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# UTILITY PATENT APPLICATION TRANSMITTAL

*(ONLY FOR NEW NONPROVISIONAL APPLICATIONS UNDER 37 CFR 1.53(B))*

| | |
|---|---|
| *Attorney Docket No.* | 424662093300 |
| *First Named Inventor* | Alasdair Michael MACLAINE |
| *Title* | ATTACHMENT FOR A HAND HELD APPLIANCE |
| *Express Mail Label No.* | |

## APPLICATION ELEMENTS

*See MPEP chapter 600 concerning utility patent application contents.*

1. [X] **Fee Transmittal Form** (PTO/SB/17 or equivalent)
2. [ ] **Applicant asserts small entity status.** See 37 CFR 1.27
3. [ ] **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. [X] **Specification** [*Total Pages* 28 ]
   Both the claims and abstract must start on a new page.
   *(See MPEP § 608.01(a) for information on the preferred arrangement)*
5. [X] **Drawing(s)** (35 U.S.C. 113) [*Total Sheets* 17 ]
6. **Inventor's Oath or Declaration** [*Total Pages* ]
   *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   a. [ ] Newly executed (original or copy)
   b. [ ] A copy from a prior application (37 CFR 1.63(d))
7. [X] **Application Data Sheet** ** See note below.*
   See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. **CD-ROM or CD-R** in duplicate, large table, or Computer Program (*Appendix*)
   [ ] Landscape Table on CD
9. **Nucleotide and/or Amino Acid Sequence Submission** (*if applicable, items a. – c. are required*)
   a. [ ] Computer Readable Form (CRF)
   b. [ ] Specification Sequence Listing on:
      i. [ ] CD-ROM or CD-R (2 copies); or
      ii. [ ] Paper
   c. [ ] Statements verifying identity of above copies

*ADDRESS TO:* **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**

## ACCOMPANYING APPLICATION PAPERS

10. [ ] **Assignment Papers** (cover sheet & document(s))
    Name of Assignee: DYSON TECHNOLOGY LIMITED
11. [ ] **37 CFR 3.73(c) Statement** (*when there is an assignee*) [X] **Power of Attorney**
12. [ ] **English Translation Document** (*if applicable*)
13. [X] **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    [X] Copies of citations attached
14. [ ] **Preliminary Amendment**
15. [ ] **Return Receipt Postcard** (*MPEP § 503*) (*Should be specifically itemized*)
16. [ ] **Certified Copy of Priority Document(s)** (*if foreign priority is claimed*)
17. [ ] **Nonpublication Request** Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
18. [ ] **Other:**

***Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

## 19. CORRESPONDENCE ADDRESS

[X] The address associated with Customer Number: 25227 **OR** [ ] Correspondence address below

| | | | | | |
|---|---|---|---|---|---|
| Name | | | | | |
| Address | | | | | |
| City | | State | | Zip Code | |
| Country | | Telephone | | Email | |

| | | | |
|---|---|---|---|
| Signature | /christopher gloria/ | Date | March 12, 2015 |
| Name (Print/Type) | Christopher Gloria | Registration No. (Attorney/Agent) | 71,907 |

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: March 12, 2015 Signature: /dbernecker/ (Donna Bernecker)



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# POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

| Application Number | Filing Date |
|---|---|
| | |

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

[X] I hereby appoint Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 25227

**OR**

[ ] I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

**Please recognize or change the correspondence address for the application identified in the attached transmittal letter to:**

[X] The address associated with the above-mentioned Customer Number

**OR**

[ ] The address associated with Customer Number:

**OR**

| | | | | | |
|---|---|---|---|---|---|
| Firm or Individual Name | | | | | |
| Address | | | | | |
| City | | State | | Zip | |
| Country | | | | | |
| Telephone | | Email | | | |

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Dyson Technology Limited

[ ] Inventor or Joint Inventor (title not required below)

[ ] Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

[X] Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

[ ] Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

**SIGNATURE of Applicant for Patent**

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

| | | | |
|---|---|---|---|
| Signature | G.R. Smith | Date (Optional) | 14. May. 2014 |
| Name | Gillian R. Smith | | |
| Title | Group IP Director, Dyson Technology Limited | | |

**NOTE:** Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

[ ] Total of 1 forms are submitted.

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| Application Data Sheet 37 CFR 1.76 | Attorney Docket Number | 424662093300 |
|---|---|---|
| | Application Number | |
| Title of Invention | ATTACHMENT FOR A HAND HELD APPLIANCE | |

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

## Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

## Inventor Information:

**Inventor 1** Remove

**Legal Name**

| Prefix | Given Name | Middle Name | Family Name | Suffix |
|---|---|---|---|---|
| Mr. | Alasdair | Michael | MACLAINE | |

**Residence Information (Select One)** ○ US Residency ◉ Non US Residency ○ Active US Military Service

| City | London | Country of Residence i | GB |
|---|---|---|---|

**Mailing Address of Inventor:**

| | | | |
|---|---|---|---|
| **Address 1** | c/o Dyson Technology Limited | | |
| **Address 2** | Tetbury Hill, Malmesbury | | |
| **City** | Wiltshire | **State/Province** | |
| **Postal Code** | SN16 0RP | **Country** i | GB |

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

## Correspondence Information:

**Enter either Customer Number or complete the Correspondence Information section below.**
**For further information see 37 CFR 1.33(a).**

☐ **An Address is being provided for the correspondence Information of this application.**

| | | | |
|---|---|---|---|
| **Customer Number** | 25227 | | |
| **Email Address** | PatentDocket@mofo.com | Add Email | Remove Email |

## Application Information:

| | | | |
|---|---|---|---|
| **Title of the Invention** | ATTACHMENT FOR A HAND HELD APPLIANCE | | |
| **Attorney Docket Number** | 424662093300 | **Small Entity Status Claimed** | ☐ |
| **Application Type** | Nonprovisional | | |
| **Subject Matter** | Utility | | |
| **Total Number of Drawing Sheets (if any)** | 17 | **Suggested Figure for Publication (if any)** | |

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| Application Data Sheet 37 CFR 1.76 | Attorney Docket Number | 424662093300 |
|---|---|---|
| | Application Number | |
| Title of Invention | ATTACHMENT FOR A HAND HELD APPLIANCE | |

## Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

| Application number of the previously filed application | Filing date (YYYY-MM-DD) | Intellectual Property Authority or Country |
|---|---|---|
| | | |

## Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

## Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

| Please Select One: | ◉ Customer Number | ○ US Patent Practitioner | ○ Limited Recognition (37 CFR 11.9) |
|---|---|---|---|
| Customer Number | 25227 | | |

## Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

| Prior Application Status | | | Remove |
|---|---|---|---|
| Application Number | Continuity Type | Prior Application Number | Filing Date (YYYY-MM-DD) |
| | | | |

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

## Foreign Priority Information:

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| Application Data Sheet 37 CFR 1.76 | Attorney Docket Number | 424662093300 |
|---|---|---|
| | Application Number | |
| Title of Invention | ATTACHMENT FOR A HAND HELD APPLIANCE | |

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) [i]the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

| Application Number | Country [i] | Filing Date (YYYY-MM-DD) | Access Code[i] (if applicable) |
|---|---|---|---|
| 1404982.9 | GB | 2014-03-20 | |

Remove

| Application Number | Country [i] | Filing Date (YYYY-MM-DD) | Access Code[i] (if applicable) |
|---|---|---|---|
| 1404985.2 | GB | 2014-03-20 | |

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

## Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

## Authorization to Permit Access:

☐ Authorization to Permit Access to the Instant Application by the Participating Offices

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| **Application Data Sheet 37 CFR 1.76** | Attorney Docket Number | 424662093300 |
|---|---|---|
| | Application Number | |
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If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

## Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

**Applicant 1** Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

| ◉ Assignee | ○ Legal Representative under 35 U.S.C. 117 | ○ Joint Inventor |
|---|---|---|
| ○ Person to whom the inventor is obligated to assign. | ○ Person who shows sufficient proprietary interest | |

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

| Organization Name | Dyson Technology Limited | | |
|---|---|---|---|
| **Mailing Address Information:** | | | |
| **Address 1** | Tetbury Hill, Malmesbury | | |
| Address 2 | | | |
| **City** | Wiltshire | **State/Province** | |
| **Country** [i] | GB | Postal Code | SN16 0RP |
| Phone Number | | Fax Number | |

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| Application Data Sheet 37 CFR 1.76 | Attorney Docket Number | 424662093300 |
|---|---|---|
| | Application Number | |
| Title of Invention | ATTACHMENT FOR A HAND HELD APPLIANCE | |

| Email Address | |
|---|---|

Additional Applicant Data may be generated within this form by selecting the Add button. Add

## Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

**Assignee 1**

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

| Organization Name | Dyson Technology Limited |
|---|---|

**Mailing Address Information For Assignee including Non-Applicant Assignee:**

| **Address 1** | Tetbury Hill, Malmesbury | | |
|---|---|---|---|
| Address 2 | | | |
| **City** | Wiltshire | **State/Province** | |
| **Country** i | GB | Postal Code | SN16 0RP |
| Phone Number | | Fax Number | |
| Email Address | | | |

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

## Signature:

Remove

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications

| **Signature** | /christopher gloria/ | | | Date (YYYY-MM-DD) | 2015-03-12 |
|---|---|---|---|---|---|
| First Name | Christopher | Last Name | Gloria | Registration Number | 71907 |

Additional Signature may be generated within this form by selecting the Add button. Add

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| **Application Data Sheet 37 CFR 1.76** | Attorney Docket Number | 424662093300 |
|---|---|---|
| | Application Number | |
| Title of Invention | ATTACHMENT FOR A HAND HELD APPLIANCE | |

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

# 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 the Freedom of Information Act requires disclosure of these records.

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 inspections 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.



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# ATTACHMENT FOR A HAND HELD APPLIANCE

## REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the priority of United Kingdom Application Nos. 1404982.9, and 1404985.2, both filed March 20, 2014, the entire contents of which are incorporated herein by reference.

## FIELD OF THE INVENTION

[0002] This invention relates to an attachment for a hand held appliance, in particular a hair care appliance such as a hot styling brush.

## BACKGROUND OF THE INVENTION

[0003] In a conventional hot styling brush, air is sucked into an inlet by a fan unit and directed towards the hair by an attachment or head. Depending on the style desired, the air may or may not be heated. The head or attachment often includes bristles onto which hair is wrapped and held for styling. The air is generally blown out of the head or attachment normal to the surface of the head.

## SUMMARY OF THE INVENTION

[0004] The present invention provides an attachment for a hand held appliance comprising an inlet, an outlet, and a fluid flow path between the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment wherein fluid emitted from the outlet is blown along the external surface.

[0005] Preferably, the slot extends substantially along the length of the attachment.



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[0006] It is preferred that the outlet comprises a plurality of slots radially spaced around the attachment.

[0007] Preferably, fluid emitted from the outlet flows around the external surface of the attachment. It is preferred that the fluid emitted from the outlet is tangential to the external surface of the attachment. Preferably, the fluid emitted from the outlet is attracted to the surface of the attachment.

[0008] By having the fluid exiting the fluid outlet travelling around the outer surface of the head hair is attracted to the surface and easily wraps around to create the style.

[0009] It is preferred that the attachment is generally cylindrical.

[0010] Preferably, the outlet comprises two slots.

[0011] It is preferred that the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is parallel to the longitudinal axis.

[0012] Alternatively, the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is non-parallel to the longitudinal axis. It is preferred that the at least one slot is helical with respect to the longitudinal axis.

[0013] A curved slot changes the direction that fluid flows out from the fluid outlet tending to give a flow that is more normal to the surface of the attachment and this improves the hold of the hair around the attachment.

[0014] Preferably, the attachment further comprises a flow directing element between the inlet and the outlet. The flow directing element also changes the direction that fluid flows



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out from the fluid outlet tending to give a flow that is more normal to the surface of the attachment and this improves the hold of the hair around the attachment. In addition, the flow directing element reduces the velocity of the fluid within the attachment which in turn reduces the noise produced by the attachment.

[0015] It is preferred that the flow directing element comprises a perforated layer. Preferably, the perforated layer is formed from a mesh or weave of an elongate material. It is preferred that the elongate material is a wire. Preferably, the flow directing element extends substantially along the length of the at least one slot. It is preferred that the flow directing element extends substantially around an inner circumference of the attachment.

[0016] According to a second aspect, the invention provides a hand held appliance comprising a handle having a fluid flow path from an inlet to an outlet and a fan unit for drawing fluid into the fluid inlet and an attachment for attaching to the handle, the attachment comprising an inlet, an outlet, and a fluid flow path between the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment and fluid emitted from the outlet is blown along the external surface.

[0017] According to a third embodiment, the invention provides an attachment for a hand held appliance comprising a first part and a second part, the first part comprising a first end of the attachment and at least one plate extending from the first end, the second part comprising a second end of the attachment and at least one further plate extending from the second end wherein when the first part and the second part are connected at least two slots are formed between the at least one plate and the at least one further plate, the at least two slots defining a fluid outlet for the attachment.



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[0018] Preferably, the first end of the attachment comprises a fluid inlet into the attachment.

[0019] It is preferred that the first end of the attachment includes a supporting ring for supporting the at least one plate.

[0020] Preferably, the supporting ring comprises at least one recess for housing an end of the at least one further plate.

[0021] It is preferred that the supporting ring is additionally a collar for attaching the attachment to the appliance.

[0022] Preferably, the first part of the attachment includes a supporting scaffold located at or near a distal end to the first end of the first part of the attachment.

[0023] It is preferred that the supporting scaffold is attached to the at least one plate.

[0024] Preferably, the supporting scaffold includes a part of a fixture for fixing the first part and the second part together.

[0025] It is preferred that the second end of the attachment includes at least one further recess for housing an end of the at least one plate.

[0026] Preferably, the second end of the attachment includes another part of a fixture for fixing the first and the second part together.

[0027] It is preferred that one or more of the at least one plate and the at least one further plate are arcuate.



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[0028] Preferably, one or more of the at least one plate and the at least one further plate extend orthogonally from a respective end.

[0029] Alternatively, the at least one plate and the at least one further plate curve round a longitudinal axis of the attachment.

[0030] Preferably, the at least one plate and the at least one further plate are helical.

[0031] It is preferred that the at least one plate and the at least one further plate are helical in a clockwise direction from the first end.

[0032] A curved slot changes the direction that fluid flows out from the fluid outlet tending to give a flow that is more normal to the surface of the attachment and this improves the hold of the hair around the attachment.

[0033] Preferably, a gap formed between the at least one plate and the at least one further plate is defined by a spacer.

[0034] It is preferred that a pair of spacers is provided longitudinally spaced along the at least one plate and the at least one further plate.

[0035] Any spacers maintain the gap between the two parts forming the slot or thickness of the slot. It is advantageous for these to all be substantially equal is this creates an even flow around the attachment.

[0036] Preferably, at least one of the at least one plate and the at least one further plate is lined with a material.



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[0037] It is preferred that every plate is lined with material.

[0038] Preferably, the material absorbs sounds and/or vibrations.

[0039] It is preferred that the material is Kevlar or wool.

[0040] Preferably, the attachment further comprises a flow directing element between the fluid inlet and the fluid outlet. The flow directing element also changes the direction that fluid flows out from the fluid outlet tending to give a flow that is more normal to the surface of the attachment and this improves the hold of the hair around the attachment. In addition, the flow directing element reduces the velocity of the fluid within the attachment which in turn reduces the noise produced by the attachment.

[0041] It is preferred that the flow directing element comprises a perforated layer.

[0042] Preferably, the perforated layer is formed from a mesh or weave of an elongate material.

[0043] It is preferred that the elongate material is a wire.

[0044] Preferably, the flow directing element extends substantially along the length of the at least one slot.

[0045] It is preferred that the flow directing element extends substantially around an inner circumference of the attachment.



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[0046] According to a fourth aspect, the invention provides a hand held appliance comprising a handle having a fluid flow path from a fluid inlet to a fluid outlet and a fan unit for drawing fluid into the fluid inlet and an attachment for attaching to the handle, the attachment comprising a first part and a second part, the first part comprising a first end of the attachment and at least one plate extending from the first end, the second part comprising a second end of the attachment and at least one further plate extending from the second end wherein when the first part and the second part are connected at least two slots are formed between the at least one plate and the at least one further plate, the at least two slots defining a fluid outlet for the attachment.

[0047] In one embodiment the appliance is a hair care appliance.

[0048] In another embodiment the appliance is a hot styling appliance such as a hot styling appliance such as a hot styling brush.

[0049] The invention will now be described by example, with reference to the accompanying drawings, of which:

## BRIEF DESCRIPTION OF THE DRAWINGS

[0050] Figure 1a shows an example of an appliance according to the invention;

[0051] Figure 1b shows a cross section through the appliance shown in Figure 1a;

[0052] Figure 2a shows an exploded view of some of the handle components of the device of Figure 1a;

[0053] Figure 2b shows an enlarged section of the fluid inlet;



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[0054] Figures 3a and 3b show an isometric view and an isometric cross section through a first attachment according to the invention;

[0055] Figures 4a and 4b show a side view and a side view cross section through the first attachment;

[0056] Figures 5a and 5b show cross sections through the first attachment;

[0057] Figures 6a and 6b show an isometric view and a side view through a second attachment;

[0058] Figure 7a shows an isometric view through another attachment;

[0059] Figures 7b and 7c show an isometric view and a side view through a further attachment;

[0060] Figure 8a shows an isometric view of a fifth attachment;

[0061] Figure 8b shows an isometric view of a sixth attachment;

[0062] Figures 9a and 9b show isometric views of a two part assembly for an attachment;

[0063] Figures 10a and 10b show an isometric view and an isometric cross section through a further attachment according to the invention;

[0064] Figures 11a, 11b and 11c show a side view and a side view cross sections through the further attachment;



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[0065] Figures 12a and 12b show cross sections through the further attachment in a first position;

[0066] Figures 13a and 13b show cross sections through the further attachment in a second position;

[0067] Figure 14 shows schematically the further attachment in use; and

[0068] Figure 15a shows an isometric view of another attachment;

[0069] Figure 15b shows different component parts of the other attachment;

[0070] Figure 15c shows the different component parts from the inlet end;

[0071] Figure 15d shows a cross section through the side of the other attachment;

[0072] Figure 15e shows a cross section through the other attachment; and

[0073] Figures 16a and 16b show an alternative sock for the other attachment.

## DETAILED DESCRIPTION OF THE INVENTION

[0074] Figures 1a and 1b shows a hot styling brush 10 with a handle 20 and a detachable head or attachment 30 which is attaches at the distal end 22 of the handle 20 to the fluid inlet 40.

[0075] The handle 20 has an outer wall 26 which is generally tubular and includes the fluid inlet 40 at and adjacent one end 24. The fluid inlet 40 comprises a first set of apertures 44 which extend radially around the handle 20 and along the outer wall 26 of the handle from



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the handle end 24. The handle end 24 is covered by an end wall 42 which is also perforated with a second set of apertures 46 that extend through the end wall 42 of the handle. Thus, the fluid inlet 40 extends around, along and across the handle 20. The end wall 42 is orthogonal to the outer wall 26 and an inner wall 60 of the handle.

[0076] The handle 20 also includes a fan unit 70 which comprises a fan and a motor which drives the fan and in use, draws fluid in through the fluid inlet 40, along a fluid flow path 50 which extends through the length of the handle 20. The fluid is optionally heater by a heater 80 before entering an inner cavity 38 of the head 30.

[0077] The head 30 includes a fluid outlet 100 which in this example comprises parallel slots 102 each extending towards a second end 36 of the head and radially around the head 30. This arrangement enables fluid to exit the head all the way around the head and for the majority of the length of the head 30 maximising a hair styling region of the product.

[0078] In use, hair is wrapped around the head 30 whilst air or fluid exits through the slots 102 drying the hair and/or styling the hair into curls or waves. The hair wraps automatically due to the flow of air around the surface of the head 30. The air or fluid can be heated but this is not essential.

[0079] Power is provided to the appliance via a power cable 48 which preferably extends from a plug or other power source through the end wall 42 of the handle 20. The handle 20 also houses a PCB 75 which is electrically connected to the cable 48, the fan unit 70 and the heater 80 by internal wiring (not shown). An on/off switch 52 and control buttons 54 are provided and connected to the PCB 75 to allow the user to select one of a range of temperature and flow settings.



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[0080] Figure 2a shows an exploded view of various parts of the handle 20 in more detail. The handle 20 is tubular and the outer wall 26 of the handle 20 is a cylindrical sleeve made from for example an extruded tube or rolled sheet of metal such as aluminium, an aluminium alloy or a steel. The handle connects to a head 30 at a first end 22 and at the distal, second end 24 a fluid inlet 40 is provided. The fluid inlet 40 is a first means of filtering fluid that enters the fluid flow path 50.

[0081] The fluid inlet 40 comprises a plurality of apertures extending around, along and across the handle 20. 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.

[0082] 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 44 that extend around and along the handle 20. However, the apertures 46 that extend under the handle and across the end wall 42 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 fluid inlet 40. However, by having apertures that extend around, along and across the handle 20 the risk of blocking the fluid inlet 40 is reduced.

[0083] 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. It is



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advantageous to space the apertures regularly around, along and across the fluid inlet 40. Not only is this visually pleasing but it also has the technical advantage that there is no weak region of the fluid inlet 40 where blockage of a portion is more likely or would have more impact on the flow into the fluid inlet 40. The inlet is designed so that the flow into the inlet is even at least around the circumference of the handle 20.

[0084] A foam block 48 is provided which in use is inserted into the second end 24 of the handle 20. The foam block 48 is a second means of filtering the fluid that passes through the primary fluid inlet 40 into the primary fluid flow path 50. It is advantageous that the foam block 48 extends beyond or further towards the first end 22 of the handle than the primary fluid inlet 40 as this ensures that fluid that has entered the primary fluid inlet 40 has passed through the foam block 48 so has had two stages of filtration. In other words, the foam block 48 extends from the second end 24 of the handle 20 past the downstream end 44a of the fluid inlet.

[0085] The foam block 48 shown is cylindrical and substantially fills the area within the handle 20 at the primary fluid inlet 40. This is to ensure that all fluid that enters the primary fluid inlet through first apertures 44 that extend around and along the handle and fluid that enters through second apertures 46 that extend across and through the end wal1 42 of the handle 20 passes through this second stage of filtration. The foam block 48 extends longitudinally from the second end 24 of the handle 20 further than the first apertures 42 of the primary fluid inlet 40.

[0086] The first apertures 44 that extend along and around the outer wall 26 are machined, punched or laser cut from the extruded tube or sheet metal that the outer wall 26 is formed from.



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[0087] The handle 20 has an outer wall 26 and an inner wall 60, the outer wall 26 slides over the inner wall 60 to form the finished product. The inner wall 60 is a duct which surrounds and defines a fluid flow path 50 through the appliance. The outer wall 26 includes a grippable portion and in these examples, includes the fluid inlet 40 into the fluid flow path 50. An insulting layer of material 28 is provided within the inner wall 60. 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 appliance, vibrations caused by the fan unit and noise produced within the appliance by the flow of fluid through the fluid flow path 50. The insulating layer absorbs energy including airborne noise.

[0088] The inner wall 60 provides a housing 62 in which a fan unit 70 is disposed. The housing 62 is cylindrical and has an inwardly protruding ledge 64,66 disposed one at each end of the housing 62 which maintain the position of the fan unit 70 within the handle 20. The inner wall 60 is made from two parts a first part 60a and a second part 60b which is moulded separately. This enables easier assembly of the fan unit 70 within the handle 20 than a one piece inner wall. A similar pair of inwardly protruding ledges 68, 72 maintains the position of the heater 80 within the handle 20.

[0089] Although the outer wall 26 of the handle 20 has been described as being made from an extruded tube or a rolled sheet of metal, alternatives methods of manufacture and materials could be used; these include, but are not limited to, a plastic extrusion/moulded tube or a composite tube such as carbon fibre reinforced plastic.

[0090] The fluid outlet 100 of the head 30 will now be described in more detail, referring in particular to Figures 3a, 3b, 4a, 4b, 5a and 5b. The head 30 is essentially cylindrical and has a first end 32 for connection to a handle 20 and a second end 36 distal to the first end 32. The head 30 extends longitudinally from the first end 32 to the second end 26 continuing a line described by the handle 20 (Figure 1a) so is approximately the same diameter as the



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handle. Within the head 30 is an inner cavity 38 and fluid that has been drawn into the fluid flow path 50 within the handle 20 by the fan unit 70 enters the inner cavity 38 via an aperture 302 in the first end 32 of the head 30.

[0091] The fluid outlet 100 is formed from a number of parallel slots 102 which extend along the length of the head 30 from the first end 32 to the second end 36. The slots 102 are formed from an overlap 120 (Figure 5b) formed between adjacent plates 110 which results in fluid being directed between a radially inner surface 104 formed from the outer surface 112 of a first plate 110a and a radially outer surface 106 formed from the inner surface 114 of a second plate 110b. The fluid 122 flowing out of the slot 102 is tangential 130 to the outer surface 112 of the plate 110a and joins with the fluid flowing out of the other slots of the fluid outlet 100 forming a fluid flow around the circumference of the head 30. Thus, the fluid 122 is blown out along the external surface of the head and this encourages hair to wrap around the head 30 automatically.

[0092] The fluid 122 exiting the slots 102 is attracted to the curved surface of the head 30 by the Coanda effect. This in turn causes hair that is presented to the head 30 to automatically wrap around the surface and then styled into curls. As air is blown down the length of the hair, wet hair is dried more quickly than conventionally and as the wrapping process occurs without the use of bristles, the hair can slide off the head 30 once it is dry or styled so there is no tangling.

[0093] To maintain the size of each slot 102, spacers 108 are provided. In this example, a pair of spacers 108 is provided to maintain each slot 102 size. Each one of the pair of spacers 108 is longitudinally spaced along the slot 102 and the plate 110. The spacers 108 join adjacent plates 110 together.



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[0094] Advantageously, each plate 110 is lined with a felt like material 308 such as Kevlar or wool (see Figure 3b). The material 308 does not extend over each slot 102 so the fluid exiting the fluid outlet 100 does not pass through the layer of material 308. This layer serves to absorb some of the noise produced by the fluid flowing through the head 30 from the inlet to the head 30 at aperture 302 to the fluid outlet 100. Such a layer of material 308 is as applicable for other heads herein described such as heads 130, 180 and 230.

[0095] Figures 6a and 6b show an alternative head 130, all features identical to those previously described have the same reference numerals. The head 130 has a larger diameter than the handle 20 so is used to create larger curls. The head 130 has a first end 32 for connection to the handle 20 and this is the same diameter as the handle 20, within a collar 132 of the head 130, the diameter of the head 130 increases to the larger diameter prior to the fluid outlet 100 formed by slots 142 and then continues at a constant diameter to the second end 136. An inner fluid cavity (not shown) is larger than for the head 30 of Figure 3a. In this example the number of plates 110 and slots 102 is the same i.e. six as for the head described with respect to Figure 3a. Alternatively, a larger or smaller number of plates 110 and slots 142 could be used.

[0096] Figure 7a shows a further head 230. This head 230 has a reduced diameter compared with the handle 20. The first end 32 is substantially the same diameter as the handle 20 for connection thereto, and then within a collar 232 the diameter of the head 230 decreases to the reduced diameter prior to the fluid outlet 200 formed by slots 202 and continues at a constant diameter to the second end 236. This head 230 is used to create tighter curls.

[0097] The slots 202 for this head extend longitudinally straight from the first end 32 to the second end 236 as was the case for slots 102 in heads 30, 130.



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[0098] In another embodiment, as shown in Figures 7b and 7c, a further head 280 has slots 282 which curve around the head 280 forming a spiral or helical pattern around the head 230. The slots 282 curve by an angle $\alpha$ of 45° from the longitudinal axis A-A of the handle 20 and head 280. In this example the slots 282 curve in a clockwise direction from the first end 34 of the head 280 towards the second end 236 of the head. The slots 282 are formed as before between adjacent overlapping plates 210 however, in order to form the curved slots 282, the plates 210 do not extend along the longitudinal axis of the head 280 but also curve by an angle of 45°. Using angled slots changes the profile of the fluid exiting from the head. The airflow exiting from the slots is more normal to the slot when angled slots are used. This has benefits including enabling more hair to be wrapped around the head also, the hair is retained on the head more easily leading to a potentially quicker styling process.

[0099] The slots can be curved in a clockwise or and anticlockwise direction from the longitudinal axis A-A of the handle 20. Whilst an angle of 45° has been illustrated, improved wrapping is seen even at an angle of 1°.

[0100] Figure 8a shows a head 180 which is substantially the same diameter as the handle 20. The slots 182 are curved or spiral around the head 180 in the same manner as head 280.

[0101] Figure 8b shows a head 380 which has a larger diameter than the handle, and is similar to head 130 except it has curved or spiralling slots 382 around the head 380.

[0102] Figures 9a and 9b show a way of assembling head 30. A first part 150 is formed from the first end 32 and has a collar 152 and a first set of plates 154 which are joined to or formed integrally with the collar 152. A second part 160 is formed from the second end 36 and has an end wall 162 and a second set of plates 164 which are joined to or formed integrally with the end wall 162. The first set of plates 154 and second set of plates 164



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each comprise non-adjacent plates 110 enabling the first part 150 and the second part 160 to be slotted together to form the head 30. Between each of the first set of plates 154, a recess 156 is provided in the connecting ring 152 adapted to accommodate the distal end 164a of the second set of plates 164 from the end wall 162. A similar set of recesses 166 is provided in the end wall 162 and is adapted to accommodate the distal end 154a of the first set of plates from the collar 32.

[0103] In order to retain the first part 150 and the second part 160 of the head 30 in the assembled condition, a protruding screw hole 168 is provided. Near the distal end 154a of the first set of plates 154 a support scaffold 170 is provided and this has two functions. A first function is to support the first set of plates 154 and maintain their relative positions towards the distal end 154a and a second function is to provide part of the fixing mechanism. In this example, the support scaffold 170 has a central aperture 172 through which the protruding screw hole 168 passes on assembly of the head 30a and a screw, for example can be inserted to fix the two parts 150, 160 of the head together.

[0104] Figures 15a, 15b, 15c, 15d and 15e show a head 400 all features identical to those previously described have the same reference numerals. This head 400 has a reduced diameter compared with the handle 20. The slots 102 extend longitudinally from the first end 32 to the second end 236, however the slots could be curved as described with respect to Figures 7a and 7b.

[0105] Internal of the head 400, within the cavity 418 formed within the head 400, an internal sock 420 is provided. This sock 420 is a mesh formed from a metal wire. The sock 420 can be in the knitted form 426 shown in Figure 15b. Alternatively as shown in Figures 16a and 16b the sock 420 is a tube 424 formed from a woven mesh 422 having generally square apertures.



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[0106] The sock 420 diffuses the fluid flowing in the cavity 418 within the head 400 and slows down the longitudinal velocity of the flow. This results in more even wrapping of hair around the head 400 as the direction of fluid exiting the head 400 is more normal to the slots 102. The sock 420 extends along the length of the slots 102 within the head 400. The size of the apertures in the mesh is important; if they are too small the flow becomes too restricted and there is an increased chance of them clogging over time. An aperture size of around 1.6mm has been found to provide the benefit without undue restriction.

[0107] Figures 10a, 10b, 11a-11c and 12 show various views of another head 300 which has a directed fluid flow. The head 300 has a first cylindrical part 310 and a second triangular part 330 that together form the fluid outlet 320.

[0108] The second triangular part 330 has a first end 312 for connection to a handle 20 via a collar 328 and extends longitudinally to a second end 314 The first cylindrical part 310 has an aperture 322 extending from a first end 378 to a second end which is defined by end wall 316. The aperture 322 is defined by a first edge 324 and a second edge 326. . An inner cavity 318 is formed within the head 300 when the second triangular part 330 is slid into the first cylindrical part 310. The first end 278 of the first cylindrical part 310 abuts a downstream end of the collar 328 and the second end 314 of the second triangular part 330 abuts the end wall 316 when the attachment is formed.

[0109] The second triangular part 330 has a first end 332 and a second end 334 and is formed from a first side 336, a second side 338 and an internal wall 340. The second triangular part 330 fits within the aperture 322 and extends outwardly beyond the first cylindrical part 310.

[0110] The second triangular part 330 is movable relative to the first cylindrical part 310. In this example, the second triangular part 330 is fixed with respect to the handle 20 and the



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first cylindrical part 310 is moveable relative to both the second triangular part 330 and the handle 20. This enables the outlet slot 342 to be partially defined by one or the other of the first edge 324 and the second edge 326.

[0111] In one position, referring now to Figures 12a and 12b, the first edge 324 along with a first side 336 of the second triangular part 330 define the limits of the outlet slot 342. The second triangular part 330 moves with respect to the first cylindrical part 310 so the outlet slot 342 is alternatively defined by the second edge 326 and the second side 338 as shown in Figures 13a and 13b.

[0112] The second triangular part 330 rotates with respect to the first cylindrical part 310 in order to change the position of the outlet slot 342. The first cylindrical part 310 is temporarily retained in a position by the use of a detent mechanism.

[0113] The end wall 316 of the first cylindrical part 310 includes a first recess 340 and a second recess 350 each of which adapted to partially accommodate a ball bearing 360. The ball bearing 360 is biased towards the end wall 316 by a spring 362 (see Figure 11b). There are a number of suitable alternatives that could be used instead of this method of retaining one part with respect to the other part such as a plastic bump feature or a piece of sprung metal.

[0114] Referring now to Figures 12a and 12b, when the second triangular part 330 is in a first position with respect to the first cylindrical part 310, the outlet slot 342 is formed from first side 336 and first edge 324 and the ball bearing 360 is accommodated by the first recess. By manually rotating the second triangular part 330 with respect to the first cylindrical part 310 the force of the spring 362 retaining the ball bearing 360 within the first recess 340 is overcome and the second triangular part 330 can be rotated with respect to the first cylindrical part 310 to move the ball bearing 360 into the second recess 350 and



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changing the position of the outlet slot 328 so it is now formed from the second edge 326 and the second side 338.

[0115] The first cylindrical part 310 includes bristles 350 arranged in this example in parallel rows 352 on either side of the aperture 322. The rows 352 of bristles 350 extend from near the outlet slot 342 around the head 300 but in this example the bristles 350 do not extend all the way around the head 300, there is a gap in the rows 352 diametrically opposite the outlet slot 320.

[0116] Referring now to Figure 14, when hair 354 is being styled, the action of drawing the bristles 350 down through the hair 354 opens the outlet slot 342 on the side next to the hair 354. The position of the outlet slot 342 is movable by hand or by the friction or force of combing through the hair.

[0117] The use of a combination of a directed outlet slot 342 and bristles 350 means that the hair is dried and/or styled more quickly than conventionally as the fluid exiting from the outlet slot 342 is blown down the hair 354. The fluid exiting the outlet slot 342 is attracted to the surface of the second triangular part 330 which in turn attracts the hair 354 to the second triangular part 330. The bristles 350 separate and detangle individual strands of the hair 354 and this combination gives fast drying and a smother result.

[0118] In use as shown in Figure 14, this head is designed to be pulled through the hair with the slot 328 adjacent the hair 354. Fluid is blown out of the slot 328 as the appliance is moved along the hair 354 so the hair is both heated and brushed. Having the slot 328 on either side of the head 356 means that the same head 300 can be used for both sides of the head and both the underside and the topside of the hair 354.



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[0119] In each of the examples given, the head 30, 130, 180, 230, 300 in connected to handle 20 via a collar and a twist lock joint. Referring to Figure 7b, three protrusions 234 are provided on the internal surface of the collar 232 (one not shown). The protrusions 234 are adapted to engage a slot 90 (see Figure 1b) or three separate slots provided near the distal end 22 of the handle 20. The slot 90 extends at least partially around an outer surface of the inner wall 60 and is helical so both a rotational and longitudinal movement is required to attach or remove the head from the handle 20. This is one example of a fixing mechanism, it will be apparent to the skilled person that other equally acceptable alternative mechanisms could be used.

[0120] The heads 30, 130, 180 and 230 described with respect to Figures 3a to 9b could be provided with bristles. For these heads 30, 130, 180 and 230 as the slots are arranged all the way around the head, any bristles would be arranged all the way around the head. An example would be to have one or more rows of bristles at least located on every other plate 110, 210.

[0121] The invention has been described in detail with respect to 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 including a hairdryer.

[0122] The appliance can be used with or without a heater; the action of the outflow of fluid at high velocity has a drying effect.

[0123] The heads have been described as being manufactured by attaching a first part to the second part using a screw however, as the skilled person will be aware, a number of different fixing methods can be used such as, but not limited to gluing or using ultrasonic welding.



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[0124] 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. Such additives include but are not limited to hairspray and serums for example.

[0125] The heads 30, 130, 230 are all generally cylindrical in shape, however as the skilled person would realise, alternative shapes could be used such as ovals.

[0126] 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. An attachment for a hand held appliance comprising an inlet; an outlet; and a fluid flow path between the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment wherein fluid emitted from the outlet is blown along the external surface and wherein fluid emitted from the outlet flows around the external surface of the attachment.

2. The attachment of claim 1, wherein the slot extends substantially along the length of the attachment.

3. The attachment of claim 1, wherein the outlet comprises a plurality of slots radially spaced around the attachment.

4. The attachment of claim 1, wherein the fluid emitted from the outlet is tangential to the external surface of the attachment.

5. The attachment of claim 1, wherein the fluid emitted from the outlet is attracted to the surface of the attachment.

6. The attachment of claim 1, wherein the attachment is generally cylindrical.

7. The attachment of claim 1, wherein the outlet comprises two slots.

8. The attachment of claim 1, wherein the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is parallel to the longitudinal axis.



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9. The attachment of claim 1, wherein the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is non-parallel to the longitudinal axis.

10. The attachment of claim 9, wherein the at least one slot is helical with respect to the longitudinal axis.

11. The attachment of claim 1, further comprising a flow directing element between the inlet and the outlet.

12. The attachment of claim 11, wherein the flow directing element comprises a perforated layer.

13. The attachment of claim 12, wherein the perforated layer is formed from a mesh or weave of an elongate material.

14. The attachment of claim 13, wherein the elongate material is a wire.

15. The attachment of claim 12, wherein the flow directing element extends substantially along the length of the at least one slot.

16. The attachment of claim 12, wherein the flow directing element extends substantially around an inner circumference of the attachment.

17. A hand held appliance comprising a handle having a fluid flow path from an inlet to an outlet and a fan unit for drawing fluid into the fluid inlet and an attachment for attaching to the handle, the attachment comprising an inlet; an outlet; and a fluid flow path between



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the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment and fluid emitted from the outlet is blown along the external surface and wherein fluid emitted from the outlet flows around the external surface of the attachment.

18. The appliance of claim 17, wherein the slot extends substantially along the length of the attachment.

19. The appliance of claim 17, wherein the outlet comprises a plurality of slots radially spaced around the attachment.

20. The appliance of claim 17, wherein the fluid emitted from the outlet is tangential to the external surface of the attachment.

21. The appliance of claim 17, wherein the fluid emitted from the outlet is attracted to the surface of the attachment.

22. The appliance of claim 17, wherein the attachment is generally cylindrical.

23. The appliance of claim 17, wherein the outlet comprises two slots.

24. The appliance of claim 17, wherein the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is parallel to the longitudinal axis.



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25. The appliance of claim 17, wherein the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is non-parallel to the longitudinal axis.

26. The appliance of claim 25, wherein the at least one slot is helical with respect to the longitudinal axis.

27. The appliance of claim 17, further comprising a flow directing element between the inlet and the outlet.

28. The appliance of claim 27, wherein the flow directing element comprises a perforated layer.

29. The appliance of claim 28, wherein the perforated layer is formed from a mesh or weave of an elongate material.

30. The appliance of claim 29, wherein the elongate material is a wire.

31. The appliance of claim 27, wherein the flow directing element extends substantially along the length of the at least one slot.

32. The appliance of claim 27, wherein the flow directing element extends substantially around an inner circumference of the attachment.

33. The appliance of claim 17, wherein the appliance is a hair care appliance.

34. The appliance of claim 17, wherein the appliance is a hot styling appliance.



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35. The appliance of claim 17, wherein the appliance is a hot styling brush.



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## ABSTRACT OF THE DISCLOSURE

An attachment for a hand held appliance comprising an inlet; an outlet; and a fluid flow path between the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment wherein fluid emitted from the outlet is blown along the external surface. The slot extends substantially along the length of the attachment. The outlet comprises slots radially spaced around the attachment. Fluid emitted from the outlet flows around the external surface of the attachment, tangentially to the external surface, and is attracted to the surface of the attachment. The attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot may be parallel to the longitudinal axis.



