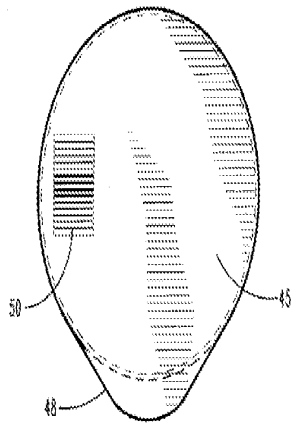
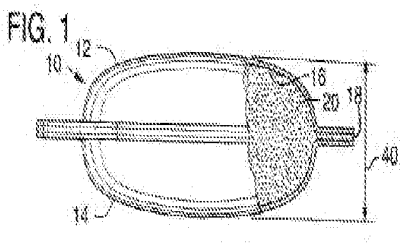
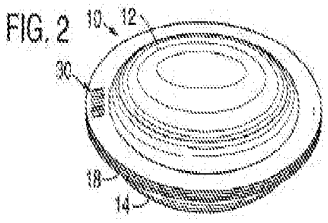
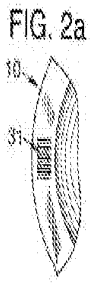
Appendix A – Obviousness Chart for U.S. Patent No. 10,858,176

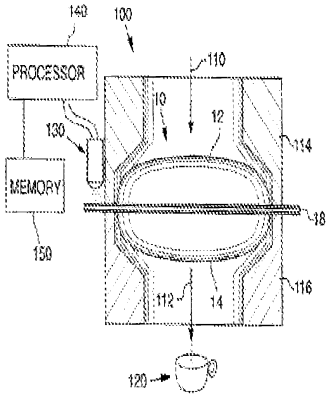
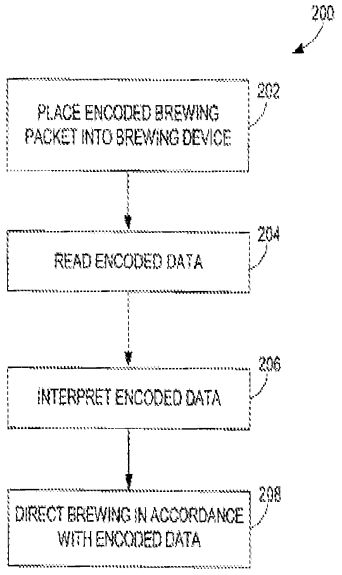
U.S. Patent No. 10,858,176	Disclosure
[1.d] the base element including a circumferential flange having a top side to which the first foil lid is sealed and an opposing bottom side with a first barcode located on the bottom side,	The below cited art discloses, either expressly or inherently, the base element including a circumferential flange having a top side to which the first foil lid is sealed and an opposing bottom side with a first barcode located on the bottom side. *See, e.g.*: Aker at Abstract: A method of associating a barcode with a product that has a product body with a round ending section. The method includes positioning the barcode repetitively along a circle sharing a common center with an outer-ring of the round ending section. A method of reading such a barcode on such a product includes positioning at least a portion of the round ending section of the product within a field of view of a barcode reader such that a complete barcode can be construed from a portion of a first instance of the barcode and a portion of the second distance of the barcode. Aker at [0003]: Generally, if a product is somewhat cylindrically symmetric and has some of its information coded with barcodes, when such product is to be handled by certain handling-machine, it may be desirable for a barcode reader in the handling-machine to find the barcode on such product repeatedly and reliably. Aker at [0004]: In one aspect, the invention is directed to a product. The product includes a product body with a round ending section, and a barcode repetitively positioned along a circle sharing a common center with an outer-ring of the round ending section. Aker at [0006]: In another aspect, the invention is directed to a method of associating a barcode with a product that has a product body with a round ending section. The method includes

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	positioning the barcode repetitively along a circle sharing a common center with an outer-ring of the round ending section of the product body. Aker at [0017]: FIG. 2A-FIG. 2B illustrate a product with a product body 40 that is somewhat cylindrically symmetric and some information of the product is coded with barcodes in accordance with some embodiments. In FIG. 2A, the product body 40 is generally in the shape of a conic cylinder. The product body 40 is terminated with a round ending section 45. FIG. 2B is a top view of the product body 40. In FIG. 2B, a barcode is repetitively positioned along an out-ring 46 of the round ending section 45. Multiple instances of the same barcode, 50A-50H, are printed on the surface of the round ending section 45. In other implementations, the barcode can be repetitively positioned along a circle sharing a common center with an outer-ring of the round ending section, and the diameter of such circle can be smaller than the diameter of the outer-ring. In general, the product body 40 can be in the shape of a conic cylinder as shown in FIG. 3A, in the shape of a cylinder as shown in FIG. 3B, or in any other shape that is somewhat cylindrically symmetric as shown in FIG. 3C. Aker at Fig. 1B:

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	 *FIG. 1B* *See also* Aker at [0018]–[0022]; *id.* at Figs. 1A, 2A, 2B, 4A, 4B, 4C, 5A, 5B. Boyd at [0023]: With the foregoing in mind, it will be appreciated that it would be desirable to automatically customize the brew operation based on particular characteristics of the packet, the characteristics of the coffee, and/or the tastes of the user, whether or not the user is aware of what changes in the brew operation will lead to the desired taste. The present invention provides a vehicle for such customization in the form of an encoded packet configured to provide the brewing machine with data useful in directing the brewing operation in accordance with packet or packet content characteristics and/or the user's tastes. Boyd at [0028]: As shown in FIG. 2, packet 10 includes a machine interpretable feature 30 which directs operation of the coffee machine in accordance with predefined brewing directives. In the first depicted embodiment, the machine interpretable feature is a barcode 31 as depicted in

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	FIG. 2 and 2a. It will be understood that the machine interpretable feature may be any machine readable feature associated with packet 10. Boyd at [0034]: Referring now to FIG. 4, a method of operation for the present invention is illustrated at 200. At 202, a brewing packet encoded with packet-characteristic data is placed into a brewing device. At 204, the packet-characteristic data is read by a sensor. At 206, the packet-characteristic data is interpreted by a processor. Finally, at 208, brewing is directed in accordance with the packet-characteristic data read by the sensor and interpreted by the processor. Boyd at [0037]: The encoded packets also may be used to track brewing information which may be useful in ensuring satisfaction with the brewed coffee beverage. For example, the packet may include an encoded date for use in tracking freshness of the coffee grounds contained within the packet. Upon determining that the packet is stale, the processor may direct the machine to note such staleness, thus avoiding an unsatisfactory beverage. Similarly, the packet may contain encoded data related to the coffee blend contained within the packet, such data being stored in memory to provide a history of coffee blends. The encoded packet also may contain encoded data defining the source of the packet so as to prohibit use of counterfeit packets, or packets from unauthorized suppliers.

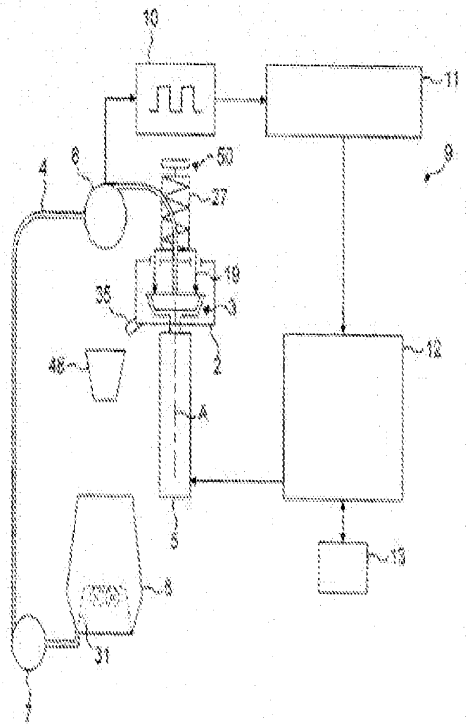
	Boyd at Fig. 1:  Boyd at Fig. 2:  Boyd at Fig. 2a:  Boyd at Fig. 3:

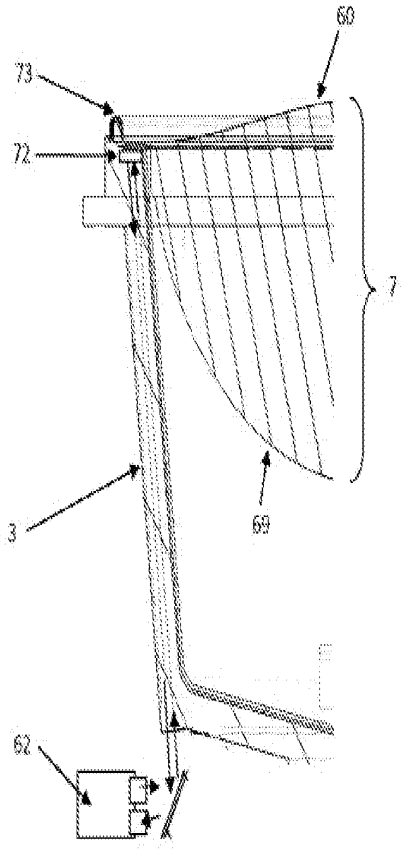
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	FIG.3  Boyd at Fig. 4:  FIG. 4

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	See also, Boyd at Claims 1–25. Jarisch at [0016]–[0017]: More particularly, the capsule has a circumference wherein the code is arranged on the container along an arc-shaped or circular path of the circumference. In a particular mode, the capsule has a circumference wherein the code comprises successive segments which are individually rectilinear but extend substantially along at least a part of the circumference. More particularly, the code is arranged along at least a eighth of the circumference. This configuration provides a reliable reading or retrieval of information as well as an effective portion for information. In order to ensure a reliable reading or retrieval of information, the code is repeated along said circumference. The repetition ensures a higher probability that at least one code is readable but also may potentially reduce the reading time. Preferably, the code is an optical code. The code may be a bit code formed by a series of discrete polygonal (e.g., rectangles or squares) or dot surfaces printed on the container and/or embossed in the container. Jarisch at [0019]: Preferably, the code is printed or embossed to form a pattern which possesses surfaces having different reflective and/or absorbing properties to light. In particular, the pattern possesses first surfaces and second surfaces having different reflective and/or absorbing properties to light. More particularly, the pattern possesses first surfaces inclined mirroring or absorbing properties to light and second surfaces having flat mirroring or flat reflective properties to light. Jarisch at [0022]: In another embodiment, the code is present on the rim of the capsule. In the most preferred embodiment, the code is present on the bottom of the rim of the capsule which is opposed to the lid of the capsule. The bottom of the rim is sufficiently away from the liquid injection

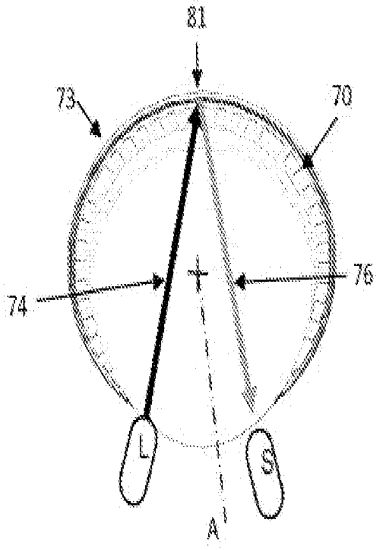
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	and beverage delivery areas so that there is a lower risk for the code to become unreadable such if partly or totally hidden or soiled by beverage residues or otherwise (e.g., coffee particles). As a result, the reading is made more reliable. The reading may also be carried out while the capsule is in place in the beverage production device. Therefore, the preparation of the beverage is simplified and the preparation time can be reduced. Jarisch at [0024]: In particular the reading means may comprise a light emitter and a light sensor. In an alternative, the reading means comprises an inductive sensor. The optical reading means or inductive sensor may be arranged to detect a code on the rim of the capsule. Jarisch at [0063]–[0064]: 2) Optical reading on rim bottom side of capsule (figures 4 to 7): The capsule 7 may comprise a code 70 on the bottom side 72 of its rim 73. The bit code is formed of a succession of small rectangular surfaces having light mirroring properties and intermediate surfaces having flat mirroring and/or diffusing properties.

