	12:08:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$966
RAM confirmation Number	071116INTEFSW00009707031952
Deposit Account	031952
Authorized User	Donna Bernecker

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	IssueFee_424662077100.pdf	33549 e430a8fafb4c102a58a956cf5040018e9ee82f25	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32274 024fbcc3608afe689fee45ff62ffcce34bdad2d9	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	65823		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/323,937	08/16/2016	9414662	424662077100	2130

25227 7590 07/27/2016

MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 152 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Patrick Joseph William MOLONEY, Swindon, UNITED KINGDOM;
Dyson Technology Limited, Wiltshire, UNITED KINGDOM;
Edward Sebert Maurice SHELTON, Swindon, UNITED KINGDOM;
Stephen Benjamin COURTNEY, Bath, UNITED KINGDOM;
Daniel Martin TAYLOR, Bristol, UNITED KINGDOM;

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