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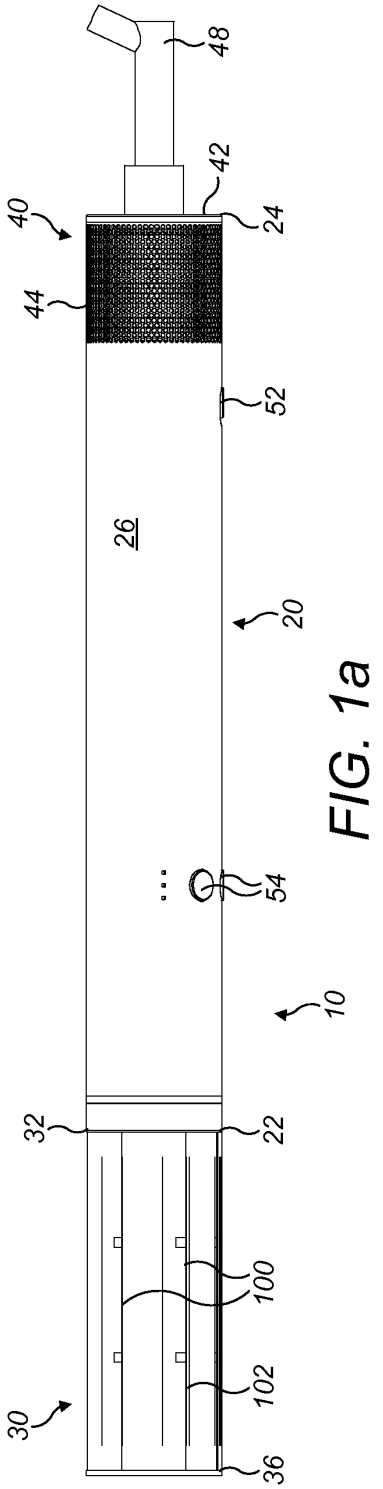

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FIG. 1a

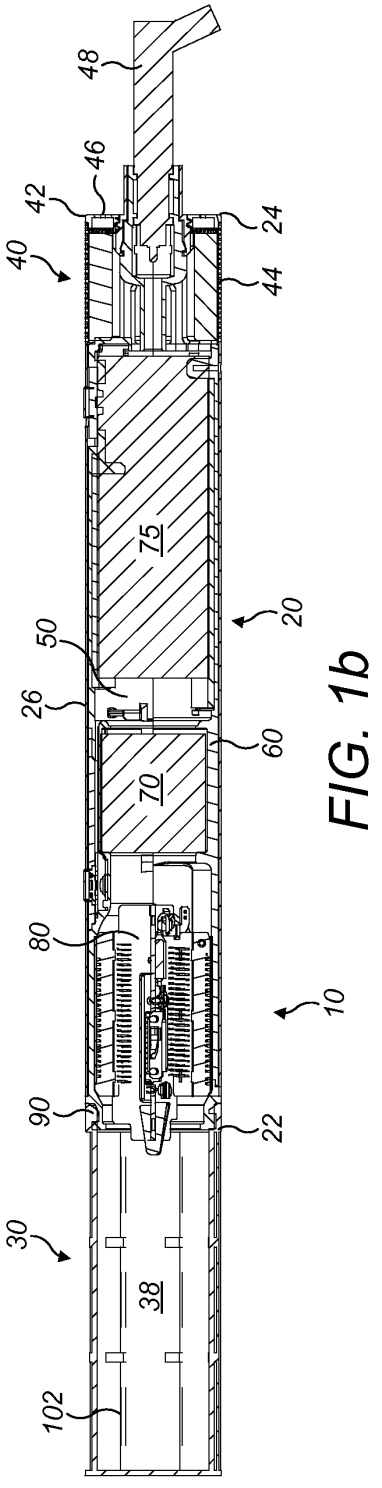

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FIG. 1b

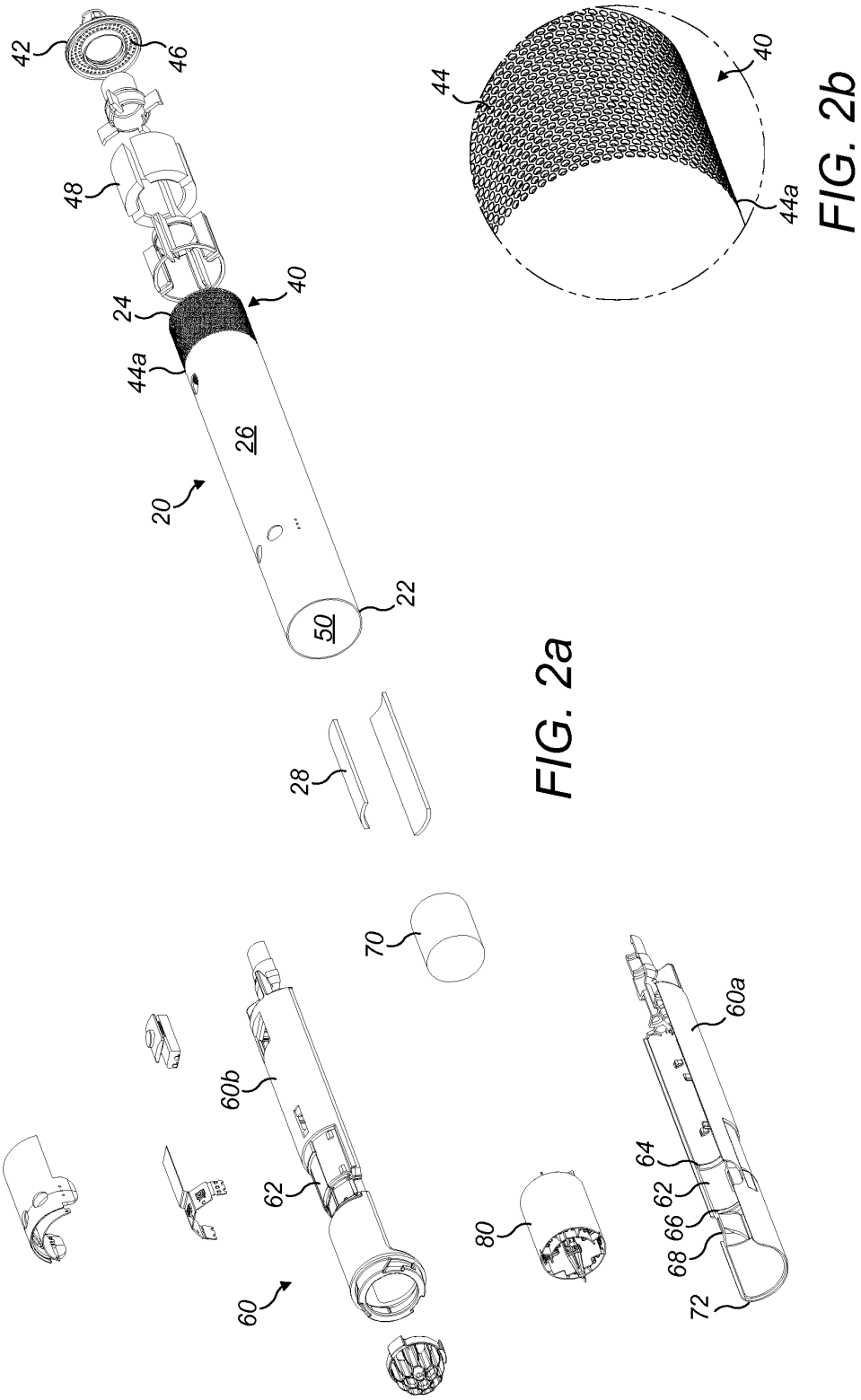

42
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44a
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60b
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80
60a
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62
66
68
72

FIG. 2a


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44a

FIG. 2b

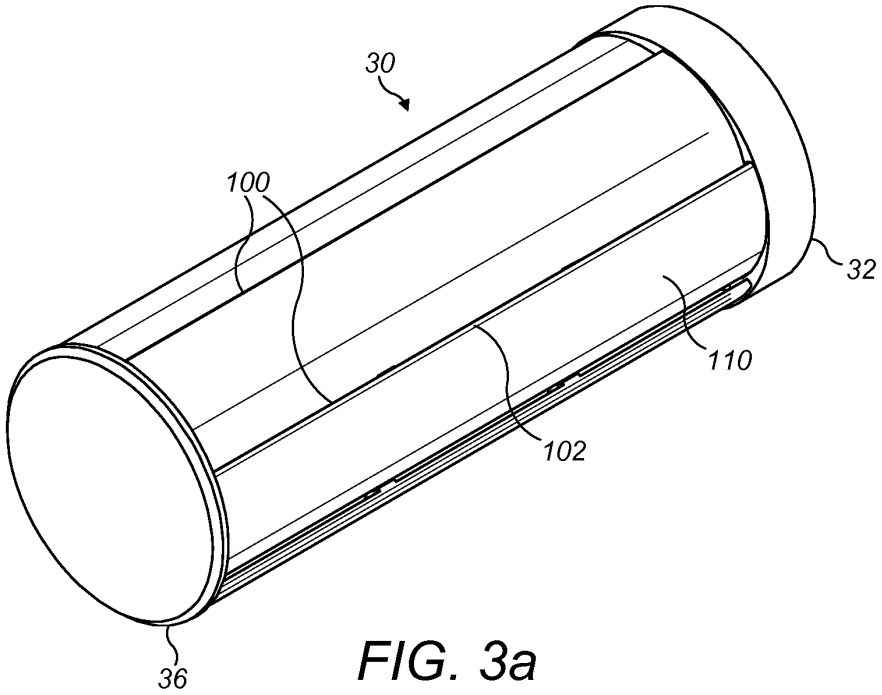



FIG. 3a

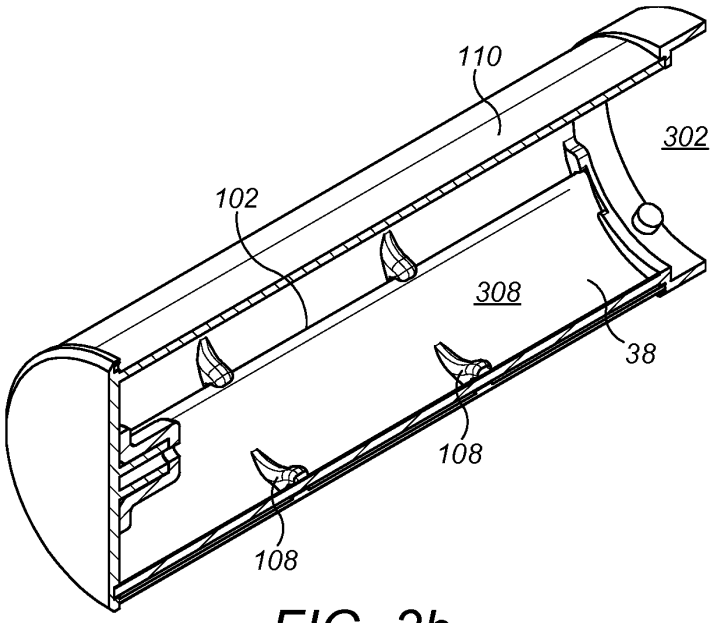



FIG. 3b

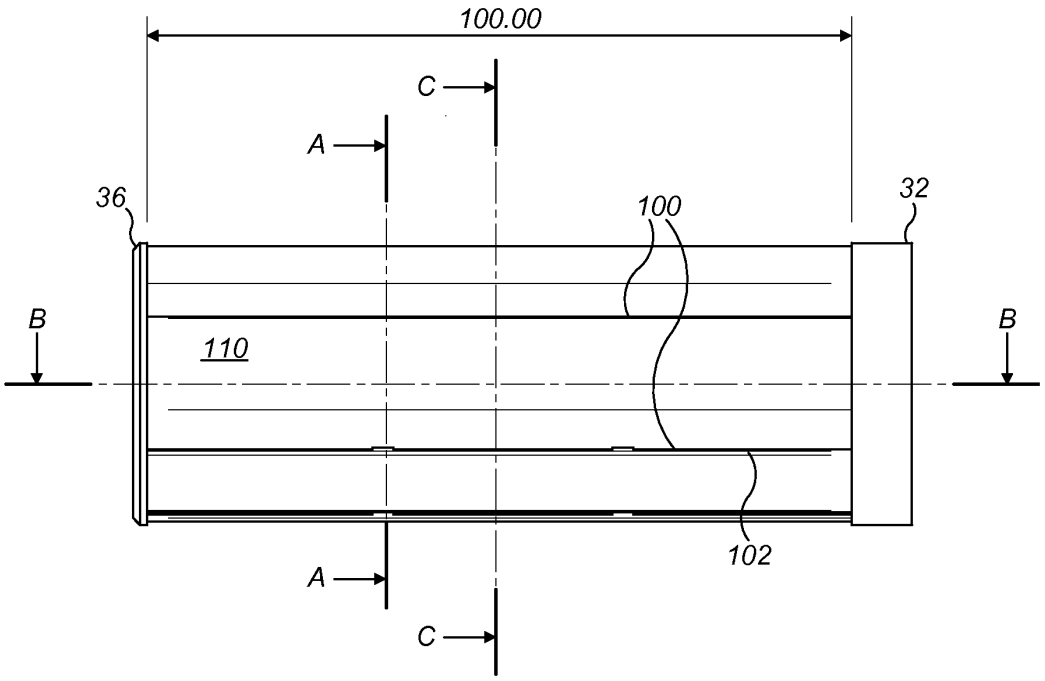



FIG. 4a

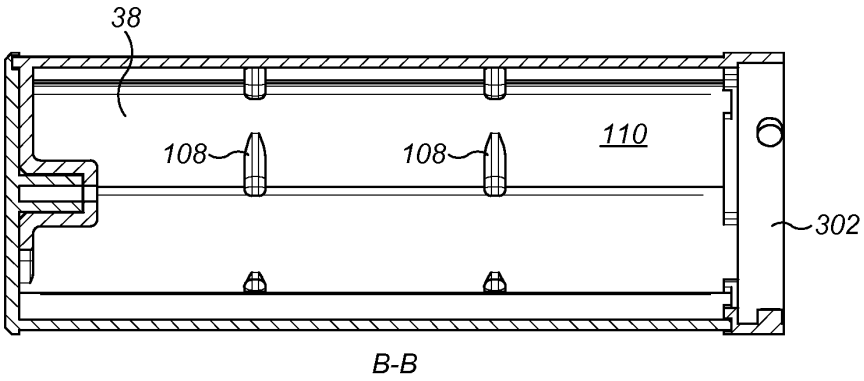



FIG. 4b

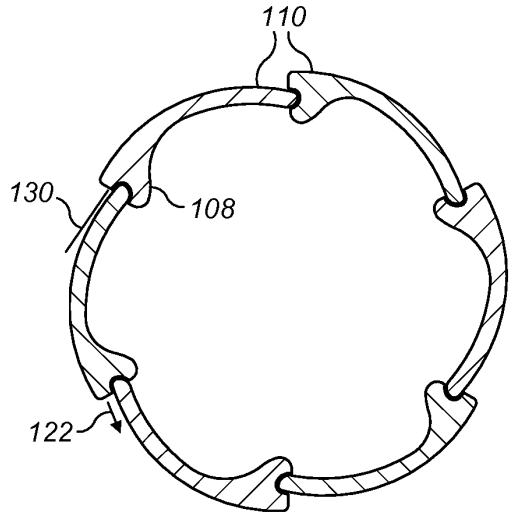



FIG. 5a

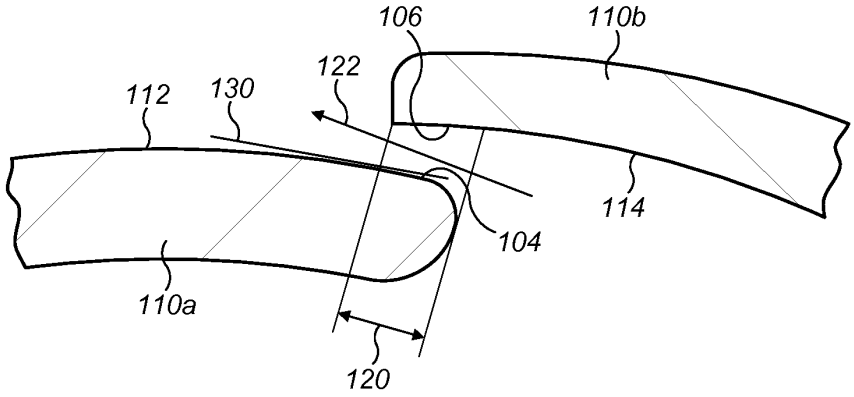



FIG. 5b

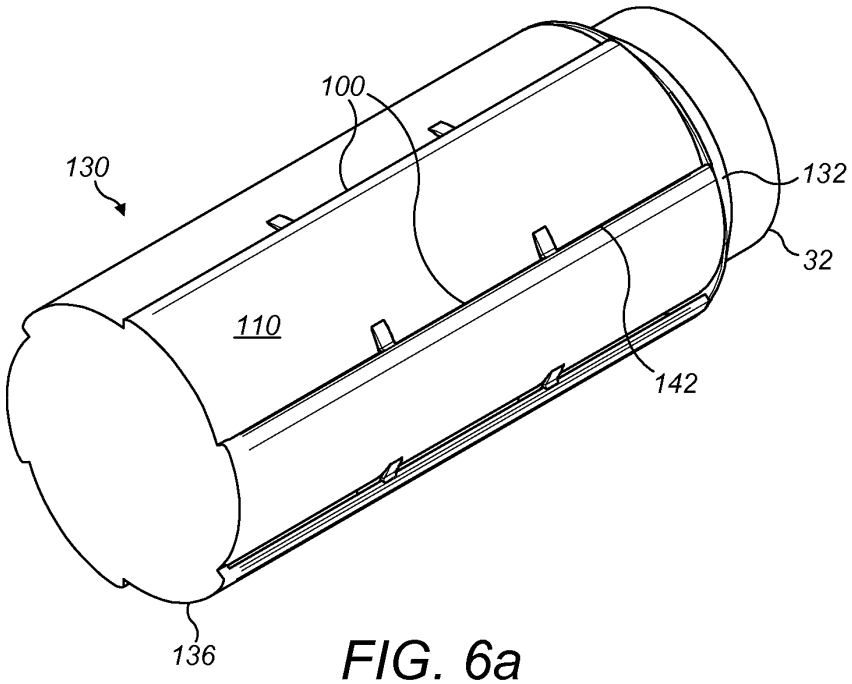



FIG. 6a

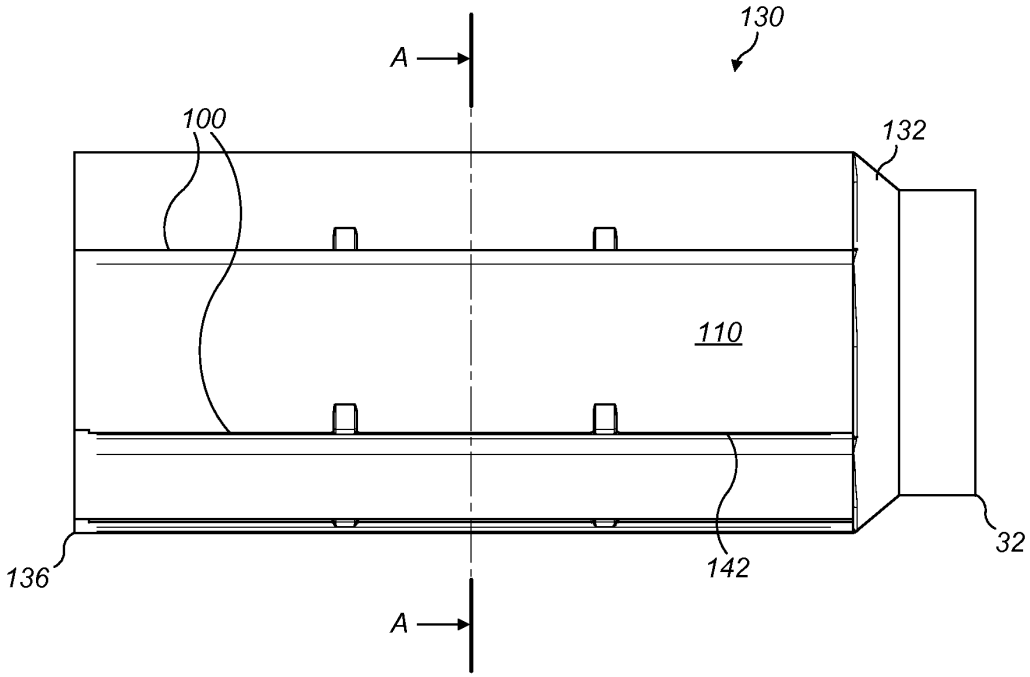



FIG. 6b

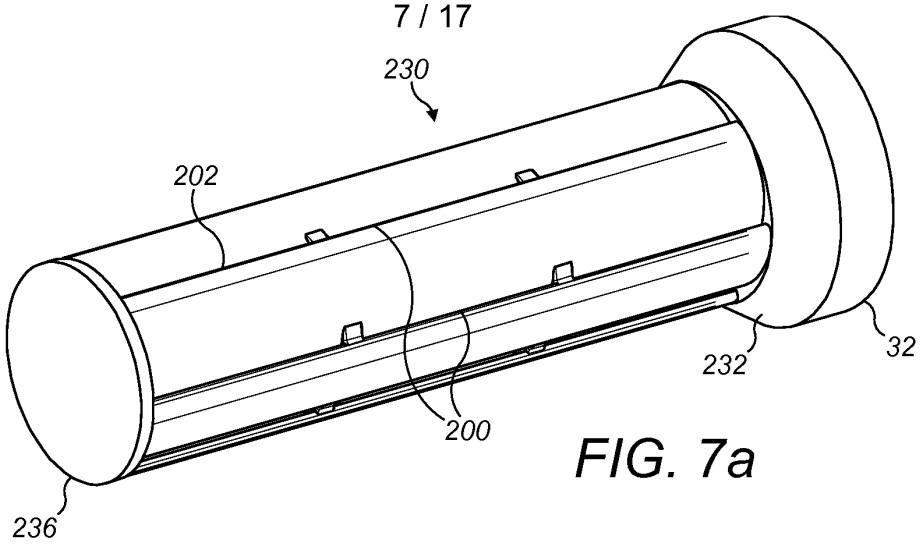



FIG. 7a

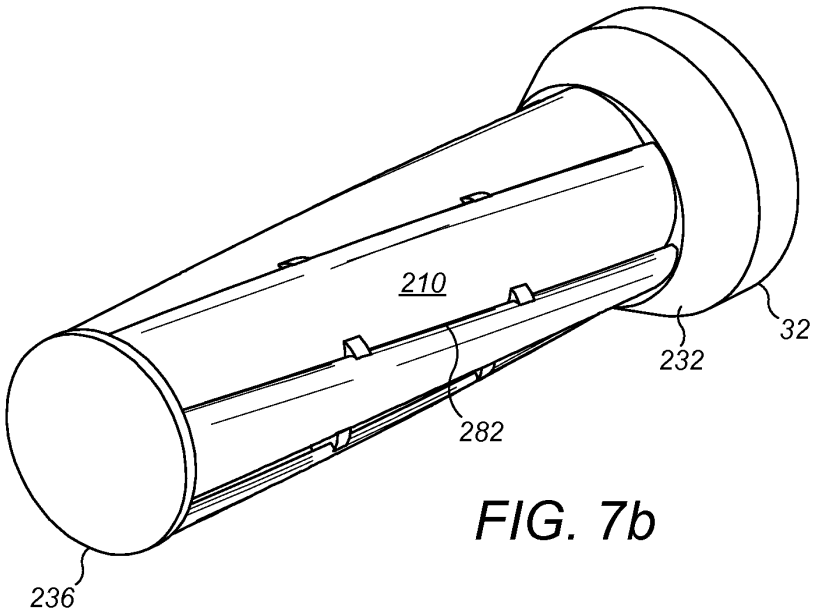



FIG. 7b

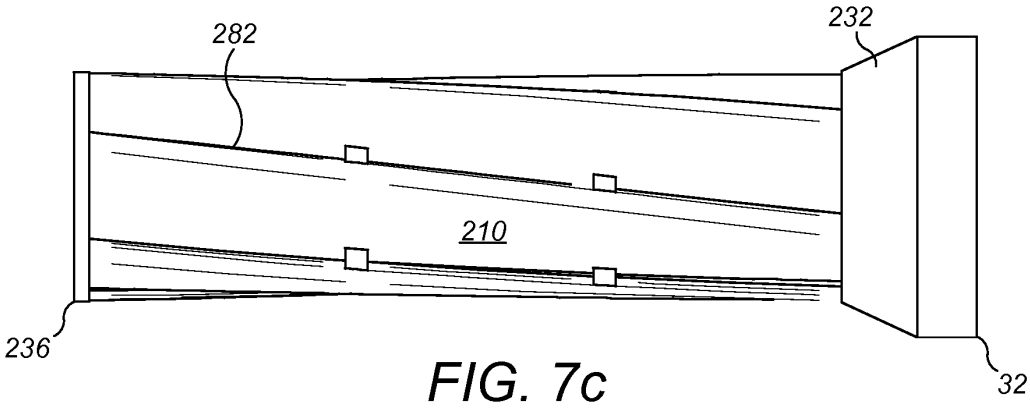



FIG. 7c

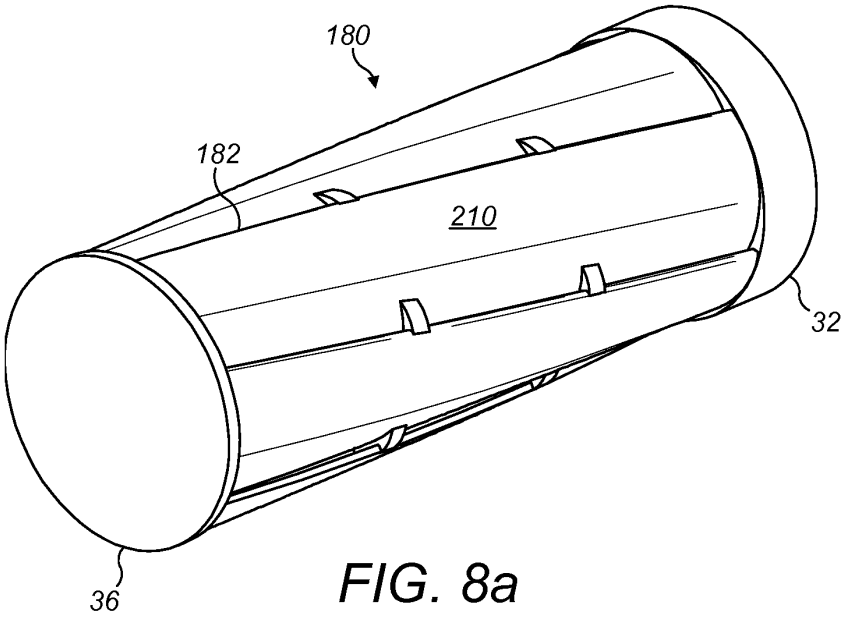



FIG. 8a

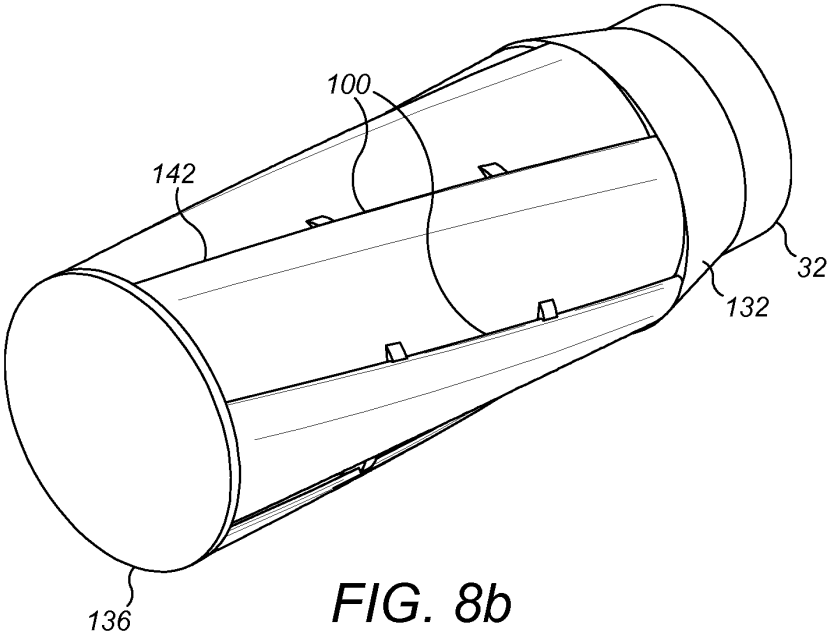



FIG. 8b

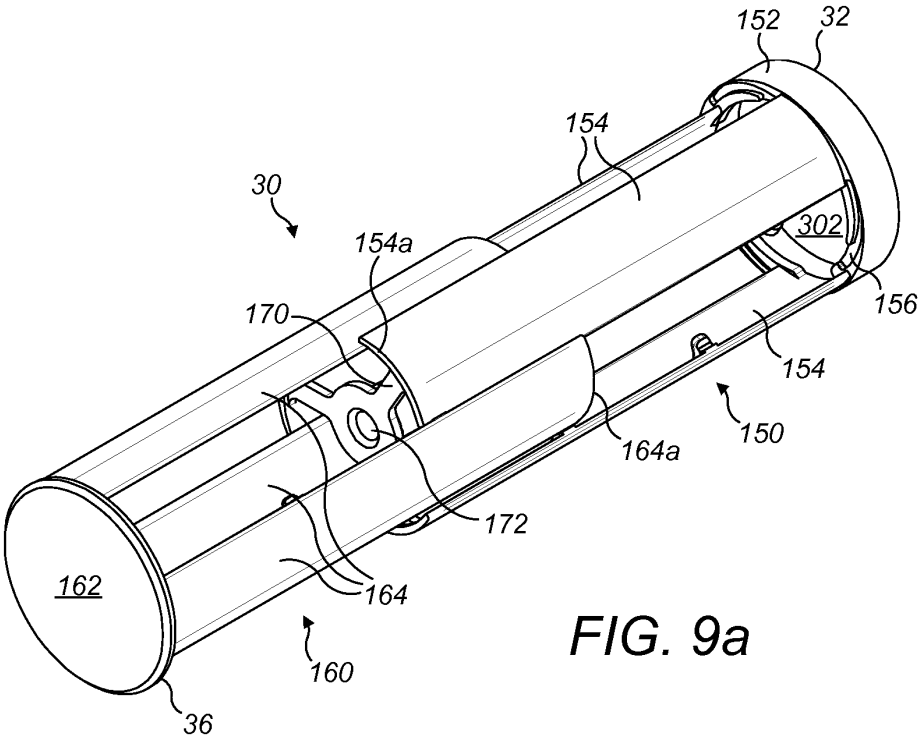

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154a
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FIG. 9a