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	Jarisch at FIG. 1:  Fig. 1 Jarisch at FIG. 4:

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	 Jarisch at [0022]: In the most preferred embodiment, the code is present on the bottom of the rim of the capsule which is opposed to the lid of the capsule. The bottom of the rim is sufficiently away from the liquid injection and beverage delivery areas so that there is a lower risk for the code to become unreadable such if partly or totally hidden or soiled by beverage residues or otherwise (e.g., coffee particles). As a result, the reading is made more reliable. The reading may also be carried out while the capsule is in place in the beverage production device. Therefore, the preparation of the beverage is simplified and the preparation time can be reduced.

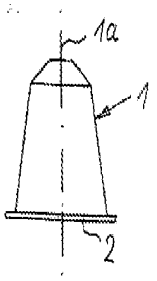
U.S. Patent No. 10,858,176	Disclosure
	Jarisch at [0042]–[0048]: Onto the capsule foil 60, a plurality of bits forming the code 61 is applied along a circular or arc-shaped path. Preferably, the code is placed on a flat portion of the lid and close to the peripheral edge of the capsule. The code is preferably placed the lid that is supported by the flange-like rim of the capsule or overlaps with the rim. Hence, the code is not distorted due to mechanical constraints and can be read more reliably. The marks may consist of: Mirroring or absorbing surfaces for providing bit 0 and, Diffusing and reflective surfaces for providing bit 1 The binary values 0 and 1 are arbitrary chosen and can be inversed. The code is read by rotating the capsule along a central axis A (FIG. 1). Jarisch at [0070]: The bit code is read by rotating the capsule along its central axis A. Jarisch at [0086]: Therefore, the number of bits and their bit code depend on the number and specific arrangement of mirror surfaces (e.g. rectangles) and diffusing or absorbing surfaces (e.g., zones between the rectangles). The same sequence of bits forming a code can be repeated several times on the circumference of the rim. This repetition provides redundancy and more reliability to the reading. Jarisch at [0099]: The code preferably comprises three sections, the synchronization section, the payload section and the verification section. The synchronization section serves for the

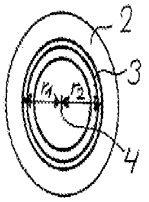
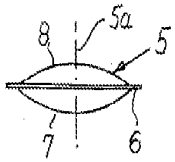
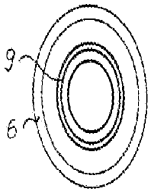
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	synchronization purpose i.e. to inform the sensor when the code begins. Since the speed of the rotation of the capsule can vary, the synchronization is achieved through a known sequence of bits such as 0.1.0.1. Then the payload of the code identifying the capsule can be read. In order to avoid misinterpretation of the code, the payload can be followed by verification bits. These bits can be a checksum on the payload or a similar verification function. Jarisch at FIG. 5:  *See also* Jarisch at Claims 11–14; FIGs. 6–7. Mahlich at Abstract: A machine readable identification on a single-serving unit containing coffee powder for espresso machines, designed so that it can be read easily and accurately, is structured in a rotation-symmetrical manner and is applied to an essentially level surface of the single-serving unit, whereby the single-serving unit preferably consists of a single-serving capsule

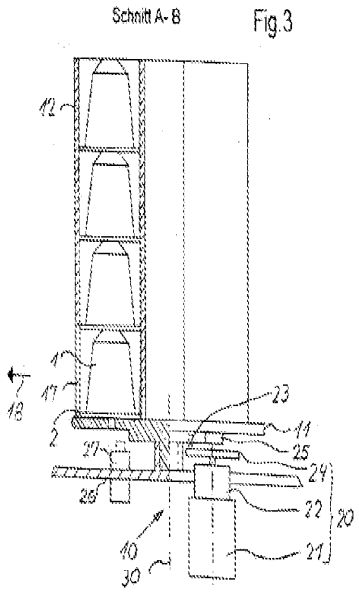
U.S. Patent No. 10,858,176	Disclosure
	(1) having an essentially circular base (2) where-upon the identification is applied in a coaxial manner. Mahlich at [0001]–[0002]: The invention concerns machine readable identification on a single-serving unit containing coffee powder for espresso machines. Another aspect of the invention concerns a system particularly suitable for the registration of machine readable identification. Mahlich at [0006]: Such espresso machines, already known from EP 1 046 366 Al, for example, are provided with a storage magazine storing assorted single-serving units having different contents that are conveyed from the storage magazine into the brewing head during the course of an automatic brewing process. The storage magazine consists of car-touches, also termed magazine tubes, arranged on a turntable, wherein the individual single-serving units are stacked. In order to keep the different types of coffee separate and to select different coffee types, each magazine tube is stocked with only one type of coffee. At the start of the brewing process the selected magazine tube is rotated with the turntable into the dispensing position so that the desired type of coffee can be obtained. For this purpose the single-serving unit at the bottom of the stack inside the magazine tube is conveyed to a brewing chamber of the brewing head. Preferably each magazine tube is provided with a window so that the consumer is able to recognize the desired type of coffee, for example by means of a certain colour that is assigned to a certain type of coffee. It is also possible to equip the single-serving units with a certain identification code able to be registered by a reading device, so that the contents of the single-serving units can be recognized electronically. However, this method has thus far not been used for presently-known espresso machines. This may be due to the fact that the usual bar code structured in a linear manner to be read by a simple linear reading device must either be positioned correctly with regard to the position of the reading device, which is somewhat difficult in view of the inherent rotation-symmetric design of

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	single-serving capsules and pouches due the technology of their manufacture, or that an expensive and voluminous double mirror scanner is required as the reading device. Mahlich at [0012]–[0014]: In particular, according to claim 3 such rotation-symmetrical identification may be an ID code consisting of concentric circles, whereby the usual linear reading heads can be used. If the ID code is a multi-digit binary code, just four concentric circles are sufficient to reliably identify a great variety of coffee types. If the single-serving unit consists of a capsule with a mainly circular base, according to claim 4, the identification as defined above is applied to the base in a coaxial manner. If the single-serving unit consists of an essentially lozenge-shaped pouch with an upper and a lower surface, the identification is applied to each surface in a coaxial manner. Therefore it does not matter, with regard to the machine reading of the identification, whether the upper or the lower surface of a pouch is facing downwards when the pouches are inserted into the storage magazine. Apart from coffee type identification, the identification on any single-serving unit may also contain producer identification, whereby the latter in conjunction with an adapted evaluation system for controlling the espresso machine can block operation of the espresso machine if the producer identification on the single-serving unit does not correspond to the machine's preprogrammed producer identification. Mahlich at [0030]–[0032]: FIGS. 1, la and 3 show a single-serving capsule 1 of an essentially frustoconical design arranged in a rotation-symmetrical manner around a symmetrical axis la.

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	An ID code 3 consisting of concentric circles is shown on the base 2 of the single-serving capsule 1, whereby the symmetrical axis la of the single-serving capsule passes through the centre point 4 of the circles. FIGS. 2 and 2a show a pouch 5 containing one serving of pre-pressed coffee powder whereby the pouch, with the exception of its edge 6, is essentially lozenge-shaped. The pouch 5 with its edge 6 are arranged in a rotation-symmetrical manner around a symmetrical axis 5a. The lower surface 7 as well as the upper surface 8 of pouch 5 is provided with an ID code 9 consisting of concentric circles and extending in a rotation-symmetrical manner around the symmetrical axis 5a. Mahlich at Fig 1: Fig.1 

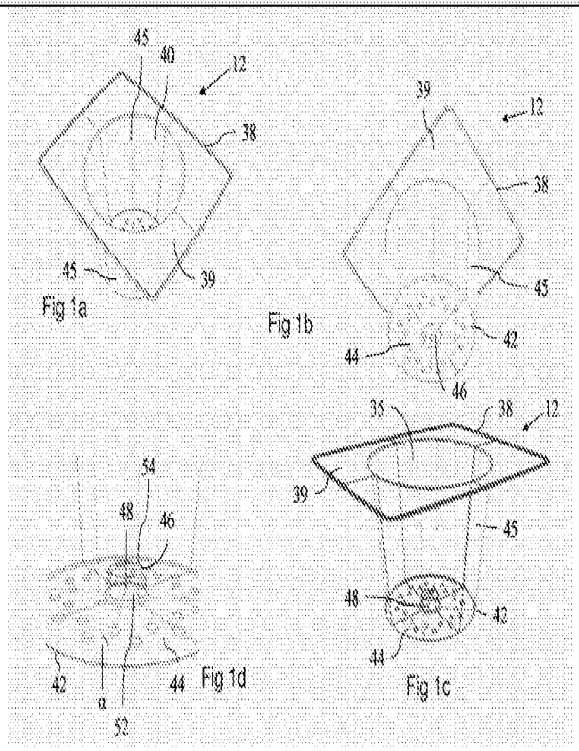
	Mahlich at Fig. 1a: Fig.1a  Mahlich at Fig. 2: Fig.2  Mahlich at Fig. 2a: Fig.2a 

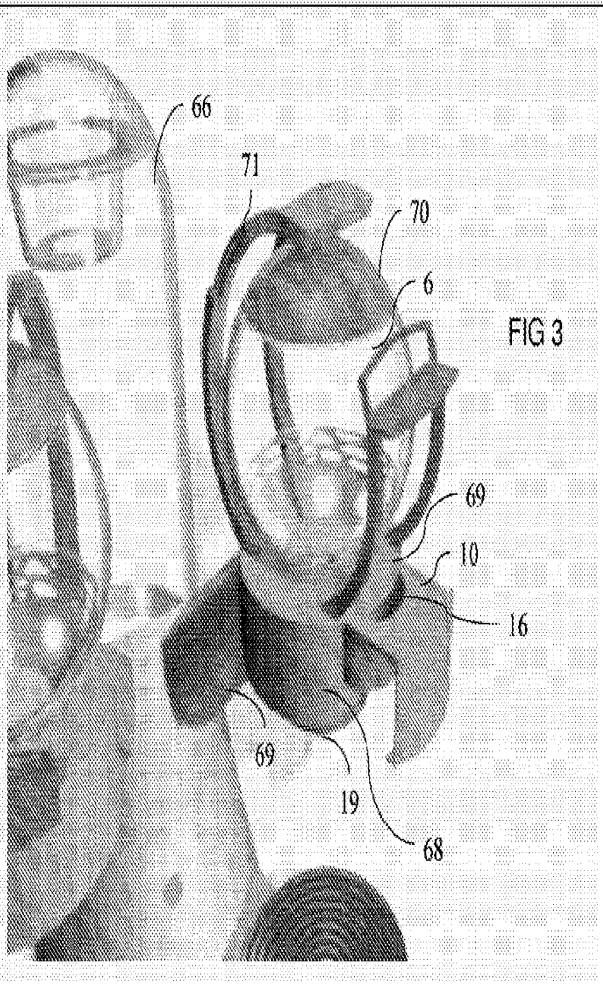
U.S. Patent No. 10,858,176	Disclosure
	Mahlich at Fig. 3:  *See also* Mahlich at Claims 1–12. Panesar at p. 12, ll. 1–7: A lower end of the outwardly extending shoulder 33 is provided with an outwardly extending flange 35 which extends perpendicularly to the major axis X. Typically the flange 35 has a width of between 2 and 4 mm. A portion of the flange 35 is enlarged to form a handle 24 by which the outer member 2 may be held. The handle 24 is provided with an upturned rim 25 to improve grip. Panesar at p. 16, ll. 28–32:

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	The laminate 5 is then affixed to the outer member 2 by forming a weld 126 around the periphery of the laminate 5 to join the laminate 5 to the lower surface of the outwardly extending flange 35. *See also* Panesar at Figs. 10, 15, 21. Panesar at p. 2, ll. 19–28: [T]he lower surface of the insert further comprises a barcode or RFID which, in use, is readable by a barcode or RFID reader of the beverage preparation machine for controlling operation of the beverage preparation machine, wherein the barcode or RFID is located on the lower surface of the insert such that a line joining the outlet of the insert to a centre of the barcode and a line joining the outlet of the insert to the inlet of the insert [are] separated by a minimum angular separation of greater than 70 degrees. Panesar at p. 2 at line 29 – p. 3 at line 12: Advantageously, it has been found that this minimum angular separation of the barcode or RFID from the inlet improves the accuracy of the reading of the barcode or RFID by the recognition means of the machine. Firstly, the separation results in any distortion of the inlet area having a minimal affect [sic] on the region of the barcode or RFID. Secondly, it has been found that there may be a small degree of leakage of fluid from the inlet area during dispensation since dispensation occurs at pressure. This fluid may spread, in particular due to capillary effect between the insert and a brew to partial obfuscation of the resulting in a greater chance head of the machine, leading barcode or RFID by the fluid of the barcode or RFID being misread. With the barcode or RFID separated by an angle of greater than 70 degrees it has been found that this problem does not occur. Panesar at p. 3, ll. 18–20: The barcode or RFID is preferably located at or near a periphery of the lower surface.

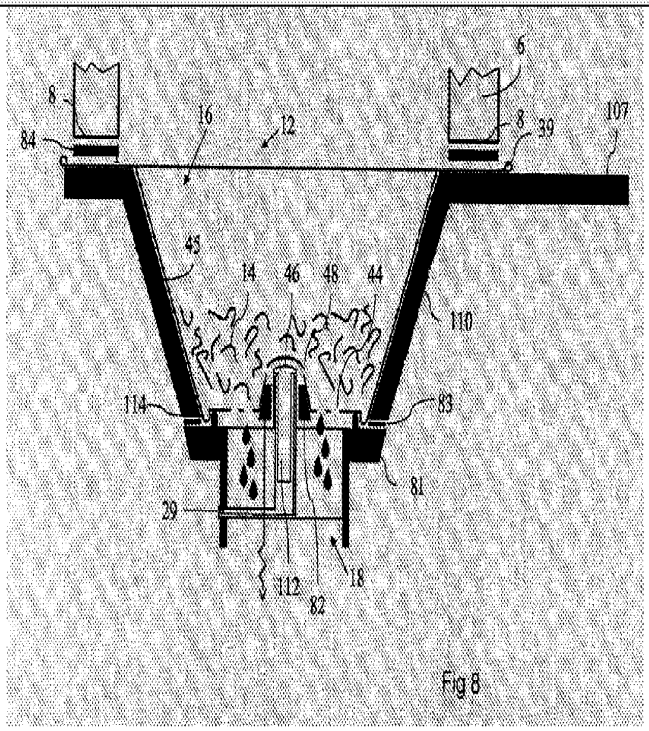
K-FEE SYSTEM GMBH, EX2012, page 670
NESPRESSO USA, INC. v. K-FEE SYSTEM GMBH
IPR2023-00485, U.S. PATENT 11,230,430

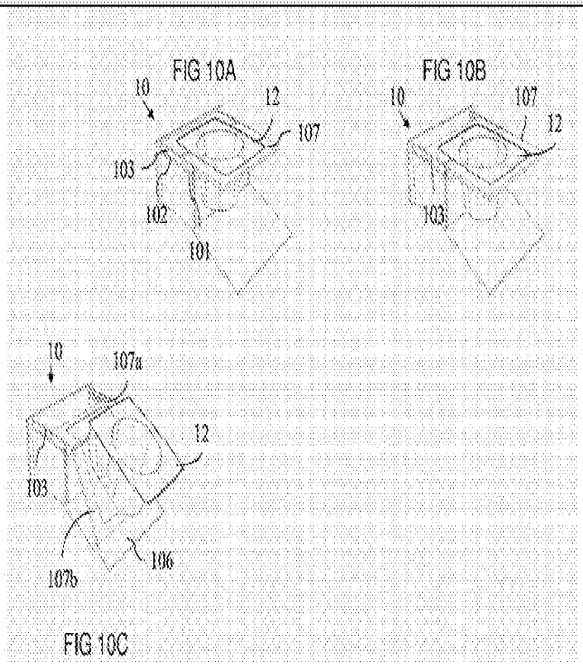
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	Panesar at p. 18, ll. 24–31: [T]he cartridge 1 is provided on the laminate with a barcode 320 as shown in Figure 10. The barcode 320 is formed from a plurality of bars of contrasting colour. Preferably the bar are black on a white background to maximise the contrast. The barcode 320 is not required to conform to a published standard but a standard format for barcodes, such as EAN-13, UPC-A, or Interleaf 2 of 5 may be used. Panesar at p. 20, ll. 10–13: Preferably, the barcode 320 is also located near a periphery of the laminate 5 so as to separate the barcode 320 from the outlet 122 so as to avoid distortion of the barcode 320 on piercing of the outlet 122. Panesar at p. 35, ll. 24–31: To insert the cartridge 1 the holder 251 is opened as described above to expose the cartridge mount 257. The cartridge 1 is then placed on the cartridge mount 257 received within the recess 290 such that the handle 24 of the cartridge is located in the irregularity 291. The optical or magnetic barcode 320 or RFID of the cartridge 1 is oriented directly above the aperture 326 in the cartridge mount 257. Van Belleghem at Figures 1a-d, 3, 8, 10A-C:

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	 FIG 3

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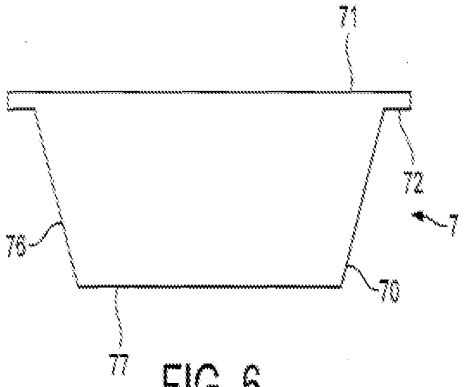
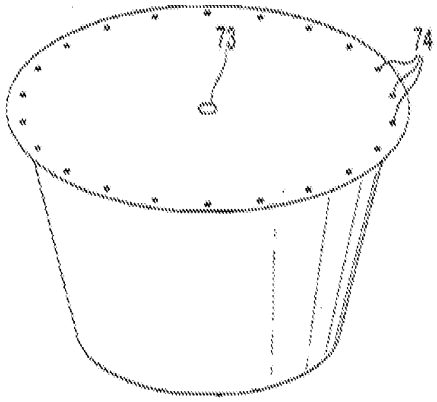
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	 FIG 10C Van Belleghem at [0032]: According to one embodiment, the cartridge includes automatic readable means adapted to be read or detect by a detecting or reading means. The readable means may comprise and/or inform on preparation parameters for indicating how to infuse the infusible substance of the cartridge at best. Van Belleghem at [0033]: Advantageously, the preparation parameters may consist of the infusion temperature and/or the infusion duration and/or when the gas injection takes place, how long it lasts, etc. Van Belleghem at [0046]:

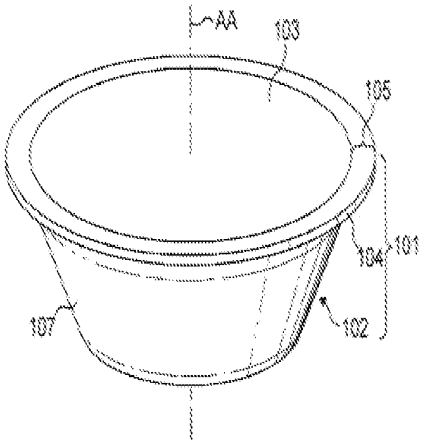
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	The cartridge 12 may comprise marks or any automatic readable means comprising or indicating infusion parameters. The marks or readable means may be located either on the outside surface of the side walls 45 or on the lip 39 or on the sheet 50. Van Belleghem at [0055]: Referring now to figure 3, the platform 68 comprises a receptacle 10 for receiving a cartridge 12 containing infusible substances 14. In this particular embodiment, the receptacle 10 consists of a drawer. The drawer 10 is operable between at least a first position and a second position. The drawer 10 slides from a closed position in the platform 68 to an opened position out of the platform 68. The drawer comprises a cavity 16 into which a cartridge 12 (not represented) containing infusible substances may be inserted. The drawer 10 may slide either automatically or manually. When the drawer 10 is closed in the platform 68, the cavity 16 of the drawer 10 communicates with the bottom opening 8 of the infusion container 6, so that the infusion container 6 and the cavity 16 form an infusion chamber. Van Belleghem at [0080]: Once the drawer 10 is closed within the platform 68 and once the top sheet 50 of the cartridge 12 has been cut out, the tray 107 is raised up away from the side panels 104a, 104b. The lip 39 of the cartridge 12 located in the recess 109 of the tray 107 is brought into contact with the bottom opening 8 of the infusion container 6. A gasket 84 disposed on the edge of the bottom opening 8 ensures a hermetic connection between the infusion container 6 and the lip 39. The cartridge 12 is firmly maintained blocked within the cavity 16. Van Belleghem at [0081]: The dimensions of the opening 8 of the infusion container 6 are equal or larger than those of the section of the cavity 16 on the tray 107 to surround the opening 35 of the cartridge 12. The dimensions of the opening 8 of the infusion container 6 are smaller than those of the section of the recess 109 of the tray 107.