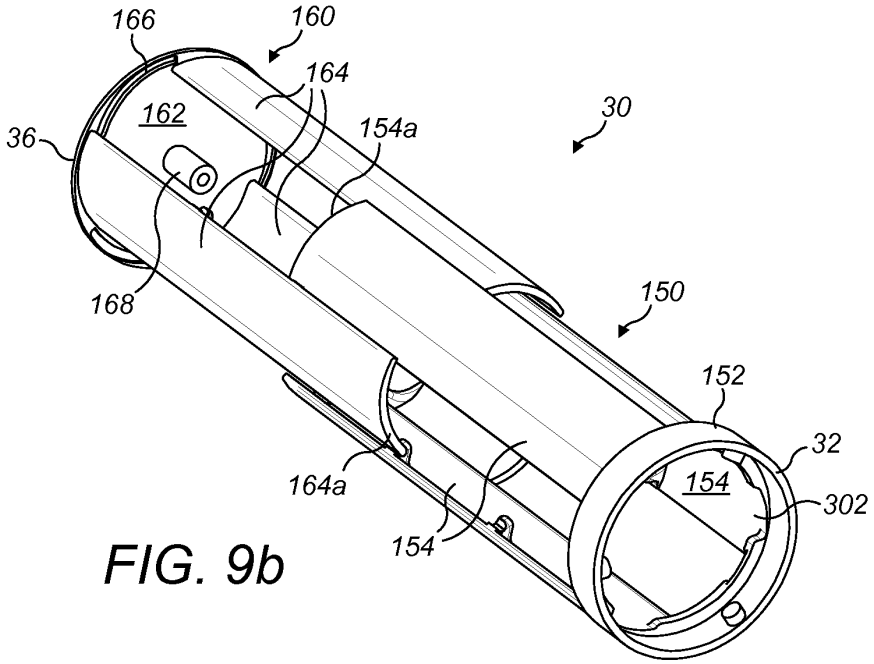

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FIG. 9b

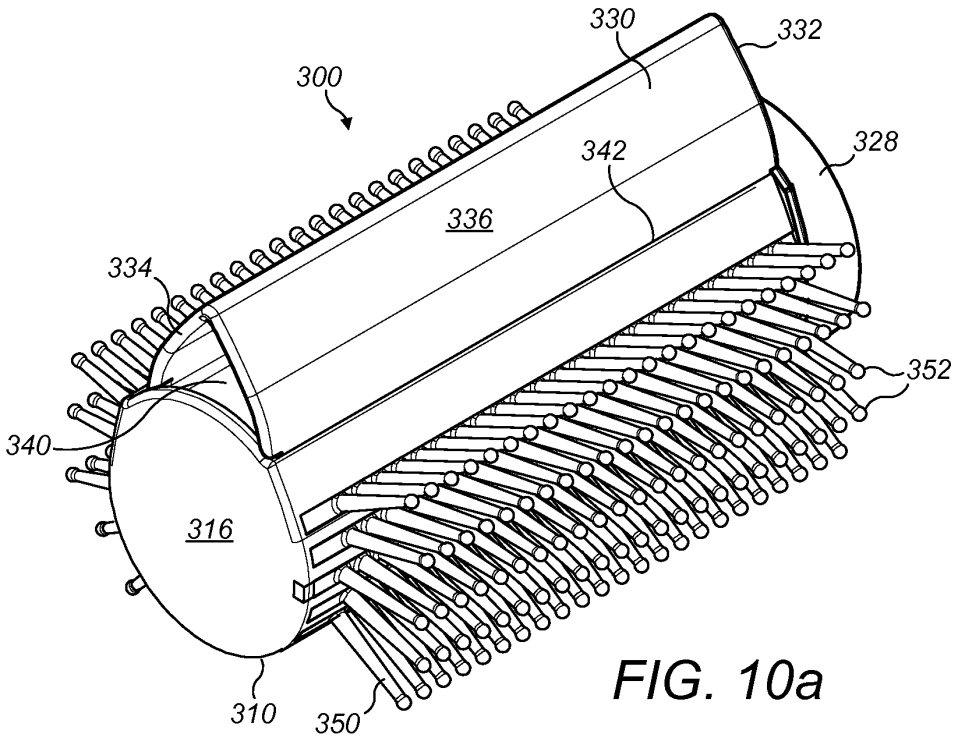



FIG. 10a

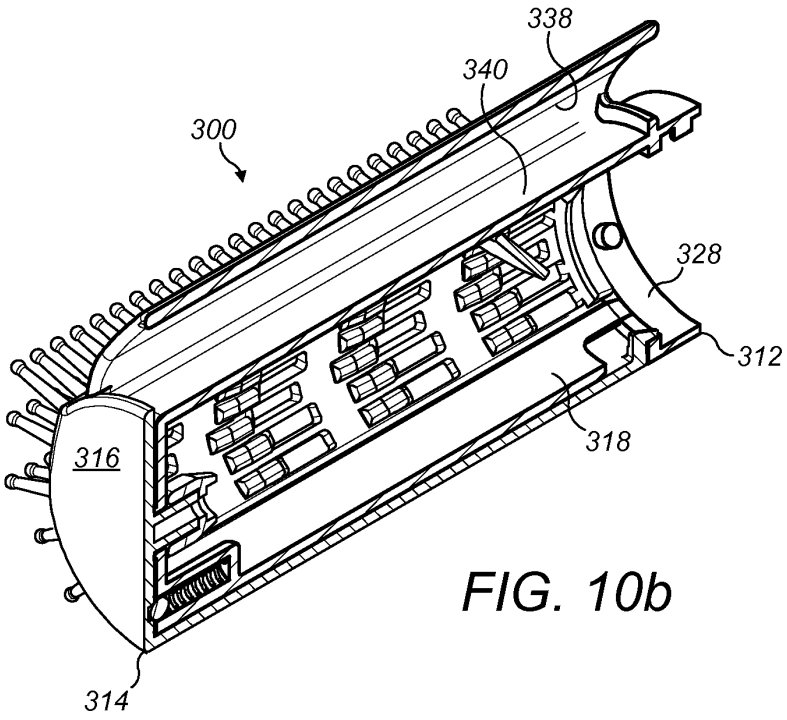



FIG. 10b

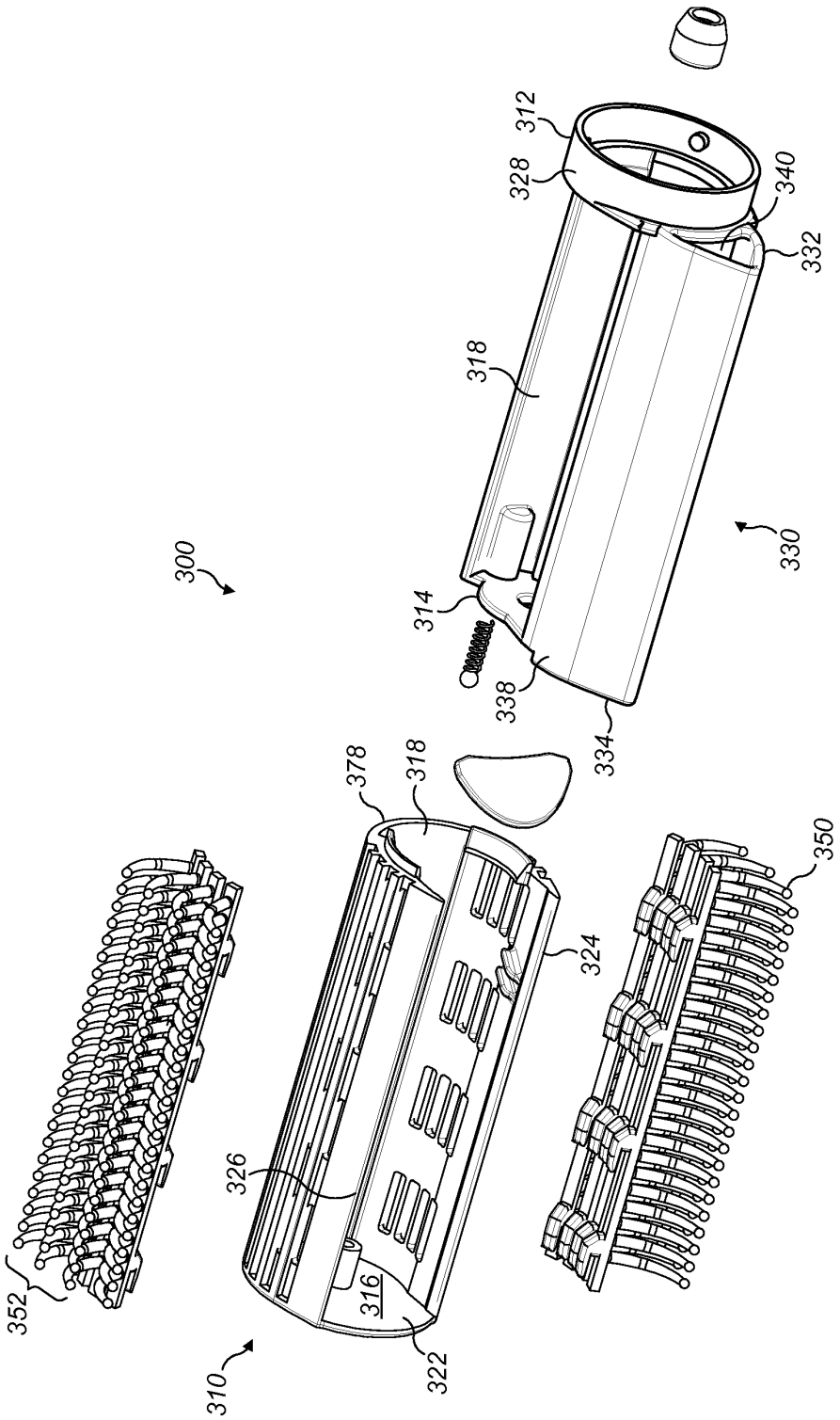

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FIG. 11a

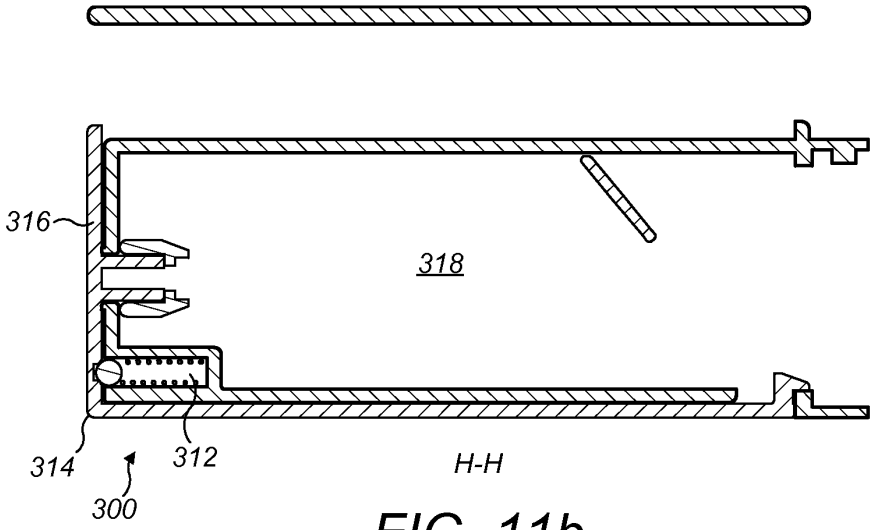



FIG. 11b

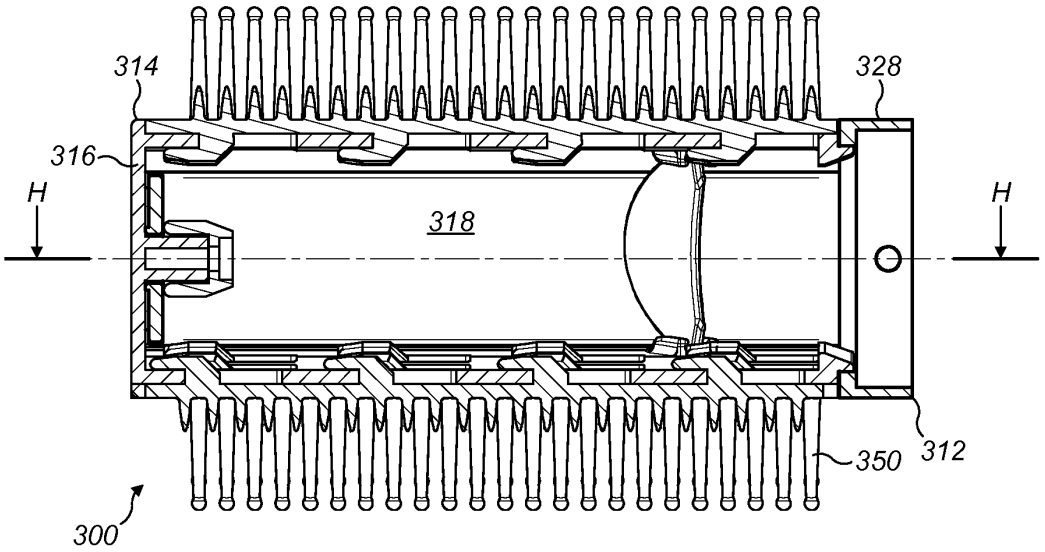



FIG. 11c

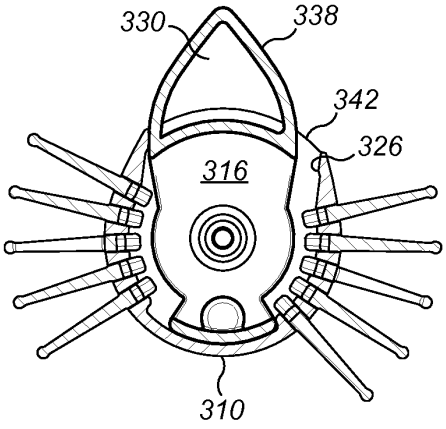



FIG. 12a

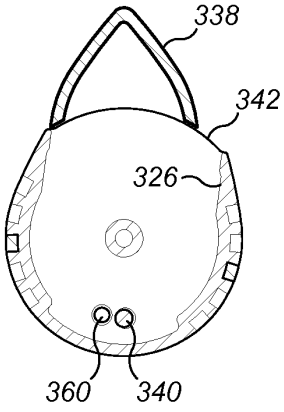



FIG. 12b

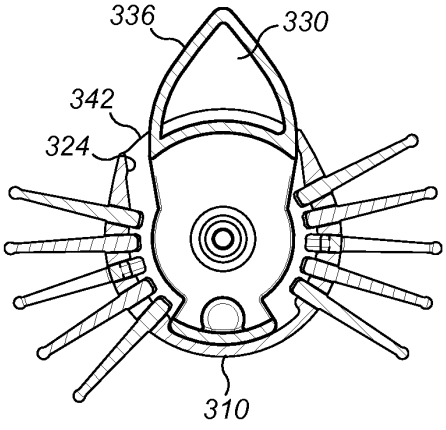



FIG. 13a

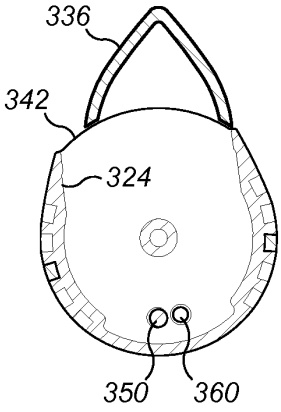



FIG. 13b

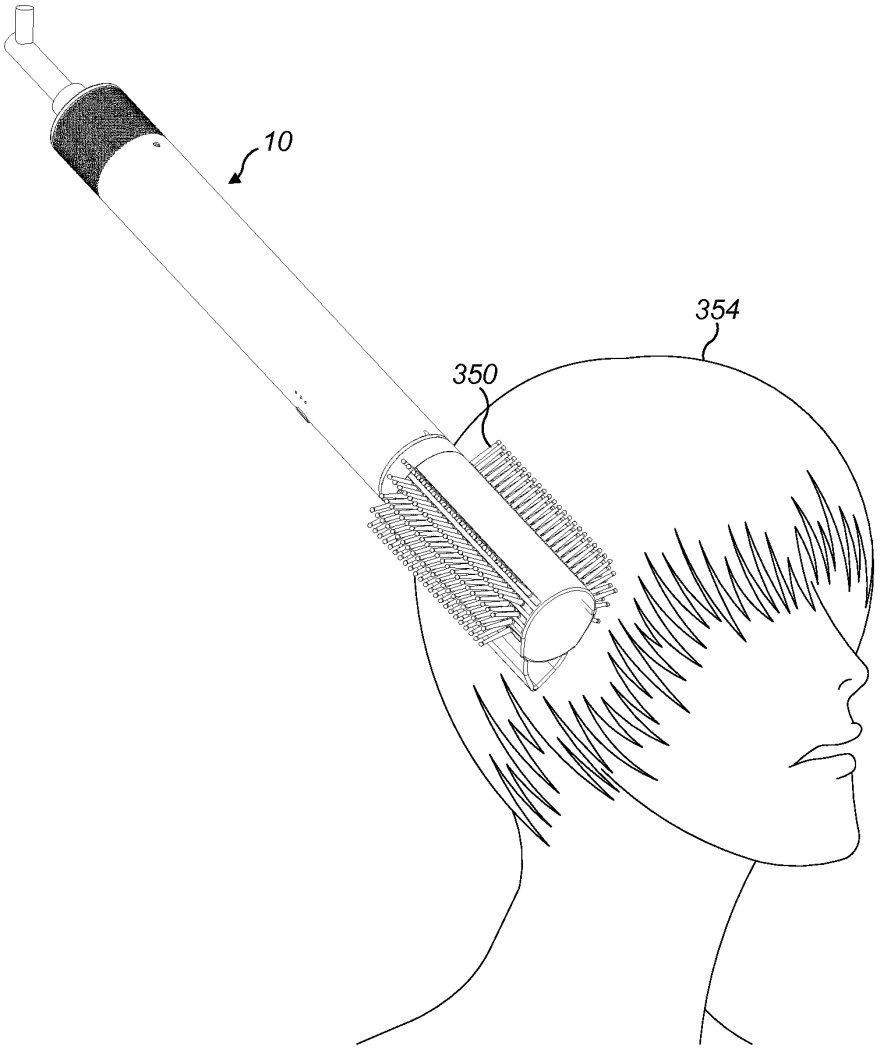



FIG. 14

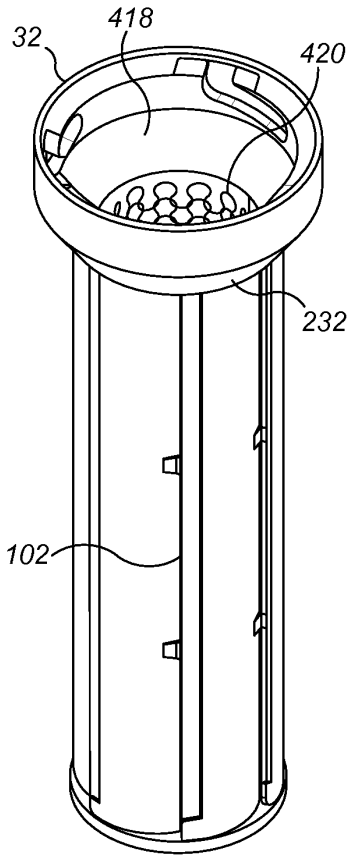



FIG. 15a

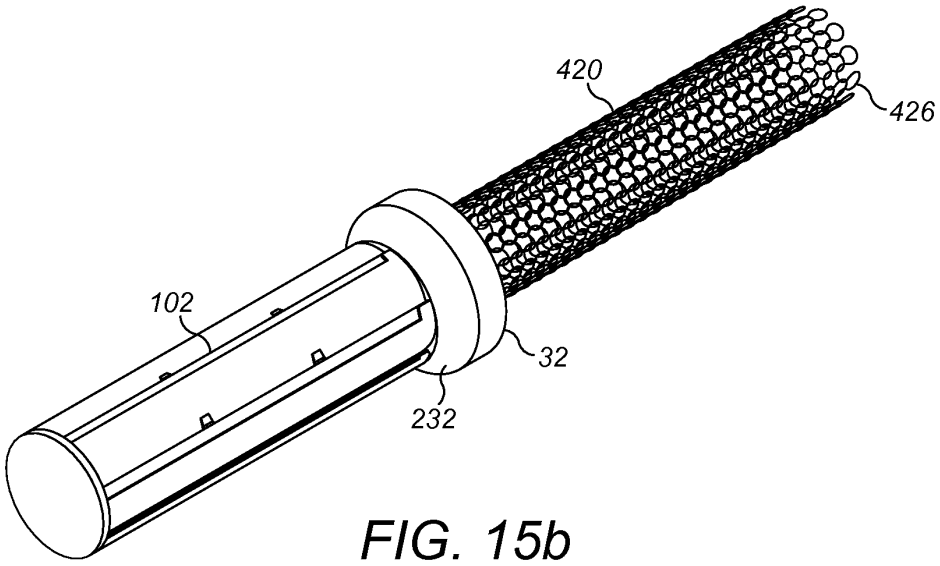



FIG. 15b

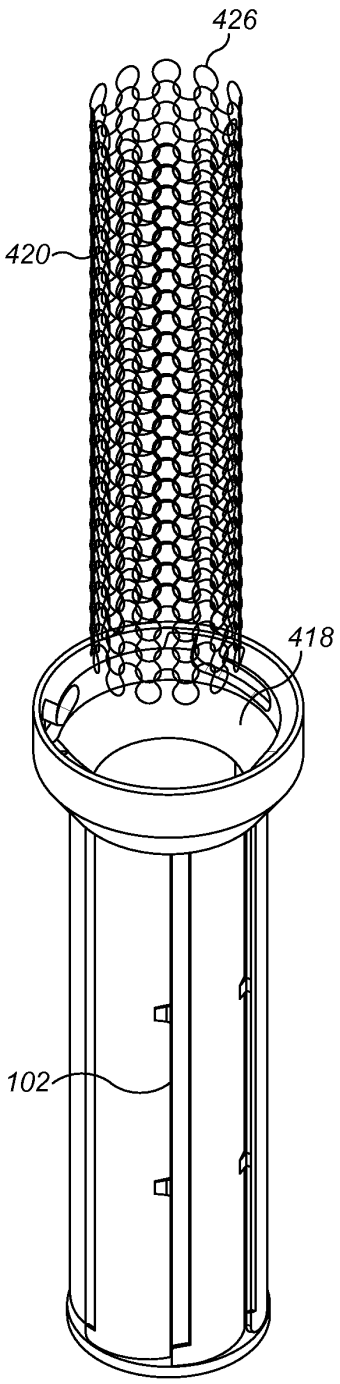



FIG. 15c

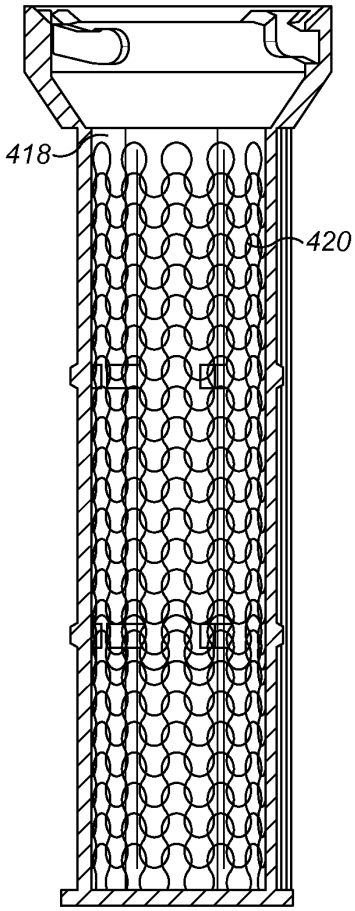



FIG. 15d

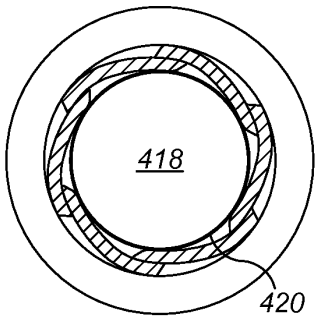



FIG. 15e

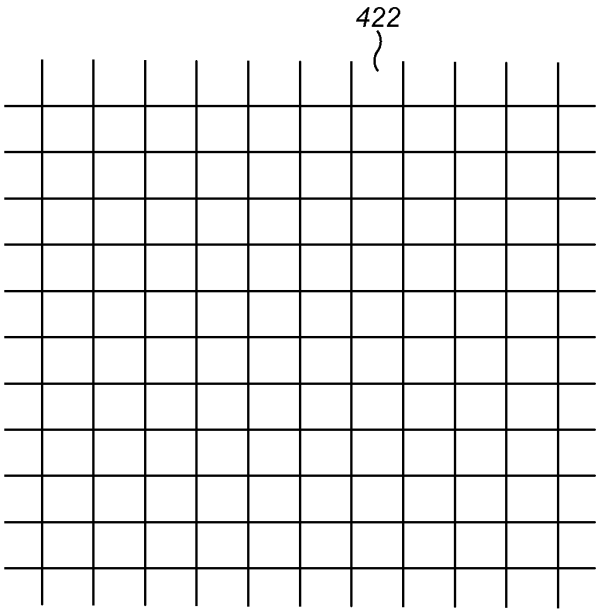



FIG. 16a

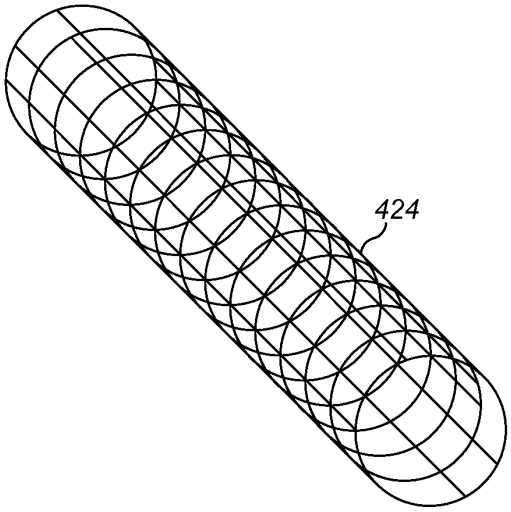



FIG. 16b

PATENT SPECIFICATION (11) 1 465 855

1 465 855

(21) Application No. 7506/74 (22) Filed 19 Feb. 1974 (19)
(31) Convention Application No. 336 562 (32) Filed 28 Feb. 1973 in
(33) United States of America (US)
(44) Complete Specification published 2 March 1977
(51) INT. CL.[a] A45D 20/10 20/48
(52) Index at acceptance
A5R 32 79D

(72) Inventors HENRY J. WALTER and
EUGENE T. FLEISCHHAUER

# (54) HAIR DRYING APPLIANCE

(71) We, BRISTOL MYERS COMPANY, a Corporation organized and existing under the laws of the State of Delaware, United States of America, of 345 Park Avenue, New York, N.Y. 10022, United States of America, 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 pertains to appliances for drying hair and, more particularly, to hand held hair drying appliances adapted to have attachments mounted thereon to facilitate styling or shaping of hair.

Hand held hair drying appliances normally include a housing in which are disposed a motor driving a fan to impel air past a heating element and through an outlet in the housing such that heated air is expelled from the housing for use in drying hair. In order to permit such hair drying appliances to be utilized to style or shape hair, attachments such as brushes, combs, nozzles, and the like have been mounted thereon to act on the hair as heated air is supplied to the hair.

In order to provide sufficient air flow for effective drying, prior art hair drying appliances have utilized housing and brush and comb geometry normally of a rectangular configuration in that the heated air provided by the hair drying appliances is normally expelled in a direction transverse to the longitudinal axis of the housing thereby requiring the use of centrifugal, crossflow or tangential fans with housings shaped to accommodate the same. Accordingly, prior art hair drying appliances have had the disadvantages of not being useful in shaping the hair due to their configurations and, further, of being bulky and awkward to handle by the user.

In order to overcome the above-mentioned disadvantages, it has been proposed to utilize an axial fan to blow air over the heater thereby permitting the housing to have a cylindrical configuration; however, the use of an axial fan in a housing having a diameter small enough to be utilized in the styling or shaping of hair has not been found to supply sufficient air flow for effective drying. That is, styling or shaping of hair is a function of the diameter of the mandrel over which the hair is wound, and a housing for an axial fan of dimensions to provide sufficient hot air for drying is too large for effective use in styling or shaping hair. Attempts to reduce the diameter of the housing while maintaining a cylindrical configuration have included the use of double-staged fans and varying blade angles among others; however, such attempts have not been effective in increasing the volume of heated air expelled from the hair dryer.

The present invention provides a hand held hair drying appliance overcoming the above-mentioned disadvantages of the prior art while having a sleek, tubular e.g. cylindrical housing with a diameter sufficiently small to permit its use as a mandrel in the styling or shaping of hair.

Some of the advantages of the hand held hair drying appliance of the present invention over the prior art are that a sufficient volume of heated air for drying hair can be supplied while maintaining a sleek, cylindrical configuration, a single conventional, low cost motor can be utilized to drive the hair drying appliance, and the hair drying appliance can be easily handled by a user with one hand during hair styling or shaping.

The present invention provides a hand held hair drying appliance comprising a tubular housing having a first inlet therein, a second inlet therein spaced from said first inlet and an outlet therein disposed between said first and second inlets; heating means disposed in said housing between said first and second inlets; first and second fans arranged in said housing to force air from

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said first and second inlets towards said outlet; and drive means for driving said first and second fans and located on a side of one of said fans which is opposed to the side which faces the other fan, whereby air is drawn into said housing through said first and second inlets, moved past said heating means and expelled through said outlet to provide heated air for drying hair.

The present invention further provides a hand held hair drying appliance comprising a tubular housing having a first inlet therein, a second inlet therein spaced from said first inlet, an outlet in the peripheral wall of said housing and disposed between said first and second inlets and a tubular handle portion formed by said housing; heating means disposed in said housing between said first and second inlets; first and second fans arranged in said housing to force air from said first and second inlets toward said outlet; said first and second fans each having blades extending radially from the axis of rotation thereof, said blades of said first fan having a pitch opposite the pitch of said blades of said second fan such that said first and second fans form oppositely directed currents of air when rotated in the same direction; and motor means disposed in said handle for driving said first and second fans and located on a side of one of said fans which is opposed to the side which faces the other fan, whereby air is drawn into said housing through said first and second inlets, moved past said heating means and expelled through said outlet to provide heated air for drying hair.

The present invention even further provides a hand held hair drying appliance comprising a tubular housing having first and second spaced inlet openings therein for passage of air drawn into said housing and an outlet opening therein disposed in said space between said first and second inlet openings for passage of air expelled from said housing; heating means disposed in said housing in said space between said first and second inlet openings and adjacent said outlet opening; and first and second fans disposed in said housing for drawing a first current of air into said housing through said first inlet opening and directing said first air current toward said outlet opening and for drawing a second current of air into said housing through said second inlet opening and directing said second air current towards said outlet opening, said first and second air currents extending axially along said tubular housing in opposite directions, and for expelling said first and second air currents past said heating means through said outlet opening to provide heated air for drying hair, and drive means for driving said first and second fans and located on a side of one of said fans which is opposed to the side which faces the other fan.

A preferred hand held hair drying appliance in accordance with the present invention will now be described by way of example, with reference to the accompanying Drawings, in which:—

Figure 1 is a longitudinal section of the hand held hair drying appliance, and

Figure 2 is a section taken along line 2—2 of Figure 1.

A preferred embodiment of a hand held hair drying appliance 10 according to the present invention is illustrated in Figures 1 and 2 and includes a housing 12, which can be constructed of upper and lower housing members, and forms a cylindrical handle 14 and a cylindrical head 16 having a diameter slightly greater than the diameter of handle 14 and connected thereto at a neck 18.

A cylindrical extension 22 engages the open end of handle 14 and a switching circuit 24 is mounted therein and operated by an actuator 26 which is controlled by a rod 28 extending from an end cap 30 engaging extension 22 and rotatable relative thereto. Rotation of the end cap causes movement of the rod 28 to control actuator 26, and switching circuit 24 includes conventional circuitry responsive to the position of actuator 26 for providing the hair drying appliance 10 with various modes of operation, such modes of operation being preferably denoted by indicia carried on the surface of the extension 22 for alignment with an indexing mark on end cap 30.

Adaptors 32 and 34 are mounted in axially spaced relation within handle 14 to support therebetween a DC electric motor 36 by means of O-rings 38 and 40. The DC motor 36 receives electricity from switching circuit 24 through a rectifier 42. A rotor 44 of motor 36 is fixed to a flexible coupling 46 which carries a pin diametrally fixed to a shaft 48 such that rotation of the rotor 44 of the motor 36 is imparted to the shaft 48.

Head 16 has an end cap 50 mounted thereon, the end cap 50 having a bearing 52 therein in which is journalled the end of shaft 48, the shaft 48 also being journalled in a bearing 54 mounted in adaptor 32 such that the shaft 48 is maintained in precise coaxial alignment with the housing 12.

A heating assembly 55 is mounted in head 16 and includes a mica support structure 56 across which a plurality of hot wire heating elements 58 extend in a direction substantially parallel to the longitudinal axis of the housing 12. The heating elements 58 are connected with switching circuit 24 by suitable wires, not shown, such that the voltage supplied to the heating elements can be controlled by rotation of the end cap 30.

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A plurality of inlet openings 60 is formed in the periphery of housing 12 along handle 14 at neck 18, and a plurality of inlet openings 62 is formed in end cap 50 spaced from inlet openings 60. An outlet opening 63 is formed by a longitudinally extending slot or slots in the periphery of head 16 such that the outlet opening 63 is disposed in the space between inlet openings 60 and 62 to permit air flow through the head 16 in opposite directions to be expelled through outlet opening 63 after movement past heating assembly 55. A pair of axial fans 64 and 66 are fixed to shaft 48 and disposed in head 16 adjacent inlet openings 60 and 62, respectively. Fan 64 has a hub 68 spaced from the end of adaptor 32 by a spacer 70 and blades 72 radially extending from hub 68. Adaptor 32 is formed with an arcuate peripheral surface 74 to channel air into the housing 12 through inlet openings 60 past the fan 64, the channel formed by the arcuate peripheral surface 74 having an annular configuration corresponding to the radial length of the blades 72. Axial fan 66 similarly has a hub 76 spaced from end cap 50 by a spacer 78 and blades 80 radially extending therefrom. The inlet openings 62 formed in end cap 50 correspond in size to the radial length of blades 80 in order to channel air past the fan 66. The blades 72 of fan 64 have a pitch (or "Rand") opposite to the pitch of the blades 80 of fan 66 such that rotation of both fans in the same direction creates oppositely directed air currents, such air currents drawing air into the housing through inlet openings 60 and 62, respectively, in opposite directions when the common drive shaft 48 for the fans is rotated in the direction indicated by arrow 82. If desired, baffles 84 can be symmetrically formed within head 16, as shown in phantom in Fig. 1, to aid in the deflection of the axial air currents formed by fans 64 and 66 to expel heated air transverse to the axis of the housing.

In operation, end cap 30 is rotated in order to align the indexing mark thereon with the desired indicia carried on extension 22 with the rotation of the end cap moving the actuator 26 to set the switching circuit 24 to operate the hair drying appliance in the selected mode of operation. To this end, switching circuit 24 supplies electricity to heating elements 58 with a predetermined voltage to control the temperature thereof; and, similarly, controls the DC voltage supplied to electric motor 36 to control the speed of rotation thereof. A suitable attachment for styling or shaping hair, such as a brush, comb, or nozzle, can be mounted on head 16 of the housing 12 in alignment with outlet opening 63; and, thereafter, the hair drying appliance can be utilized to dry and style or shape the hair as desired, it being appreciated that the cylindrical configuration of the head 16 of the housing permits the head to be used as a mandrel in styling or shaping the hair.

The motor 36, shaft 48 and fans 64 and 66 form a blower disposed in the housing for drawing first and second currents of air into the housing through the inlet openings 60 and 62 and directing the first and second air currents along the axis of the housing in opposite directions towards the space between the fans with the air being heated by the heating assembly 55 and radially expelled through the outlet opening 63 in a direction transverse to the axis of the housing. The total area of the inlet openings 60 and 62 is preferably one and a half times as great as the area of the outlet opening 63; and, if desired, further inlet openings can be disposed along the handle 14 such that air flows past the motor 36 for cooling.

The hand held hair drying appliance 10, as described above, thus provides a high volume of heated air without requiring a large or irregularly configured housing; and, accordingly, the tubular housing 12 preferably has a cylindrical configuration with a diameter conforming to the diameter of the fans 64 and 66 in order to provide an elongate, sleek configuration, round in cross-section that is easily held and manipulated by a user. For instance, it has been found that heated air can be expelled at a rate of 40 cu. ft./min. with the head of the housing having a diameter of 1¾" thereby providing sufficient heated air flow to effectively dry hair while the diameter and configuration of the housing are such as to be utilized in the styling or shaping of hair.

Inasmuch as the present invention is subject to many variations, modifications and changes in detail within the ambit of the following claims, it is intended that all subject matter described above or shown in the accompanying drawings be interpreted as illustrative and not in a limiting sense.

WHAT WE CLAIM IS:—

1. A hand held hair drying appliance comprising a tubular housing having a first inlet therein, a second inlet therein spaced from said first inlet and an outlet therein disposed between said first and second inlets;

heating means disposed in said housing between said first and second inlets;

first and second fans arranged in said housing to force air from said first and second inlets towards said outlet; and

drive means for driving said first and second fans and located on a side of one of said fans which is opposed to the side which faces the other fan, whereby air is drawn into said housing through said first and second inlets, moved past said heat-

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ing means and expelled through said outlet to provide heated air for drying hair.

2. A hand held hair drying appliance as claimed in claim 1 wherein said outlet is formed by at least one longitudinally extending slot in the periphery of said housing such that air is expelled from said outlet in a direction substantially transverse to the axis of said housing.

3. A hand held hair drying appliance as claimed in claim 1 or claim 2, wherein said first and second fans are adapted to provide oppositely directed currents of air through said first and second inlets toward the general direction of said outlet, respectively.

4. A hand held hair drying appliance as claimed in any one of claims 1 to 3 wherein said housing has a substantially cylindrical configuration.

5. A hand held hair drying appliance as claimed in any one of claims 1 to 4 wherein said drive means includes a common drive shaft fixed to said first and second fans and a single motor for rotating said drive shaft.

6. A hand held hair drying appliance as claimed in claim 5, wherein said motor is attached to said drive shaft at a location exterior to portions of the drive shaft disposed between said first and second fans, said fans being adapted to force air axially inwardly in an opposite direction with respect to each other, and wherein the opposing streams of air upon meeting each other are deflected in a direction substantially perpendicular to the axis of said drive shaft.

7. A hand held hair drying appliance as claimed in claim 5 or claim 6 wherein said first inlet is formed by openings in the periphery of said housing and said second inlet is formed by openings in an end of said housing.

8. A hand held hair drying appliance as claimed in claim 6 or claim 7 wherein said housing includes an end cap rotatably mounting an end of said common drive shaft adjacent said second inlet and an adaptor rotatably mounting said common drive shaft adjacent said first inlet, said adaptor having an arcuate configuration to channel air from said openings forming said first inlet toward said outlet.

9. A hand held hair drying appliance as claimed in claim 8 wherein said housing includes a head having a cylindrical configuration with said end cap mounted at one end thereof and a handle having a cylindrical configuration with a diameter less than the diameter of said head, said head being connected, at its end opposite said one end, with said handle by a neck, said openings forming said first inlet being disposed adjacent said neck, said openings forming said second inlet being disposed in said end cap and said motor being disposed in said handle.

10. A hand held hair drying appliance as claimed in any one of claims 5 to 9, wherein said motor is an electric motor.

11. A hand held hair drying appliance as claimed in any one of claims 1 to 10 wherein said fans are axial-flow fans.

12. A hand held hair drying appliance as claimed in any one of claims 1 to 11 wherein said fans are of opposite pitch.

13. A hand held hair drying appliance comprising a tubular housing having a first inlet therein, a second inlet therein spaced from said first inlet, an outlet in the peripheral wall of said housing and disposed between said first and second inlets and a tubular handle portion formed by said housing; heating means disposed in said housing between said first and second inlets; first and second fans arranged in said housing to force air from said first and second inlets toward said outlet; said first and second fans each having blades extending radially from the axis of rotation thereof, said blades of said first fan having a pitch opposite the pitch of said blades of said second fan such that said first and second fans form oppositely directed currents of air when rotated in the same direction; and motor means disposed in said handle for driving said first and second fans and located on a side of one of said fans which is opposed to the side which faces the other fan, whereby air is drawn into said housing through said first and second inlets, moved past said heating means and expelled through said outlet to provide heated air for drying hair.

14. A hand held hair drying apparatus as claimed in claim 13 wherein said motor means includes a common drive shaft fixed to said first and second fans and a single motor rotating said drive shaft.

15. A hand held hair drying appliance comprising a tubular housing having first and second spaced inlet openings therein for passage of air drawn into said housing and an outlet opening therein disposed in said space between said first and second inlet openings for passage of air expelled from said housing; heating means disposed in said housing in said space between said first and second inlet openings and adjacent said outlet opening; and first and second fans disposed in said housing for drawing a first current of air into said housing through said first inlet opening and directing said first air current toward said outlet opening and for drawing a second current of air into said housing through said second inlet opening and directing said second air current towards said outlet opening, said first and second air currents extending axially along said tubular housing in opposite directions, and for expelling

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said first and second air currents past said heating means through said outlet opening to provide heated air for drying hair, and drive means for driving said first and second fans and located on a side of one of said fans which is opposed to the side which faces the other fan.

16. A hand held hair drying appliance as claimed in claim 15 wherein said first and second fans are axially aligned and have radially extending blades with opposite pitches.

17. A hand held hair drying appliance substantially as herein described with reference to the accompanying drawing.

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from which copies may be obtained.

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1465855 COMPLETE SPECIFICATION
1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

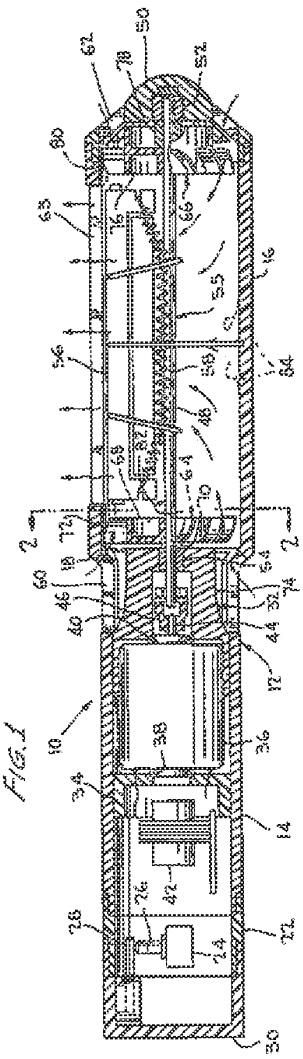


FIG. 1

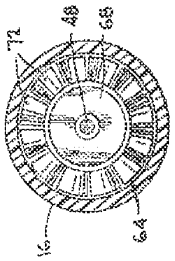


FIG. 2

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Patent Translate
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# Notice

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## DESCRIPTION SU1340734

[0001]

The invention relates to devices llya hair care.

[0002]

The aim of the invention is to improve -operational characteristics.

[0003]

At fi | -. 1 is a hair dryer in the installation tips and guide sector, LDCs partite section; FIG. 2 N 3 - and longitudinal sections, respectively nonerechny guide sector in the relative displacement of the tubular elements.

[0004]



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Nanravlyayushy sector ltya dryer 1 with a nozzle, eg a comb 2, comprises two tubular elements 3 and 4, each of which has nrodolnuyu nrorez 5, the tubular element 3 has a portion 6 for mounting on the nozzle 2, the dryer 1 and a tubular element 4 is arranged concentrically item 3 on the outer surface of the rotatable and reciprocating nostu- patelpsm about neremep1eniya along e; 1e.menta. to change n nrnam and length relative to the longitudinal slot 5.

In the inner cavity of the tubular member may be paprav; 1yayu1tsie e.lement) 7.

[0005]

ilpn care iskhtosami tubular member 4 is rotated or moved

[0006]

0

[0007]

5

[0008]

0



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[0009]

with respect to the tubular member 3 to change nr necessary the longitudinal groove.

[0010]

To redistribute the hot air nozzles mounted along the guide elements 7.

[0011]

Change in the longitudinal nro- cramps umenschit area allows the hot air to the skin and increase the effectiveness of suschki.

[0012]

Claims

[0013]

Guide sector for dryer with a nozzle, eg a comb contents tubular member with a longitudinal slit and the annular mounting portion, characterized in that, with a plan uluchp1eniya performance, it has donol- tional tubular member with a longitudinal slit disposed kontseptrichno main tubular element and adjoint its inner surface and rotatably reciprocating movement relative thereto for changing the length of the longitudinal and N1iripy nrorezi.

[0014]



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FIG. g



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© EPODOC / EPO

PN - SU1340734 A1 19870930
TI - GUIDE SECTOR FOR HAIR DRIER PROVIDED WITH A NOZZLE
PA - BOBKOV ALEKSANDR N [SU]

© WPI / Thomson

AN - 1988-118119
TI - Hair combing fan flow guiding sector - has outer tube moved on inner to change hot air discharging slot size
AB - Hair combing (2) fan (1) flow guiding sector consists of the two tubes (3) and (4), each with longitudinal slot (5). Inner tube (3) has rib (6) for mounting it on comb (2). Outer tube (4) is concentric and can be rotated and also moved horizontally on tube (3) for changing the width and length of the slot (5).
When dressing the hair, tube (4) is moved relative to tube (3) and changes slot (5) size. Hot air is distributed down the sector by setting the guides (7). Change in slot size reduces hot air contact area and accelerates drying.
- USE/ADVANTAGE :
Hair combing fan flow guiding sector makes hair dressing easier. Bul.36/30.9.87.
PN - SU1340734 A 19870930 DW198817
PA - (BOBK-I) BOBKOV A N





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СОЮЗ СОВЕТСКИХ СОЦИАЛИСТИЧЕСКИХ РЕСПУБЛИК

(19) SU (11) 1340734 A1

(51) 4 A 45 D 20/12

ГОСУДАРСТВЕННЫЙ КОМИТЕТ СССР ПО ДЕЛАМ ИЗОБРЕТЕНИЙ И ОТКРЫТИЙ

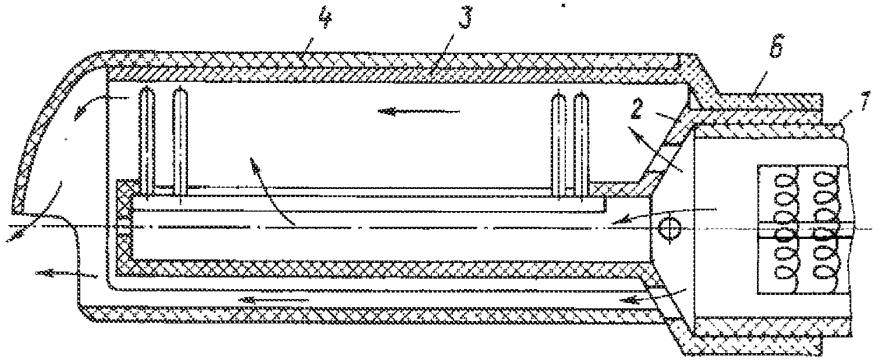
# ОПИСАНИЕ ИЗОБРЕТЕНИЯ

## К АВТОРСКОМУ СВИДЕТЕЛЬСТВУ

(21) 3957773/28-12
(22) 26.09.85
(46) 30.09.87. Бюл. № 36
(75) А. Н. Бобков
(53) 646.72(088.8)
(56) Заявка ФРГ № 2850515, кл. А 45 D 20/12, 1980.

(54) НАПРАВЛЯЮЩИЙ СЕКТОР ДЛЯ ФЕНА С НАСАДКОЙ

(57) Изобретение относится к устройствам для ухода за волосами и позволяет улучшить эксплуатационные характеристики. Направляющий сектор состоит из двух трубчатых элементов 3 и 4. Каждый имеет продольную прорезь. Трубчатый элемент 3 размещен посадочным участком 6 на насадке 2 фена 1. Трубчатый элемент 4 установлен концентрично на наружной поверхности элемента 3 с возможностью поворота и возвратно-поступательного перемещения вдоль этого элемента для изменения величины продольной прорези 3 и.т.




Фиг. 1

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Изобретение относится к устройствам для ухода за волосами.

Целью изобретения является улучшение эксплуатационных характеристик.

На фиг. 1 представлен фен в зоне установки насадки и направляющего сектора, продольный разрез; на фиг. 2 и 3 - продольный и поперечный разрезы соответственно направляющего сектора при относительном смещении трубчатых элементов.

Направляющий сектор для фена 1 с насадкой, например расческой 2, содержит два трубчатых элемента 3 и 4, каждый из которых имеет продольную прорезь 5, при этом трубчатый элемент 3 имеет участок 6 для установки на насадке 2 фена 1, а трубчатый элемент 4 размещен концентрично элементу 3 на его наружной поверхности с возможностью поворота и возвратно-поступательного перемещения вдоль элемента 3 для изменения ширины и длины относительной продольной прорези 5. Во внутренней полости трубчатого элемента могут быть направляющие элементы 7.

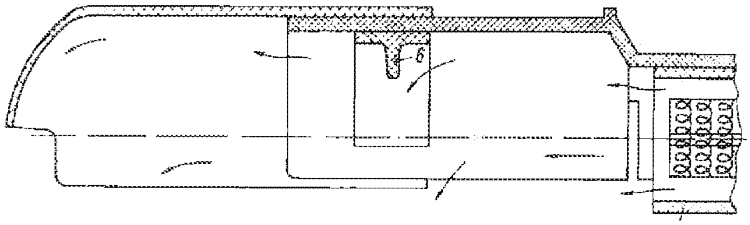
При уходе за волосами трубчатый элемент 4 поворачивается или перемещается относительно трубчатого элемента 3 для изменения при необходимости величины продольного паза.

Для перераспределения горячего воздуха вдоль насадки устанавливаются направляющие элементы 7.

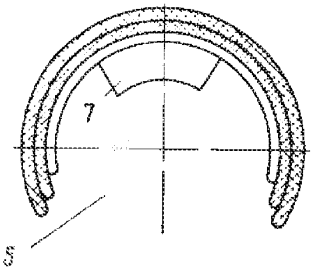
Изменение величины продольной прорези позволяет уменьшить площадь воздействия горячего воздуха на кожу и повысить эффективность сушки.

### *Формула изобретения*

Направляющий сектор для фена с насадкой, например с расческой, содержащий трубчатый элемент с продольной прорезью и кольцевым установочным участком, *отличающийся* тем, что, с целью улучшения эксплуатационных характеристик, он имеет дополнительный трубчатый элемент с продольной прорезью, размещенный концентрично основному трубчатому элементу и сопряженный с ним своей внутренней поверхностью с возможностью поворота и возвратно-поступательного перемещения относительно него для изменения ширины и длины продольной прорези.




*Фиг. 2*




*Фиг. 3*

Составитель С. Бражник
Редактор Л. Повхан Техред И. Верес Корректор Л. Бескид
Заказ 4360/7 Тираж 353 Подписное
ВНИИПИ Государственного комитета СССР по делам изобретений и открытий
113035, Москва, Ж-35, Раушская наб., д. 4/5
Производственно-полиграфическое предприятие, г. Ужгород, ул. Проектная, 4

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## (54) Electrically powered hand held hair curling appliance.

(57) The invention relates to electrically powered hand held hair curling appliances of the type comprising a barrel (2) for delivering warm air to the hair, the barrel (2) being of adjustable diameter to allow curls of different diameter to be formed. The barrel (2) consists of a number of barrel elements (3) which can be moved radially outwardly or radially inwardly to expand or contract the barrel, the elements (3) overlapping one another when contracted but always allowing unobstructed air flow from the interior of the barrel (2) out through apertures (3d) to the hair.

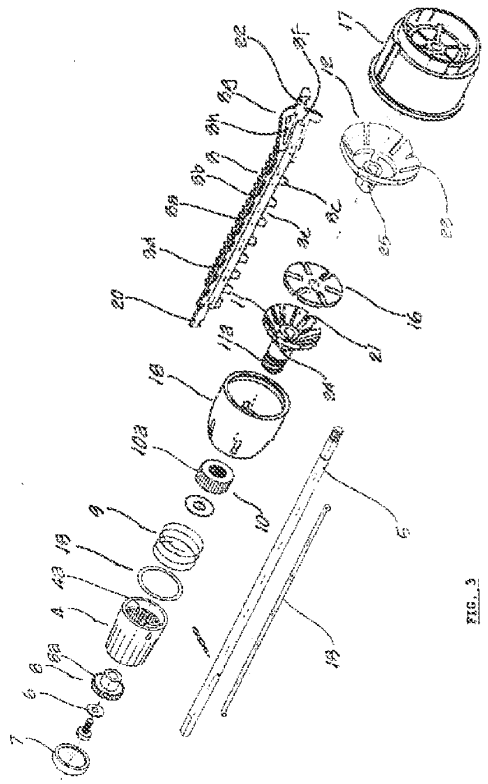


FIG. 3

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The present invention relates to electrically powered hand held hair curling appliances of the type comprising a handle by means of which the appliance is held; a barrel extending from the handle on which the hair to be curled is wound externally, the barrel being hollow to allow fluid flow along the barrel, the barrel being provided with apertures to allow the fluid to flow outwardly to the hair, and the barrel being of adjustable diameter between a fully expanded and a fully contracted state to allow curls of different diameter to be formed.

DE-A-25 28 822 in the name Hubner and DE-A-25 29 016 in the same name (the latter being an application for a patent of addition to the former) both describe hair curling appliances of the type described. Hubner describes a hair curling appliance which uses steam as a fluid. The barrel consists of a hollow perforated cylinder which is of fixed diameter, on the outside of which are pivotally mounted a number of perforated semi-circular segments. The segments may be pivotally moved together outwardly to increase the diameter of the barrel or inwardly to decrease the diameter of the barrel.