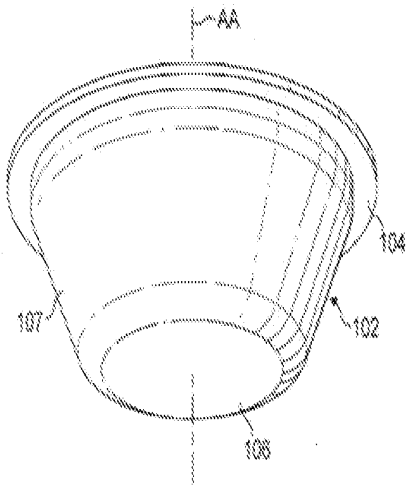
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	Gibbs at [0022]–[0027]: The cartridges of the present invention are preferably provided with at least one recognition means whereby, in use, the cartridge is identified by the machine into which it is placed for treatment and the identification of the cartridge thereby causes it to be subjected to the correct treatment steps including the introduction of the aqueous medium into the cartridge and the activation of the whipping means. The recognition means may comprise one or more surface features formed in the body of the cartridge. For example, the cartridge body may be provided with one or more indents, cut outs, protrusions or holes which can be identified by a mechanical sensor in the beverage preparation machine, the mechanical sensor registering the presence or absence of the indents, cut outs, protrusions or holes. The recognition means may, alternatively, comprise a system which can be sensed by a simple optical device, for example a bar code printed onto the body of the cartridge, a pattern of through holes in the cartridge, a pattern of contrasting tones or colours printed onto the cartridge or cartridges containing different comestibles being of different colours. The recognition means may also comprise one or more strips of a magnetic material applied to the body of the cartridge which can be read by an appropriate magnetic sensor; one or more shaped or divided areas of metal foil applied to the cartridge body which cause an inductive effect on movement of the cartridge in the machine, which inductive effect can be sensed; or one or more electrically conductive areas formed on the body of the cartridge which can be sensed electrically. As mentioned above, the cartridge of the present invention contains one or more beverage preparation ingredients, for example, roast and ground coffee or leaf tea and sugar and/or creamer, as desired. One machine which can readily be adapted for the preparation of a beverage from the preferred cartridge of the invention which includes a recognition means is described in our EP-A-0334573. The only modification required to be made to such a

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	beverage preparation machine is to incorporate an appropriate sensor or sensors into it, the sensor or sensors being designed to read the particular coding on the cartridge and to send a signal to the controller, which then selects the appropriate beverage preparation cycle and activates the whipping means. The sensor may be, for example, a mechanical sensor, an optical sensor, a magnetic sensor, an electrical sensor or an inductive sensor. The machine is preferably adapted so that the cartridge is handled automatically following its insertion into the machine. Gibbs at [0038]–[0039]: The cartridge is also provided, as best shown in Figure 1 with teeth 30 moulded along one side edge of the cartridge. The teeth 30 have recesses 31 formed therebetween. The teeth 30 are intended to enable the cartridge to be driven through a beverage preparation machine by the engagement of the teeth 30 with the tooth (not shown) of a cam 35 as shown in Figure 5. The side edge of cartridge 1 opposite to the edge provided with teeth 30 has a plurality of pegs 32, 33 and 34 provided thereon. As the package is driven into the machine by the engagement of teeth 30 with cam 35, the presence or absence of the upstanding pegs 32, 33, 34 is sensed by a sensing arm (not shown). If one or more of pegs 32, 33, 34 is not present the sensing arm will thereby identify a different type of cartridge. The sensing arm operates a switch (not shown) which thereby transmits information concerning the presence or absence of the pegs on the package to the control mechanism for the beverage dispensing machine. The arrangement of pegs 32, 33, 34 on the cartridge thus identifies the type of cartridge to a controller which then selects the appropriate beverage preparation conditions. The base element including a circumferential flange having a top side to which the first foil lid is sealed and an opposing bottom side with a first barcode located on the bottom side. *See, e.g.*: Yoakim at [0197]:

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	FIGS. 6 and 7 illustrate a capsule that can suit the device according to the different embodiments of FIGS. 2 to 5. In FIG. 6, the capsule 7 comprises a cup-shaped body 70 with upwardly oriented sidewall 76 and a bottom wall 77. The sidewall forms a portion of cone which promotes the collection of the brewed liquid internally. The body terminates by an upper edge 72 raising outwards onto which is sealed a lid 71. The lid may be a flexible pierceable membrane of several microns in aluminium and/or plastic. The lid can be welded on the upper edges 72 of the body. It can be pointed out that the membrane and body preferably comprise gas barrier layers such as aluminium and/or EVOH. Yoakim at FIGS. 6–7:

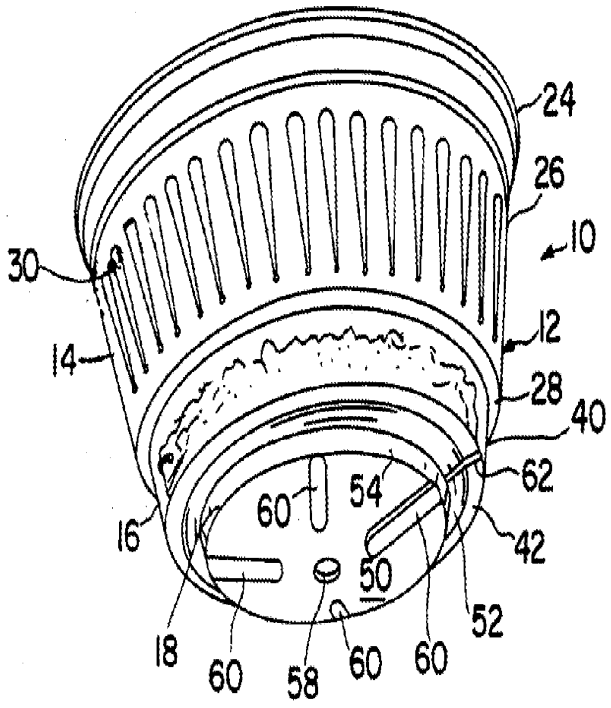
U.S. Patent No. 10,858,176	Disclosure
	 FIG. 6  FIG. 7 Yoakim at [0414]: As shown in FIGS. 26 and 27, a preferred capsule 101 of the invention generally comprises a dished body 102 onto which is sealed a sealing foil 103. The sealing foil 103 is sealed onto a peripheral rim 104 of the body at a sealing annular portion 105. The rim 104 can extend outwards forming a small annular portion, e.g., of about 2–5mm. The dished body comprises a bottom wall 106 and a side wall 107 which preferably widens in direction of the large open end of the body opposed to the bottom wall. The dished body is preferably rigid

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	or semi-rigid. It can be formed of a food grade plastics, e.g., polypropylene, with a gas barrier layer such as EVOH and the like or aluminium alloy or a complex of plastic and aluminium alloy. The sealing foil 103 can be made of a thinner material such as a plastic laminate also including a barrier layer or aluminium alloy or a combination of plastic and aluminium alloy. The sealing foil is usually of a thickness between 30 and 250 microns, for example. The sealing foil membrane can be pierced for creating the water inlet and the beverage outlet(s) as will be described later in the description. Yoakim at FIGS. 26 and 27:  FIG. 26

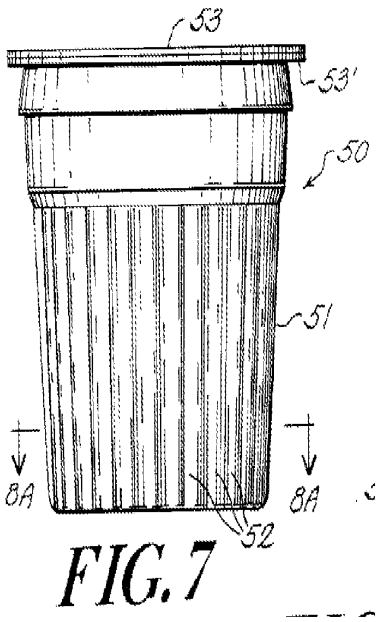
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	 FIG. 27 Yoakim at [0477]: The capsule system further comprises an identification means associated to the different capsules in the set for identifying each capsule and adjusting brewing parameters accordingly. Yoakim at [0496]: The recognition means can be differentiable by a visual code such as a barcode, a colour, a sign, a logo, etc., or by a radio-frequency code (RFID), a magnetic element or by an identifiable shape.

Appendix A – Obviousness Chart for U.S. Patent No. 10,858,176

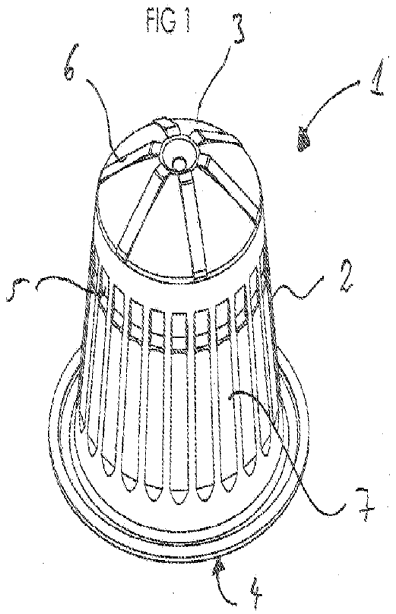
U.S. Patent No. 10,858,176	Disclosure
[1.e] the base element of the first portion capsule includes an outside surface having a plurality of vertically oriented grooves;	The below cited art discloses, either expressly or inherently, the base element of the first portion capsule includes an outside surface having a plurality of vertically oriented grooves. *See, e.g.*: Erickson at 5:9–26: The reservoir 14 of the container 12 is open at the top and includes a rim 24, a depending side wall 26 and a bottom wall 28. The rim 24 extends laterally and outwardly from the upper end of the wall 26 to facilitate pouring of the water or other liquid into the reservoir and movement of the coffee maker 10 without spilling. The wall 26 is cylindrical and is stepped and tapered inwardly and includes vertical ribs 30 for strengthening. The bottom wall 28, in the illustrative embodiment, is in the form of an annular shoulder and includes a relatively large central opening 32. As illustrated, the reservoir 14 of the invention is configured to contain the appropriate amount of water necessary to brew the desired amount of coffee and to provide the necessary hydrostatic pressure to the partition 20 to cause the partition 20 to allow the flow of water therethrough at the desired brewing temperature. Erickson at Fig. 1:

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	 FIG. 1 Lazaris at [0012]: In other embodiments of the present invention the interior surface of the housing is contoured to coact in mechanical interengagement with the surface irregularities in the cartridge side wall. Lazaris at [0028]:

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	A typical beverage filter cartridge is depicted ay 50 in FIGS. 7 and 8A. The cartridge includes a cup-shaped base 51 having an inverted frustum-shaped side wall interrupted by surface irregularities indicated typically at 52 and comprising circumferentially spaced grooves. The cup-shaped base is closed by a lid 53. As herein employed, the term "surface irregularity" is intended to broadly encompass any deviation from a smooth surface than can mechanically interengage with adjacent components or surfaces of the housing 28. Non limiting examples of such surface irregularities may comprise a uniform array of grooves as shown in FIG. 8A, or pairs of oppositely disposed grooves 52 a in the side wall of a cartridge 50 a as shown in FIG. 8B, or a single surface irregularity such as the outwardly projecting rib 54 b in the side wall of cartridge 50 b as shown in FIG. 8C. Lazaris at [0039]: FIG. 6 illustrates an alternative embodiment of a cartridge holder in which the side wall of the housing 28 is provided with internal grooves 300″ configured and arranged to slidably receive and coact in mechanical interengagement with externally projecting ribs 52 c in the side wall of cartridge 50 c Still another embodiment of a cartridge holder is illustrated in FIGS. 9–11. The cartridge 50 d is of the type described in the above-referenced patent application Ser. No. 09/782,660, with generally flat side walls diverging upwardly from a bottom to a top opening closed by a lid 53 a. Oppositely facing side walls are provided with surface irregularities in the form of protruding somewhat triangular-shaped bosses 52 d. Lazaris at [0041]: The recesses 301 in the housing side walls coact with the bosses 52 d in the cartridge side wall to orientate the cartridge within the housing in one of two possible positions. Lazaris at Fig. 7:

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	 FIG. 7 *See also* Lazaris at Fig. 8A. Mariller at [0020]–[0032]: List of numerical references used in the figures: 1. capsule 2. side wall 3. top wall 4. bottom wall 5. cavity 6. top wall stiffening element 7. side wall stiffening element 8. top edge stiffening element 9. internal protrusion 10. beading 11. weakened zone

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	12. piercing element Mariller at [0034]: a) The top part of the capsule is reinforced by an architecture known as an "exposed beams", "reinforcing" or "framework" architecture the purpose of which is to reinforce the capsule in its ability to withstand the pressure of the water and at the time of its perforation. It is also possible to obtain a reinforced structure using folds of material. The rigidity may also be reinforced using an architecture of the "exposed beams" or "framework" type which is concave in relation to the capsule (see FIG. 2). Mariller at [0037]–[0038]: c) On the outside of the capsule, opposite each projecting element or opposite a circumferential rim, a cavity is created which strengthens the lateral parts of the capsule through a framework effect while at the same time saving on material (see cross section) and in particular allows the use of biodegradable material and fine materials of the PET or metal type or any other petroleum-derived material. The lateral reinforcement of the capsule may also be created by folds of the material (see FIGS. 5–6). d) The outer lateral part of the capsule has facets which may extend as far as the vicinity of the bottom part of the capsule or over a certain distance in the heightwise direction. In this alternative form also, it is therefore possible to save on material while at the same time reinforcing the lateral parts of the capsule (see FIGS. 7–8). Mariller at Fig. 1:

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	 *See also* Mariller at Figs. 2, 7, 8. Mock at [0027]: The packaging according to the invention may be produced with very diverse shapes and in very diverse materials, It may be rigid, for example made of thermoforming plastic or stamping thin metal sheet, for example made of aluminum, and have an outline that is, for example, circular, rectangular or hexagonal. Mock at [0036]: According to another preferred embodiment, the part of the packaging from which the hollow shaft departs is produced with strengthening ribs and/or with ribs for positioning the nozzle, these ribs being formed, for example by thermoforming, as recesses in the end wall and the wall and being orientated toward the hollow shaft.