The Hubner hair curler suffers from a number of disadvantages. Firstly, the Hubner barrel has a large diameter even when fully contracted. This large diameter arises from the construction, in particular because the barrel comprises segments fixed externally to a cylinder. The minimum diameter is stated to be 20 mm which is at the upper and of the range of desirable curl diameters. Secondly, the Hubner appliance is intended to apply a low volume low pressure supply of steam to the hair. It would be unsuitable for use in applying a substantial flow of dry warm air to the hair for the purpose of drying and styling, in particular because in the Hubner appliance the fluid must flow along a circuitous path from the interior of the cylinder out through one set of apertures into the area between the cylinder and the segments, and then out through another set of apertures to the hair. The two sets of apertures are generally not aligned with one another. Finally the appliance proposed by Hubner would suffer from condensation problems with drops of water falling from the appliance onto the hair.

US-A-3,921,648 to Barradas also describes a hair curling appliance of the type described. The appliance is a steam curling iron. The barrel consists of a central hollow perforated cylinder of fixed diameter on the outside of which is mounted a perforated expansible mandrel of resilient stainless steel.

The Barradas hair curling appliance suffers from the same disadvantages as the Hubner appliance, namely a large diameter when fully contracted arising from the two-layer structure, unsuitability for high volume flow of warm dry air arising from a circuitous path through two sets of apertures which are not in register, and condensation leading to drops of water falling on the air.

According to the invention there is provided a hair curling appliance of the type described in which the barrel comprises a number of elongate barrel elements arranged in mutually parallel radial relationship to form a generally axially symmetric barrel, the barrel elements being movable radially inwardly together and radially outwardly together so as to contract and expand the diameter of the barrel, the barrel elements mutually combining to form a substantially closed barrel when in the fully expanded state and a substantially closed barrel with overlapping barrel elements in the contracted state, and the barrel elements being provided with apertures which allow fluid to flow from the interior of the barrel directly out to the hair when the barrel is in the fully expanded, fully contracted or any intermediate state.

Thus there is provided an improved curling appliance of the type described which has a substantially smaller diameter than the prior art devices. There is also provided an improved hair curling appliance of the type described which can deliver a substantial flow or warm dry air to the hair.

The hair curling appliance according to the invention has a number of advantages. Firstly, the structure allows a barrel of small diameter to be constructed. Secondly, air flow idrectly form the interior of the barrel to the hair, allowing a large volume of air to be applied to the hair.

There now follows a description of preferred embodiments of the invention, by way of example, with reference being made to the accompanying drawings, in which:

Figure 1 is a side elevation of a warm air brush including a barrel of adjustable diameter in accordance with the invention shown in the expanded state;

Figure 2 is a view similar to Figure 1, but showing the barrel in cross section;

Figure 3 is an exploded perspective view of the barrel on a larger scale, showing the principal components;

Figure 4 shows on a larger scale one of the components shown in Figure 3, namely a barrel element;

Figure 4a & 4b show two adjacent barrel elements with the barrel in the fully expanded and the fully contracted state respectively;

Figures 5a & 5b are sectional views on A-A of Figure 2 and show the barrel in the expanded and contracted state thereof respectively;

Figure 6 & 7 are views similar to Figure 2, but on a large scale, showing the adjustment mechanism for the barrel, Figure 6 showing the outer end of the barrel and Figure 7 showing the inner end;

Figure 8 is a view similar to Figure 3, but showing a modified construction of warm air brush; and

Figure 9 is a sectional side elevation of the barrel and adjustment mechanism of the modified con-



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struction.

Referring now to Figures 1 to 7 of the drawings, the warm air brush comprises a gripping handle 1, a barrel 2 which is used to brush the hair, and a heater blower (not shown) located in the gripping handle 1 for heating air which is then directed along the barrel 2 and emerges through apertures described below to warm the hair being brushed.

The barrel 2 consists of six elongate barrel elements 3 arranged in mutually parallel radial relationship to form a generally cylindrical barrel. Each barrel element 3 consists of a base 3a, a row of projecting brush teeth 3b, a lateral projection 3c at one side of the base for underlying the base 3a of the adjacent element, a row of apertures 3d in the base 3a and a row of indentations 3e in the lateral projection 3c. Each barrel element 3 is integrally formed of plastic material but includes a metal stiffening rod 3f. Figure 5b shows the barrel 2 in the fully contracted state with the bases 3a abutting one another. Figure 5a shows the barrel 2 in the fully expanded state with gaps between the bases 3a, these gaps being closed by the lateral projections 3c. Closure of the gaps ensures that the barrel 2 is substantially closed so that warm air flowing down the barrel escapes only through the apertures 3d. The external diameter of the barrel 2 is 14 mm in the fully contracted state and 21 mm in the fully expanded state.

As best seen in Figures 4a and 4b, the apertures 3d are always unobstructed, allowing a substantial volume of warm dry air to be delivered directly from the interior of the barrel 2 to the hair, without any risk of backpressure or overheating of the heater blower. When the barrel 2 is in the fully expanded state as shown in Figure 4a, air emerges through the apertures 3d and also through the indentations 3e. When the barrel 2 is in the fully contracted state as shown in Figure 4b, the indentations 3e move into register with the apertures 3d, so that the apertures remain unobstracted.

The user expands or contracts the barrel 2 by means of the adjustment knob 4 located at the tip of the barrel. The user grips the knob 4, depressing the knob axially along the barrel 2 towards the handle 1 against spring biassing so as to disengage the knob 4 from a locking mechanism, the user then rotates the knob 4 clockwise to expand the barrel 2 or anti-clockwise to contract the barrel 2, and then releases the knob 4 so that the latter moves axially back along the barrel 2 under the influence of the spring biassing and re-engages the locking mechanism to prevent further rotation.

The locking mechanism will now be described. A fixed central shaft 5 extends from the handle 1. A washer 6 and cap 7 are provided at the outer end of the fixed central shaft 5. A flanged collar 8 is fixedly mounted at the end of the shaft 5 just inwardly of the cap 7 and washer 6, and has gear-teeth 8a on the outer circumferential surface of the flange. The adjustment knob 4 has teeth 4a on the inner circumferential surface which in the normal position thereof as shown in Figure 6 engage with the teeth 8a on the flanged collar 8, thereby preventing rotation of the adjustment knob 4. The adjustment knob 4 is held in the normal position by a coiled compression spring 9 which biasses the adjustment knob 4 towards the outer end of the shaft 5 into abutment with the washer 6.

The adjustment mechanism will now be described. When the adjustment knob 4 is depressed against the action of the coiled compression spring 9, the inwardly projecting teeth 4a of the adjustment knob 4 move out of meshing engagement with the externally projecting teeth 8a on the flanged collar 8, allowing the adjustment knob 4 to be rotated. The subsequent rotation of the adjustment knob 4 causes corresponding rotation of nut 10, the adjustment knob 4 and nut 10 being held together by meshing gears 4a, 10a. The nut 10 is threaded on external screw threading 11a on the shank of front cam 11 which is slidably mounted on the central shaft 5. Double helix threading is used for extra stability. The nut 10 is held in a fixed axial position between the front cam housing 18 and the flanged collar 8. As a result, rotation of the adjustable knob 4 and consequent rotation of the nut 10 causes lengthwise axial movement of the front cam 11. The axial movement of the front cam 11 is transmitted by connecting rods 13 to the rear cam 12 which is also slidably mounted on the central shaft 5. As the front and rear cams 11, 12 move axially, axial movement of the barrel elements 3 is prevented by stopping member 16 which is fixed on the central shaft 5 by means of locking pin 19 (best seen in Figure 6), and the barrel elements 3 are caused to ride up or down the cams 11, 12, so that the barrel 2 expands or contracts radially. The cams 11, 12 are located in the front cam housing 18 and rear cam housing 17 respectively. Front cam housing 18 is fixed on the stopping member 16 and rear cam housing 17 is fixed to the central shaft 5 and allows air to flow therethrough to the interior of the barrel 2.

By way of further explanation the co-operation of the barrel elements 3, cams 11, 12 and connecting rods 13 will now be described. The outer end of each barrel element 3 is provided with a pair of angled side slots which define an angled neck 20 for engaging in the inclined radial slots 21 in the front cam 11. The inner end of the barrel element 3 has an inclined portion 3g so that in combination the six barrel elements have a flared inner end, the largest diameter of which substantially matches the diameter of the handle 1 to allow a large flow of air to be introduced into the barrel. One large triangular aperture 3h is provided in each inclined portion which serves the dual purpose of delivering air to the outside surface of the curled hair and venting any air pressure build up to prevent overheat-



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ing of the heater blower. In addition each inclined portion 3g finishes with an inclined neck 22 which engages in an inclined radial slot 23 in the rear cam 12. The connecting rods 13 are disposed, as best seen in Figure 7, alongside the central shaft 5 and are provided at each end with an outwardly turned right angle bend 13a which engage in holes 24, 25 in the front and rear cams 11, 12 respectively.

Figures 8 and 9 show a modification in which the diameter of the barrel 102 is adjustable by means of a thumb-operated knob 104 at the inner end of the barrel. This arrangement allows the appliance to be held in one hand and the barrel diameter to be adjusted by the thumb of that hand. There is no locking mechanism to prevent rotation of the knob 104. The components comprise a shaft mounting bracket 130 fixed to the handle (not shown), a fixed central shaft 105, a front cam 111 fixed to the shaft 105, a rear cam 112 fixed to the shaft 105, a front cam housing 118, a washer 106, a cap 107 and bolt 131, barrel element 103, a barrel element stiffening rod 103f, and a heat shield 131 which fits inside the knob 104. An essential component of the mechanism is puller element 132. This component is prevented from rotating by the engagement of feet 132a in apertures 112a in the rear cam 112, but is free to move axially along shaft 105. The puller element 132 is provided with three equally spaced external lugs 132b which co-operate with helical grooves 104a on the inside face of the rotatable knob 104.

When knob 104 is rotated, the co-operation of lugs 132b and grooves 104a causes the puller element 132 to move axially along the shaft 105. This axial movement is in turn transmitted to the barrel elements 103 by virtue of the engagement of the neck 103a of each barrel element 103 in a corresponding slot 132c in the puller element 132. As the barrel element 103 move axially they ride up or down the front rear cams 111, 112 causing the barrel 102 to expand contract.

The invention is not limited to warm air brushes. The invention may be applied to a variety of differnt hair care appliances, for examples hair curling irons.

## Claims

1. An electrically powered hand held hair care appliance of the type comprising a handle (1) by means of which the appliance is held; a barrel (2) extending from the handle on which the hair to be curled is wound externally, the barrel (2) being hollow to allow fluid flow along the barrel, the barrel being provided with apertures (3d) to allow the fluid to flow outwardly to the hair, and the barrel being of adjustable diameter between a fully expanded and a fully contracted state to allow curls of different diameter to be formed, characterized in that the barrel (2) comprises a number of elongate barrel elements (3) arranged in mutually parallel radial relationship to form a generally axially symmetric barrel, the barrel elements (3) being movable radially inwardly together and radially outwardly together so as to contract and expand the diameter of the barrel (2), the barrel elements (3) mutually combining to form a substantially closed barrel (2) when in the fully expanded state and a substantially closed barrel (2) with overlapping barrel elements (3a, 3c) in the contracted state, and the barrel elements (3) being provided with apertures (3d) which allow fluid to flow from the interior of the barrel (2) directly out to the hair when the barrel (2) is in the fully expanded, fully contracted or any intermediate state.

2. A hair curling appliance according to claim 1 in which each barrel element (3) comprises an elongate base (3a), a row of brush teeth (3b) projecting radially outwardly from the base, a row of apertures (3d) in the base, and a lateral projection (3c) extending along one side of the elongate base (3a) for underlying the base (3a) of the adjacent barrel element (3) in the contracted or partially contracted state.



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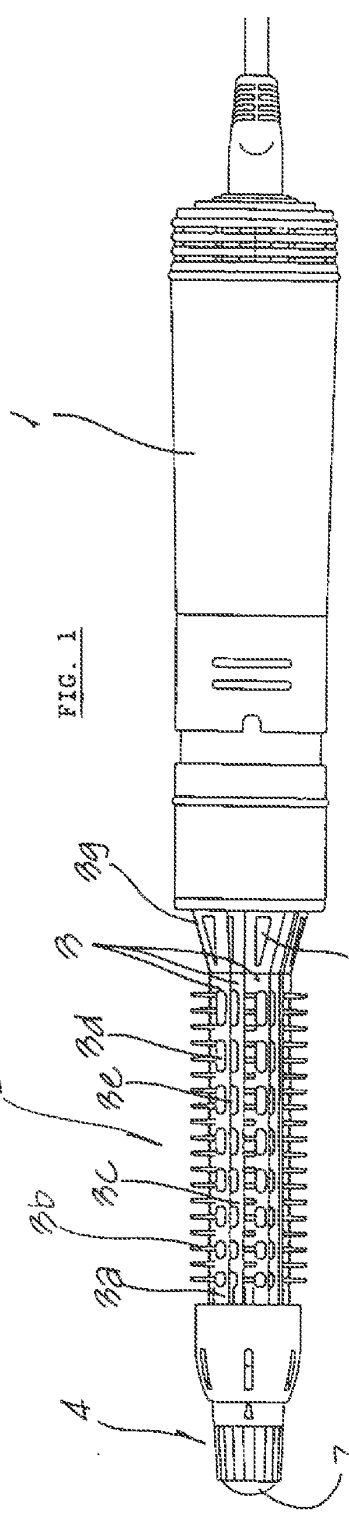



FIG. 1

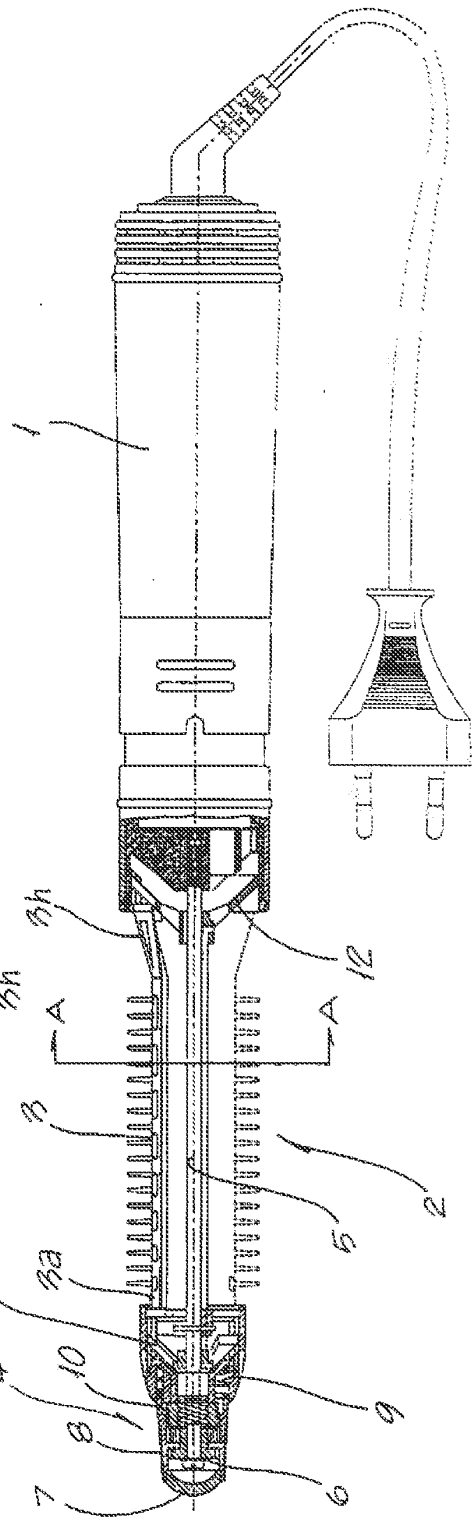



FIG. 2



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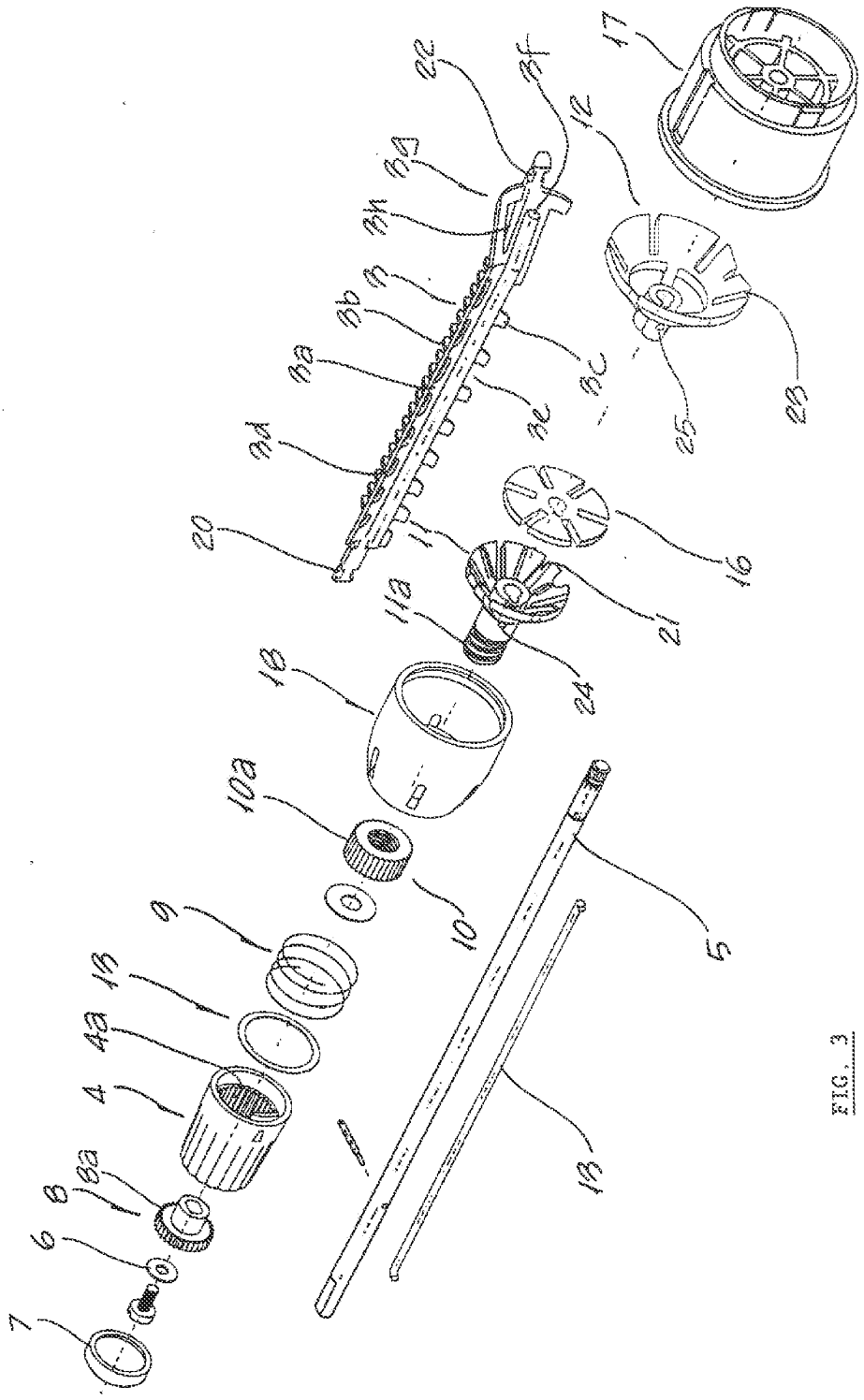



FIG. 3



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FIG. 4a

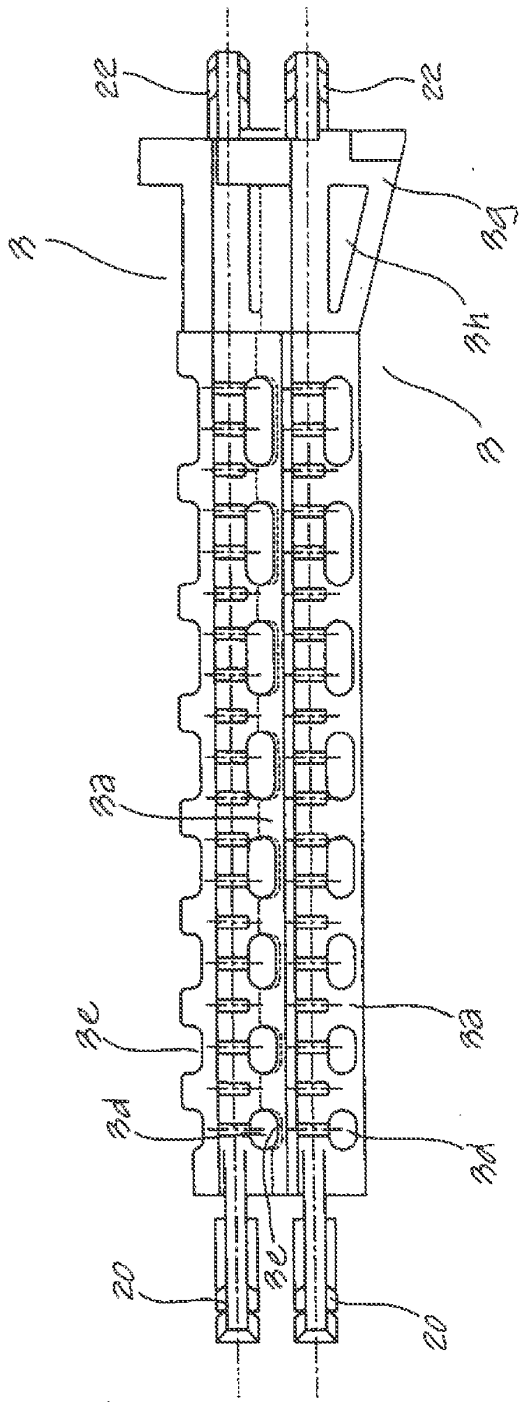
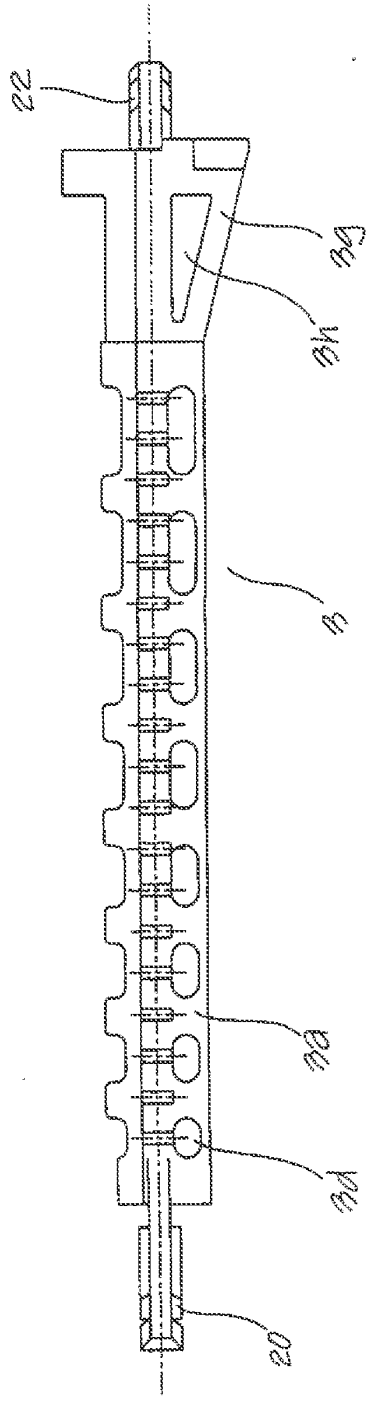



FIG. 4






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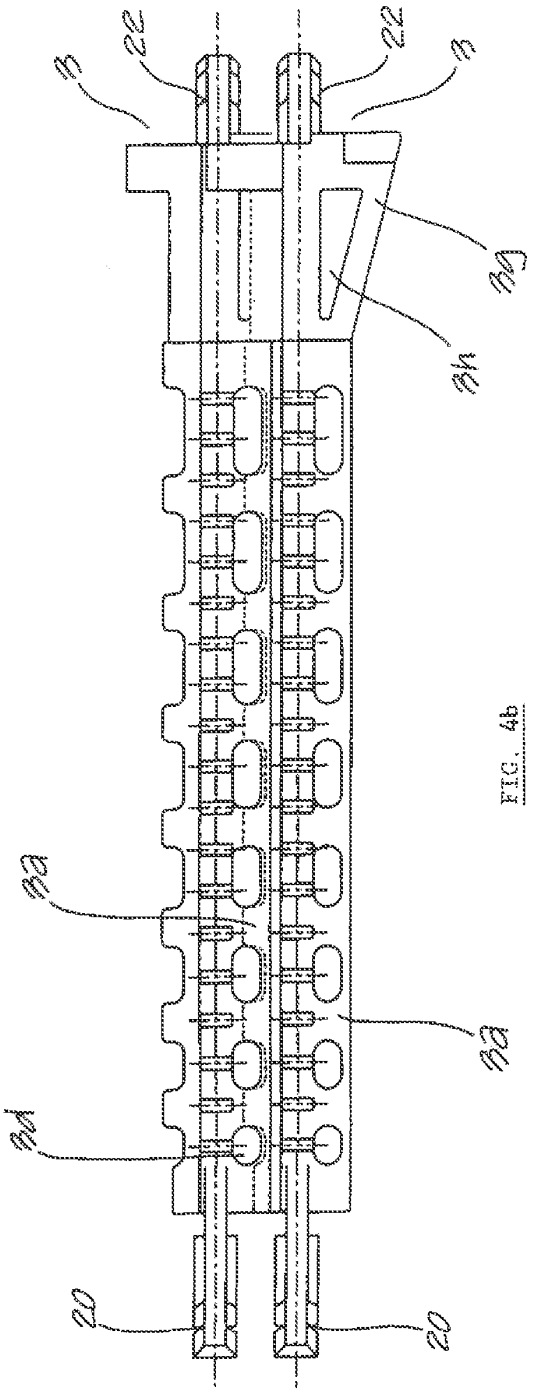



FIG. 4b



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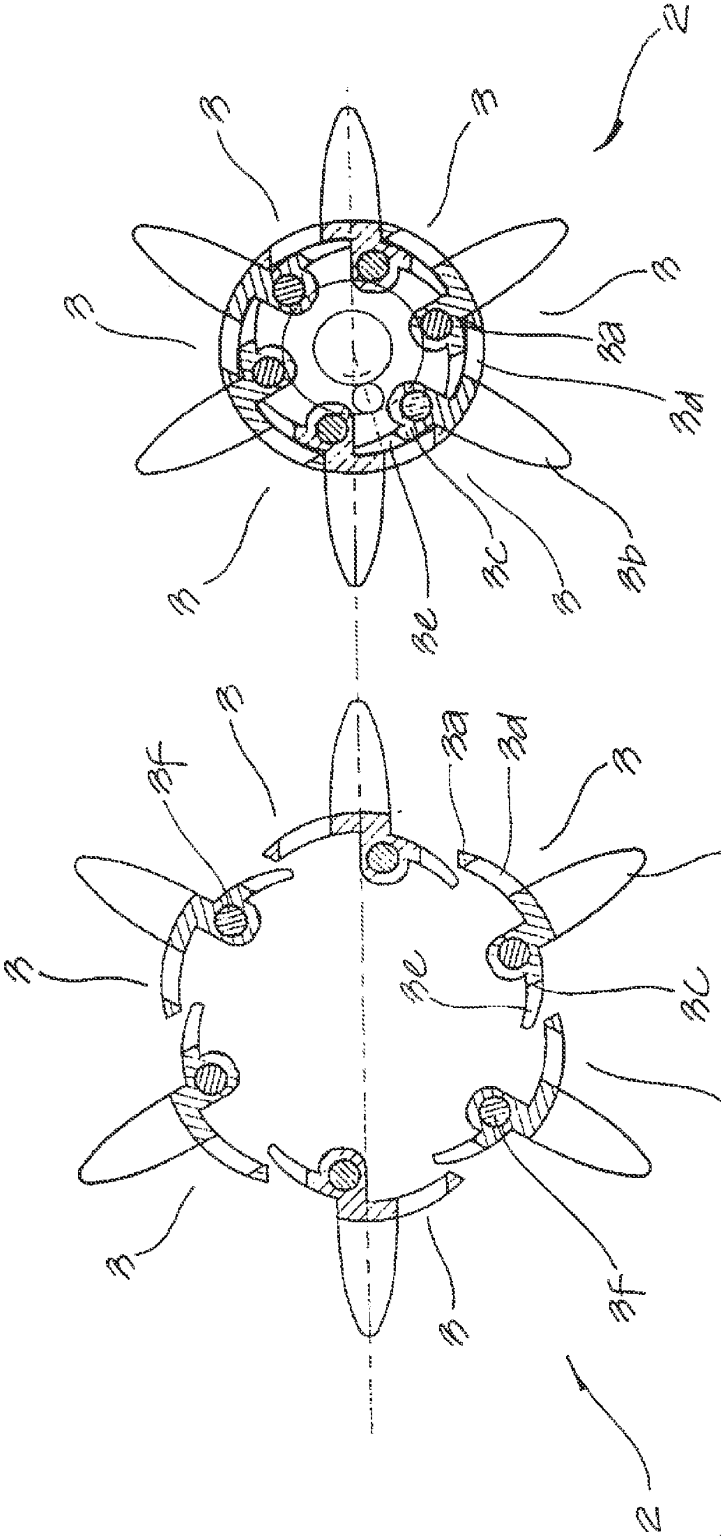


FIG. 5b

FIG. 5a

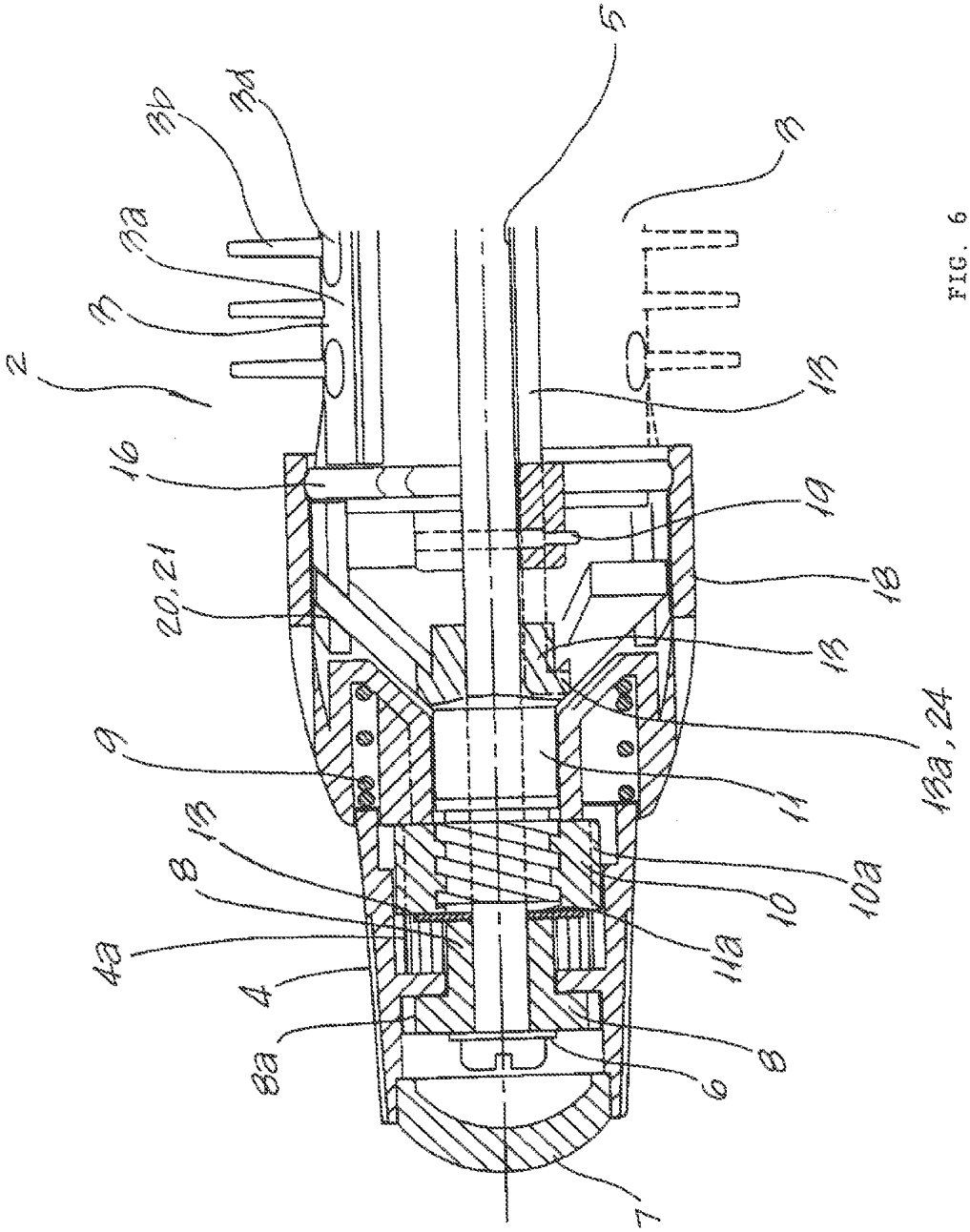



FIG. 6



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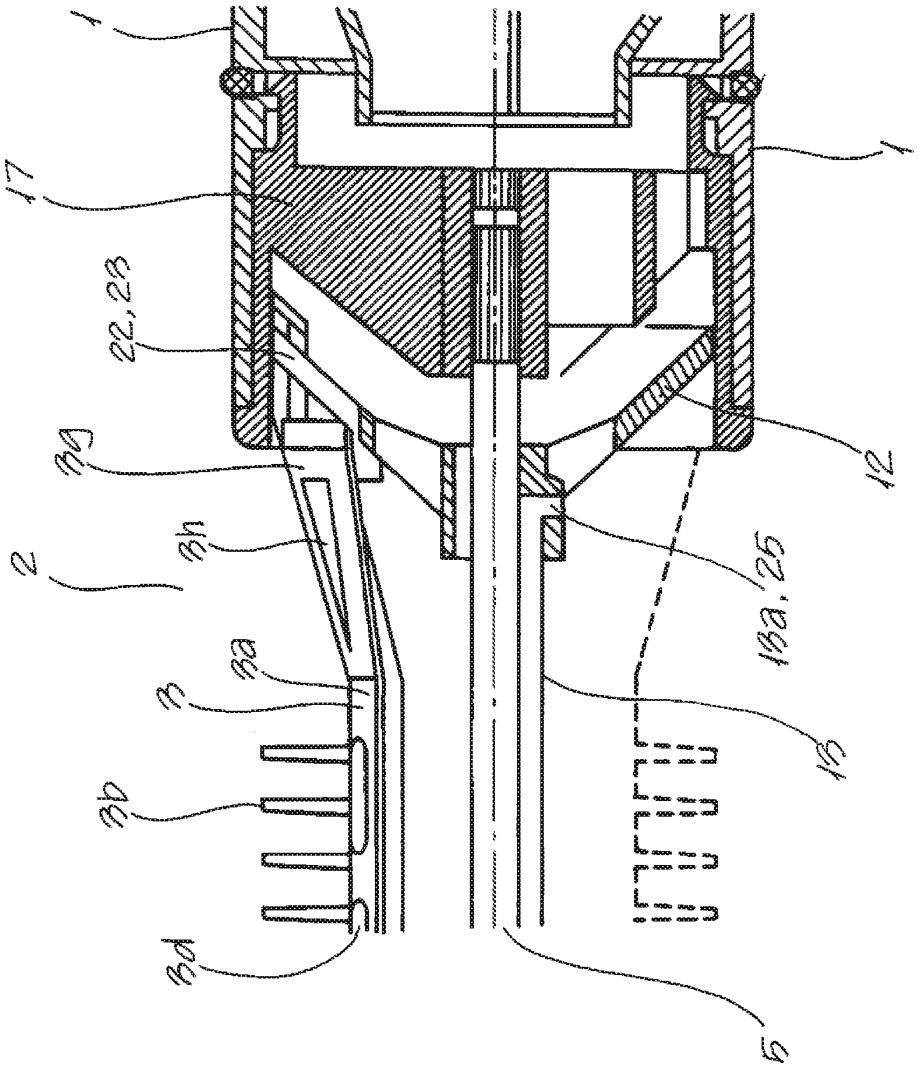



FIG. 7



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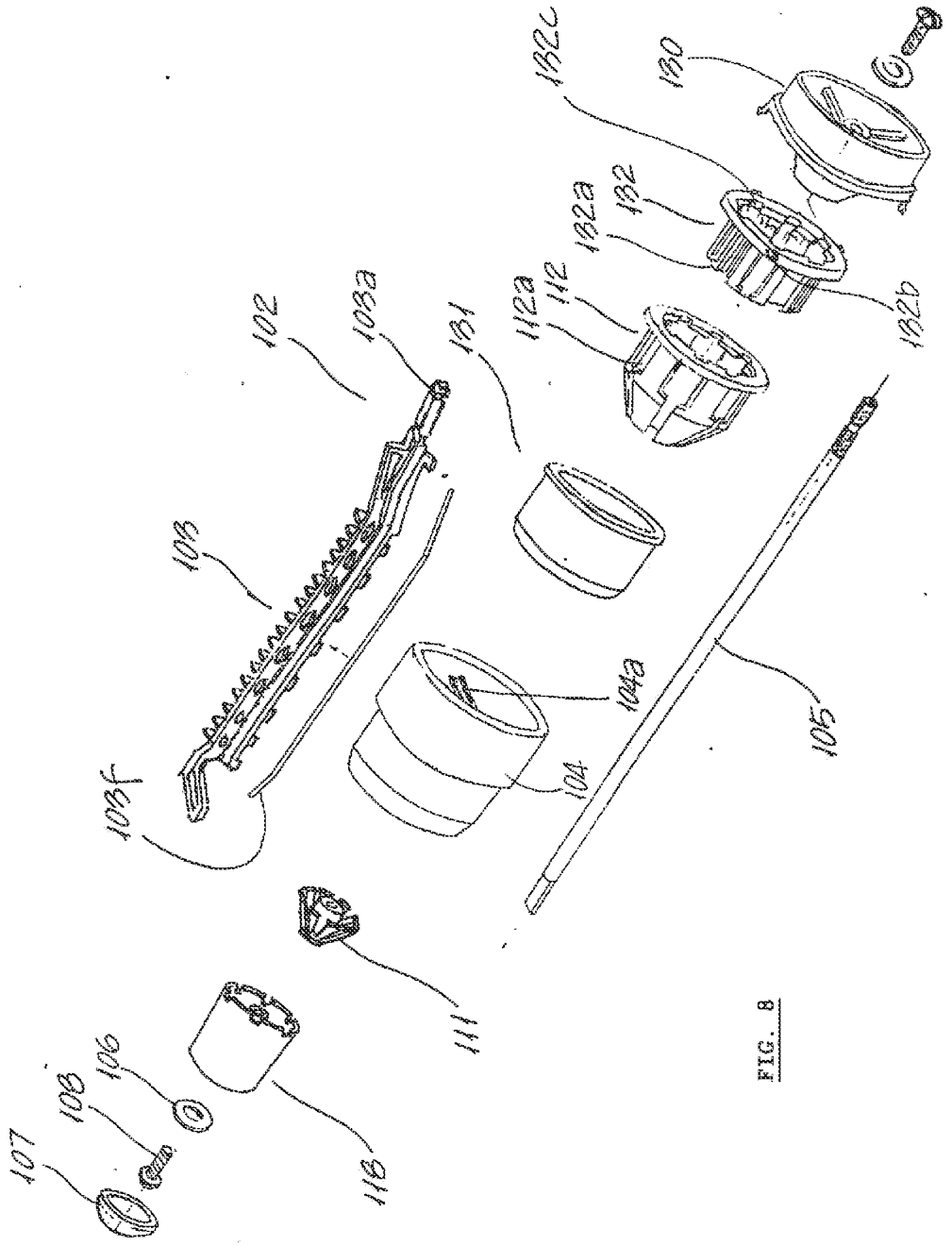



FIG. 8



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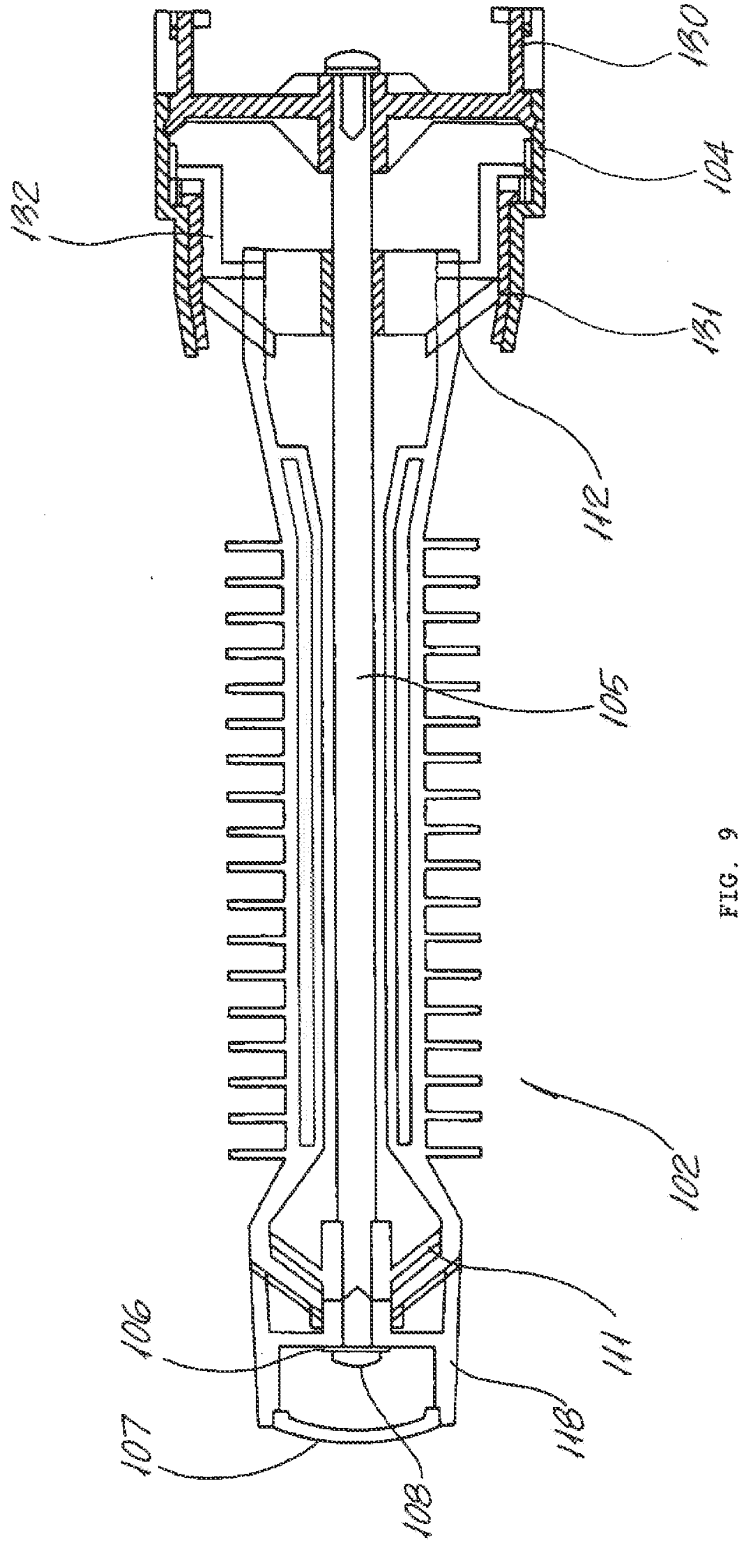



FIG. 9



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European Patent Office

# EUROPEAN SEARCH REPORT

Application Number

## DOCUMENTS CONSIDERED TO BE RELEVANT

EP 91309787.9

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int. Cl.5) |
|---|---|---|---|
| D,A | DT - A - 2 529 026 (HÜBNER) * Totality * | 1 | A 45 D 2/36 |
| A | US - A - 3 583 409 (RIOS) * Fig. 1-9 * | 1 | |

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

A 45 D 2/00
A 45 D 20/00

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| VIENNA | 10-12-1991 | PIRKER |

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 (P0401)



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Espacenet

## Bibliographic data: KR20080030428 (A) — 2008-04-04

# HAIR DRYER

**Inventor(s):** I YEONG SEOK [KR] ± (I, YEONG SEOK)

**Applicant(s):** Y S CREATION CO LTD [KR] ± (Y.S CREATION CO., LTD)

**Classification:** **- international:** ***A45D20/00; A45D20/48***
**- cooperative:**

**Application number:** KR20060096834 20060930

**Priority number(s):** KR20060096834 20060930

## Abstract of KR20080030428 (A)

A hair dryer is provided to enable a user to do her hair promptly and conveniently by installing a comb on the side of an air sending tool additionally and letting a user to dry and comb her hair at the same time. An air sending housing(3) is installed on the side of a head(17b) of a handle portion(1). An intake(7), an air sending fan(9) and a heater (11) are built in the air sending housing. An air sending hole through which hot wind/cold wind is discharged is formed to be narrow and long. A comb(17) is assembled to be inserted into or separated from the inner side of the air sending hole. A protrusion(19) is formed on the inner surface of the air sending hole. The head portion of the comb is formed to have a streamlined shape.