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	Mock at [0077]: As can also be seen in FIGS. 2 and 3, in this first embodiment, the capsule 2 has ribs 6a, 6b extending from the hollow shaft 9 to the periphery. A first series of ribs 6a plays a part in reinforcing the capsule 2, and possibly in partitioning it as will be seen later on. A second series of ribs 6b is designed to prevent the nozzle from rotating in the packaging, as will be explained with reference to FIGS. 6 and 7. . . . Mock at Figs. 1–2.

K-FEE SYSTEM GMBH, EX2012, page 689
NESPRESSO USA, INC. v. K-FEE SYSTEM GMBH
IPR2023-00485, U.S. PATENT 11,230,430

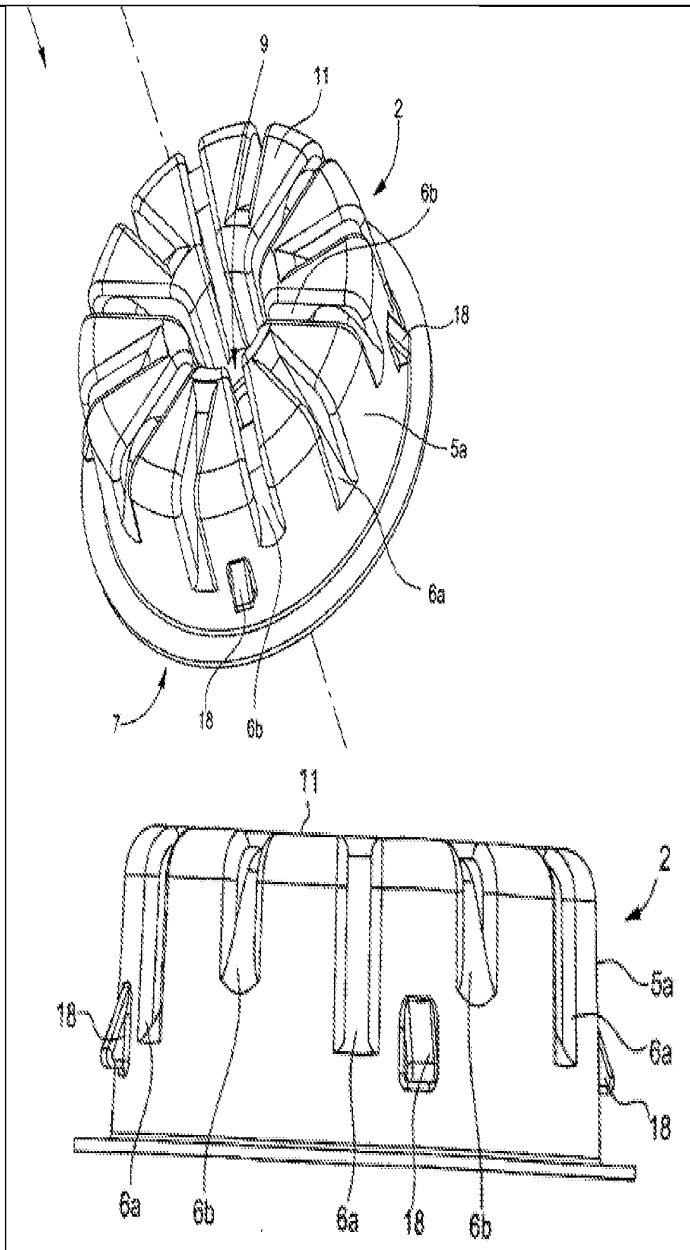
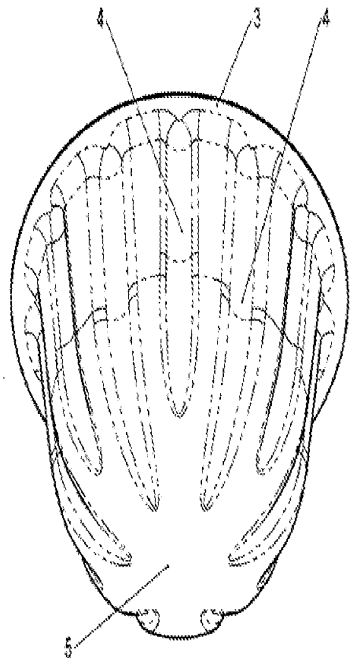
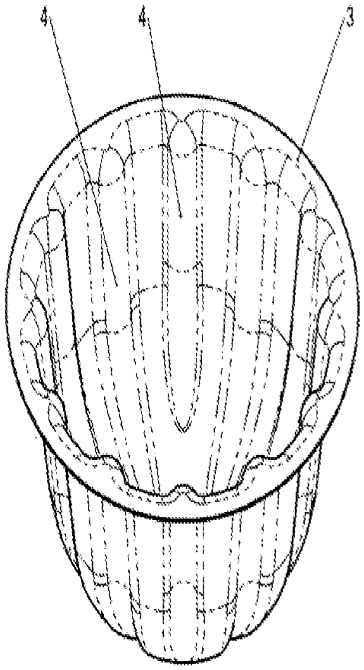


Fig.2

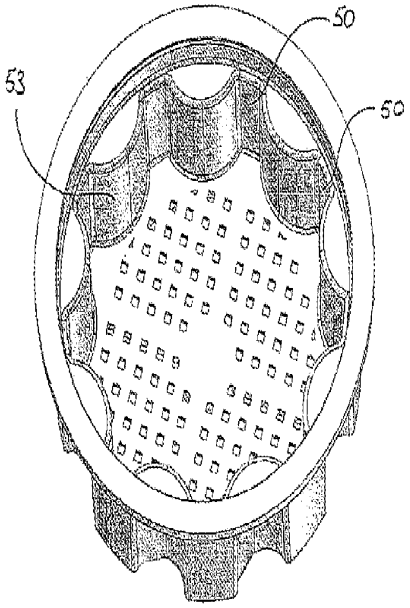
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	Rapparini at [0007]: The present invention allows overcoming the problems and drawbacks of the systems known in the prior art. In particular, the present invention guarantees stability of the structure of filtering and permeable containers so that they can be easily handled in packaging and/or filling machines even when these machines operate at very high rates. Moreover, the present invention provides containers which are easily employed in automatic machines both for domestic and industrial use. Rapparini at [0009]–[0011]: The present invention is based on the idea of providing the body of the container with longitudinal stiffening ribs wherein the length of the ribs is variable along the surface of the body. The presence of ribs having different lengths on the body of the container allows the optimization of the stability of the container. The modulation of the length of the ribs along the surface of the container allows improving the stability and rigidity of the system. According to an embodiment of the present invention, a filtering and permeable container for substances suitable for the preparation of beverages is provided, the container being made by means of thermoforming starting from a flat strip of permeable, filtering and thermoformable material, wherein the body of the container comprises longitudinal stiffening ribs, wherein the length of the ribs is variable along the surface of the body. According to a further embodiment of the present invention, a container is provided, wherein long and short ribs are alternated along the surface of the body. The stability of the container is accordingly optimized by providing for example long ribs extending at least partially in the bottom region of the container alternated to short ribs extending only along the side region of the container. Rapparini at [0013]–[0014]:

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	According to a further embodiment of the present invention, a container is provided, wherein at least along a portion of one or more of the ribs, the width of the ribs decreases toward the bottom of the container, so that said one or more of the ribs have a pointed shape. In this way the stability of the container is further optimized. In particular, the side portion of the body is stiffened by the presence of the stiffening ribs and the bottom portion is minimally altered by the presence of those ribs having a pointed shape pointing toward the bottom of the container. According to a further embodiment of the present invention , a container is provided, wherein the stiffening ribs increase the filtering surface of the body. Rapparini at [0019]: According to a further embodiment of the present invention, a container is provided, wherein the container is adapted to be employed in automatic espresso machines. In particular, the container can be adapted to be employed for example for automatic domestic espresso machines or for industrial espresso machines. Rapparini at [0052]: Figures 6 and 6bis schematically display 3D views of the container according to an embodiment of the present invention. The container is provided with longitudinal stiffening ribs 4, and the length L of the stiffening ribs 4 is variable along the surface of the body 2 of the container. In particular, long and short ribs are alternated along the surface of the body 2. The long ribs extends toward the bottom region 5 of the container. In particular, the long ribs occupy a portion of the bottom region 5 of the container. The container has a cup-shaped bottom region 5. The long stiffening ribs occupy, therefore, a portion of the cup-shaped bottom region 5. Each short rib is placed between two long ribs and extends along the lateral region of the container. Accordingly, the stabilization of the structure is optimized and, at the same time, the filtering surface of the container is increased.