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## DESCRIPTION KR20080030428

[1]

An exploded perspective view showing a hair dryer of the present invention Figure 1 is a.

[2]

Coupling a cross - sectional view of the present invention.

[3]

Description of the Related * in the drawing *

[4]

1 - handle 3 - ventilated housing

[5]

7 - 9 - ball blower fan intake

[6]

15 - 11 - heater outlet

[7]

17 hair combs 17a - Jam Home

[8]

17b - 17c - exhaust ball head

[9]

19 locking jaw

Hair present invention is an improvement to be useful when you trim your hair style,



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you can trim the hair so quickly and easily by forming a linear structure, especially the outlet and configured to be mounted on the outlet hair comb, relates to a dryer.

Normally, when you trim your hair after shampoo to clean the hair in the salon or use a hair dryer to dry the moisture laden hair.

Especially the morning rush and the need to trim the hair in a short time, and when going out, this is useful when a hair dryer is used more.

Not operate the function of the hot air and discharged to the outside of the opening passing through the electric heater in the heated process air is sucked in, an electric heater and continue to operate the fan formed in the rearward sucked through the air intake hole of the appropriate amount of the hair dryer is and has a function to cool air sucked by the operation of the fan air which has discharged from that state, is divided into approximately steel, again depending on the product consists of warm air and cool air to operate these features.

A conventionally known structures of such a domestic hair dryer registered Utility Model Publication No. 0364342 (2004.

10

Are well described in 01).

Concurrently hold as a hair dryer to make cleaning the hair after use, built inside the reverse rotation of the motor by the publication of the hair dryer; Is securely fixed to the fixing means on the back of the hair - dryer, comprising a connector and a filter inlet port hair cleaner; And is characterized in that which consists of; fixing means for fixing a connector on the back of the hair dryer of the hair cleaner.

This is complicated in structure in addition to the cleaning function, but is useful to manufacture and difficult problem in the above hair dryer.



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This problem also does not meet the requirements to achieve a fast and convenient trim the hair is just as a normal hairdryer.

Have their purpose serve the needs of the prior art as described above, and so the invention is also to solve the problem, lower comb the hair with the dry hair with a comb portion by installing the side tuyere, the hairstyle can be quickly and easily clean.

In accordance with the above objects, that are built into the front handle portion intake port, the air blowing fan and the heater installed in the blower housing, but the present invention, the narrow and long linear form an outlet to be discharged hot air / cold air, the assembly inserted into the inside of the air outlet or suggest a hair comb hair dryer by providing separate, so you can quickly and easily trim your hair style.

More specifically, the assembly so that the engagement with the locking bar to form a locking bar on an inner surface of the tuyeres, to form a locking groove formed in the head portion and at the same time of the hair brush in this streamlined as a means for mounting the above - described hair comb invention The configuration.

In addition, to be discharged to the outside cool air is induced into the exhaust outlet is formed so as to penetrate the ball head portion of the hair brush hot air /.

According to this arrangement, at the same time, it can be quickly and conveniently clean the hair style by a comb with a dry hair the hair by discharging the hot air / cold air according to the present invention is a hair dryer.

Hereinafter be described in more detail with reference to the accompanying drawings, preferred embodiments of the present invention.

And also shows a separate overall appearance structure of the present invention, showing the internal structure of the assembled FIG.

As can be seen throughout the drawings, comprises a housing (3) is configured on the



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side handle (1) and the wire is to be connected to the power supply is applied, the head of the handle (1), the blower of the present invention is a hair dryer.

The handle (1) is provided with adjusting the hot air / cold air and strong wind, such as around the control buttons (5), (11) the blower housing (3), the inlet port 7, the air blowing fan 9 and a heater The built - in configuration.

Is guided in one direction by the blowing fan (09) and guides (13) are sucked through the inlet port (7) to the air, the air outlet is discharged to the 15 goes through an electric heater 11 is heated.

As a characteristic configuration of the present invention, the above - described air outlet (15), unlike a typical structure, a linear long and narrow form, and comprises a structure for fitting the insertion combs (17) with the inside of the air outlet 15.

To form a linear air outlet (15), is formed in a streamlined appearance wing the blower housing (3) is shaped as a whole constitute a hatchet combined with the handle (1).

The assembly is installed in a manner to be inserted into the inside of the air outlet (15) and the combs (17).

That is, in the means for mounting the above - described invention, hair comb formed locking bar (19) to the inner surface of the air outlet (15), the combs (17) in the locking bar (19) interlocking gwamat locking groove (17a) forms a, and configured to be easily inserted into the inside of the air outlet 15 is formed in a fairing of the combs (17) the head portion (17b) as well.

In addition, that is, so that the head of the comb (17) the head portion (17b) has to be formed through a plurality of exhaust holes (17c) of the hot air / cold air is guided to the air outlet (15) towards the user's head can be discharged outside.

According to this arrangement, would have to be assembled or separated by the insertion combs (17) to the outlet (15) of the present invention a hair dryer is, when



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using the hair within the comb assembly to dry the moisture of the hair, and at the same time dry ridorok can be used, the only one to be used during dry separation.

As can be seen through the embodiment described above, by using the head to form a comb installed in a linear structure, and an air outlet for insertion into the inside thereof, as well as to comb the hair dry quickly and making a hairstyle according to the present invention a hair dryer is it is possible to obtain an effect that the convenience to clean.

Further separation comb head assembly in the present invention, A / is easy, it can be used just as a conventional hair dryer and during separation.

On the other hand, is not limited to the above embodiment, many variations are possible for it will be apparent by those skilled in the art within the scope of the present invention is provided.



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## CLAIMS KR20080030428

[0001]

Installing a built - in, but that the inlet port, the air blowing fan and the heater side of the blower housing, knob head portion, a linear long and narrow outlet to be discharged to form a hot air / cold air, formed by a comb assembly head to be inserted to the inside of the air outlet, or separate Hair dryer according to claim.

[0002]

The method of claim 1, wherein the locking step is formed on the inner surface of the ventilation opening, and a head portion formed in a streamline of the hair brush, inserted to form a locking groove engaged with the jaw assembly to the locking head of the hair brush, a hair dryer which is characterized by forming a FULFILLED exhaust holes to discharge the hot air to the outside of the head induced by tuyeres / cold air as well.



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PN - KR20080030428 A 20080404
TI - HAIR DRYER
AB - A hair dryer is provided to enable a user to do her hair promptly and conveniently by installing a comb on the side of an air sending tool additionally and letting a user to dry and comb her hair at the same time. An air sending housing(3) is installed on the side of a head(17b) of a handle portion(1). An intake(7), an air sending fan(9) and a heater(11) are built in the air sending housing. An air sending hole through which hot wind/cold wind is discharged is formed to be narrow and long. A comb(17) is assembled to be inserted into or separated from the inner side of the air sending hole. A protrusion(19) is formed on the inner surface of the air sending hole. The head portion of the comb is formed to have a streamlined shape.
PA - Y S CREATION CO LTD [KR]

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AN - 2008-L66746
TI - Hair dryer, has air sending housing installed on side of head of handle portion, intake hole, air sending fan and heater built in air sending housing, and head portion of comb formed to have streamlined shape
AB - NOVELTY :
The hair dryer has an air sending housing (3) installed on a side of a head (17b) of a handle portion (1). An intake hole (7), air sending fan (9) and a heater (11) are built in the air sending housing. Hot wind/cold wind is discharged through an air sending hole, and a comb (17) is assembled to be inserted into or separated from an inner side of the air sending hole. A protrusion (19) is formed on an inner surface of the air sending hole. A head portion of the comb is formed to have a streamlined shape.
- USE :
Hair dryer.
- ADVANTAGE :
The comb is installed on side of the air sending tool additionally, so that the hair dryer allows a user to dry and comb at the same time, thus providing better convenient to the user.
- DESCRIPTION OF DRAWINGS :
The drawing shows an exploded perspective view of a hair dryer.
1 : Handle portion
3 : Air sending housing
7 : Intake hole
9 : Air sending fan
11 : Heater
17 : Comb
17b : Head
19 : Protrusion
PN - KR20080030428 A 20080404 DW200868
PA - (YSCR-N) YS CREATION CO LTD



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(19) 대한민국특허청(KR)
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서울 동작구 흑석2동 289-11

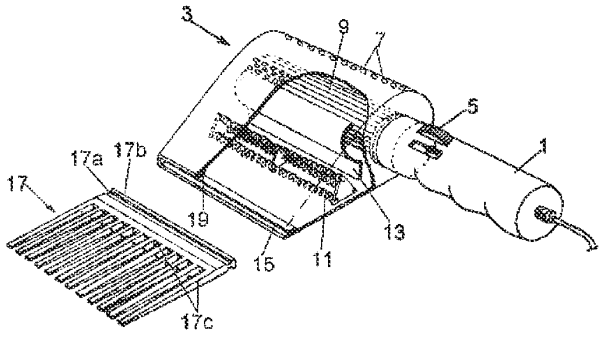
전체 청구항 수 : 총 2 항

(54) 헤어드라이어

(57) 요 약

본 발명은 손잡이부의 상부에 흡기구, 송풍팬 및 히터가 내장된 송풍하우징을 설치하되, 온풍/냉풍이 토출되는 송풍구를 선단으로 경사 지게 형성하며, 상기 송풍구의 내측으로 삽입 조립 또는 분리되도록 머리빗을 설치하되, 상기 송풍구의 내면에 걸림턱을 형성하고, 상기 머리빗의 헤드부를 유선형으로 형성함과 아울러 걸림홈을 형성하여 상기 걸림턱에 맞물려 조립되도록 구성하고, 또한 상기 머리빗의 헤드부를 관통하도록 배기공을 형성하여 송풍구로 유도된 온풍/냉풍이 외부로 토출되도록 함으로써, 머리카락을 드라이하면서 헤어스타일을 빠르고 편리하게 손질할 수 있도록 한다.

대표도






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## 등록청구의 범위

### 청구항 1

손잡이부의 헤드 측에 흡기구, 송풍팬 및 히터를 내장한 송풍하우징을 설치하되, 온풍/냉풍이 토출되는 송풍구를 선형으로 좁고 길게 형성하며, 상기 송풍구 의 내측으로 삽입되거나 또는 분리되도록 머리빗을 조립하여 구성한 것을 특징으로 하는 헤어드라이어.

### 청구항 2

제 1 항에 있어서, 상기 송풍구의 내면에 걸림턱을 형성하고, 상기 머리빗의 헤드부를 유선형으로 형성하며, 상기 머리빗의 헤드부에 삽입 조립시 상기 걸림턱에 맞물리는 걸림홈을 형성하고, 아울러 상기 헤드부에 송풍구로 유도된 온풍/냉풍을 외부로 토출시키는 배기공을 형성하여 이루어진을 특징으로 하는 헤어드라이어.

## 명 세 서

## 발명의 상세한 설명

### 발명의 목적

#### 발명이 속하는 기술 및 그 분야의 종래기술

<10> 본 발명은 자신의 헤어스타일을 손질할 때 유동하게 사용할 수 있도록 개선한 것으로서, 특히 송풍구를 선형 구조로 형성하고 상기 송풍구에 머리빗을 조립할 수 있도록 구성함으로써, 빠르고 편리하게 머리카락을 손질할 수 있도록 한 헤어드라이어에 관한 것이다.

<11> 통상, 샴푸 후에 머리를 손질하거나 미용실에서 머리를 손질할 때에는 습기를 머금은 머리카락을 말리기 위하여 헤어드라이어를 사용한다. 특히 아침 출근이나 외출시에는 짧은 시간 내에 머리를 손질할 필요성이 있으며, 이러한 때에는 헤어드라이어의 사용이 더욱 유용한 것이다.

<12> 헤어드라이어는 팬이 작동하면 후방에 형성된 흡기공을 통해 적절량의 공기가 흡입된 후 이 흡입된 공기가 전열히터를 통과하는 과정에서 가열된 열기를 외부로 토출시키는 온풍기능과, 전열히터를 작동시키지 않은 상태에서 팬의 작동에 의해 흡입된 공기를 그대로 토출시키는 냉풍기능을 갖고 있으며, 이러한 온풍과 냉풍기능은 제품에 따라 다시 강, 약으로 구분되어 작동되도록 구성되어 있다.

<13> 이러한 헤어드라이어의 종래 공지된 구조가 국내 등록실용신안공보 제0364342호(2004. 10. 01)에 잘 게시되어 있다.

<14> 상기 공보에 의한 헤어드라이어는 사용한 후에 머리카락의 청소를 할 수 있도록 한 것으로서, 내부에 정역회전 모터를 내장하는 헤어드라이어; 상기 헤어드라이어의 후방에 고정수단으로 고정 설치되며, 연결구와 지름홈 기구로 이루어지는 머리카락 청소기; 상기 머리카락 청소기의 연결구를 헤어드라이어의 후방에 고정하는 고정수단;으로 구성되는 것을 특징으로 한다.

#### 발명이 이루고자 하는 기술적 과제

<15> 상기한 헤어드라이어는 청소 기능을 추가하여 유용하기는 하지만 구조적으로 복잡해고 제조가 어려운 문제점이 있다.

<16> 또한 통상의 헤어드라이어와 마찬가지로 머리카락의 손질을 빠르고 편리하게 실현하고자 하는 요구에 부응하지 못하는 문제점이 있다.

<17> 본 발명은 상기한 종래의 요구에 부응하고 또한 문제점을 해결하기 위하여, 송풍구 측에 머리빗을 부가 설치하여 드라이와 함께 머리카락을 빗어내려, 헤어스타일을 빠르고 편리하게 손질할 수 있도록 함에 그 목적을 두고 있다.

#### 발명의 구성 및 작용



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<18> 상기 목적에 따라, 본 발명에서는 손잡이부의 앞쪽에 흡기구, 송풍팬 및 히터가 내장된 송풍하우징을 설치하되, 온풍/냉풍이 토출되는 송풍구를 선형으로 곧고 길게 형성하며, 상기 송풍구의 내측으로 삽입 조립 또는 분리되는 머리빗을 설치함으로써, 헤어스타일을 빠르고 편리하게 손질할 수 있도록 한 헤어드라이어를 제안한다.

<19> 더욱 구체적으로, 상기한 머리빗을 장착하기 위한 수단으로서 본 발명에서는 송풍구의 내면에 걸림턱을 형성하고, 상기 머리빗의 헤드부를 유선형으로 형성함과 아울러 걸림홈을 형성하여 상기 걸림턱에 탄성의 조립되도록 구성한다.

<20> 또한 머리빗의 헤드부를 관통하도록 배기공을 형성하여 송풍구로 유도된 온풍/냉풍이 외부로 토출될 수 있도록 한다.

<21> 이러한 구성에 따라, 본 발명의 헤어드라이어는 온풍/냉풍을 토출하여 머리카락을 드라이하면서 동시에, 머리빗을 이용하여 헤어스타일을 빠르고 편리하게 손질할 수 있는 것이다.

<22> 이하, 본 발명의 바람직한 실시 형태를 첨부 도면에 의거하여 더욱 상세하게 설명하기로 한다.

<23> 도 1은 본 발명의 분리된 전체 외관 구조를 보여주고 있으며, 도 2는 조립된 내부 구조를 보여주고 있다.

<24> 도면을 통하여 알 수 있는 바와 같이, 본 발명의 헤어드라이어는 손잡이 연가되는 전선이 연결된 손잡이(1)와, 그 손잡이(1)의 헤드 쪽에 구성된 송풍하우징(3)을 포함하여 이루어진다.

<25> 손잡이(1)에는 온풍/냉풍 및 바람의 강, 약 등을 조절하는 조절버튼(5)이 마련되고, 상기 송풍하우징(3)에는 흡기구(7), 송풍팬(9) 및 히터(11)를 내장하여 구성한다.

<26> 흡기구(7)를 통하여 흡입된 공기는 송풍팬(9)과 가이드(13)에 의하여 한쪽 방향으로 유도되고, 발열 히터(11)를 거치면서 가열되어 송풍구(15)로 토출되어 진다.

<27> 본 발명의 특징적인 구성으로서, 상기한 송풍구(15)는 일반적인 구조와 달리 선형으로 곧고 길게 형성되어 있고, 상기 송풍구(15)의 내측으로 머리빗(17)을 삽입 설치하는 구조로 이루어진다.

<28> 상기 송풍하우징(3)은 송풍구(15)를 선형으로 형성하기 위하여, 외관상 유선형 날개 모양으로 형성되고, 손잡이(1)와 함께 일체적 전체적으로 손도끼 모양을 구성한다.

<29> 상기한 머리빗(17)은 송풍구(15)의 내측으로 삽입되는 방식으로 조립 설치되는 것이다. 즉, 상기한 머리빗을 장착하기 위한 수단으로서 본 발명에서는 송풍구(15)의 내면에 걸림턱(19)을 형성하고, 상기 머리빗(17)에는 상기 걸림턱(19)과 맞물리는 걸림홈(17a)을 형성하며, 아울러 상기 머리빗(17)의 헤드부(17b)를 유선형으로 형성하여 송풍구(15)의 내측으로 용이하게 삽입될 수 있도록 구성한다.

<30> 또한 상기 머리빗(17)의 헤드부(17b)에는 다수개의 배기공(17c)을 관통되게 형성하여 송풍구(15)로 유도된 온풍/냉풍이 외부 즉, 사용자의 머리쪽으로 토출될 수 있도록 한다.

<31> 이러한 구성에 따라, 본 발명의 헤어드라이어는 송풍구(15)에 머리빗(17)을 삽입하여 조립 또는 분리하여 사용할 수 있도록 한 것이며, 조립 사용시에는 머리카락의 습기를 말리 드라이함과 동시에 머리카락을 빗어 내리도록 사용할 수 있고, 분리시에는 드라이만으로 사용할 수 있도록 한 것이다.

*발명의 효과*

<32> 이상에서 설명한 실시예를 통하여 알 수 있는 바와 같이, 본 발명의 헤어드라이어는 송풍구를 선형 구조로 형성하고 그 내측으로 삽입되도록 머리빗을 설치하여 사용함으로써, 드라이는 물론 머리카락을 빗어 내릴 때 헤어스타일을 빠르고 편리하게 손질하는 효과를 얻을 수 있다.

<33> 또한 본 발명에서 머리빗은 조립/분리가 용이하며, 분리시에는 통상의 헤어드라이어와 마찬가지로 사용할 수 있는 것이다.

<34> 한편, 본 발명은 상술한 실시예들에 한정되지 않으며, 본 발명의 기술적 사상 내에서 당분야의 통상의 지식을 가진 자에 의하여 많은 변형이 가능함은 명백할 것이다.

*도면의 간단한 설명*

<1> 도 1은 본 발명의 헤어드라이어를 도시한 분리 사시도.



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<2> 도 2는 본 발명의 결합 단면도.

<3> ▪도면의 주요 부분에 대한 부호의 설명▪

<4> 1-손잡이 3-송풍하우징

<5> 7-출기공 9-송풍팬

<6> 11-터빈 13-송풍구

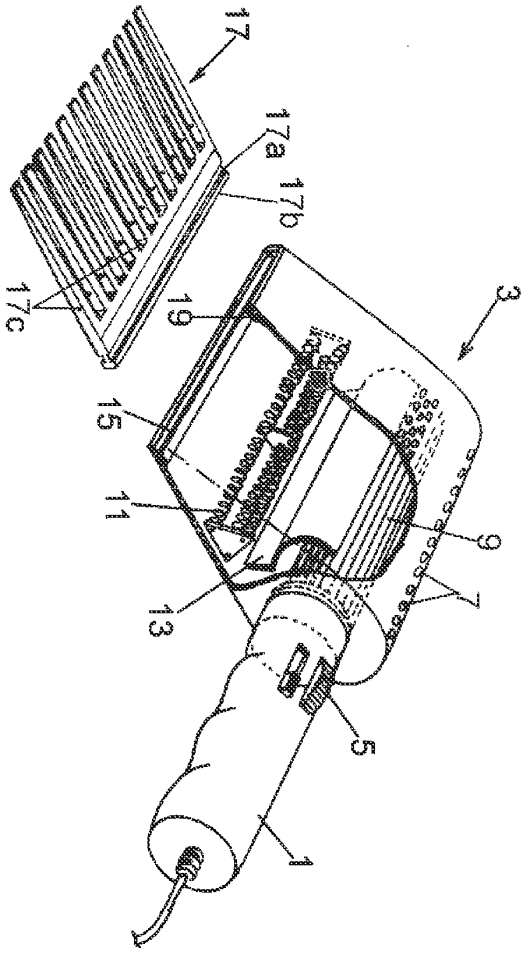
<7> 17-먼지컵 17a-입입홈

<8> 17b-헤드부 17c-배기공

<9> 19-필터부

## 도면

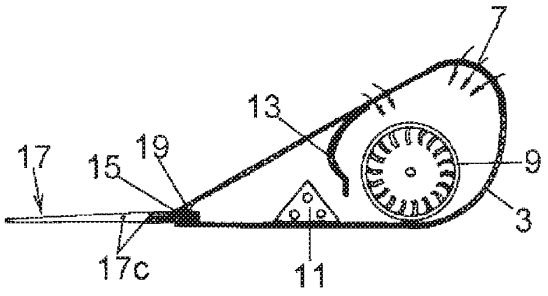
### 도면1






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도면3






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Espacenet

## Bibliographic data: CN201986906 (U) — 2011-09-28

### Trouser seam ironing nozzle of electric blow drier


**Inventor(s):** LINA CEN ± (CEN LINA)

**Applicant(s):** LINA CEN ± (CEN LINA)



**Classification:** **- international:** ***A45D20/12; D06F75/08***
**- cooperative:**

**Application number:** CN20102697598U 20101228

**Priority number(s):** CN20102697598U 20101228


### Abstract of CN201986906 (U)


The utility model relates to an auxiliary ironing mechanism of an electric blow drier, in particular to a trouser seam ironing nozzle of the electric blow drier. One side of a sleeve nozzle (1) is connected with a thin end of a trumpet tube (5), an annular step is arranged on the side wall of a thick end of the trumpet tube, the ironing nozzle (7) is in a round tube structure, an arc sealing head is arranged at one end of the ironing nozzle, the arc sealing head is provided with a notch (6) communicated with the ironing nozzle, a neck retracting plug (8) is arranged at the other end of the ironing nozzle and plugged into the annular step on the inner side wall of the thick end of the trumpet tube, and the inner wall of the other side of the sleeve nozzle is matched with an air outlet (2) of the electric blow drier (3). The sleeve nozzle of the trouser seam ironing nozzle is sleeved at the outer edge of the air outlet, so that trouser seams can be ironed to be shaped by the hot air, and using functions of the electric blow drier are effectively enriched. Further, the trouser seam ironing nozzle is simple in structure, low in cost and easy to be popularized and applied.




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# DESCRIPTION CN201986906

[0001]

TECHNICAL FIELD

[0002]

The utility model relates to a hair dryer ironing aid agencies, particularly to a hair dryer Ku Feng ironing mouth.

[0003]

BACKGROUND ART

[0004]



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Known, hair dryer role is only to hair styling or dry hair, its structure is mainly composed of body hair dryer, hair dryer body in the rear has air inlet is provided at the front of the dryer outlet, through the motor will After the air is heated by blowing hot air outlet, hair dryer nozzle due to divergent duct structure, only to dry hair or hair styling, hair dryer makes the action more single.

[0005]

SUMMARY OF THE INVENTION

[0006]

To overcome the lack of background art, the utility model discloses a hair dryer ironing Ku Feng mouth, the hair dryer ironing Ku Feng mouth through the outer edges of the socket at the outlet of the dryer ironing Ku Feng mouth The sets of mouth, by hot pressing the Ku Feng stereotypes, effectively expanding the use of hair dryer function; has simple structure, low cost, easy application.

[0007]

To achieve the above purpose invention, utility model adopts the following technical solutions:

[0008]

One kind of hair dryer ironing Ku Feng mouth, including the nipple and ironing mouth, the mouth of the tube-shaped structure set in the side of the nipple connecting the narrow end of the horn tubes, on the inside of the tube wall thick end of the horn has a circular stage, the ironing mouth of the tube-shaped structure, which is set to end ironing mouth closed arc-shaped head, the arc-shaped head has a closed mouth through ironing internal grooving, ironing mouth has necking plug the other end; plug the plug in the speakers inside wall of the tube butt circular stairs, on the other side of the wall and the dryer vent cover mouth kiss with the outer wall.



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[0009]

The hair dryer ironing Ku Feng mouth, lips set in ironing slotted lengthwise along the ironing mouth surround slot.

[0010]

Ku Feng said hair dryer ironing mouth, mouth and horn pipe sleeve is set to one.

[0011]

As a result of these technical solutions, the utility model has the following beneficial effects:

[0012]

The utility model hair dryer ironing Ku Feng mouth, through the outer edge of the socket at the outlet nozzle of the hair dryer ironing sets Ku Feng mouth, forcing hot air down the hair dryer ironing out of the mouth of the slot, The Ku Feng Shun along in the slot and slide up and down, from the Ku Feng hot ironing stereotypes; utility model effectively extends the use of hair dryer function, especially after hair dryer ironing jeans and other cotton fabrics more stable stereotypes and not easily deformed; has simple structure, low cost, easy application.

[0013]

BRIEF DESCRIPTION



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[0014]

Figure 1 is a schematic diagram of a utility model application state;

[0015]

Figure 2 is a schematic diagram of the structure of the utility model;

[0016]

Figure: 1, nipple; 2, the outlet; 3, hair dryer; 4, air inlet; 5, horn pipe; 6, grooving; 7, ironing mouth; 8 plug.

[0017]

[DETAILED DESCRIPTION]

[0018]

By the following examples can be more detailed explanation of the utility model, the utility model is not limited to the following examples, the purpose of public utility model is designed to protect all the changes within the scope of the utility model and improved;

[0019]



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The hair dryer as described in conjunction with the accompanying Ku Feng ironing nozzle 1 or 2, comprising a nipple and ironing nozzle 7, wherein the nipple-shaped structure 1 is a round pipe, the side of the nipple pipe 1 is connected speaker 5 The narrow end, the wide end of the horn inner side wall of the tube is provided with an annular step 5, the nozzle 7 for pressing the tube-shaped structure, wherein one end of the nozzle 7 is set as pressing the arc-shaped closure head, round arc has closed head inside the mouth and through the ironing 7 along ironing longitudinal slotted nozzle 7 surrounded by six, ironing mouth at the other end has a constriction plug 7 8; plug in the plug 8 circular stairs inside the thick end of the side wall of the horn pipe 5, and set the other side of the wall and the dryer nozzle 1 3 2 wall outlet with kisses.

[0020]

Implementation of this utility model hair dryer ironing Ku Feng mouth, through the hair dryer in the outer edge of the socket outlet two Ku Feng ironing mouth nipple a sidewall in the thick end of the speaker tube five circular Ironing socket plug the nozzle 7 8 steps to make a nipple and ironing nozzle 7 is integrally formed by hair dryer motor 3 will be sucked into the inlet 4 air heating, hot air down ironing mouth again 7 slotted six out of the Ku Feng Shun along in the slot 6 and slide up and down, by hot pressing the Ku Feng stereotypes; utility model effectively extends the use of hair dryer function, especially after hair dryer ironing jeans stereotypes such as cotton fabric is more stable, and not easily deformed.



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## CLAIMS CN201986906

[0001]

One kind of nozzle dryer ironing Ku Feng, including the nipple (and the pressing mouth (7), characterized in that: said sleeve nozzle (for tube-shaped structure on the side of the nipple (the flare connection (5) The narrow end, the flared tube (5) has a rough end of the inside wall of the annular step, the pressing mouth (7) for the tube-shaped structure, wherein one end of the ironing nozzle (7) is set to a circular arc shaped closure head, the closure head has a circular arc shape through pressing the mouth (7) inside the grooved (6), the pressing mouth (7) and the other end has a constriction plug (8); said plug (8) Plug in the speaker tube (5) the rough end of the annular sidewall stairs, nipple (the other side of the wall and the dryer (3) of the outlet (2) wall kiss with.

[0002]

Hair dryer according to claim 1, wherein the ironing Ku Feng mouth, wherein: the nozzle provided in the ironing (7) on the grooved (6) along the pressing mouth (7) around the longitudinal slot.

[0003]



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Ku Feng according to claim 1, wherein the hair dryer ironing mouth, and its features are: nipple (1) and the speaker tube (5) is set to one.



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PN - CN201986906U U 20110928

TI - Trouser seam ironing nozzle of electric blow drier

AB - The utility model relates to an auxiliary ironing mechanism of an electric blow drier, in particular to a trouser seam ironing nozzle of the electric blow drier. One side of a sleeve nozzle (1) is connected with a thin end of a trumpet tube (5), an annular step is arranged on the side wall of a thick end of the trumpet tube, the ironing nozzle (7) is in a round tube structure, an arc sealing head is arranged at one end of the ironing nozzle, the arc sealing head is provided with a notch (6) communicated with the ironing nozzle, a neck retracting plug (8) is arranged at the other end of the ironing nozzle and plugged into the annular step on the inner side wall of the thick end of the trumpet tube, and the inner wall of the other side of the sleeve nozzle is matched with an air outlet (2) of the electric blow drier (3). The sleeve nozzle of the trouser seam ironing nozzle is sleeved at the outer edge of the air outlet, so that trouser seams can be ironed to be shaped by the hot air, and using functions of the electric blow drier are effectively enriched. Further, the trouser seam ironing nozzle is simple in structure, low in cost and easy to be popularized and applied.

PA - LINA CEN

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AN - 2011-N49912

TI - Trousers seam ironing nozzle for blow drier, has plug inserted into arc-shaped step formed in inner side wall of thick end of loudspeaker pipe, and sleeve nozzle whose inner wall is matched with outer wall of air outlet of blow drier

AB - NOVELTY :

The nozzle has a sleeve nozzle (1) connected with a small end of a loudspeaker pipe (5). A circular arc-shaped close head is formed on an end of a tubular ironing nozzle (7) and provided with a slot (6) that passes through the nozzle. Other end of the nozzle is provided with a reducing plug (8) that is inserted into the circular arc-shaped step, where the step is formed in an inner side wall of a thick end of a loudspeaker pipe. An inner wall of the sleeve nozzle is matched with an outer wall of an air outlet of a blow drier.

- USE :

Trousers seam ironing nozzle for a blow drier.

- ADVANTAGE :

The nozzle is simple in structure, and has low production cost.

- DESCRIPTION OF DRAWINGS :

The drawing shows a side sectional view of a trousers seam ironing nozzle.

1 : Sleeve nozzle

5 : Loudspeaker pipe

6 : Slot

7 : Tubular ironing nozzle

8 : Reducing plug

PN - CN201986906U U 20110928 DW201171

PA - (CENL-I) CEN L



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(12)实用新型专利

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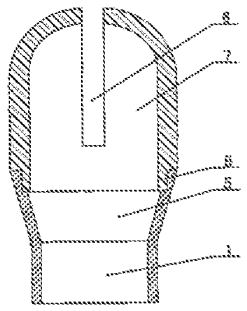
权利要求书 1 页 说明书 2 页 附图 1 页

(54)实用新型名称

一种电吹风裤缝熨烫嘴

(57)摘要

本实用新型涉及一种电吹风的辅助熨烫机构，尤其是涉及一种电吹风裤缝熨烫嘴，在套嘴(1)的一侧连接喇叭管(5)的细端，在喇叭管的粗端内侧壁上设有圆环形台阶，所述熨烫嘴(7)为圆管形结构，其中熨烫嘴的一端设置为圆弧形封闭头，在圆弧形封闭头上设有贯通熨烫嘴内部的开槽(6)，在熨烫嘴的另一端设有缩颈插头(8)；所述插头插接在喇叭管粗端内侧壁的圆环形台阶内，套嘴的另一侧内壁与电吹风(3)的出风口(2)外壁吻配；本实用新型通过在出风口的外缘套接所述电吹风裤缝熨烫嘴的套嘴，由热风将裤缝熨烫定型，有效地扩展了电吹风的使用功能；本实用新型结构简单、成本低廉，易于推广应用。




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1. 一种电吹风裤缝熨烫嘴，包括套嘴 (1) 和熨烫嘴 (7)，其特征是：所述套嘴 (1) 为圆管形结构，在套嘴 (1) 的一侧连接喇叭管 (5) 的细端，在喇叭管 (5) 的粗端内侧壁上设有圆环形台阶，所述熨烫嘴 (7) 为圆管形结构，其中熨烫嘴 (7) 的一端设置为圆弧形封闭头，在圆弧形封闭头上设有贯通熨烫嘴 (7) 内部的开槽 (6)，在熨烫嘴 (7) 的另一端设有缩颈插头 (8)，所述插头 (8) 插接在喇叭管 (5) 粗端内侧壁的圆环形台阶内，套嘴 (1) 的另一侧内壁与电吹风 (3) 的出风口 (2) 外壁吻配。

2. 根据权利要求 1 所述的电吹风裤缝熨烫嘴，其特征是：设置在熨烫嘴 (7) 上的开槽 (6) 为沿熨烫嘴 (7) 的纵向环绕槽。

3. 根据权利要求 1 所述的电吹风裤缝熨烫嘴，其特征是：套嘴 (1) 和喇叭管 (5) 设置为一体。



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# 一种电吹风裤缝熨烫嘴

【技术领域】

[0001] 本实用新型涉及一种电吹风的辅助熨烫机构，尤其是涉及一种电吹风裤缝熨烫嘴。

【背景技术】

[0002] 公知的，电吹风作用仅在于给头发定型或吹干头发，它的结构主要由电吹风本体，在电吹风本体后部设有进风口，在电吹风的前部设有出风口，通过电机将空气加热后由出风口吹出热风，由于电吹风风嘴为扩散形的风道结构，仅可以干发或给头发定型，使得电吹风的作用较为单一。

【发明内容】

[0003] 为了克服背景技术中的不足，本实用新型公开了一种电吹风裤缝熨烫嘴，所述电吹风裤缝熨烫嘴通过在出风口的外缘套接所述电吹风裤缝熨烫嘴的套嘴，由热风将裤缝熨烫定型，有效地扩展了电吹风的使用功能；本实用新型结构简单、成本低廉，易于推广应用。

[0004] 为实现上述发明目的，本实用新型采用如下技术方案：

[0005] 一种电吹风裤缝熨烫嘴，包括套嘴和熨烫嘴，所述套嘴为圆管形结构，在套嘴的一侧连接喇叭管的细端，在喇叭管的粗端内侧壁上设有圆环形台阶，所述熨烫嘴为圆管形结构，其中熨烫嘴的一端设置为圆弧形封闭头，在圆弧形封闭头上设有贯通熨烫嘴内部的开槽，在熨烫嘴的另一端设有缩颈插头；所述插头插接在喇叭管粗端内侧壁的圆环形台阶内，套嘴的另一侧内壁与电吹风的出风口外壁吻配。

[0006] 所述的电吹风裤缝熨烫嘴，设置在熨烫嘴上的开槽为沿熨烫嘴的纵向环绕槽。

[0007] 所述的电吹风裤缝熨烫嘴，套嘴和喇叭管设置为一体。

[0008] 由于采用了上述技术方案，本实用新型具有如下有益效果：

[0009] 本实用新型所述电吹风裤缝熨烫嘴，通过在出风口的外缘套接所述电吹风裤缝熨烫嘴的套嘴，迫使电吹风的热风顺着熨烫嘴的开槽流出，将裤缝顺沿在开槽内并上下滑动，由热风将裤缝熨烫定型；本实用新型有效地扩展了电吹风的使用功能，尤其是经过电吹风熨烫的牛仔裤等棉织物定型较为稳固，且不易变形；本实用新型结构简单、成本低廉，易于推广应用。

【附图说明】

[0010] 图 1 是本实用新型的应用状态示意图；

[0011] 图 2 是本实用新型的结构示意图；

[0012] 图中：1、套嘴；2、出风口；3、电吹风；4、进风口；5、喇叭管；6、开槽；7、熨烫嘴；8、插头。

【具体实施方式】



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[0013] 通过下面的实施例可以更详细的解释本实用新型，本实用新型并不局限于下面的实施例，公开本实用新型的目的旨在保护本实用新型范围内的一切变化和改进；

[0014] 结合附图 1 或 2 中所述的电吹风裤缝熨烫嘴，包括套嘴 1 和熨烫嘴 7，所述套嘴 1 为圆管形结构，在套嘴 1 的一侧连接喇叭管 5 的细端，在喇叭管 5 的粗端内侧壁上设有圆环形台阶，所述熨烫嘴 7 为圆管形结构，其中熨烫嘴 7 的一端设置为圆弧形封闭头，在圆弧形封闭头上设有贯通熨烫嘴 7 内部且为沿熨烫嘴 7 的纵向环绕的开槽 6，在熨烫嘴 7 的另一端设有缩颈插头 8，所述插头 8 插接在喇叭管 5 粗端内侧壁的圆环形台阶内，套嘴 1 的另一侧内壁与电吹风 3 的出风口 2 外壁吻配。

[0015] 实施本实用新型所述电吹风裤缝熨烫嘴，通过在出风口 2 的外缘套接所述电吹风裤缝熨烫嘴的套嘴 1，在喇叭管 5 粗端内侧壁的圆环形台阶内套接熨烫嘴 7 的插头 8，使套嘴 1 和熨烫嘴 7 形成一体，通过电吹风 3 的电机将进风口 4 吸进的空气加热，再使热风顺着熨烫嘴 7 的开槽 6 流出，将裤缝顺沿在开槽 6 内并上下滑动，由热风将裤缝熨烫定型，本实用新型有效地扩展了电吹风的使用功能，尤其是经过电吹风熨烫的牛仔裤等棉织物定型较为稳固，且不易变形。



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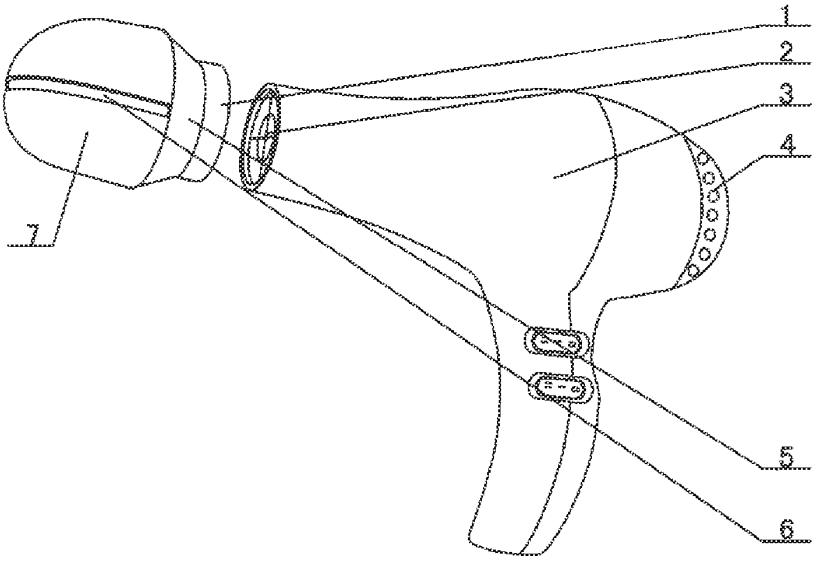