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	Rapparini at FIG. 6 bis:  FIG. 6 bis

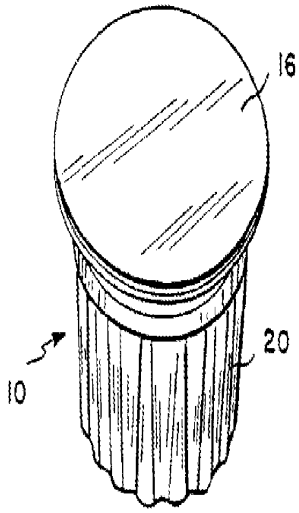
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	See also FIG. 6 at 4:  Rubino at [0009]: The present invention provides several relevant advantages. The main advantage lies in the fact that the internal grooves of the capsule attain optimal flow conditions for the liquid passing through the capsule itself, to the advantage of the quality and repeatability of the end beverage and also of the correct operation of the associated machines, which are not subject to unforeseeably variable flow conditions. Rubino at [0012]: The capsule 1 comprises a main body of substantially cylindrical overall geometry, which has just a longitudinal axis of symmetry A. In particular, the main body is comprised of a top face 2 and a bottom face 3 having a substantially circular contour, and of a lateral surface or

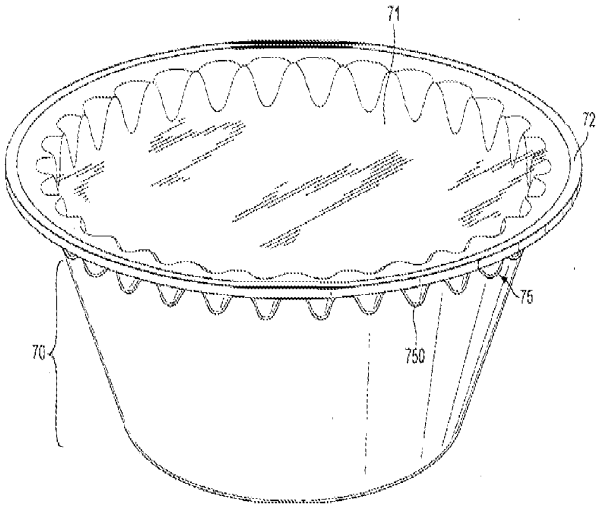
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	skirt 4 bearing a plurality of grooves that will be detailed hereinafter. Such top and bottom faces 2 and 3 and lateral skirt 4 define an internal housing 10 of the capsule 1, better seen in Figures 7 and 8, receiving the ground coffee. Rubino at [0018]–[0019]: As mentioned above, in correspondence of its lateral skirt 4 the main body of the capsule 1 has a plurality of concave external grooves 5, identical the one to the other and equally distributed over the entire lateral extension of the skirt 4 itself according to an axial geometry. The grooves 5 develop in a direction substantially parallel to axis A of the capsule 1 and are partitioned by external longitudinal ribs 52. Also the latter are identical the one to the other, equally distributed over the entire lateral extension of the skirt 4, and develop along a direction substantially parallel to the axis A of the capsule 1. As it is better seen in Figure 8, the external ribs 52 are internally hollow, thereby producing in correspondence of the housing 10 a plurality of grooves or internal notches 50 of the capsule itself. Therefore, said internal notches 50 define longitudinal portions of the housing 10 inside which part of the ground coffee is received. The presence and arrangement of the notches 50 allows, as already mentioned above, optimal conveyance of the extraction fluid within the capsule 1, preventing stagnation, allowing to accurately control and foresee the properties of said flow and generally to optimize the extraction process. Rubino at Claim 1: A capsule (1) of the type containing or apt to contain a substantially granular infusion for making beverages such as coffee and the like in an extraction process providing the passing through the capsule itself by an extraction fluid, said capsule (1) comprising a main body (2, 3, 4) defining an internal housing (10) apt to receive said infusion (C), characterized in that said main body (2, 3, 4) has, in correspondence of at least part of the lateral wall (4) of said housing (10), a plurality of internal longitudinal grooves (50) arranged substantially in the

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	direction of the extraction fluid flow and apt to convey such a fluid through the capsule (1) itself. Rubino at Fig. 8:  FIG. 8 *See also* Rubino at Claims 2, 3, 6; Figs. 1–4, 7. Sweeney at Abstract: A beverage filter cartridge includes a cup-shaped outer container with a bottom and a side wall extending upwardly from the bottom wall to a circular rim surrounding an upper opening. The side wall has an upper section extending downwardly from the rim to an intermediate section, and a tapered lower section configured to provide a plurality of

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	circumferentially spaced flutes extending downwardly from the intermediate section to the bottom wall. A filter element subdivides the interior of the container into first and second chambers. A beverage medium is stored in the first chamber. A cover is joined to the side wall at the rim to close the upper opening. The cover is yieldably pierceable to accommodate an injection of liquid into the first chamber for combination with the beverage medium to produce a beverage. The filter element is permeable to accommodate a flow of the beverage from the first chamber into the second chamber, and the bottom wall is yieldably pierceable to accommodate an outflow of the beverage from the second chamber to the exterior of the cartridge. Sweeney at 2:20–35: In accordance with the present invention, the container side wall is provided with circumferentially spaced flutes which are strategically positioned to enhance resistance to buckling without interfering with or compromising the integrity of the seal between the side wall and the filter component. The location at which the filter component is joined to the interior side wall of the container is lowered to achieve a beneficial increase in beverage medium storage capacity. This location is defined by a tapered circular ledge against which the tapered filter component is reliably sealed. The channels formed between the circumferentially spaced flutes serve to efficiently direct the brewed beverage downwardly towards the pierced container bottom, with an accompanying beneficial increase in turbulence in the head space defined between the filter element and container side wall. Sweeney at 2:47–55: In a third embodiment of the present invention, the circumferentially spaced flutes protrude sufficiently inwardly into the container interior to radially contact the filter element at circumferentially spaced locations. This radial contact beneficially guides the filter element into its centrally located position during assembly of the cartridge components, and, during

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	the processing cycle, provides radial support which resists distortion and possible bursting of the filter element. Sweeney at 3:65–4:8: The lower tapered wall section 20 c is configured to provide a plurality of circumferentially spaced flutes 20 e, the upper ends of which terminate beneath the intermediate section defined by ledge 20 b, and the lower ends of which terminate as indentations in the bottom wall 18. It will be seen from FIG. 8 that the depths "d" of the flutes 20 e gradually increase from a minimum at their upper ends to a maximum at their lower ends. Likewise, as can be seen from FIG. 7, the widths "w" of the flutes also gradually increase from a minimum at their upper ends to a maximum at their lower ends. Sweeney at 5:11–19: In all embodiments, the downwardly diverging and gradually deepening of the flutes serves to promote downward flow of the brewed beverage in chamber B while beneficially encouraging turbulence. The upwardly protruding bosses 18 a, 318 a on the container bottoms of the first and third embodiments provide readily accessible support platforms for the bottoms of the filter elements. Securing the bottoms of the filter elements to the bosses 18 a, 218 a insures that the filter elements will not be punctured by the outlet probe 30. Sweeney at Fig. 1:

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	 FIG. 1 *See also* Sweeney at Figs. 2, 3, 5, 7, 9–11, and 15. The base element of the first portion capsule includes an outside surface having a plurality of vertically oriented grooves. *See, e.g.*: Yoakim at [0161]: In yet another embodiment, the surface of the capsule comprises a toothed structure. Yoakim at [0215]: FIG. 23 illustrates another capsule of the invention. The capsule comprises means for connecting it to the external rotational driving means of the device. For this, capsule has a toothed structure 75 on at least one of its outer surface. The capsule has a body 70 comprising an upper edge 72 which can be closed by an upper membrane 71. The toothed structure comprises a series of teeth which is positioned below the edge or rim 72 of the body of the capsule. The teeth are placed along the whole periphery of the body of the capsule. The body of the capsule can be made of plastic and/or aluminium or aluminium

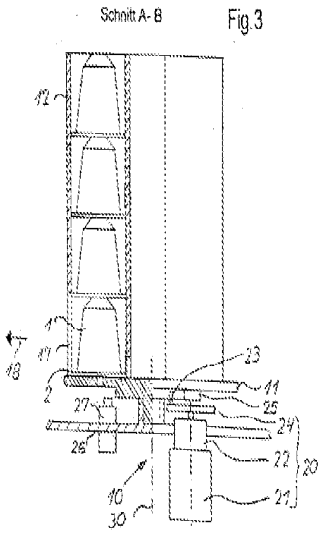
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	alloy. For example, it can be moulded by injection of plastic or deep drawn in aluminium. For example, the shape of the teeth could be slightly triangular, oval, rectangular or pyramidal. It should be noticed that the teeth could be replaced by other equivalent structures such as series of elements in relief and/or hollow. For example, slits, pins or small needles can be envisaged. Yoakim at [0216]: The device itself that receives the capsule of FIG.23 comprises a toothed surface of complementary shape. FIG. 24 shows a capsule holder 44 adapted to receive the capsule of FIG. 23. The capsule holder has a cavity into which are provided hollow teeth 440. The hollow teeth are arranged to fit the teeth 750 on the outer surface of the capsule. Yoakim at FIG. 23:  FIG. 23

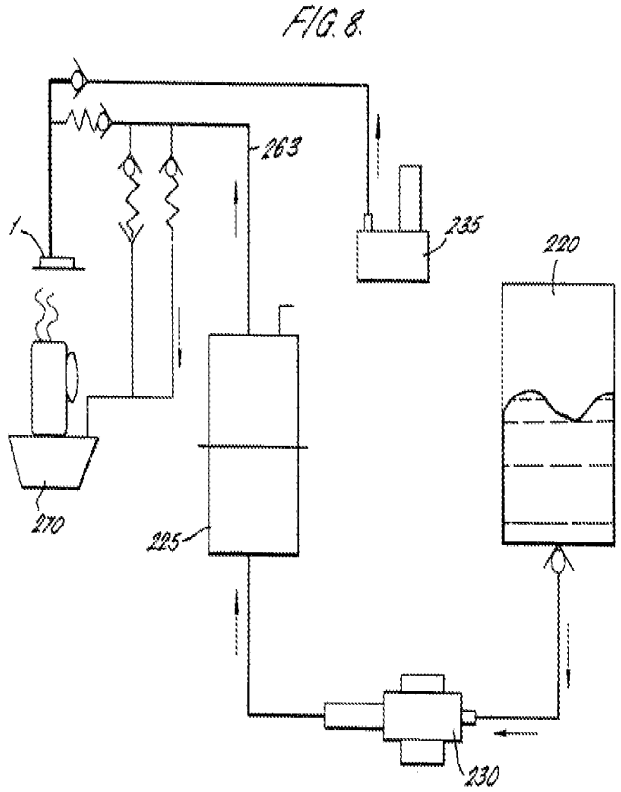
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[1.f] reading the first barcode with the barcode reader; controlling a production process of a first coffee beverage based upon the reading of the first barcode;	The below cited art discloses, either expressly or inherently, reading the first barcode with the barcode reader; controlling a production process of a first coffee beverage based upon the reading of the first barcode. *See, e.g.*: Jarisch at [0022]: In the most preferred embodiment, the code is present on the bottom of the rim of the capsule which is opposed to the lid of the capsule. The bottom of the rim is sufficiently away from the liquid injection and beverage delivery areas so that there is a lower risk for the code to become unreadable such if partly or totally hidden or soiled by beverage residues or otherwise (e.g., coffee particles). As a result, the reading is made more reliable. The reading may also be carried out while the capsule is in place in the beverage production device. Therefore, the preparation of the beverage is simplified and the preparation time can be reduced. Mahlich at [0008]: It is thus the task of the present invention to equip the actual single-serving units to be selected with suitable machine readable identification whereby complicated voluminous double mirror scanners are not required for reading the identification code and whereby the accurate alignment of the single-serving pouch with regard to the scanner or its reading unit does not matter. In particular, the difficult process of aligning a rotation-symmetrical single-serving unit, whereby the shape of the capsule is mainly frustoconical and the pouch is mainly lozenge-shaped, is thus eliminated. Mahlich at [0010]–[0020]: According to the invention, direct scanning or immediate reading of the identification on the single-serving unit, particularly of the single-serving capsule itself and not of any part of the storage magazine adjacent to the capsule, guarantees that the selected type of coffee is correctly identified with the single-serving unit and is actually being brewed after removal of the single-serving unit from the storage magazine. The identification can be read easily and

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	accurately via an uncomplicated and compact reading head able to read in a linear manner, provided that the reading head is able to register the rotation-symmetrical identification. However, the rotational or angular position of the rotation-symmetrical identification with regard to the reading head that reads in a linear manner is not important, whereby the alignment of the single-serving unit with regard to the reading head is greatly simplified. In addition, the rotation-symmetrical identification is suitable for testing via a simple procedure according to claim 12. The above-mentioned advantage, i.e. that the rotational or angular position of the single-serving unit with regard to the reading head does not matter, applies particularly to a rotation-symmetrical single-serving unit which does not have a preferred position, defined by its shape, around its symmetrical axis. In such cases the identification is preferably structured in a rotation-symmetrical manner around this symmetrical axis. Thus the reading head, reading in a linear manner, can register the identification regardless of the rotational or angular position of the single-serving unit, so that a single-serving unit stored inside a magazine tube can be identified regardless of the rotational position of the single-serving unit inside the magazine tube. Thus any measures ensuring the definite alignment of the single-serving units inside the magazine tube can be eliminated. In particular, according to claim 3 such rotation-symmetrical identification may be an ID code consisting of concentric circles, whereby the usual linear reading heads can be used. If the ID code is a multi-digit binary code, just four concentric circles are sufficient to reliably identify a great variety of coffee types. If the single-serving unit consists of a capsule with a mainly circular base, according to claim 4, the identification as defined above is applied to the base in a coaxial manner. If the single-serving unit consists of an essentially lozenge-shaped pouch with an upper and a lower surface, the identification is applied to each surface in a coaxial manner. Therefore it does not matter, with regard to the machine reading of the identification, whether the upper or the lower surface of a pouch is facing downwards when the pouches are inserted into the storage magazine.