图 1

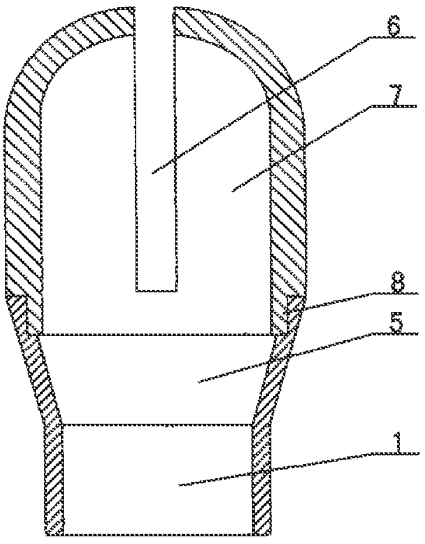



图 2



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Dated: March 12, 2015 Signature: /dbernecker/
(Donna Bernecker)

Patent
Docket No. 424662093300

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:
Alasdair Michael MACLAINE

Application No.: Not Yet Assigned

Confirmation No.: Not Yet Assigned

Filed: Concurrently Herewith

Art Unit: Not Yet Assigned

For: ATTACHMENT FOR A HAND HELD APPLIANCE

Examiner: Not Yet Assigned

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

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 with the application; 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.

va-446276

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Dated: March 12, 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-446276

ALTERNATIVE TO PTO/SB/08A/B
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| Substitute for form 1449/PTO | | | | Complete if Known | |
|---|---|---|---|---|---|
| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** | | | | **Application Number** | Not Yet Assigned |
| | | | | **Filing Date** | Concurrently Herewith |
| | | | | **First Named Inventor** | Alasdair Michael MACLAINE |
| | | | | Art Unit | Not Yet Assigned |
| ***(Use as many sheets as necessary)*** | | | | Examiner Name | Not Yet Assigned |
| Sheet | 1 | of | 1 | Attorney Docket Number | 424662093300 |

**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-3,857,016 | 12-24-1974 | Meyer et al. | |
| | 2. | US-4,214,597 | 07-29-1980 | Glassman | |
| | 3. | US-2004/0129289 | 07-08-2004 | Hafemann | |

**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] |
|---|---|---|---|---|---|---|
| | 4. | GB-1 465 855 | 03-02-1977 | Bristol Myers Company (Henry J. WALTER et al.) | | |
| | 5. | SU-1340734 | 09-30-1987 | Aleksandr N. BOBKOV | Partial Translation | X |
| | 6. | EP-0 482 906 | 04-29-1992 | China Pacific Trade Ltd. (Gregory John MCDOUGALL) | | |
| | 7. | KR-10-2008-0030428 | 04-04-2008 | Y.S. Creation Co., Ltd. (Yeong SEOK) | Machine Translation | X |
| | 8. | CN-201986906 | 09-28-2011 | Cen LINA | Machine Translation | X |

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|---|---|---|---|
| | 9. | Search Report dated September 12, 2014, directed to GB Application No. 1404982.9; 1 page | |
| | 10. | Search Report dated September 16, 2014, directed to GB Application No. 1404985.2; 1 page | |

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va-446281

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | |
| **Filing Date:** | |
| **Title of Invention:** | ATTACHMENT FOR A HAND HELD APPLIANCE |
| **First Named Inventor/Applicant Name:** | Alasdair Michael MACLAINE |
| **Filer:** | Bradley J. Meier/Donna Bernecker |
| **Attorney Docket Number:** | 424662093300 |

Filed as Large Entity

**Filing Fees for Utility under 35 USC 111(a)**

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| Utility application filing | 1011 | 1 | 280 | 280 |
| Utility Search Fee | 1111 | 1 | 600 | 600 |
| Utility Examination Fee | 1311 | 1 | 720 | 720 |
| **Pages:** | | | | |
| **Claims:** | | | | |
| Claims in Excess of 20 | 1202 | 15 | 80 | 1200 |
| **Miscellaneous-Filing:** | | | | |
| Late Filing Fee for Oath or Declaration | 1051 | 1 | 140 | 140 |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| **Extension-of-Time:** | | | | |
| **Miscellaneous:** | | | | |
| | | **Total in USD ($)** | | **2940** |

| Electronic Acknowledgement Receipt | |
|---|---|
| **EFS ID:** | 21752016 |
| **Application Number:** | 14656357 |
| **International Application Number:** | |
| **Confirmation Number:** | 9085 |
| **Title of Invention:** | ATTACHMENT FOR A HAND HELD APPLIANCE |
| **First Named Inventor/Applicant Name:** | Alasdair Michael MACLAINE |
| **Customer Number:** | 25227 |
| **Filer:** | Bradley J. Meier/Donna Bernecker |
| **Filer Authorized By:** | Bradley J. Meier |
| **Attorney Docket Number:** | 424662093300 |
| **Receipt Date:** | 12-MAR-2015 |
| **Filing Date:** | |
| **Time Stamp:** | 17:39:04 |
| **Application Type:** | Utility under 35 USC 111(a) |

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| Payment Type | Deposit Account |
| Payment was successfully received in RAM | $2940 |
| RAM confirmation Number | 4196 |
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|---|---|---|---|---|---|
| 1 | | FilingPapers_424662093300.pdf | 2464845<br>37f559f2aee1859acb0c8ee6464791ce23de2fde | yes | 2 |

| Multipart Description/PDF files in .zip description | | |
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| **Document Description** | **Start** | **End** |
| Transmittal of New Application | 1 | 1 |
| Power of Attorney | 2 | 2 |

**Warnings:**

**Information:**

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|---|---|---|---|---|---|
| 2 | Application Data Sheet | ADS_424662093300.PDF | 1560676<br>e3dc1c90236ec846d207e9a903fbd95fd78866e5 | no | 7 |

**Warnings:**

**Information:**

| | | | | | |
|---|---|---|---|---|---|
| 3 | | Application_424662093300.pdf | 83468<br>2fae07c5a4c48f55a6d7b43a842761a7877d9c40 | yes | 28 |

| Multipart Description/PDF files in .zip description | | |
|---|---|---|
| **Document Description** | **Start** | **End** |
| Specification | 1 | 22 |
| Claims | 23 | 27 |
| Abstract | 28 | 28 |

**Warnings:**

**Information:**

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|---|---|---|---|---|---|
| 4 | Drawings-only black and white line drawings | Drawings_424662093300.pdf | 812760<br>234197df9bd4b5c6009a901fa4f1ad1da9b3734e | no | 17 |

**Warnings:**

**Information:**

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| 5 | Foreign Reference | GB_1465855.pdf | 379708<br>9f16e445317e886cfdca342955a599390109b316 | no | 6 |
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| **Information:** | | | | | |
| 6 | Foreign Reference | SU_1340734.pdf | 162542<br>e63537500405878f1266e4ba40225ba31db65f8c | no | 7 |
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| 7 | Foreign Reference | EP_0482906.pdf | 490550<br>2ab07e3a33407ceabd9df3c78ea37b954a069dfd | no | 14 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 8 | Foreign Reference | KR_20080030428.pdf | 400506<br>1c88ccd96c7ae3e393807739e5411446e3d4d24b | no | 14 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 9 | Foreign Reference | CN_201986906.pdf | 399998<br>eaa5e96ed05c5ae1e976319c6bbf46d04458779a | no | 14 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 10 | Non Patent Literature | GBSR_2093300_Sep122014.pdf | 307666<br>d4707431b26ceffb2b778ad8585ce5222d3abed2 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 11 | Non Patent Literature | GBSR_2093300_Sep162014.pdf | 44194<br>ca06758cd24b5f9eba9e11febea211adbc59119f | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 12 | | IDS_424662093300.pdf | 46879<br>0f2acc959b92b40f2ce9789066ca3c5fedef3a2f | 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:** | | | | | |
| 13 | Fee Worksheet (SB06) | fee-info.pdf | 38395<br>1d8216875a2b747d53f3626e37fe996cf5763c3a | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | | **Total Files Size (in bytes):** | 7192187 | |

**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.**

| PATENT APPLICATION FEE DETERMINATION RECORD<br>Substitute for Form PTO-875 | Application or Docket Number<br>14/656,357 |
|---|---|

APPLICATION AS FILED - PART I

| | (Column 1) | (Column 2) | SMALL ENTITY | | OR | OTHER THAN SMALL ENTITY | |
|---|---|---|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | RATE($) | FEE($) | | RATE($) | FEE($) |
| BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | 280 |
| SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | 600 |
| EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | 720 |
| TOTAL CLAIMS (37 CFR 1.16(i)) | 35 minus 20 = | * 15 | | | OR | x 80 = | 1200 |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | 2 minus 3 = | * | | | | x 420 = | 0.00 |
| 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). | | | | | | 0.00 |
| MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | 0.00 |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | 2800 |

APPLICATION AS AMENDED - PART II

| | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY ADDITIONAL FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE($) |
|---|---|---|---|---|---|---|---|---|---|---|
| AMENDMENT A | Total (37 CFR 1.16(i)) | * | Minus | ** | = | x = | | OR | x = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | x = | | OR | x = | |
| | Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

| | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE($) | ADDITIONAL FEE($) | | RATE($) | ADDITIONAL FEE($) |
|---|---|---|---|---|---|---|---|---|---|---|
| AMENDMENT B | Total (37 CFR 1.16(i)) | * | Minus | ** | = | x = | | OR | x = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | x = | | OR | x = | |
| | Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | 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 found in the appropriate box in column 1.

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www.uspto.gov

| APPLICATION NUMBER | FILING or 371(c) DATE | GRP ART UNIT | FIL FEE REC'D | ATTY.DOCKET.NO | TOT CLAIMS | IND CLAIMS |
|---|---|---|---|---|---|---|
| 14/656,357 | 03/12/2015 | 3744 | 2940 | 424662093300 | 35 | 2 |

**CONFIRMATION NO. 9085**

25227
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

**FILING RECEIPT**

*OC000000074173574*

Date Mailed: 03/25/2015

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

**Inventor(s)**
Alasdair Michael MACLAINE, London, UNITED KINGDOM;

**Applicant(s)**
DYSON TECHNOLOGY LIMITED, Wiltshire, UNITED KINGDOM

**Assignment For Published Patent Application**
DYSON TECHNOLOGY LIMITED, Wiltshire, UNITED KINGDOM

**Power of Attorney:** The patent practitioners associated with Customer Number 25227

**Domestic Applications for which benefit is claimed - None.**
*A proper domestic benefit claim must be provided in an Application Data Sheet in order to constitute a claim for domestic benefit. See 37 CFR 1.76 and 1.78.*

**Foreign Applications** (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
UNITED KINGDOM 1404982.9 03/20/2014 No Access Code Provided
UNITED KINGDOM 1404985.2 03/20/2014 No Access Code Provided

**If Required, Foreign Filing License Granted:** 03/23/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/656,357**

**Projected Publication Date:** 09/24/2015

**Non-Publication Request:** No

**Early Publication Request:** No



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Page 120 of 1998

**Title**

ATTACHMENT FOR A HAND HELD APPLIANCE

**Preliminary Class**

165

**Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications:** No

## PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Page 121 of 1998

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## Title 35, United States Code, Section 184

## Title 37, Code of Federal Regulations, 5.11 & 5.15

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www.uspto.gov

| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 14/656,357 | 03/12/2015 | Alasdair Michael MACLAINE | 424662093300 |

**CONFIRMATION NO. 9085**

25227
MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 400
MCLEAN, VA 22102

**NOTICE**

*OC000000074173575*

Date Mailed: 03/25/2015

## INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
  Alasdair Michael MACLAINE



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Page 123 of 1998

Intellectual Property Office

Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

# Certified Office Copy

I, the undersigned, being an officer duly authorised in accordance with section 74(1) and (4) of the Deregulation & Contracting Out Act 1994 to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with patent application GB1404985.2 filed on 20 March 2014, and as stored electronically on the Patents Electronic Case file System.

The Patents Electronic Case-file System is compliant with British Standard BS10008 - Evidential weight and legal admissibility of information stored electronically and ISO15801 - Electronic imaging – information stored electronically, recommendations for trustworthiness and reliability.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated 2 March 2015



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Page 124 of 1998

INTELLECTUAL PROPERTY OFFICE

1200105582
K759278 D10033
20/03/2014 230.00 ACCOUNT CHARGE

**Patents Form 1**
Patents Act 1977 *(Rule 12)*

## Request for grant of a patent

Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

*Application number* GB 1404985.2

| | | |
|---|---|---|
| 1. | Your reference | **MJF_GBP1316A** |
| 2. | Full name, address and postcode of the applicant or of each applicant<br><br>Patents ADP number *(if you know it)* | **DYSON TECHNOLOGY LIMITED**<br>**Tetbury Hill**<br>**Malmesbury SN16 0RP**<br>**Wiltshire**<br>**United Kingdom** 08940744001 |
| 3. | Title of the invention | **Attachment for a Hand Held Appliance** |
| 4. | Name of your agent *(if you have one)*<br>"Address for service" to which all correspondence should be sent. This may be in the European Economic area or Channel Islands (see warning note below)<br>*(including the postcode)*<br><br>Patents ADP number *(if you know it)* | **FOWLER, Maria**<br>**FOWLER, Maria**<br>**PO Box Dyson Technology Limited**<br>**Intellectual Property Department**<br>**Tetbury Hill**<br>**Malmesbury SN16 0RP**<br>**Wiltshire**<br>**United Kingdom** 08940744002 |

5. Priority declaration: Are you claiming priority from one or more earlier-filed patent applications? If so, please give details of the application(s)

| Country | Application number | Date of filing | PDAS Access Code |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 6. | Divisionals etc: Is this application a divisional application, or being made following resolution of an entitlement dispute about an earlier application. If so, please give the application number and filing date of the earlier application | Number of earlier UK application | Date of filing *(day / month / year)* |

7. Inventorship: (Inventors must be individuals not companies)

   Are all the applicants named above also inventors? **No**

8. Are you paying the application fee with this form? **Yes**

9. Accompanying documents: please enter the number of pages of each item accompanying this form.

   Continuation sheets of this form

   Description: **18**

   Claim*(s)*: **4**

   Abstract: **1**

   Drawing*(s)*: **15**

   If you are not filing a description, please give details of the previous application you are going to rely upon

| Country | Application number | Date of filing | PDAS Access Code |
|---|---|---|---|



SharkNinja Ex. 1002
Page 125 of 1998

## Patents Form 1

10. If you are also filing any of the following, state how many against each item.

| | |
|---|---|
| Priority documents: | **0** |
| Statement of inventorship and right to grant of a patent (Patents Form 7): | **0** |
| Request for search (Patents Form 9A): | **1** |
| Request for a substantive examination (Patents Form 10): | **1** |
| Any other documents (please specify): | |

11. I/We request the grant of a patent on the basis of this application.

Signature: **Subject: GB, Dyson Technology Limited, M. Fowler 28586; Issuer: European Patent Office, European Patent Office CA** Date: **20 Mar 2014**

12. Name, e-mail address, telephone, fax and/or mobile number, if any, of a contact point for the applicant

**Webb, Miss Hannah**
**Email: Hannah.Webb@dyson.com**
**Telephone: 01666 834258**
**Fax: 01666 828164**

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After an application for a patent has been filed, the Comptroller will consider whether publication or communication of the invention should be prohibited or restricted under section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you are resident in the United Kingdom and your application contains information which relates to military technology, or would be prejudicial to national security or the safety of the public, section 23 of the Patents Act 1977 prohibits you from applying for a patent abroad without first getting written permission from the Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked. Until such time or until the revocation of any direction, for any such application the address for service referred to at part 4 above must be in the United Kingdom.

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Page 126 of 1998

# Attachment for a Hand Held Appliance

This invention relates to an attachment for a hand held appliance, in particular a hair care appliance such as a hot styling brush.

In a conventional hot styling brush, air is sucked into an inlet by a fan unit and directed towards the hair by an attachment or head. Depending on the style desired, the air may or may not be heated. The head or attachment often includes bristles onto which hair is wrapped and held for styling. The air is generally blown out of the head or attachment normal to the surface of the head.

The present invention provides an attachment for a hand held appliance comprising a first part and a second part, the first part comprising a first end of the attachment and at least one plate extending from the first end, the second part comprising a second end of the attachment and at least one further plate extending from the second end wherein when the first part and the second part are connected at least two slots are formed between the at least one plate and the at least one further plate, the at least two slots defining a fluid outlet for the attachment.

Preferably, the first end of the attachment comprises a fluid inlet into the attachment.

It is preferred that the first end of the attachment includes a supporting ring for supporting the at least one plate.

Preferably, the supporting ring comprises at least one recess for housing an end of the at least one further plate.

It is preferred that the supporting ring is additionally a collar for attaching the attachment to the appliance.

Preferably, the first part of the attachment includes a supporting scaffold located at or near a distal end to the first end of the first part of the attachment.

It is preferred that the supporting scaffold is attached to the at least one plate.

Preferably, the supporting scaffold includes a part of a fixture for fixing the first part and the second part together.

It is preferred that the second end of the attachment includes at least one further recess for housing an end of the at least one plate.

Preferably, the second end of the attachment includes another part of a fixture for fixing the first and the second part together.

It is preferred that one or more of the at least one plate and the at least one further plate are arcuate.

Preferably, one or more of the at least one plate and the at least one further plate extend orthogonally from a respective end.

Alternatively, the at least one plate and the at least one further plate curve round a longitudinal axis of the attachment.

Preferably, the at least one plate and the at least one further plate are helical.

It is preferred that the at least one plate and the at least one further plate are helical in a clockwise direction from the first end.

A curved slot changes the direction that fluid flows out from the fluid outlet tending to give a flow that is more normal to the surface of the attachment and this improves the hold of the hair around the attachment.

Preferably, a gap formed between the at least one plate and the at least one further plate is defined by a spacer.

It is preferred that a pair of spacers is provided longitudinally spaced along the at least one plate and the at least one further plate.

Any spacers maintain the gap between the two parts forming the slot or thickness of the slot. It is advantageous for these to all be substantially equal is this creates an even flow around the attachment.

Preferably, at least one of the at least one plate and the at least one further plate is lined with a material.

It is preferred that every plate is lined with material.

Preferably, the material absorbs sounds and/or vibrations.

It is preferred that the material is Kevlar or wool.

Preferably, the attachment further comprises a flow directing element between the fluid inlet and the fluid outlet. The flow directing element also changes the direction that fluid flows out from the fluid outlet tending to give a flow that is more normal to the surface of the attachment and this improves the hold of the hair around the attachment. In addition, the flow directing element reduces the velocity of the fluid within the attachment which in turn reduces the noise produced by the attachment.

It is preferred that the flow directing element comprises a perforated layer.

Preferably, the perforated layer is formed from a mesh or weave of an elongate material.

It is preferred that the elongate material is a wire.

Preferably, the flow directing element extends substantially along the length of the at least one slot.

It is preferred that the flow directing element extends substantially around an inner circumference of the attachment.

According to a second aspect, the invention provides a hand held appliance comprising a handle having a fluid flow path from a fluid inlet to a fluid outlet and a fan unit for drawing fluid into the fluid inlet and an attachment for attaching to the handle, the attachment comprising a first part and a second part, the first part comprising a first end of the attachment and at least one plate extending from the first end, the second part comprising a second end of the attachment and at least one further plate extending from the second end wherein when the first part and the second part are connected at least two slots are formed between the at least one plate and the at least one further plate, the at least two slots defining a fluid outlet for the attachment.

In one embodiment, the appliance is a hair care appliance.

In one embodiment, the appliance is a hot styling brush.

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

Figure 1a shows an example of an appliance according to the invention;

Figure 1b shows a cross section through the appliance shown in Figure 1a;

Figure 2a shows an exploded view of some of the handle components of the device of Figure 1a;

Figure 2b shows an enlarged section of the fluid inlet;

Figures 3a and 3b show an isometric view and an isometric cross section through a first attachment according to the invention;

Figures 4a and 4b show a side view and a side view cross section through the first attachment;

Figures 5a and 5b show cross sections through the first attachment;

Figures 6a and 6b show an isometric view and a side view through a second attachment;

Figure 7a shows an isometric view through another attachment;

Figures 7b and 7c show an isometric view and a side view through a further attachment;

Figure 8a shows an isometric view of a fifth attachment;

Figure 8b shows an isometric view of a sixth attachment;

Figure 9 shows a two part assembly for an attachment;

Figures 10a and 10b show an isometric view and an isometric cross section through a further attachment according to the invention;

Figures 11a, 11b and 11c show a side view and a side view cross sections through the further attachment;

Figures 12a and 12b show cross sections through the further attachment in a first position;

Figures 13a and 13b show cross sections through the further attachment in a second position;

Figure 14 shows schematically the further attachment in use; and

Figure 15a shows an isometric view of another attachment;

Figure 15b shows different component parts of the other attachment;

Figure 15c shows the different component parts from the inlet end;

Figure 15d shows a cross section through the side of the other attachment;

Figure 15e shows a cross section through the other attachment; and

Figures 16a and 16b show an alternative sock for the other attachment.

Figures 1a and 1b shows a hot styling brush 10 with a handle 20 and a detachable head or attachment 30 which is attaches at the distal end 22 of the handle 20 to the fluid inlet 40.

The handle 20 has an outer wall 26 which is generally tubular and includes the fluid inlet 40 at and adjacent one end 24. The fluid inlet 40 comprises a first set of apertures 44 which extend radially around the handle 20 and along the outer wall 26 of the handle from the handle end 24. The handle end 24 is covered by an end wall 42 which is also perforated with a second set of apertures 46 that extend through the end wall 42 of the

handle. Thus, the fluid inlet 40 extends around, along and across the handle 20. The end wall 42 is orthogonal to the outer wall 26 and an inner wall 60 of the handle.

The handle 20 also includes a fan unit 70 which comprises a fan and a motor which drives the fan and in use, draws fluid in through the fluid inlet 40, along a fluid flow path 50 which extends through the length of the handle 20. The fluid is optionally heater by a heater 80 before entering an inner cavity 38 of the head 30.

The head 30 includes a fluid outlet 100 which in this example comprises parallel slots 102 each extending towards a second end 36 of the head and radially around the head 30. This arrangement enables fluid to exit the head all the way around the head and for the majority of the length of the head 30 maximising a hair styling region of the product.

In use, hair is wrapped around the head 30 whilst air or fluid exits through the slots 102 drying the hair and/or styling the hair into curls or waves. The hair wraps automatically due to the flow of air around the surface of the head 30. The air or fluid can be heated but this is not essential.

Power is provided to the appliance via a power cable 48 which preferably extends from a plug or other power source through the end wall 42 of the handle 20. The handle 20 also houses a PCB 75 which is electrically connected to the cable 48, the fan unit 70 and the heater 80 by internal wiring (not shown). An on/off switch 52 and control buttons 54 are provided and connected to the PCB 75 to allow the user to select one of a range of temperature and flow settings.

Figure 2a shows an exploded view of various parts of the handle 20 in more detail. The handle 20 is tubular and the outer wall 26 of the handle 20 is a cylindrical sleeve made from for example an extruded tube or rolled sheet of metal such as aluminium, an aluminium alloy or a steel. The handle connects to a head 30 at a first end 22 and at the

distal, second end 24 a fluid inlet 40 is provided. The fluid inlet 40 is a first means of filtering fluid that enters the fluid flow path 50.

The fluid inlet 40 comprises a plurality of apertures extending around, along and across the handle 20. 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 44 that extend around and along the handle 20. However, the apertures 46 that extend under the handle and across the end wall 42 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 fluid inlet 40. However, by having apertures that extend around, along and across the handle 20 the risk of blocking the fluid inlet 40 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. It is advantageous to space the apertures regularly around, along and across the fluid inlet 40. Not only is this visually pleasing but it also has the technical advantage that there is no weak region of the fluid inlet 40 where blockage of a portion is more likely or would have more impact on the flow into the fluid inlet 40. The inlet is designed so that the flow into the inlet is even at least around the circumference of the handle 20.

A foam block 48 is provided which in use is inserted into the second end 24 of the handle 20. The foam block 48 is a second means of filtering the fluid that passes through the primary fluid inlet 40 into the primary fluid flow path 50. It is advantageous that the foam block 48 extends beyond or further towards the first end 22 of the handle than the primary fluid inlet 40 as this ensures that fluid that has entered the primary fluid inlet 40 has passed through the foam block 48 so has had two stages of filtration. In other words, the foam block 48 extends from the second end 24 of the handle 20 past the downstream end 44a of the fluid inlet.

The foam block 48 shown is cylindrical and substantially fills the area within the handle 20 at the primary fluid inlet 40. This is to ensure that all fluid that enters the primary fluid inlet through first apertures 44 that extend around and along the handle and fluid that enters through second apertures 46 that extend across and through the end wall 42 of the handle 20 passes through this second stage of filtration. The foam block 48 extends longitudinally from the second end 24 of the handle 20 further than the first apertures 42 of the primary fluid inlet 40.

The first apertures 44 that extend along and around the outer wall 26 are machined, punched or laser cut from the extruded tube or sheet metal that the outer wall 26 is formed from.

The handle 20 has an outer wall 26 and an inner wall 60, the outer wall 26 slides over the inner wall 60 to form the finished product. The inner wall 60 is a duct which surrounds and defines a fluid flow path 50 through the appliance. The outer wall 26 includes a grippable portion and in these examples, includes the fluid inlet 40 into the fluid flow path 50. An insulting layer of material 28 is provided within the inner wall 60. 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 appliance, vibrations caused by the fan unit and noise produced within the appliance by the flow of fluid through the fluid flow path 50. The insulating layer absorbs energy including airborne noise.

The inner wall 60 provides a housing 62 in which a fan unit 70 is disposed. The housing 62 is cylindrical and has an inwardly protruding ledge 64,66 disposed one at each end of the housing 62 which maintain the position of the fan unit 70 within the handle 20. The inner wall 60 is made from two parts a first part 60a and a second part 60b which is moulded separately. This enables easier assembly of the fan unit 70 within the handle 20 than a one piece inner wall. A similar pair of inwardly protruding ledges 68, 72 maintains the position of the heater 80 within the handle 20.

Although the outer wall 26 of the handle 20 has been described as being made from an extruded tube or a rolled sheet of metal, alternatives methods of manufacture and materials could be used; these include, but are not limited to, a plastic extrusion/moulded tube or a composite tube such as carbon fibre reinforced plastic.

The fluid outlet 100 of the head 30 will now be described in more detail, referring in particular to Figures 3a, 3b, 4a, 4b, 5a and 5b. The head 30 is essentially cylindrical and has a first end 32 for connection to a handle 20 and a second end 36 distal to the first end 32. The head 30 extends longitudinally from the first end 32 to the second end 26 continuing a line described by the handle 20 (Figure 1a) so is approximately the same diameter as the handle. Within the head 30 is an inner cavity 38 and fluid that has been drawn into the fluid flow path 50 within the handle 20 by the fan unit 70 enters the inner cavity 38 via an aperture 302 in the first end 32 of the head 30.

The fluid outlet 100 is formed from a number of parallel slots 102 which extend along the length of the head 30 from the first end 32 to the second end 36. The slots 102 are formed from an overlap 120 (Figure 5b) formed between adjacent plates 110 which results in fluid being directed between a radially inner surface 104 formed from the outer surface 112 of a first plate 110a and a radially outer surface 106 formed from the inner surface 114 of a second plate 110b. The fluid 122 flowing out of the slot 102 is tangential 130 to the outer surface 112 of the plate 110a and joins with the fluid flowing out of the other slots of the fluid outlet 100 forming a fluid flow around the

circumference of the head 30. Thus, the fluid 122 is blown out along the external surface of the head and this encourages hair to wrap around the head 30 automatically.

The fluid 122 exiting the slots 102 is attracted to the curved surface of the head 30 by the Coanda effect. This in turn causes hair that is presented to the head 30 to automatically wrap around the surface and then styled into curls. As air is blown down the length of the hair, wet hair is dried more quickly than conventionally and as the wrapping process occurs without the use of bristles, the hair can slide off the head 30 once it is dry or styled so there is no tangling.

To maintain the size of each slot 102, spacers 108 are provided. In this example, a pair of spacers 108 is provided to maintain each slot 102 size. Each one of the pair of spacers 108 is longitudinally spaced along the slot 102 and the plate 110. The spacers 108 join adjacent plates 110 together.

Advantageously, each plate 110 is lined with a felt like material 308 such as Kevlar or wool (see Figure 3b). The material 308 does not extend over each slot 102 so the fluid exiting the fluid outlet 100 does not pass through the layer of material 308. This layer serves to absorb some of the noise produced by the fluid flowing through the head 30 from the inlet to the head 30 at aperture 302 to the fluid outlet 100. Such a layer of material 308 is as applicable for other heads herein described such as heads 130, 180 and 230.

Figures 6a and 6b show an alternative head 130, all features identical to those previously described have the same reference numerals. The head 130 has a larger diameter than the handle 20 so is used to create larger curls. The head 130 has a first end 32 for connection to the handle 20 and this is the same diameter as the handle 20, within a collar 132 of the head 130, the diameter of the head 130 increases to the larger diameter prior to the fluid outlet 100 formed by slots 142 and then continues at a constant diameter to the second end 136. An inner fluid cavity (not shown) is larger than for the head 30 of Figure 3a. In this example the number of plates 110 and slots

102 is the same i.e. six as for the head described with respect to Figure 3a. Alternatively, a larger or smaller number of plates 110 and slots 142 could be used.

Figure 7a shows a further head 230. This head 230 has a reduced diameter compared with the handle 20. The first end 32 is substantially the same diameter as the handle 20 for connection thereto, and then within a collar 232 the diameter of the head 230 decreases to the reduced diameter prior to the fluid outlet 200 formed by slots 202 and continues at a constant diameter to the second end 236. This head 230 is used to create tighter curls.

The slots 202 for this head extend longitudinally straight from the first end 32 to the second end 236 as was the case for slots 102 in heads 30, 130.

Figures 7a and 7b show a further head 230. This head 230 has a reduced diameter compared with the handle 20. The first end 32 is substantially the same diameter as the handle 20 for connection thereto, and then within a collar 232 the diameter of the head 230 decreases to the reduced diameter prior to the fluid outlet 200 formed by slots 202 and continues at a constant diameter to the second end 236.

The slots 202 for this head extend longitudinally straight from the first end 32 to the second end 236 as was the case for slots 102 in heads 30, 130.

In another embodiment, as shown in Figures 7b and 7c, a further head 280 has slots 282 which curve around the head 280 forming a spiral or helical pattern around the head 230. The slots 282 curve by an angle $\alpha$ of 45° from the longitudinal axis A-A of the handle 20 and head 280. In this example the slots 282 curve in a clockwise direction from the first end 34 of the head 280 towards the second end 236 of the head. The slots 282 are formed as before between adjacent overlapping plates 210 however, in order to form the curved slots 282, the plates 210 do not extend along the longitudinal axis of the head 280 but also curve by an angle of 45°. Using angled slots changes the profile of the fluid exiting from the head. The airflow exiting from the slots is more normal to the

slot when angled slots are used. This has benefits including enabling more hair to be wrapped around the head also, the hair is retained on the head more easily leading to a potentially quicker styling process.

The slots can be curved in a clockwise or and anticlockwise direction from the longitudinal axis A-A of the handle 20. Whilst an angle of 45° has been illustrated, improved wrapping is seen even at an angle of 1°.

Figure 8a shows a head 180 which is substantially the same diameter as the handle 20. The slots 182 are curved or spiral around the head 180 in the same manner as head 280.

Figure 8b shows a head 380 which has a larger diameter than the handle, and is similar to head 130 except it has curved or spiralling slots 382 around the head 380.

Figures 9a and 9b show a way of assembling head 30. A first part 150 is formed from the first end 32 and has a collar 152 and a first set of plates 154 which are joined to or formed integrally with the collar 152. A second part 160 is formed from the second end 36 and has an end wall 162 and a second set of plates 164 which are joined to or formed integrally with the end wall 162. The first set of plates 154 and second set of plates 164 each comprise non-adjacent plates 110 enabling the first part 150 and the second part 160 to be slotted together to form the head 30. Between each of the first set of plates 154, a recess 156 is provided in the connecting ring 152 adapted to accommodate the distal end 164a of the second set of plates 164 from the end wall 162. A similar set of recesses 166 is provided in the end wall 162 and is adapted to accommodate the distal end 154a of the first set of plates from the collar 32.

In order to retain the first part 150 and the second part 160 of the head 30 in the assembled condition, a protruding screw hole 168 is provided. Near the distal end 154a of the first set of plates 154 a support scaffold 170 is provided and this has two functions. A first function is to support the first set of plates 154 and maintain their relative positions towards the distal end 154a and a second function is to provide part of

the fixing mechanism. In this example, the support scaffold 170 has a central aperture 172 through which the protruding screw hole 168 passes on assembly of the head 30a and a screw, for example can be inserted to fix the two parts 150, 160 of the head together.

Figures 15a, 15b, 15c, 15d and 15e show a head 400 all features identical to those previously described have the same reference numerals. This head 400 has a reduced diameter compared with the handle 20. The slots 102 extend longitudinally from the first end 32 to the second end 236, however the slots could be curved as described with respect to Figures 7a and 7b.

Internal of the head 400, within the cavity 418 formed within the head 400, an internal sock 420 is provided. This sock 420 is a mesh formed from a metal wire. The sock 420 can be in the knitted form 426 shown in Figure 15b. Alternatively as shown in Figures 16a and 16b the sock 420 is a tube 424 formed from a woven mesh 422 having generally square apertures.

The sock 420 diffuses the fluid flowing in the cavity 418 within the head 400 and slows down the longitudinal velocity of the flow. This results in more even wrapping of hair around the head 400 as the direction of fluid exiting the head 400 is more normal to the slots 102. The sock 420 extends along the length of the slots 102 within the head 400. The size of the apertures in the mesh is important; if they are too small the flow becomes too restricted and there is an increased chance of them clogging over time. An aperture size of around 1.6mm has been found to provide the benefit without undue restriction.

Figures 10a, 10b, 11a-11c and 12 show various views of another head 300 which has a directed fluid flow. The head 300 has a first cylindrical part 310 and a second triangular part 330 that together form the fluid outlet 320.

The second triangular part 330 has a first end 312 for connection to a handle 20 via a collar 328 and extends longitudinally to a second end 314 The first cylindrical part 310 has an aperture 322 extending from a first end 378 to a second end which is defined by end wall 316. The aperture 322 is defined by a first edge 324 and a second edge 326. An inner cavity 318 is formed within the head 300 when the second triangular part 330 is slid into the first cylindrical part 310. The first end 278 of the first cylindrical part 310 abuts a downstream end of the collar 328 and the second end 314 of the second triangular part 330 abuts the end wall 316 when the attachment is formed.

The second triangular part 330 has a first end 332 and a second end 334 and if formed from a first side 336, a second side 338 and an internal wall 340. The second triangular part 330 fits within the aperture 322 and extends outwardly beyond the first cylindrical part 310.

The second triangular part 330 is movable relative to the first cylindrical part 310. In this example, the second triangular part 330 is fixed with respect to the handle 20 and the first cylindrical part 310 is moveable relative to both the second triangular part 30 and the handle 20. This enables the outlet slot 342 to be partially defined by one or the other of the first edge 324 and the second edge 326.

In one position, referring now to Figures 12a and 12b, the first edge 324 along with a first side 336 of the second triangular part 330 define the limits of the outlet slot 342. The second triangular part 330 moves with respect to the first cylindrical part 310 so the outlet slot 342 is alternatively defined by the second edge 326 and the second side 338 as shown in Figures 13a and 13b.

The second triangular part 330 rotates with respect to the first cylindrical part 310 in order to change the position of the outlet slot 342. The first cylindrical part 310 is temporarily retained in a position by the use of a detent mechanism.

The end wall 316 of the first cylindrical part 310 includes a first recess 340 and a second recess 350 each of which adapted to partially accommodate a ball bearing 360. The ball bearing 360 is biased towards the end wall 316 by a spring 362 (see Figure 11b). There are a number of suitable alternatives that could be used instead of this method of retaining one part with respect to the other part such as a plastic bump feature or a piece of sprung metal.

Referring now to Figures 12a and 12b, when the second triangular part 330 is in a first position with respect to the first cylindrical part 310, the outlet slot 342 is formed from first side 336 and first edge 324 and the ball bearing 360 is accommodated by the first recess. By manually rotating the second triangular part 330 with respect to the first cylindrical part 310 the force of the spring 362 retaining the ball bearing 360 within the first recess 340 is overcome and the second triangular part 330 can be rotated with respect to the first cylindrical part 310 to move the ball bearing 360 into the second recess 350 and changing the position of the outlet slot 328 so it is now formed from the second edge 326 and the second side 338.

The first cylindrical part 310 includes bristles 350 arranged in this example in parallel rows 352 on either side of the aperture 322. The rows 352 of bristles 350 extend from near the outlet slot 342 around the head 300 but in this example the bristles 350 do not extend all the way around the head 300, there is a gap in the rows 352 diametrically opposite the outlet slot 320.

Referring now to Figure 14, when hair 354 is being styled, the action of drawing the bristles 350 down through the hair 354 opens the outlet slot 342 on the side next to the hair 354. The position of the outlet slot 342 is movable by hand or by the friction or force of combing through the hair.

The use of a combination of a directed outlet slot 342 and bristles 350 means that the hair is dried and/or styled more quickly than conventionally as the fluid exiting from the outlet slot 342 is blown down the hair 354. The fluid exiting the outlet slot 342 is

attracted to the surface of the second triangular part 330 which in turn attracts the hair 354 to the second triangular part 330. The bristles 350 separate and detangle individual strands of the hair 354 and this combination gives fast drying and a smother result.

In use as shown in Figure 14, this head is designed to be pulled through the hair with the slot 328 adjacent the hair 354. Fluid is blown out of the slot 328 as the appliance is moved along the hair 354 so the hair is both heated and brushed. Having the slot 328 on either side of the head 356 means that the same head 300 can be used for both sides of the head and both the underside and the topside of the hair 354.

In each of the examples given, the head 30, 130, 180, 230, 300 in connected to handle 20 via a collar and a twist lock joint. Referring to Figure 7b, three protrusions 234 are provided on the internal surface of the collar 232 (one not shown). The protrusions 234 are adapted to engage a slot 90 (see Figure 1b) or three separate slots provided near the distal end 22 of the handle 20. The slot 90 extends at least partially around an outer surface of the inner wall 60 and is helical so both a rotational and longitudinal movement is required to attach or remove the head from the handle 20. This is one example of a fixing mechanism, it will be apparent to the skilled person that other equally acceptable alternative mechanisms could be used.

The heads 30, 130, 180 and 230 described with respect to Figures 3a to 9 could be provided with bristles. For these heads 30, 130, 180 and 230 as the slots are arranged all the way around the head, any bristles would be arranged all the way around the head. An example would be to have one or more rows of bristles at least located on every other plate 110, 210.

The invention has been described in detail with respect to 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 including a hairdryer.

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 heads have been described as being manufactured by attaching a first part to the second part using a screw however, as the skilled person will be aware, a number of different fixing methods can be used such as, but not limited to gluing or using ultrasonic welding.

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. Such additives include but are not limited to hairspray and serums for example.

The heads 30, 130, 230 are all generally cylindrical in shape, however as the skilled person would realise, alternative shapes could be used such as ovals.

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

**CLAIMS**

1. An attachment for a hand held appliance comprising a first part and a second part, the first part comprising a first end of the attachment and at least one plate extending from the first end, the second part comprising a second end of the attachment and at least one further plate extending from the second end wherein when the first part and the second part are connected at least two slots are formed between the at least one plate and the at least one further plate, the at least two slots defining a fluid outlet for the attachment.

2. An attachment according to claim 1, wherein the first end of the attachment comprises a fluid inlet into the attachment.

3. An attachment according to claim 1 or claim 2, wherein the first end of the attachment includes a supporting ring for supporting the at least one plate.

4. An attachment according to claim 3, wherein the supporting ring comprises at least one recess for housing an end of the at least one further plate.

5. An attachment according to claim 3 or claim 4, wherein the supporting ring is additionally a collar for attaching the attachment to the appliance.

6. An attachment according to any preceding claim, wherein the first part of the attachment includes a supporting scaffold located at or near a distal end to the first end of the first part of the attachment.

7. An attachment according to claim 6, wherein the supporting scaffold is attached to the at least one plate.

8. An attachment according to claim 6 or claim 7, wherein the supporting scaffold includes a part of a fixture for fixing the first part and the second part together.

9. An attachment according to any preceding claim, wherein the second end of the attachment includes at least one further recess for housing an end of the at least one plate.

10. An attachment according to any preceding claim, wherein the second end of the attachment includes another part of a fixture for fixing the first and the second part together.

11. An attachment according to any preceding claim, wherein one or more of the at least one plate and the at least one further plate are arcuate.

12. An attachment according to any preceding claim, wherein one or more of the at least one plate and the at least one further plate extend orthogonally from a respective end.

13. An attachment according to any of claims 1 to 11, wherein the at least one plate and the at least one further plate curve round a longitudinal axis of the attachment.

14. An attachment according to any one of claims 1 to 11 wherein the at least one plate and the at least one further plate are helical.

15. An attachment according to claim 14, wherein the at least one plate and the at least one further plate are helical in a clockwise direction from the first end.