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	Apart from coffee type identification, the identification on any single-serving unit may also contain producer identification, whereby the latter in conjunction with an adapted evaluation system for controlling the espresso machine can block operation of the espresso machine if the producer identification on the single-serving unit does not correspond to the machine's preprogrammed producer identification. As mentioned above, an uncomplicated system for the registration of the machine readable identification on a single-serving unit according to the invention may consist of a registration device with at least one reading head able to read in a linear manner. The reading head comprises a reading sensor consisting of a transmitter scanning a luminous spot on the identification or part thereof, and of a decoder receiver. The latter may be equipped with a controlling device whereby the setting, particularly that of a magazine unit, can be controlled in order to convey the single-serving units containing the desired coffee type into the dispensing position. According to claim 7 the linear reading head is located in a compact and secure position below the magazine tubes of the magazine unit. The reading head is directed upwards towards the plane where the bases of the single-serving capsules are positioned within the magazine tubes, in such a way that the rotation-symmetrical identification on the base of the respective lowest single-serving capsule can be read. Furthermore, the carrier of a system whereby the magazine tubes are positioned on a carrier and may be conveyed together with that carrier, if desired, is provided with a transparent section at least in the area below the magazine tubes so that the base of any single-serving capsule can be scanned. The transparent section may be designed in particular as a radially positioned slit-shaped window. A scanner and a transparent section may be pro-vided below each magazine tube. This type of configuration ensures that the identification of all single-serving capsules in the lowest position inside each magazine tube can be read in a parallel manner. Based on the respective registered positions of the capsules containing various types of coffee, the magazine tube

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	whose lowest-positioned single-serving capsule contains the selected coffee type is then conveyed to the dispensing position. However, according to claim 9 it may also be sufficient to provide one reading station with just one scanning head for all magazine tubes, whereby the reading station is positioned before the dispensing station in the conveying direction, at the conveying path of those sections of the carrier that are able to move together with the carrier and are transparent so that the identification can be read. In this way it is possible to check if a single-serving unit containing the desired coffee type is conveyed into the dispensing position, whereby conveyance is controlled according to the stored positions of the single-serving capsules containing the various types of coffee. The invention can be used to great advantage in a compact system according to claim 11, whereby the magazine tubes are arranged in a mainly circular manner on a turntable serving as carrier. A Maltese-cross-type drive mechanism is positioned below the turntable and is connected to the latter via an actuation connection. The turntable is adjustable whereby its adjustment may be controlled via the registration device containing the reading head/s for reading the identification of the respective lowest single-serving capsule within the magazine tubes. Mahlich at [0037]: The support frame 26 also carries a reading head 27 mainly consisting of a scan transmitter and an encoder receiver. Reading head 27 is pointing from below towards the turntable 11 in such a way that it is able to register and scan the single-serving capsules stacked with their base facing downwards inside the magazine tubes 12 to 16 when the magazine tubes are moved across the reading head 27. For this purpose at least part of turntable 11 is transparent to the scanning of the ID code: windows 29 located below the magazine tubes 12 to 16 are designed as slits and are each arranged at equal radial distance to a main axis 30 of turntable 11, cf. FIG. 3. The ID codes 3 on the bases 2 of the single-serving capsules can be registered across their greatest radius r_1

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	and r_2 through these slits, according to FIG. la. In this case ID code 3 is being registered on entering and on leaving the reading station when the base 2 of the capsule, equipped with the ID code, passes on its circular path across reading head 27 arranged in front of dispensing station 18 in the direction of rotation 28 of the turntable. It is thus guaranteed, via comparison of the two registered ID codes as well as via data processing, that only one single-serving capsule 1 containing the desired coffee type is conveyed to the dispensing station 18, once the desired coffee type has been selected, for example by means of a control panel or a knob. Mahlich at Fig. 3:  *See also* Mahlich at Claims 1–12. Panesar at p. 23, ll. 23–32: The water pump 230 is operatively connected between the water tank 220 and the water heater 225 as shown schematically in Figure 8 and is controlled by the control processor. The pump provides a maximum flow rate of 900 ml/min of water at a maximum pressure of

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	2.5 bar. Preferably, in normal use, the pressure will be limited to 2 bar. The flow rate of water through the machine 201 can be controlled by the control processor to be a percentage of the maximum flow rate of the pump by cycle chopping the electrical supply to the pump. *Panesar* at FIG. 8:  The control processor of the beverage preparation machine 201 comprises a processing module and a memory. The control processor is operatively connected to, and controls operation of, the water heater 225, water pump 230, air compressor 235 and user interface 240.

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	The memory of the control processor includes one or more variables for one or more operational parameters for the beverage preparation machine 201. The operational parameters are the temperature of the water passed through the beverage cartridge 1 during the operating stage, the speed of charging the beverage cartridge 1, the presence or otherwise of a soak step, the total dispensed volume of the beverage, the flow rate of the water during the discharge stage, and the flow rate and period of the purge stage. Panesar at p. 25, ll. 8–29: The variables for the operational parameters are stored in the memory. The cartridge 1 comprises a code provided on or in the cartridge 1 representing the operational parameters required for optimal dispensation of the beverage in that cartridge 1 The code is in binary format and comprises a plurality of data bits corresponding to the variables stored in the control processor memory. Panesar at p. 34, ll. 5–12: The purpose of the recognition means 252 is to allow the machine 201 to recognise the type of beverage cartridge 1 that has been inserted and to adjust one or more operational parameters accordingly. In a typical embodiment, the recognition means 252 comprises an optical barcode reader which reads the printed barcode 320 provided on the laminate 5 of the beverage cartridge 1 as shown in Figure 10 and discussed above. Panesar at p. 34, line 28 – p. 35, line 4: The software can recognize whether the read of the barcode contained errors, although the occurrence of these is minimized as described above by specific location of the barcode 320 relative to the inlet. The barcode 320 may be rescanned a number of times before an error message is presented to the consumer. If the machine 201 is unable to read the barcode the consumer is able to use the beverage cartridge 1 to dispense a beverage using a manual mode of operation.

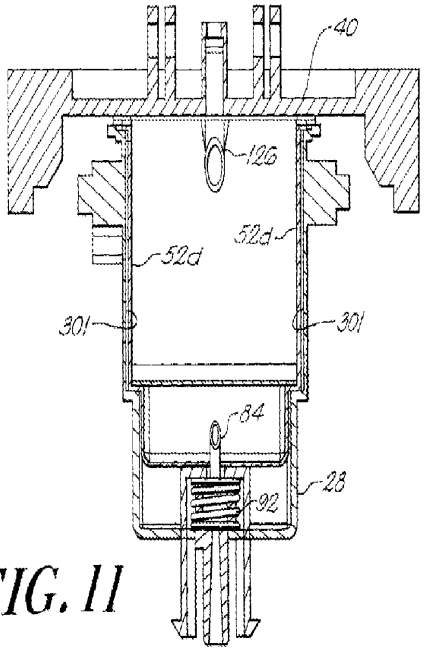
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	Cartridge recognition is performed by the optical recognition means 252 as described above assuming that the outputs from the cartridge sensor and lock sensor are satisfactory. Once the barcode 320 or RFID has been decoded the operational parameters of the machine 201 are adjusted by the control processor. The discharge cycle is then automatically commenced. The discharge cycle has four main stages, not all of which are used for all beverage types: (i) Pre-wet (ii) Pause (iii) Brew/Mixing (iv) Purge Panesar at p. 36, ll. 15–31: In the pre-wet stage the cartridge 1 is charged with water from the water storage tank 220 by means of the water pump 230. The charging with water causes the beverage ingredients 200 in the filtration chamber 130 to be wetted. Panesar at p. 37, ll. 17–24: In the brew/mixing stage water is passed through the cartridge 1 in order to produce the beverage from the beverage ingredients 200. The temperature of the water is determined by the control processor which sends instructions to the water heater 225 to heat the water passing from the water tank 220 to the brew head 250. Water enters the lower part 255 of the holder 251 through the conduit 262 via the inlet valve and the inlet piercer 253 into the inlet chamber 25 126 of the beverage cartridge 1. Panesar at p. 24, ll. 10–14:

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	The water heater 225 is located in the interior of the housing 210. The heater 225 has a power rating of 1550 W and is able to heat water received from the water pump 230 from a starting temperature of approximately 20 °C to an operating temperature of around 85 °C in under 1 minute. *See also* [1.a] and [1.d] Rossi at 1–2: The necessary operating conditions of the machine vary depending on the substance within the load element. Such operating conditions may include the amount of water used for each product, the temperature and pressure of the water supplied, as well as the time required for operation. For each substance or type of substance, the operating conditions affect the quality of the final edible product. In order to achieve a desired quality, the contents of the load element must be known and the appropriate operating conditions must be set. Rossi at 3: Furthermore, edible-product making machines of the prior art, such as coffee machines fed with capsules containing coffee powder, are usually designed so as to operate with a certain design or type of load element. Use of an incorrect load element may cause the machine to malfunction and can prejudice the safety and integrity of the machine and the may harm the user. These types of machines often involve the use of high pressure, high temperature water, which poses a potential health hazard if the machine is not used correctly or malfunctions. Alternatively, use of the wrong operating conditions with the correct load element may also lead to these consequences. For example, use of an insufficient amount of water could lead to the contents of the load element not being fully dissolved and blocking channels within the machine, thereby potentially causing accumulation and overflow of hot water.