16. An attachment according to any preceding claims, wherein a gap formed between the at least one plate and the at least one further plate is defined by a spacer.

17. An attachment according to claim 16, wherein a pair of spacers is provided longitudinally spaced along the at least one plate and the at least one further plate.

18. An attachment according to any preceding claim, wherein at least one of the at least one plate and the at least one further plate is lined with a material.

19. An attachment according to claim 18, wherein every plate is lined with material.

20. An attachment according to claim 19, wherein the material absorbs sounds and/or vibrations.

21. An attachment according to claim 19 or claim 20, wherein the material is Kevlar or wool.

22. An attachment according to any preceding claim, further comprising a flow directing element between the fluid inlet and the fluid outlet.

23. An attachment according to claim 22, wherein the flow directing element comprises a perforated layer.

24. An attachment according to claim 23, wherein the perforated layer is formed from a mesh or weave of an elongate material.

25. An attachment according to claim 24, wherein the elongate material is a wire.

26. An attachment according to any of claims 22 to 25, wherein the flow directing element extends substantially along the length of the at least one slot.

27. An attachment according to any of claims 22 to 26, wherein the flow directing element extends substantially around an inner circumference of the attachment.

28. An attachment as substantially herein described with reference to the drawings.

29. A hand held appliance comprising a handle having a fluid flow path from a fluid inlet to a fluid outlet and a fan unit for drawing fluid into the fluid inlet and an attachment for attaching to the handle, the attachment comprising a first part and a second part, the first part comprising a first end of the attachment and at least one plate extending from the first end, the second part comprising a second end of the attachment and at least one further plate extending from the second end wherein when the first part and the second part are connected at least two slots are formed between the at least one plate and the at least one further plate, the at least two slots defining a fluid outlet for the attachment.

30. An appliance according to claim 29, wherein the appliance is a hair care appliance.

31. An appliance according to claim 29, wherein the appliance is a hot styling brush.

## ABSTRACT

### Attachment for a Hand Held Appliance

Disclosed is an attachment for a hand held appliance comprising a first part and a second part, the first part comprising a first end of the attachment and at least one plate extending from the first end, the second part comprising a second end of the attachment and at least one further plate extending from the second end wherein when the first part and the second part are connected at least two slots are formed between the at least one plate and the at least one further plate, the at least two slots defining a fluid outlet for the attachment. The first end of the attachment may comprise a fluid inlet into the attachment and /or a supporting ring for supporting the at least one plate. The supporting ring may comprise at least one recess for housing an end of the at least one further plate. The supporting ring may additionally be a collar for attaching the attachment to the appliance. The first part of the attachment may include a supporting scaffold located at or near a distal end to the first end of the first part of the attachment.

(Figure 9a)

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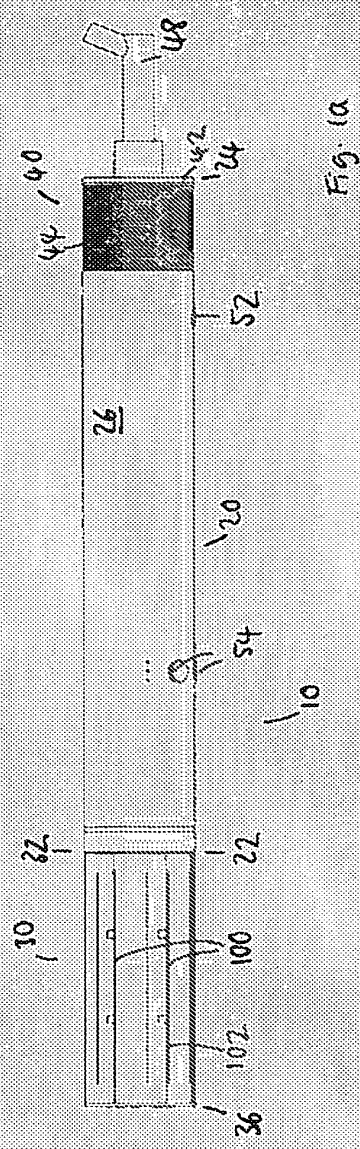



Fig. 1a

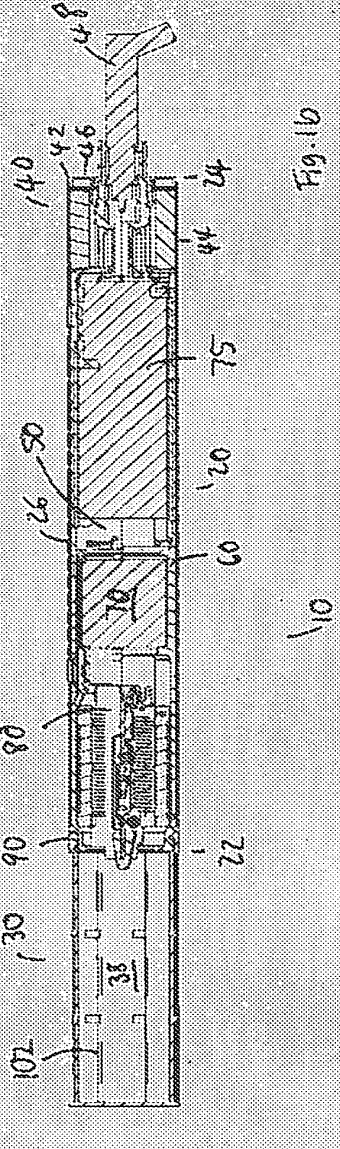
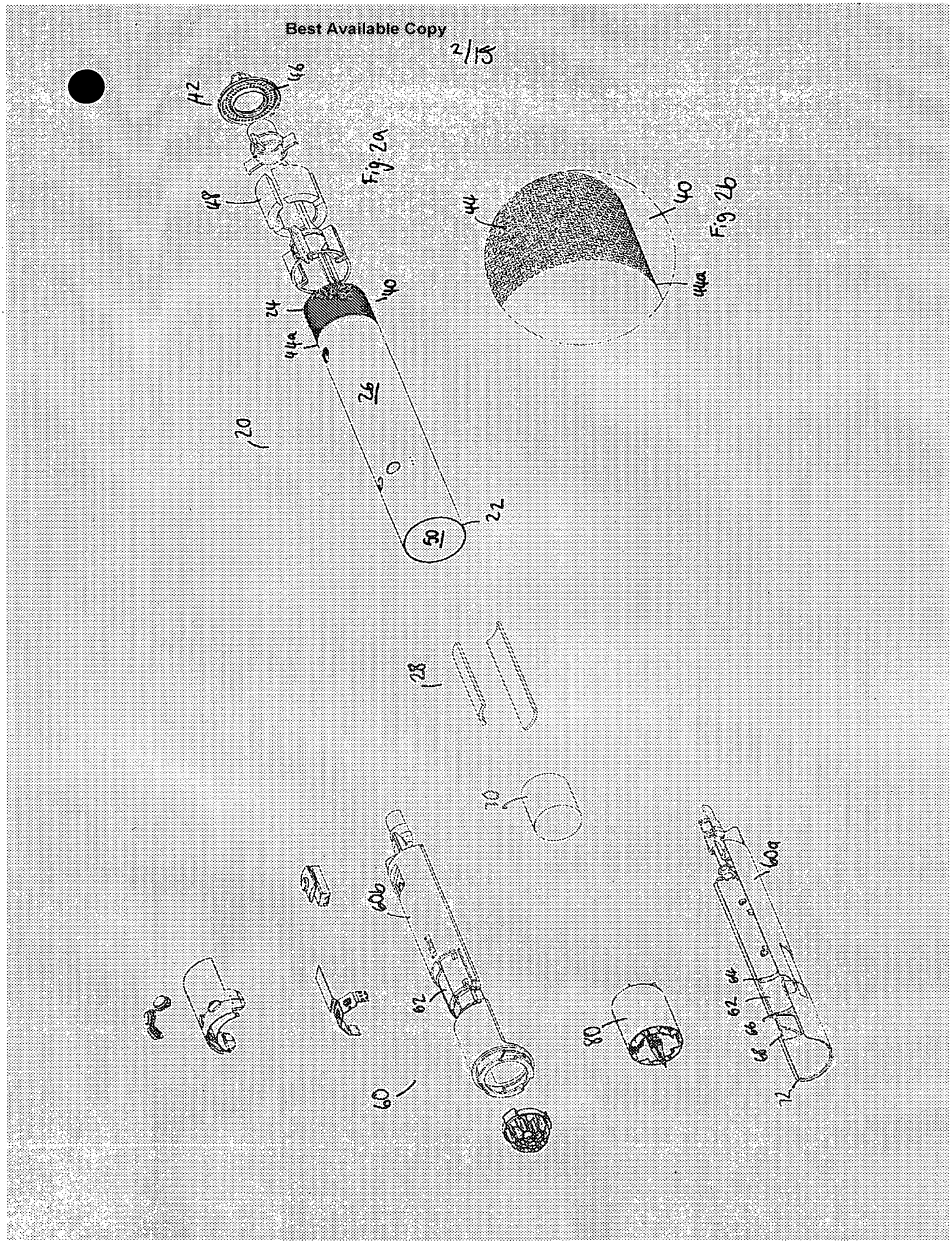



Fig. 1b

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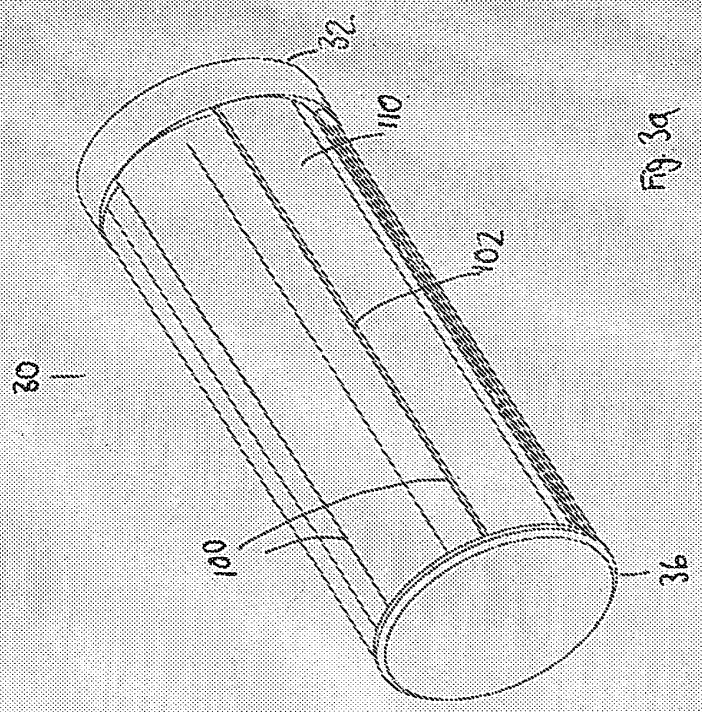



Fig. 3a

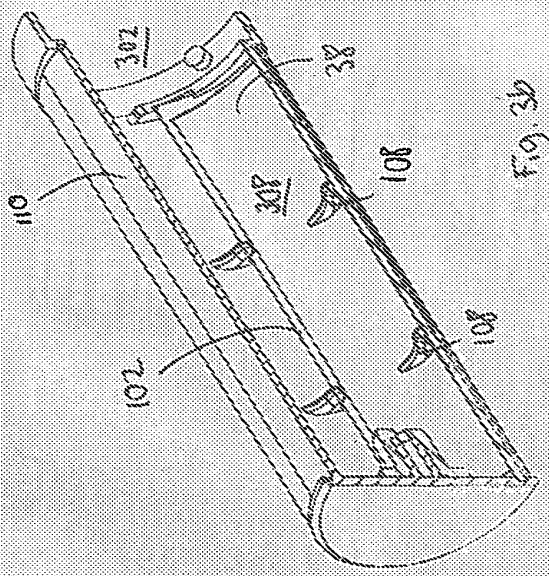
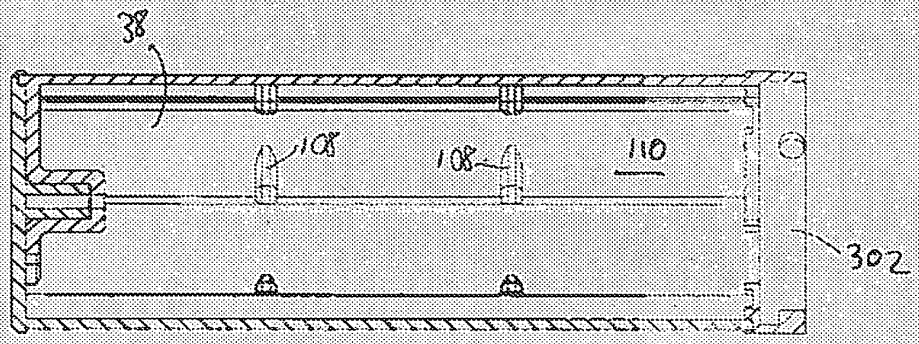



Fig. 3b

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B-B

Fig. 4b

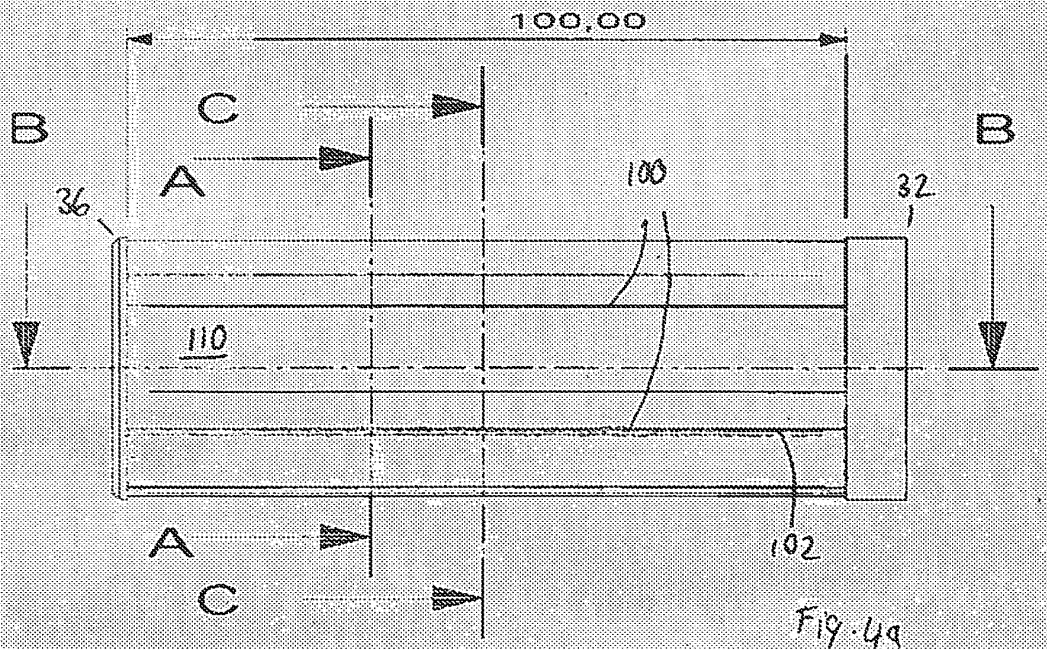



Fig. 4a

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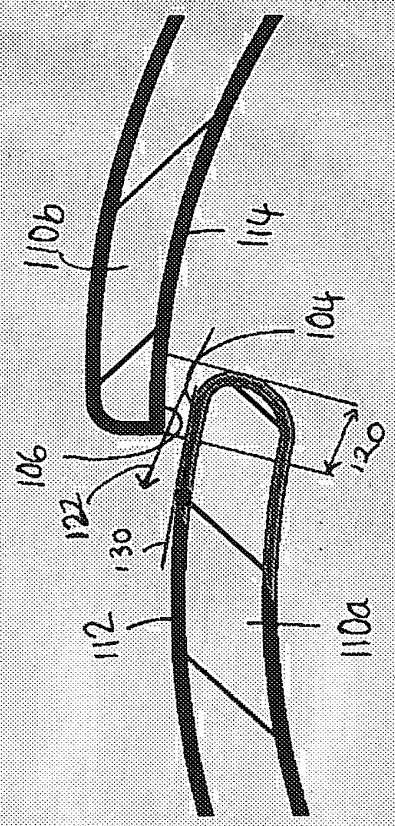



Fig. 5b

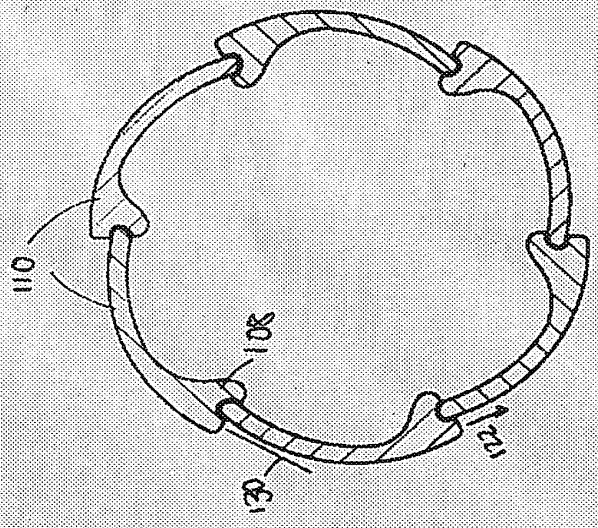



Fig. 5a

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Fig. 7a




Fig. 6a




Fig. 6b

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Fig. 8A




Fig. 7C




Fig. 8B




Fig. 7B

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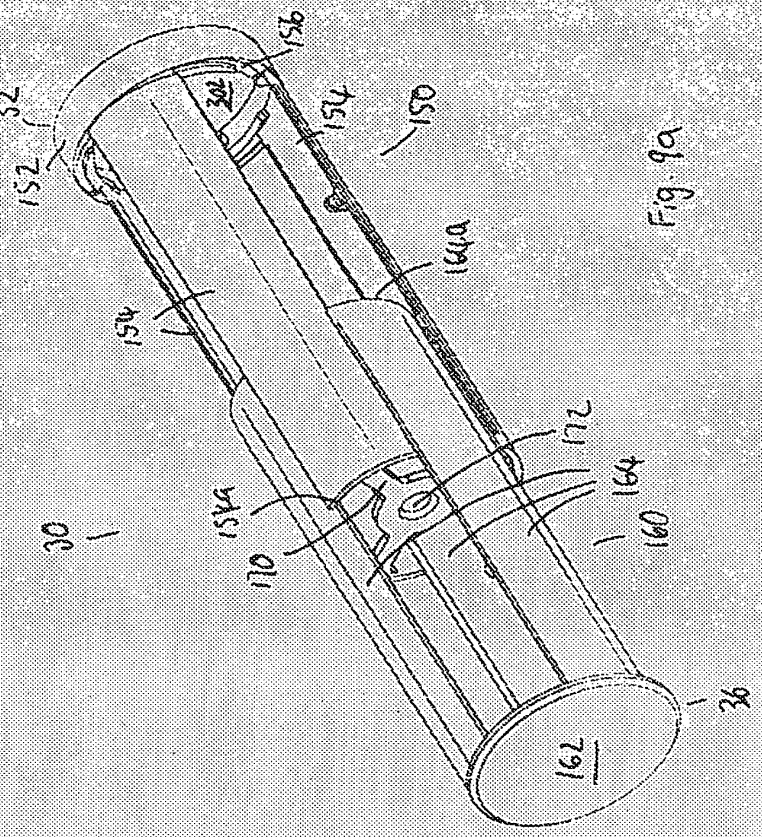



Fig. 9a

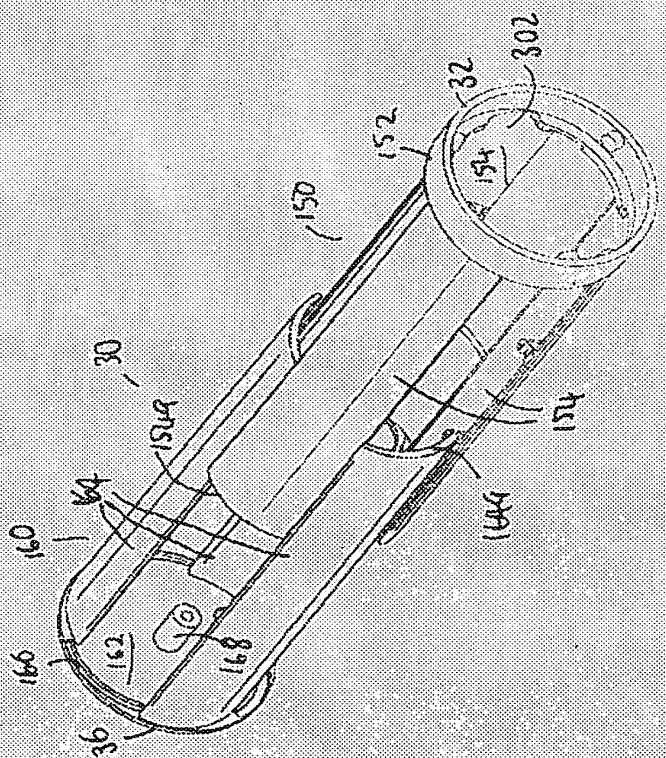



Fig. 9b

Best Available Copy

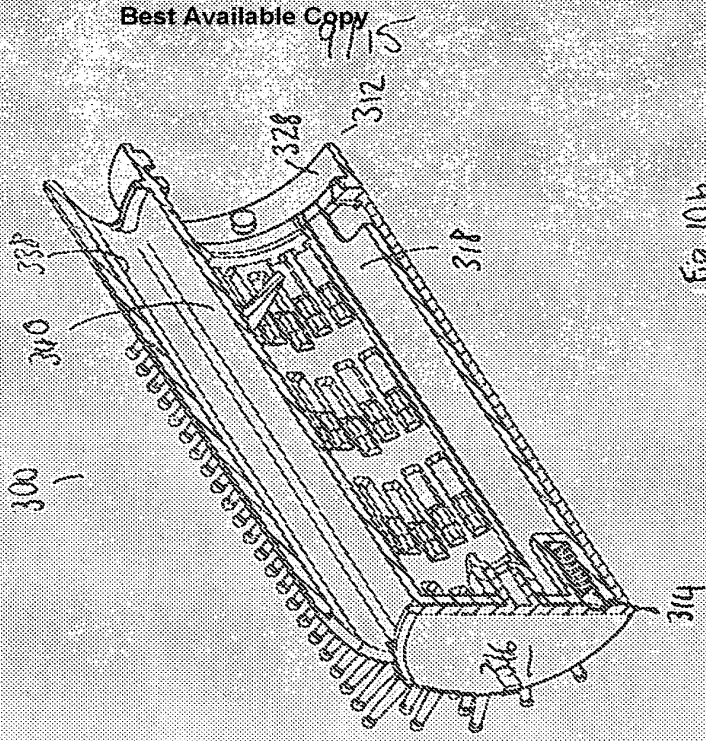



Fig. 10b

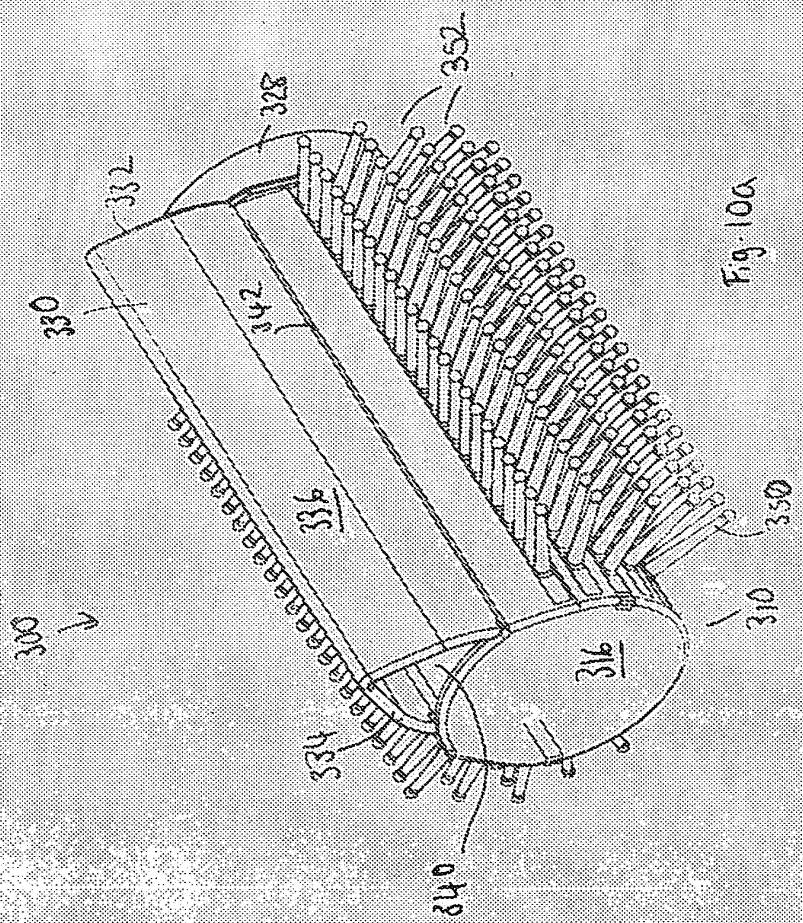



Fig. 10a

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Fig. 11a

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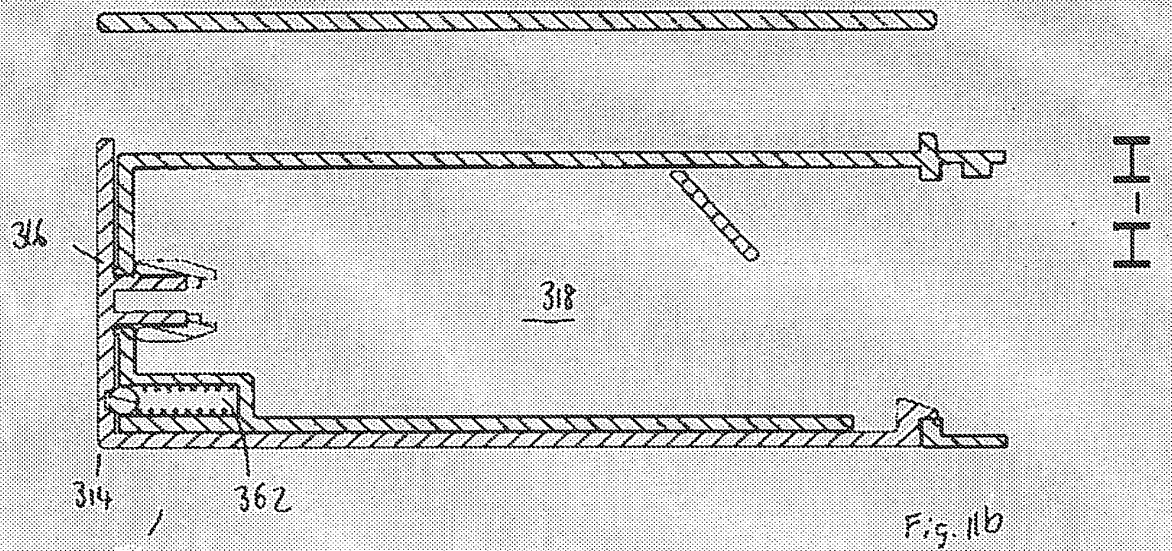



Fig. 11b

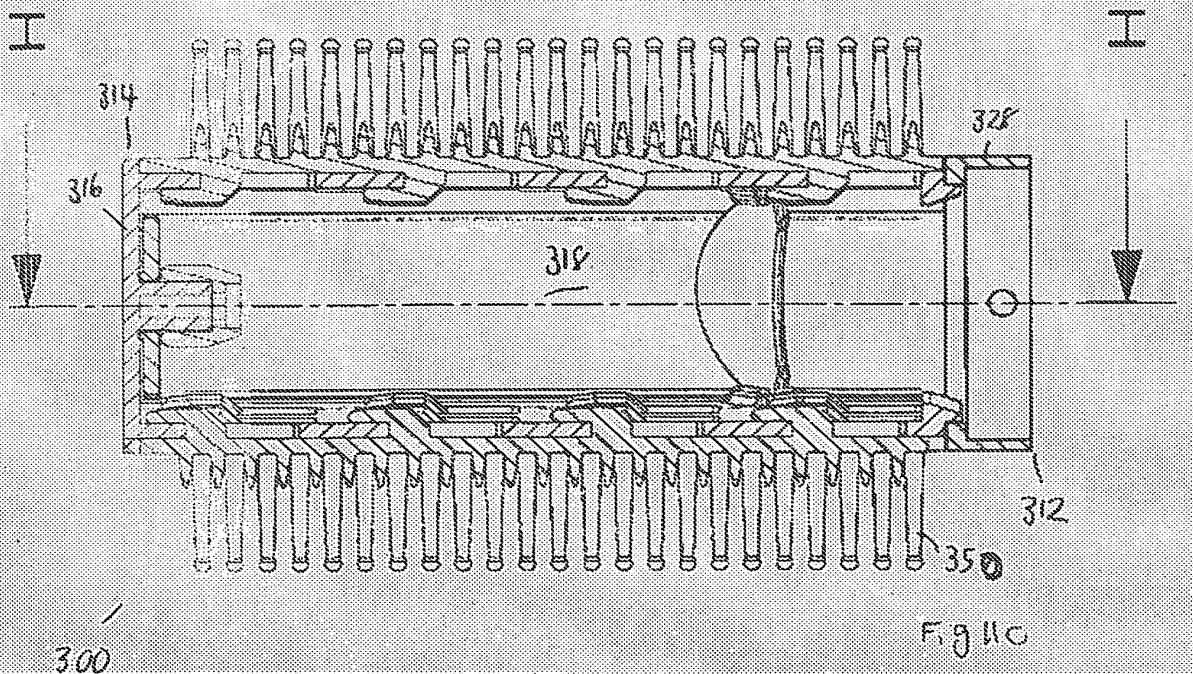



Fig 11c

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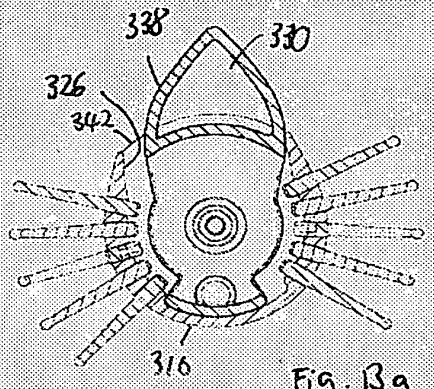



Fig. 13a

K-K

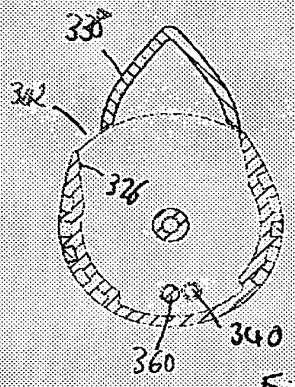



Fig. 13b

J-J

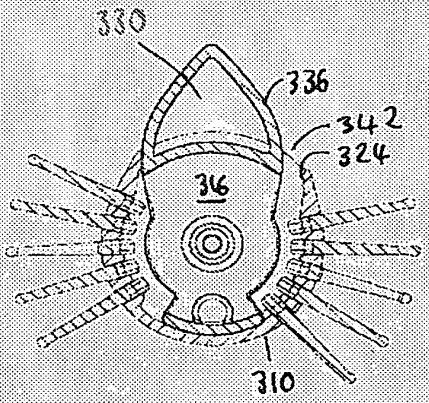



Fig. 12a

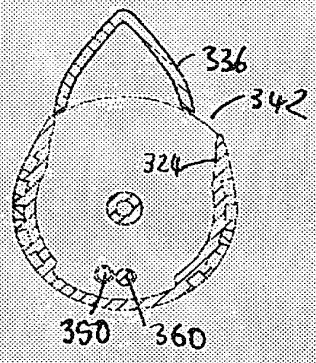



Fig. 12b

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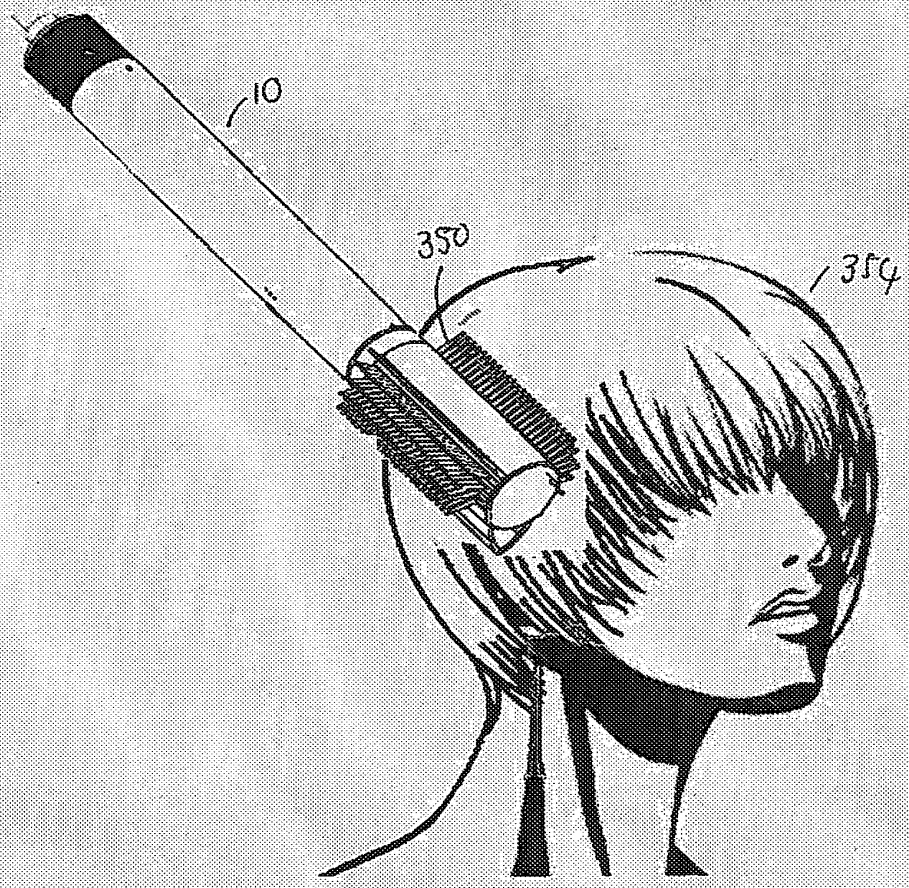



Fig. 14

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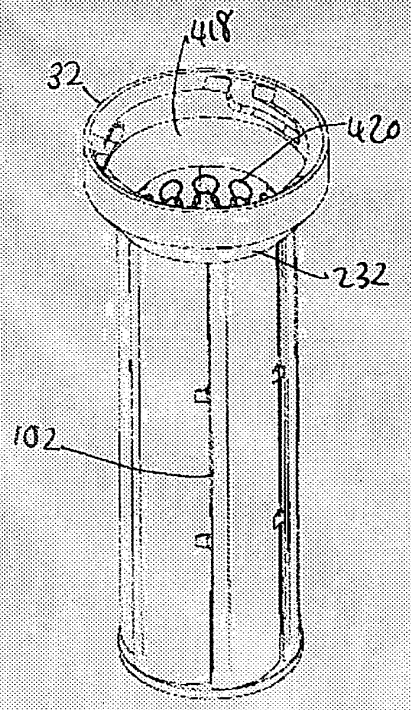




Fig. 15a

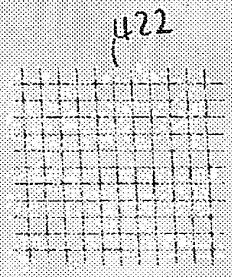



Fig. 16a

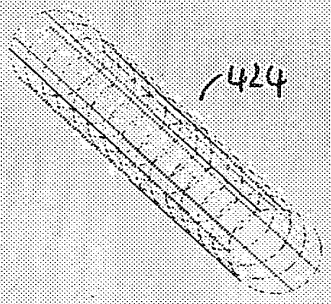



Fig. 16b

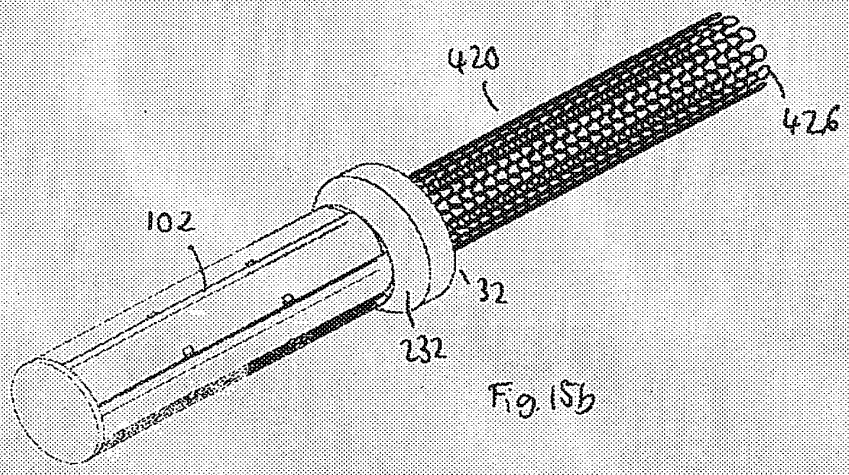



Fig. 15b

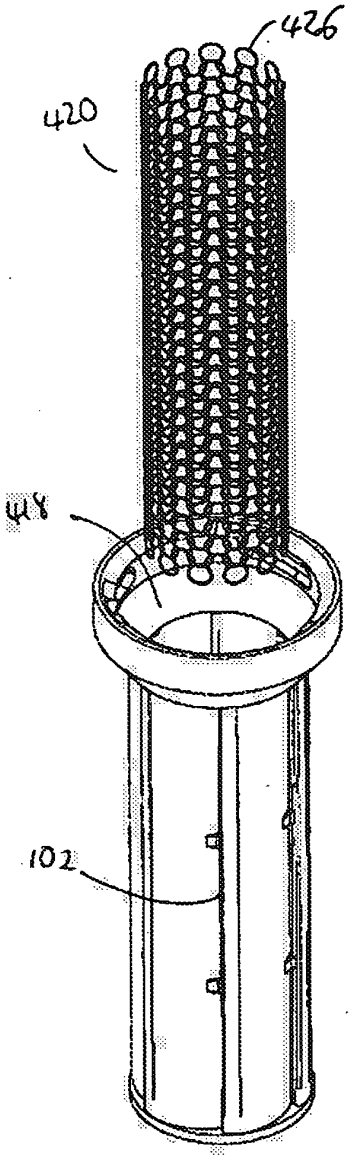



Fig. 15c

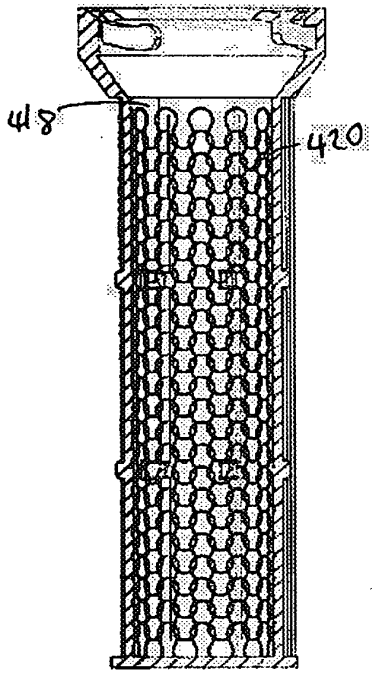



Fig. 15d

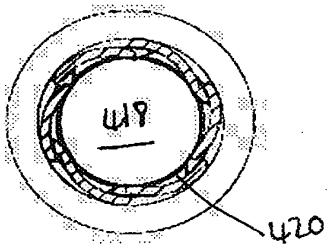



Fig. 15e

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Cardiff Road
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NP10 8QQ

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Signed Andrew Gersey

Dated 26 February 2015



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**Patents Form 1**
Patents Act 1977 *(Rule 12)*

## Request for grant of a patent

Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

*Application number* GB 1404982.9

| | | |
|---|---|---|
| 1. | Your reference | **MJF_GBP1314A** |
| 2. | Full name, address and postcode of the applicant or of each applicant | **DYSON TECHNOLOGY LIMITED**<br>**Tetbury Hill**<br>**Malmesbury SN16 0RP**<br>**Wiltshire**<br>**United Kingdom** 08940744001 |
| | Patents ADP number *(if you know it)* | |
| 3. | Title of the invention | **Attachment for a Hand Held Appliance** |
| 4. | Name of your agent *(if you have one)* | **FOWLER, Maria** |
| | "Address for service" to which all correspondence should be sent. This may be in the European Economic area or Channel Islands (see warning note below) *(including the postcode)* | **FOWLER, Maria**<br>**PO Box Dyson Technology Limited**<br>**Intellectual Property Department**<br>**Tetbury Hill**<br>**Malmesbury SN16 0RP**<br>**Wiltshire**<br>**United Kingdom** 08940744002 |
| | Patents ADP number *(if you know it)* | |

5. Priority declaration: Are you claiming priority from one or more earlier-filed patent applications? If so, please give details of the application(s)

| Country | Application number | Date of filing | PDAS Access Code |
|---|---|---|---|

6. Divisionals etc: Is this application a divisional application, or being made following resolution of an entitlement dispute about an earlier application. If so, please give the application number and filing date of the earlier application

| Number of earlier UK application | Date of filing *(day / month / year)* |
|---|---|

7. Inventorship: (Inventors must be individuals not companies)

   Are all the applicants named above also inventors? **No**

8. Are you paying the application fee with this form? **Yes**

9. Accompanying documents: please enter the number of pages of each item accompanying this form.

   Continuation sheets of this form

   Description: **16**

   Claim*(s)*: **4**

   Abstract: **1**

   Drawing*(s)*: **15**

   If you are <u>not</u> filing a description, please give details of the previous application you are going to rely upon

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|---|---|---|---|



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Page 167 of 1998

## Patents Form 1

10. If you are also filing any of the following, state how many against each item.

| | |
|---|---|
| Priority documents: | **0** |
| Statement of inventorship and right to grant of a patent (Patents Form 7): | **0** |
| Request for search (Patents Form 9A): | **1** |
| Request for a substantive examination (Patents Form 10): | **1** |
| Any other documents (please specify): | |

11. I/We request the grant of a patent on the basis of this application.

Signature: **Subject: GB, Dyson Technology Limited, M. Fowler 28586; Issuer: European Patent Office, European Patent Office CA**

Date: **20 Mar 2014**

12. Name, e-mail address, telephone, fax and/or mobile number, if any, of a contact point for the applicant

**Webb, Miss Hannah**
**Email: Hannah.Webb@dyson.com**
**Telephone: 01666 834258**
**Fax: 01666 828164**

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# Attachment for a Hand Held Appliance

This invention relates to an attachment for a hand held appliance, in particular a hair care appliance such as a hot styling brush.

In a conventional hot styling brush, air is sucked into an inlet by a fan unit and directed towards the hair by an attachment or head. Depending on the style desired, the air may or may not be heated. The head or attachment often includes bristles onto which hair is wrapped and held for styling. The air is generally blown out of the head or attachment normal to the surface of the head.

The present invention provides an attachment for a hand held appliance comprising an inlet; an outlet; and a fluid flow path between the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment wherein fluid emitted from the outlet is blown along the external surface.

Preferably, the slot extends substantially along the length of the attachment.

It is preferred that the outlet comprises a plurality of slots radially spaced around the attachment.

Preferably, fluid emitted from the outlet flows around the external surface of the attachment. It is preferred that the fluid emitted from the outlet is tangential to the external surface of the attachment. Preferably, the fluid emitted from the outlet is attracted to the surface of the attachment.

By having the fluid exiting the fluid outlet travelling around the outer surface of the head hair is attracted to the surface and easily wraps around to create the style.

It is preferred that the attachment is generally cylindrical.

Preferably, the outlet comprises two slots.

It is preferred that the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is parallel to the longitudinal axis.

Alternatively, the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is non-parallel to the longitudinal axis. It is preferred that the at least one slot is helical with respect to the longitudinal axis.

A curved slot changes the direction that fluid flows out from the fluid outlet tending to give a flow that is more normal to the surface of the attachment and this improves the hold of the hair around the attachment.

Preferably, the attachment further comprises a flow directing element between the inlet and the outlet. The flow directing element also changes the direction that fluid flows out from the fluid outlet tending to give a flow that is more normal to the surface of the attachment and this improves the hold of the hair around the attachment. In addition, the flow directing element reduces the velocity of the fluid within the attachment which in turn reduces the noise produced by the attachment.

It is preferred that the flow directing element comprises a perforated layer. Preferably, the perforated layer is formed from a mesh or weave of an elongate material. It is preferred that the elongate material is a wire. Preferably, the flow directing element extends substantially along the length of the at least one slot. It is preferred that the flow directing element extends substantially around an inner circumference of the attachment.

According to a second aspect, the invention provides a hand held appliance comprising a handle having a fluid flow path from an inlet to an outlet and a fan unit for drawing fluid into the fluid inlet and an attachment for attaching to the handle, the attachment comprising an inlet; an outlet; and a fluid flow path between the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment and fluid emitted from the outlet is blown along the external surface.

In one embodiment the appliance is a hair care appliance.

In another embodiment the appliance is a hot styling brush.

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

Figure 1a shows an example of an appliance according to the invention;

Figure 1b shows a cross section through the appliance shown in Figure 1a;

Figure 2a shows an exploded view of some of the handle components of the device of Figure 1a;

Figure 2b shows an enlarged section of the fluid inlet;

Figures 3a and 3b show an isometric view and an isometric cross section through a first attachment according to the invention;

Figures 4a and 4b show a side view and a side view cross section through the first attachment;

Figures 5a and 5b show cross sections through the first attachment;

Figures 6a and 6b show an isometric view and a side view through a second attachment;

Figure 7a shows an isometric view through another attachment;

Figures 7b and 7c show an isometric view and a side view through a further attachment;

Figure 8a shows an isometric view of a fifth attachment;

Figure 8b shows an isometric view of a sixth attachment;

Figure 9 shows a two part assembly for an attachment;

Figures 10a and 10b show an isometric view and an isometric cross section through a further attachment according to the invention;

Figures 11a, 11b and 11c show a side view and a side view cross sections through the further attachment;

Figures 12a and 12b show cross sections through the further attachment in a first position;

Figures 13a and 13b show cross sections through the further attachment in a second position;

Figure 14 shows schematically the further attachment in use; and

Figure 15a shows an isometric view of another attachment;

Figure 15b shows different component parts of the other attachment;

Figure 15c shows the different component parts from the inlet end;

Figure 15d shows a cross section through the side of the other attachment;

Figure 15e shows a cross section through the other attachment; and

Figures 16a and 16b show an alternative sock for the other attachment.

Figures 1a and 1b shows a hot styling brush 10 with a handle 20 and a detachable head or attachment 30 which is attaches at the distal end 22 of the handle 20 to the fluid inlet 40.

The handle 20 has an outer wall 26 which is generally tubular and includes the fluid inlet 40 at and adjacent one end 24. The fluid inlet 40 comprises a first set of apertures 44 which extend radially around the handle 20 and along the outer wall 26 of the handle from the handle end 24. The handle end 24 is covered by an end wall 42 which is also perforated with a second set of apertures 46 that extend through the end wall 42 of the handle. Thus, the fluid inlet 40 extends around, along and across the handle 20. The end wall 42 is orthogonal to the outer wall 26 and an inner wall 60 of the handle.

The handle 20 also includes a fan unit 70 which comprises a fan and a motor which drives the fan and in use, draws fluid in through the fluid inlet 40, along a fluid flow path 50 which extends through the length of the handle 20. The fluid is optionally heater by a heater 80 before entering an inner cavity 38 of the head 30.

The head 30 includes a fluid outlet 100 which in this example comprises parallel slots 102 each extending towards a second end 36 of the head and radially around the head 30. This arrangement enables fluid to exit the head all the way around the head and for

the majority of the length of the head 30 maximising a hair styling region of the product.

In use, hair is wrapped around the head 30 whilst air or fluid exits through the slots 102 drying the hair and/or styling the hair into curls or waves. The hair wraps automatically due to the flow of air around the surface of the head 30. The air or fluid can be heated but this is not essential.

Power is provided to the appliance via a power cable 48 which preferably extends from a plug or other power source through the end wall 42 of the handle 20. The handle 20 also houses a PCB 75 which is electrically connected to the cable 48, the fan unit 70 and the heater 80 by internal wiring (not shown). An on/off switch 52 and control buttons 54 are provided and connected to the PCB 75 to allow the user to select one of a range of temperature and flow settings.

Figure 2a shows an exploded view of various parts of the handle 20 in more detail. The handle 20 is tubular and the outer wall 26 of the handle 20 is a cylindrical sleeve made from for example an extruded tube or rolled sheet of metal such as aluminium, an aluminium alloy or a steel. The handle connects to a head 30 at a first end 22 and at the distal, second end 24 a fluid inlet 40 is provided. The fluid inlet 40 is a first means of filtering fluid that enters the fluid flow path 50.

The fluid inlet 40 comprises a plurality of apertures extending around, along and across the handle 20. 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 44 that extend around and along the handle 20. However, the apertures 46 that extend under the handle and across the end wall 42 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 fluid inlet 40. However, by having apertures that extend around, along and across the handle 20 the risk of blocking the fluid inlet 40 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. It is advantageous to space the apertures regularly around, along and across the fluid inlet 40. Not only is this visually pleasing but it also has the technical advantage that there is no weak region of the fluid inlet 40 where blockage of a portion is more likely or would have more impact on the flow into the fluid inlet 40. The inlet is designed so that the flow into the inlet is even at least around the circumference of the handle 20.

A foam block 48 is provided which in use is inserted into the second end 24 of the handle 20. The foam block 48 is a second means of filtering the fluid that passes through the primary fluid inlet 40 into the primary fluid flow path 50. It is advantageous that the foam block 48 extends beyond or further towards the first end 22 of the handle than the primary fluid inlet 40 as this ensures that fluid that has entered the primary fluid inlet 40 has passed through the foam block 48 so has had two stages of filtration. In other words, the foam block 48 extends from the second end 24 of the handle 20 past the downstream end 44a of the fluid inlet.

The foam block 48 shown is cylindrical and substantially fills the area within the handle 20 at the primary fluid inlet 40. This is to ensure that all fluid that enters the primary fluid inlet through first apertures 44 that extend around and along the handle and fluid

that enters through second apertures 46 that extend across and through the end wall 42 of the handle 20 passes through this second stage of filtration. The foam block 48 extends longitudinally from the second end 24 of the handle 20 further than the first apertures 42 of the primary fluid inlet 40.

The first apertures 44 that extend along and around the outer wall 26 are machined, punched or laser cut from the extruded tube or sheet metal that the outer wall 26 is formed from.

The handle 20 has an outer wall 26 and an inner wall 60, the outer wall 26 slides over the inner wall 60 to form the finished product. The inner wall 60 is a duct which surrounds and defines a fluid flow path 50 through the appliance. The outer wall 26 includes a grippable portion and in these examples, includes the fluid inlet 40 into the fluid flow path 50. An insulting layer of material 28 is provided within the inner wall 60. 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 appliance, vibrations caused by the fan unit and noise produced within the appliance by the flow of fluid through the fluid flow path 50. The insulating layer absorbs energy including airborne noise.

The inner wall 60 provides a housing 62 in which a fan unit 70 is disposed. The housing 62 is cylindrical and has an inwardly protruding ledge 64,66 disposed one at each end of the housing 62 which maintain the position of the fan unit 70 within the handle 20. The inner wall 60 is made from two parts a first part 60a and a second part 60b which is moulded separately. This enables easier assembly of the fan unit 70 within the handle 20 than a one piece inner wall. A similar pair of inwardly protruding ledges 68, 72 maintains the position of the heater 80 within the handle 20.

Although the outer wall 26 of the handle 20 has been described as being made from an extruded tube or a rolled sheet of metal, alternatives methods of manufacture and materials could be used; these include, but are not limited to, a plastic extrusion/moulded tube or a composite tube such as carbon fibre reinforced plastic.

The fluid outlet 100 of the head 30 will now be described in more detail, referring in particular to Figures 3a, 3b, 4a, 4b, 5a and 5b. The head 30 is essentially cylindrical and has a first end 32 for connection to a handle 20 and a second end 36 distal to the first end 32. The head 30 extends longitudinally from the first end 32 to the second end 26 continuing a line described by the handle 20 (Figure 1a) so is approximately the same diameter as the handle. Within the head 30 is an inner cavity 38 and fluid that has been drawn into the fluid flow path 50 within the handle 20 by the fan unit 70 enters the inner cavity 38 via an aperture 302 in the first end 32 of the head 30.

The fluid outlet 100 is formed from a number of parallel slots 102 which extend along the length of the head 30 from the first end 32 to the second end 36. The slots 102 are formed from an overlap 120 (Figure 5b) formed between adjacent plates 110 which results in fluid being directed between a radially inner surface 104 formed from the outer surface 112 of a first plate 110a and a radially outer surface 106 formed from the inner surface 114 of a second plate 110b. The fluid 122 flowing out of the slot 102 is tangential 130 to the outer surface 112 of the plate 110a and joins with the fluid flowing out of the other slots of the fluid outlet 100 forming a fluid flow around the circumference of the head 30. Thus, the fluid 122 is blown out along the external surface of the head and this encourages hair to wrap around the head 30 automatically.

The fluid 122 exiting the slots 102 is attracted to the curved surface of the head 30 by the Coanda effect. This in turn causes hair that is presented to the head 30 to automatically wrap around the surface and then styled into curls. As air is blown down the length of the hair, wet hair is dried more quickly than conventionally and as the wrapping process occurs without the use of bristles, the hair can slide off the head 30 once it is dry or styled so there is no tangling.

To maintain the size of each slot 102, spacers 108 are provided. In this example, a pair of spacers 108 is provided to maintain each slot 102 size. Each one of the pair of

spacers 108 is longitudinally spaced along the slot 102 and the plate 110. The spacers 108 join adjacent plates 110 together.

Advantageously, each plate 110 is lined with a felt like material 308 such as Kevlar or wool (see Figure 3b). The material 308 does not extend over each slot 102 so the fluid exiting the fluid outlet 100 does not pass through the layer of material 308. This layer serves to absorb some of the noise produced by the fluid flowing through the head 30 from the inlet to the head 30 at aperture 302 to the fluid outlet 100. Such a layer of material 308 is as applicable for other heads herein described such as heads 130, 180 and 230.

Figures 6a and 6b show an alternative head 130, all features identical to those previously described have the same reference numerals. The head 130 has a larger diameter than the handle 20 so is used to create larger curls. The head 130 has a first end 32 for connection to the handle 20 and this is the same diameter as the handle 20, within a collar 132 of the head 130, the diameter of the head 130 increases to the larger diameter prior to the fluid outlet 100 formed by slots 142 and then continues at a constant diameter to the second end 136. An inner fluid cavity (not shown) is larger than for the head 30 of Figure 3a. In this example the number of plates 110 and slots 102 is the same i.e. six as for the head described with respect to Figure 3a. Alternatively, a larger or smaller number of plates 110 and slots 142 could be used.

Figure 7a shows a further head 230. This head 230 has a reduced diameter compared with the handle 20. The first end 32 is substantially the same diameter as the handle 20 for connection thereto, and then within a collar 232 the diameter of the head 230 decreases to the reduced diameter prior to the fluid outlet 200 formed by slots 202 and continues at a constant diameter to the second end 236. This head 230 is used to create tighter curls.

The slots 202 for this head extend longitudinally straight from the first end 32 to the second end 236 as was the case for slots 102 in heads 30, 130.

In another embodiment, as shown in Figures 7b and 7c, a further head 280 has slots 282 which curve around the head 280 forming a spiral or helical pattern around the head 230. The slots 282 curve by an angle $\alpha$ of 45° from the longitudinal axis A-A of the handle 20 and head 280. In this example the slots 282 curve in a clockwise direction from the first end 34 of the head 280 towards the second end 236 of the head. The slots 282 are formed as before between adjacent overlapping plates 210 however, in order to form the curved slots 282, the plates 210 do not extend along the longitudinal axis of the head 280 but also curve by an angle of 45°. Using angled slots changes the profile of the fluid exiting from the head. The airflow exiting from the slots is more normal to the slot when angled slots are used. This has benefits including enabling more hair to be wrapped around the head also, the hair is retained on the head more easily leading to a potentially quicker styling process.

The slots can be curved in a clockwise or and anticlockwise direction from the longitudinal axis A-A of the handle 20. Whilst an angle of 45° has been illustrated, improved wrapping is seen even at an angle of 1°.

Figure 8a shows a head 180 which is substantially the same diameter as the handle 20. The slots 182 are curved or spiral around the head 180 in the same manner as head 280.

Figure 8b shows a head 380 which has a larger diameter than the handle, and is similar to head 130 except it has curved or spiralling slots 382 around the head 380.

Figures 9a and 9b show a way of assembling head 30. A first part 150 is formed from the first end 32 and has a collar 152 and a first set of plates 154 which are joined to or formed integrally with the collar 152. A second part 160 is formed from the second end 36 and has an end wall 162 and a second set of plates 164 which are joined to or formed integrally with the end wall 162. The first set of plates 154 and second set of plates 164 each comprise non-adjacent plates 110 enabling the first part 150 and the second part 160 to be slotted together to form the head 30. Between each of the first set of plates

154, a recess 156 is provided in the connecting ring 152 adapted to accommodate the distal end 164a of the second set of plates 164 from the end wall 162. A similar set of recesses 166 is provided in the end wall 162 and is adapted to accommodate the distal end 154a of the first set of plates from the collar 32.

In order to retain the first part 150 and the second part 160 of the head 30 in the assembled condition, a protruding screw hole 168 is provided. Near the distal end 154a of the first set of plates 154 a support scaffold 170 is provided and this has two functions. A first function is to support the first set of plates 154 and maintain their relative positions towards the distal end 154a and a second function is to provide part of the fixing mechanism. In this example, the support scaffold 170 has a central aperture 172 through which the protruding screw hole 168 passes on assembly of the head 30a and a screw, for example can be inserted to fix the two parts 150, 160 of the head together.

Figures 15a, 15b, 15c, 15d and 15e show a head 400 all features identical to those previously described have the same reference numerals. This head 400 has a reduced diameter compared with the handle 20. The slots 102 extend longitudinally from the first end 32 to the second end 236, however the slots could be curved as described with respect to Figures 7a and 7b.

Internal of the head 400, within the cavity 418 formed within the head 400, an internal sock 420 is provided. This sock 420 is a mesh formed from a metal wire. The sock 420 can be in the knitted form 426 shown in Figure 15b. Alternatively as shown in Figures 16a and 16b the sock 420 is a tube 424 formed from a woven mesh 422 having generally square apertures.

The sock 420 diffuses the fluid flowing in the cavity 418 within the head 400 and slows down the longitudinal velocity of the flow. This results in more even wrapping of hair around the head 400 as the direction of fluid exiting the head 400 is more normal to the slots 102. The sock 420 extends along the length of the slots 102 within the head 400.

The size of the apertures in the mesh is important; if they are too small the flow becomes too restricted and there is an increased chance of them clogging over time. An aperture size of around 1.6mm has been found to provide the benefit without undue restriction.

Figures 10a, 10b, 11a-11c and 12 show various views of another head 300 which has a directed fluid flow. The head 300 has a first cylindrical part 310 and a second triangular part 330 that together form the fluid outlet 320.

The second triangular part 330 has a first end 312 for connection to a handle 20 via a collar 328 and extends longitudinally to a second end 314 The first cylindrical part 310 has an aperture 322 extending from a first end 378 to a second end which is defined by end wall 316. The aperture 322 is defined by a first edge 324 and a second edge 326. . An inner cavity 318 is formed within the head 300 when the second triangular part 330 is slid into the first cylindrical part 310. The first end 278 of the first cylindrical part 310 abuts a downstream end of the collar 328 and the second end 314 of the second triangular part 330 abuts the end wall 316 when the attachment is formed.

The second triangular part 330 has a first end 332 and a second end 334 and is formed from a first side 336, a second side 338 and an internal wall 340. The second triangular part 330 fits within the aperture 322 and extends outwardly beyond the first cylindrical part 310.

The second triangular part 330 is movable relative to the first cylindrical part 310. In this example, the second triangular part 330 is fixed with respect to the handle 20 and the first cylindrical part 310 is moveable relative to both the second triangular part 330 and the handle 20. This enables the outlet slot 342 to be partially defined by one or the other of the first edge 324 and the second edge 326.

In one position, referring now to Figures 12a and 12b, the first edge 324 along with a first side 336 of the second triangular part 330 define the limits of the outlet slot 342.

The second triangular part 330 moves with respect to the first cylindrical part 310 so the outlet slot 342 is alternatively defined by the second edge 326 and the second side 338 as shown in Figures 13a and 13b.

The second triangular part 330 rotates with respect to the first cylindrical part 310 in order to change the position of the outlet slot 342. The first cylindrical part 310 is temporarily retained in a position by the use of a detent mechanism.

The end wall 316 of the first cylindrical part 310 includes a first recess 340 and a second recess 350 each of which adapted to partially accommodate a ball bearing 360. The ball bearing 360 is biased towards the end wall 316 by a spring 362 (see Figure 11b). There are a number of suitable alternatives that could be used instead of this method of retaining one part with respect to the other part such as a plastic bump feature or a piece of sprung metal.

Referring now to Figures 12a and 12b, when the second triangular part 330 is in a first position with respect to the first cylindrical part 310, the outlet slot 342 is formed from first side 336 and first edge 324 and the ball bearing 360 is accommodated by the first recess. By manually rotating the second triangular part 330 with respect to the first cylindrical part 310 the force of the spring 362 retaining the ball bearing 360 within the first recess 340 is overcome and the second triangular part 330 can be rotated with respect to the first cylindrical part 310 to move the ball bearing 360 into the second recess 350 and changing the position of the outlet slot 328 so it is now formed from the second edge 326 and the second side 338.

The first cylindrical part 310 includes bristles 350 arranged in this example in parallel rows 352 on either side of the aperture 322. The rows 352 of bristles 350 extend from near the outlet slot 342 around the head 300 but in this example the bristles 350 do not extend all the way around the head 300, there is a gap in the rows 352 diametrically opposite the outlet slot 320.

Referring now to Figure 14, when hair 354 is being styled, the action of drawing the bristles 350 down through the hair 354 opens the outlet slot 342 on the side next to the hair 354. The position of the outlet slot 342 is movable by hand or by the friction or force of combing through the hair.

The use of a combination of a directed outlet slot 342 and bristles 350 means that the hair is dried and/or styled more quickly than conventionally as the fluid exiting from the outlet slot 342 is blown down the hair 354. The fluid exiting the outlet slot 342 is attracted to the surface of the second triangular part 330 which in turn attracts the hair 354 to the second triangular part 330. The bristles 350 separate and detangle individual strands of the hair 354 and this combination gives fast drying and a smother result.

In use as shown in Figure 14, this head is designed to be pulled through the hair with the slot 328 adjacent the hair 354. Fluid is blown out of the slot 328 as the appliance is moved along the hair 354 so the hair is both heated and brushed. Having the slot 328 on either side of the head 356 means that the same head 300 can be used for both sides of the head and both the underside and the topside of the hair 354.

In each of the examples given, the head 30, 130, 180, 230, 300 in connected to handle 20 via a collar and a twist lock joint. Referring to Figure 7b, three protrusions 234 are provided on the internal surface of the collar 232 (one not shown). The protrusions 234 are adapted to engage a slot 90 (see Figure 1b) or three separate slots provided near the distal end 22 of the handle 20. The slot 90 extends at least partially around an outer surface of the inner wall 60 and is helical so both a rotational and longitudinal movement is required to attach or remove the head from the handle 20. This is one example of a fixing mechanism, it will be apparent to the skilled person that other equally acceptable alternative mechanisms could be used.

The heads 30, 130, 180 and 230 described with respect to Figures 3a to 9 could be provided with bristles. For these heads 30, 130, 180 and 230 as the slots are arranged all the way around the head, any bristles would be arranged all the way around the head.

An example would be to have one or more rows of bristles at least located on every other plate 110, 210.

The invention has been described in detail with respect to 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 including a hairdryer.

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 heads have been described as being manufactured by attaching a first part to the second part using a screw however, as the skilled person will be aware, a number of different fixing methods can be used such as, but not limited to gluing or using ultrasonic welding.

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. Such additives include but are not limited to hairspray and serums for example.

The heads 30, 130, 230 are all generally cylindrical in shape, however as the skilled person would realise, alternative shapes could be used such as ovals.

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

**CLAIMS**

1. An attachment for a hand held appliance comprising an inlet; an outlet; and a fluid flow path between the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment wherein fluid emitted from the outlet is blown along the external surface.

2. An attachment according to claim 1, wherein the slot extends substantially along the length of the attachment.

3. An attachment according to claim 1 or claim 2, wherein the outlet comprises a plurality of slots radially spaced around the attachment.

4. An attachment according to any preceding claim, wherein fluid emitted from the outlet flows around the external surface of the attachment.

5. An attachment according to claim 4, wherein the fluid emitted from the outlet is tangential to the external surface of the attachment.

6. An attachment according to claim 4 or claim 5, wherein the fluid emitted from the outlet is attracted to the surface of the attachment.

7 An attachment according to any preceding claim, wherein the attachment is generally cylindrical.

8. An attachment according to any preceding claim, wherein the outlet comprises two slots.

9. An attachment according to any preceding claim, wherein the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is parallel to the longitudinal axis.

10. An attachment according to any of claims 1 to 8, wherein the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is non-parallel to the longitudinal axis.

11. An attachment according to claim 10, wherein the at least one slot is helical with respect to the longitudinal axis.

12. An attachment according to any preceding claim, further comprising a flow directing element between the inlet and the outlet.

13. An attachment according to claim 12, wherein the flow directing element comprises a perforated layer.

14. An attachment according to claim 13, wherein the perforated layer is formed from a mesh or weave of an elongate material.

15. An attachment according to claim 14, wherein the elongate material is a wire.

16. An attachment according to any of claims 12 to 15, wherein the flow directing element extends substantially along the length of the at least one slot.

17. An attachment according to any of claims 12 to 16, wherein the flow directing element extends substantially around an inner circumference of the attachment.

18. A hand held appliance comprising a handle having a fluid flow path from an inlet to an outlet and a fan unit for drawing fluid into the fluid inlet and an attachment for attaching to the handle, the attachment comprising an inlet; an outlet; and a fluid

flow path between the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment and fluid emitted from the outlet is blown along the external surface.

19. An appliance according to claim 18, wherein the slot extends substantially along the length of the attachment.

20. An appliance according to claim 18 or claim 19, wherein the outlet comprises a plurality of slots radially spaced around the attachment.

21. An appliance according to any of claims 18 to 20, wherein fluid emitted from the outlet flows around the external surface of the attachment.

22. An appliance according to claim 21, wherein the fluid emitted from the outlet is tangential to the external surface of the attachment.

23. An appliance according to claim 21 or claim 22, wherein the fluid emitted from the outlet is attracted to the surface of the attachment.

24. An appliance according to any of claims 18 to 23, wherein the attachment is generally cylindrical.

25. An appliance according to any of claims 18 to 24, wherein the outlet comprises two slots.

26. An appliance according to any of claims 18 to 25, wherein the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is parallel to the longitudinal axis.

27. An appliance according to any of claims 18 to 26, wherein the attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot is non-parallel to the longitudinal axis.

28. An appliance according to claim 27, wherein the at least one slot is helical with respect to the longitudinal axis.

29. An appliance according to any of claims 18 to 28, further comprising a flow directing element between the inlet and the outlet.

30. An appliance according to claim 29, wherein the flow directing element comprises a perforated layer.

31. An appliance according to claim 30, wherein the perforated layer is formed from a mesh or weave of an elongate material.

32. An appliance according to claim 31, wherein the elongate material is a wire.

33. An appliance according to any of claims 29 to 32, wherein the flow directing element extends substantially along the length of the at least one slot.

34. An appliance according to any of claims 29 to 33, wherein the flow directing element extends substantially around an inner circumference of the attachment.

35. An appliance according to any of claims 18 to 34, wherein the appliance is a hair care appliance.

36. An appliance according to any of claims 18 to 34, wherein the appliance is a hot styling brush.

37. An appliance as substantially herein described with reference to the drawings.

## ABSTRACT

### Attachment for a Hand Held Appliance

Disclosed is an attachment for a hand held appliance comprising an inlet; an outlet; and a fluid flow path between the inlet and the outlet, wherein the outlet comprises at least one slot extending from near an inlet end of the attachment towards a distal end of the attachment and wherein the outlet is at least partially defined by an external surface of the attachment wherein fluid emitted from the outlet is blown along the external surface. The slot may extend substantially along the length of the attachment. The outlet may comprise a plurality of slots radially spaced around the attachment. Fluid emitted from the outlet flows around the external surface of the attachment and is tangential to the external surface of the attachment. The fluid emitted from the outlet is attracted to the surface of the attachment. The attachment has a longitudinal axis extending from the first end to the distal end and the at least one slot may be parallel to the longitudinal axis, alternatively the at least one slot is non-parallel to the longitudinal axis. The attachment may further comprise a flow directing element between the inlet and the outlet. Also disclosed is an appliance including such as attachment.

(Figure 1a)

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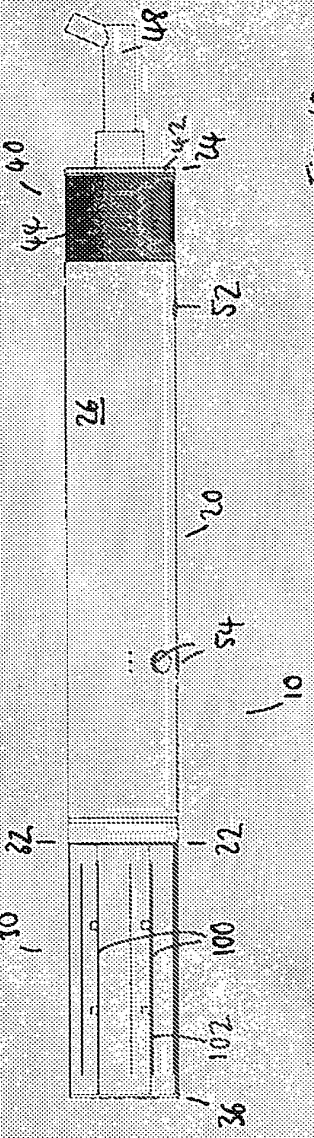



Fig. 1a

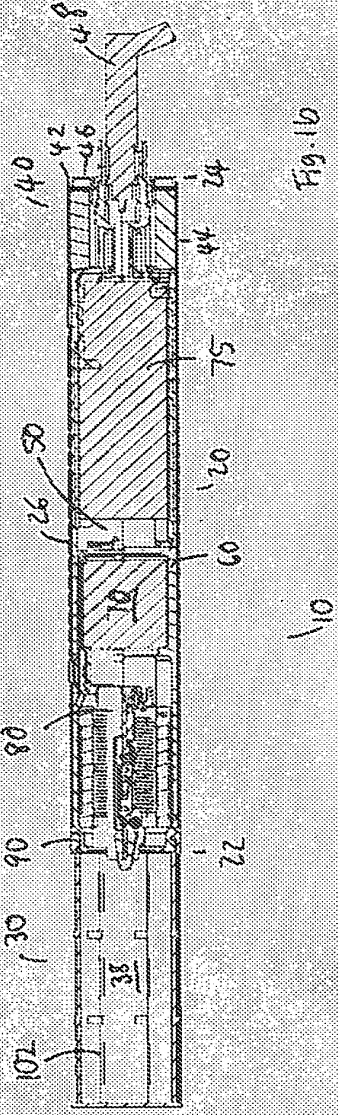



Fig. 1b

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Fig 2a




Fig 2b




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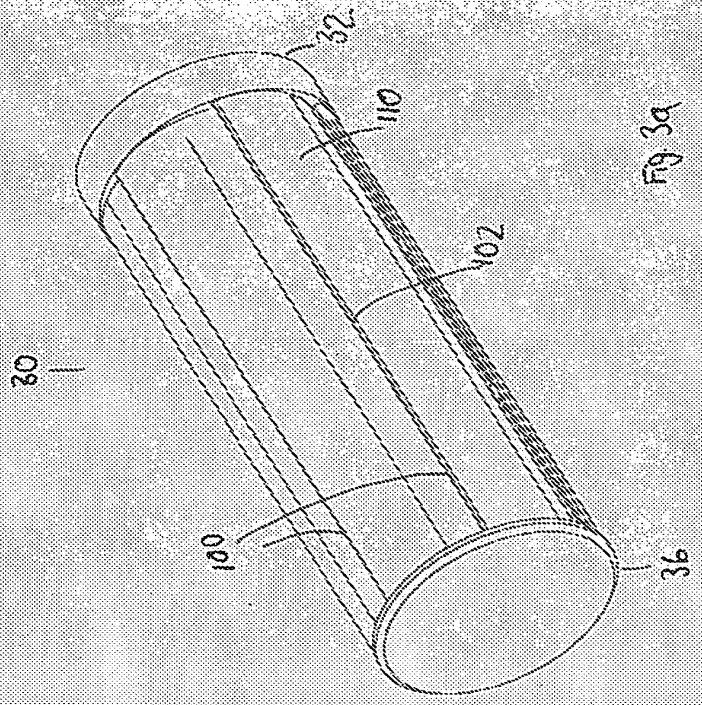



Fig 3a

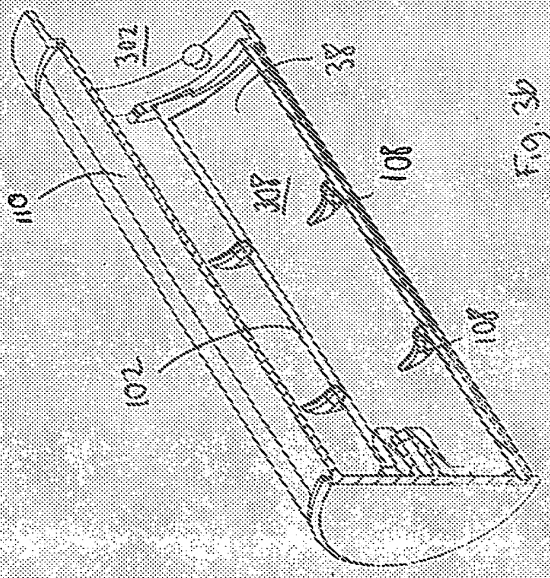
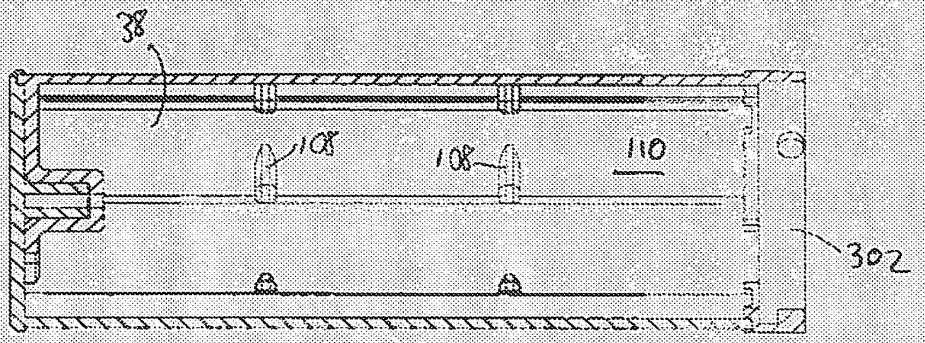



Fig. 3b

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B-B

Fig. 4b

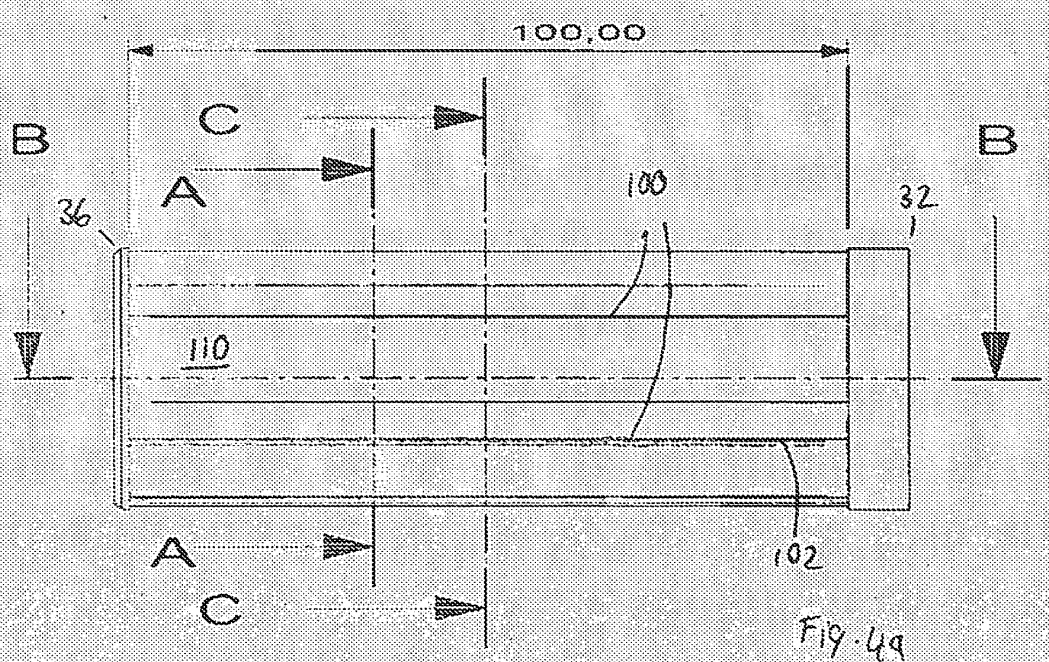



Fig. 4a

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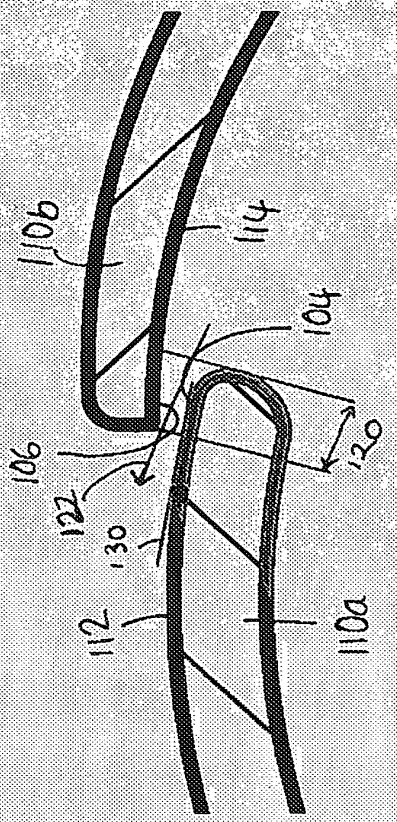



Fig. 5b

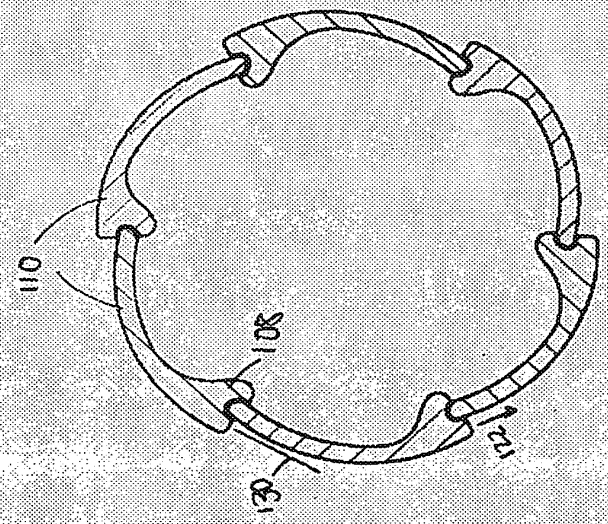



Fig. 5a

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Fig. 7a




Fig. 6a




Fig. 6b

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Fig. 8A




Fig. 7C




Fig 8B




Fig. 7B

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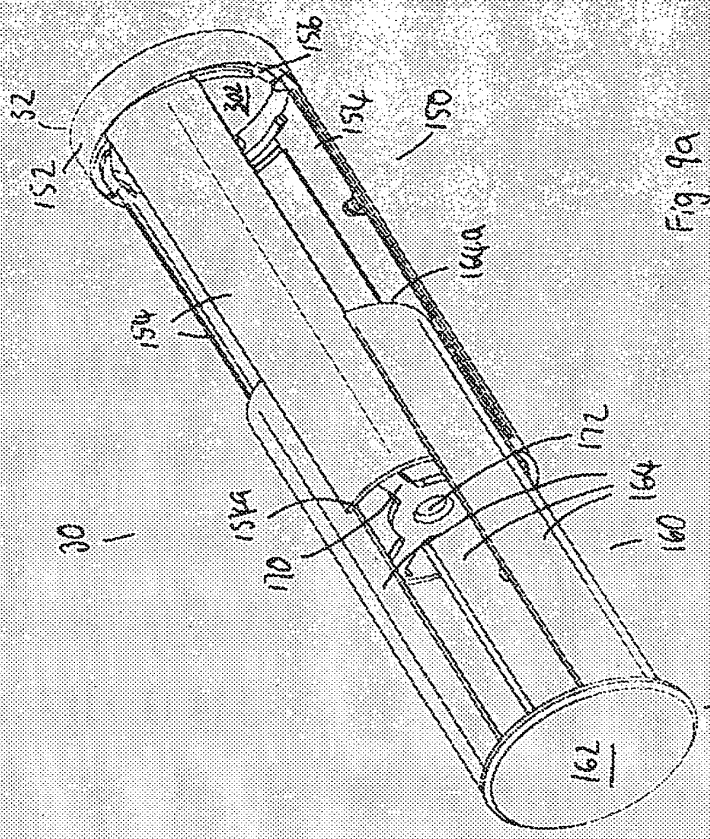



Fig. 9a

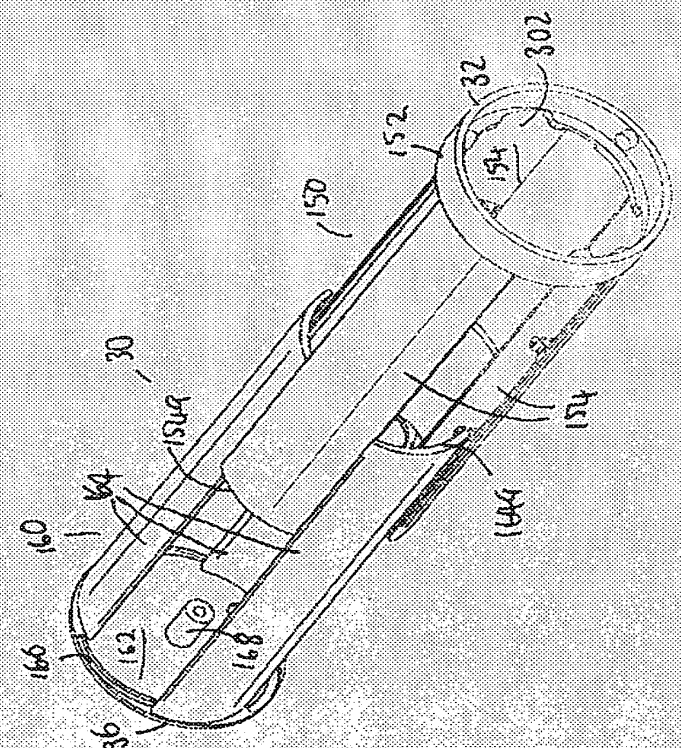



Fig. 9b