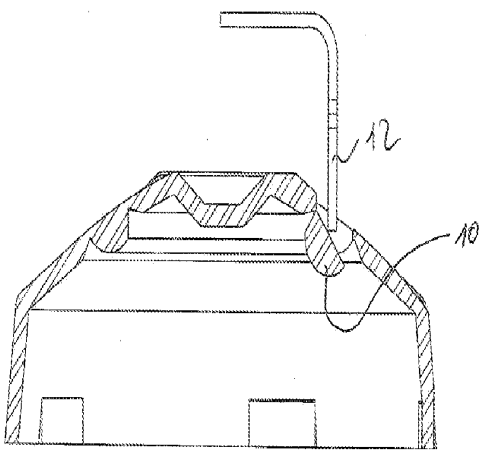
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	Rossi at 5: The use of an identification element and recognition means, as well as the step of recognising the identification element allows the machine to recognise the load element and, hence, its contents. This in turn enables the machine to automatically select the operating conditions appropriate for that specific load element. This prevents the user from having to verify the contents of the load element, and from having to know and select the operating conditions appropriate therefor. It also helps to prevent the safety hazard associated with the use of inappropriate operating conditions. Rossi at 5–6: The use of a validation element and validation means, as well as the step allowing the machine to take further steps only if it also recognises on the load element the validation element help to prevent the use of an already-used single use load element in the machine, thereby avoiding the production of an edible product of inferior quality and ensuring the proper functioning of the machine. In the case of re-use of a load element originally containing a water soluble aromatic substance, the dynamics of the fluid flow through the machine could be different if there is no substance in the load unit for the water to contact, thereby causing incorrect functioning of the machine and the associated health hazard. The use of an activation step of automatically activating the cycle of edible-product production only when the same identifying element is recognised in combination with the validated validation element ensures that the operating conditions actually used are the correct conditions as selected by the machine in the first recognition step. This helps to prevent the user from making the mistake of inserting into the machine a different load element to the one that was first recognised, for which the operating conditions are set. Rossi at 6: The identification element preferably contains information about the contents of the load element. This permits the optional further step of self -programming of the edible- product

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	making machine according to the specific load element recognised such that the appropriate operating conditions are automatically set. Yoakim at [0477]: The capsule system further comprises an identification means associated to the different capsules in the set for identifying each capsule and adjusting brewing parameters accordingly. . . . The identification means are associated to control means placed in the centrifugal brewing device which controls the adjustment of the said parameters, by controlling the rotational motor driving the capsule holder and/or the pump supplying liquid in the capsule. Yoakim at [0192]: Therefore, as much as two, three, four or even more different flow rates and/or speed ranges can be provided in function of the types of coffee to be delivered. Therefore, depending on the types of beverage to be brewed, the control unit can be programmed to adjust the optimal centrifugal conditions. For instance, the control unit may be associated to a capsule recognition system enabling to recognize the types of capsules, i.e., espresso, lungo, cappuccino, long coffee (e.g., 180–400 ml), latte, tea, etc., and to adjust the speed and/or other brewing parameters (e.g., water temperature) according the capsule which is inserted in the device. A recognition system uses a code on the capsule and recognized by the device, such as a color, a barcode, an RFID, a magnetic code, ferromagnetic micro-wires or labels, shapes and combinations thereof. Yoakim at [0153]: The device comprises a control unit adapted to vary the speed of the driving means for driving the capsule in centrifugal rotation therefore providing different centrifugal pressures in the capsule. As a result, the brewing pressure conditions in the capsule can be easily tailored to the type of beverages to be brewed.

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	See also [1.a] and [1.d]
[1.g] piercing the first foil lid with a mandrel of the apparatus in a region that is offset from a central axis of the first portion capsule;	The below cited art discloses, either expressly or inherently, piercing the first foil lid with a mandrel of the apparatus in a region that is offset from a central axis of the first portion capsule. *See, e.g.*: Jarisch at [0021]: In an embodiment, the container comprises a body and a lid connected to the body and wherein the code is present on the lid of the container. The lid may be a closed foil and/or a filter, for example. Jarisch at [0036]: In the following examples (see FIG. 4), the capsule comprises a cup-shaped body 69 extending by a flange-like rim 73. A lid such as a foil or membrane (liquid-tight or permeable to liquid) 60 is connected to the body, e.g., sealed on the rim. The capsule is filled with beverage ingredient such as ground coffee. Lazaris at [0010]: The holder of the present invention is designed for use in an apparatus for brewing a beverage by infusing heated liquid with a beverage medium contained in a single serve disposable cartridge. In one embodiment of the present invention, the holder is configured for use within a cartridge having an inverted frustum-shaped side wall specially contoured to provide at least one and preferably a plurality of strategically placed surface irregularities. The cartridge is removably received in a cup-shaped housing having a side wall configured and dimensioned to surround the cartridge side wall. Locating elements are arranged to coact with the one or plural surface irregularities in the cartridge side wall to rotatably immobilize the cartridge within the housing. A lid is mounted for manipulation between an open position accommodating insertion and removal of the cartridge, and a closed position confining the cartridge within the housing. Tubular probes associated with the lid and housing are arranged

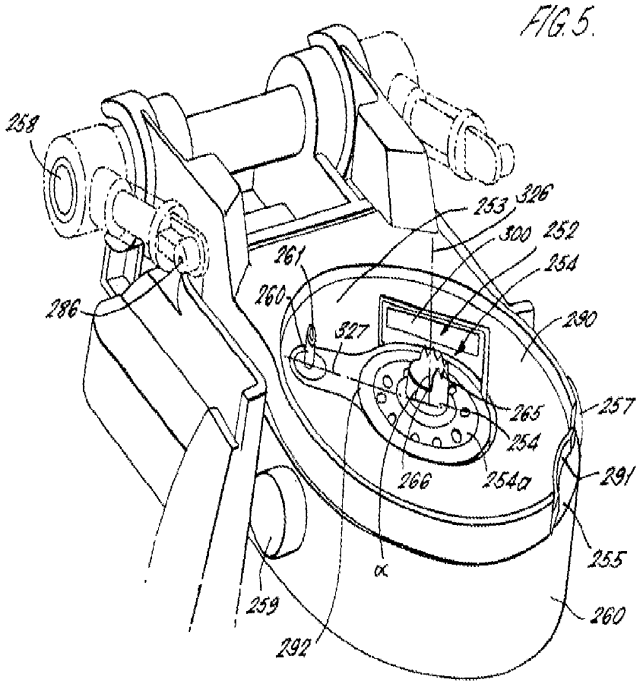
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	to pierce the thus confined cartridge to thereby accommodate a through flow of heated liquid for infusion with the beverage medium contained in the cartridge. Lazaris at [0037]: In FIG. 2B, the lid 40 has been lowered, resulting in the cartridge 50 and the cartridge platform 86 being forced downwardly against the action of spring 92. As a result, the cartridge lid and base are pierced respectively by the inlet and outlet probes 126, 84, thus accommodating a flow of heated liquid through the cartridge. The heated liquid infuses a beverage medium (not shown) contained in the cartridge to thereby produce a beverage which exits the cartridge via the outlet probe 84. Lazaris at Fig. 11:  FIG. 11

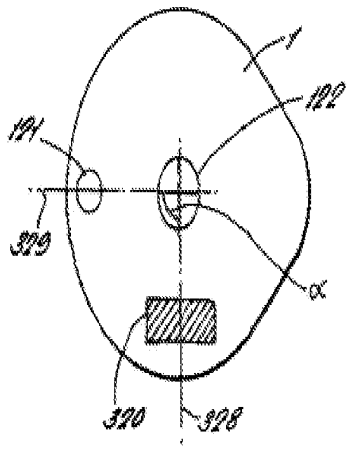
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	Mariller at [0020]–[0032]: List of numerical references used in the figures: 1. capsule 2. side wall 3. top wall 4. bottom wall 5. cavity 6. top wall stiffening element 7. side wall stiffening element 8. top edge stiffening element 9. internal protrusion 10. beading 11. weakened zone 12. piercing element Mariller at Fig. 12:

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	FIG 12  Panesar at p. 3, ll. 22–26: The insert may be a cartridge. . . . The lower surface may be a laminate. In this case, the inlet and outlet of the cartridge may be portions of the lower surface which are opened for transportation, in use, by piercing the lower surface. Panesar at p. 8, ll. 20–26: The beverage preparation machine 201 generally comprises a housing 210 containing a water tank 220, a water heater 225, a water pump 230, an air compressor 235, a control processor, a user interface 240 and a brew head 250. The brew head 250 in turn generally comprises a 25 holder 251, recognition means 252 and inlet and outlet piercers 253, 254.

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	Panesar at p. 9, ll. 9–18: [T]he cartridge 1 generally comprises an outer membrane 2, an inner member 3 and a laminate 5. The outer member 2, inner member 3 and laminate 5 are assembled to form the cartridge 1 which has an interior 120 for containing one or more beverage ingredients, an inlet 121, an outlet 122 and a beverage flow 15 path linking the inlet 121 to the outlet 122 and which passes through the interior 120. The inlet 121 and outlet 122 are initially sealed by the laminate 5 and are opened in use by piercing or cutting of the laminate 5. Panesar at p. 17, ll. 25–29: To use the cartridge 1 it is first inserted into the beverage preparation machine and the inlet 121 and outlet 122 are opened by piercing members of the beverage preparation machine which perforate and fold back the laminate 5. Panesar at p. 29 at line 3 – p. 30 at line 29: The lower part 255 comprises the inlet and outlet piercers 253, 254 and the head 300 of the cartridge recognition means 252. The inlet piercer 253 comprises a hollow needle-like tube 260 having a sharpened end 261 for perforating the laminate 5 of the beverage cartridge 1 in use. The inlet piercer 253 is in fluid communication with a water conduit 262 as shown in Figure 7 which passes through the lower part 255 and is connected to an outlet conduit 263 of the water heater 225. The outlet piercer 254 is similar in type to the outlet piercer described in the applicant's European patents EP 0 389 141 and EP 0 334 572 and comprises an open ended cylinder 264 of circular or D-shaped cross-section having dimensions larger than the discharge spout 43. An arcuate portion 265 of the upper end of the outlet piercer 254 is serrated to pierce and eventually cut the laminate of the beverage cartridge 1. The remainder of the upper end is cut back longitudinally of the cylinder at least to the base of the teeth 266 of the serrated portion to fold or pull the cut laminate 5 away from the outlet aperture before the beverage is dispensed there through. The outlet piercer 254 pierces the laminate 5 externally of the discharge spout 43 and when the cartridge mount 257 is in the closed position, rests in the annulus between the discharge spout 43 and the outer wall 42 of

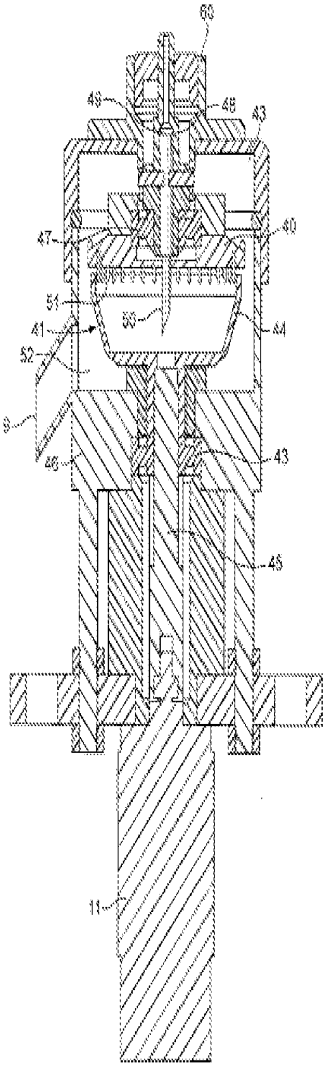
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	the discharge funnel 40. The outlet piercer 254 folds back the cut laminate 105 into the annulus. Thereby both the outlet piercer 254 and the cut laminate 105 are held out of the way of the discharged beverage. The outlet piercer 254 is surrounded by a ledge 254a which is raised relative to its surroundings by 0.5mm. Advantageously, the outlet piercer 254 is removable from the lower part 255 to enable it to be thoroughly cleaned, for example, in a dishwasher. The removable outlet piercer 254 is received in a recess 267 in the lower part 255 where it is seated. The inlet piercer 253 and/or the outlet piercer 254 may be made of a metal, such as stainless steel, or from a plastics material. Panesar at p. 35 at line 32 – p. 33 at line 3: During closure the inlet and outlet piercers 253, 254 pierce the laminate 5 of the cartridge 1 to form the cartridge inlet 121 and outlet 122. *Panesar* at FIG. 5:

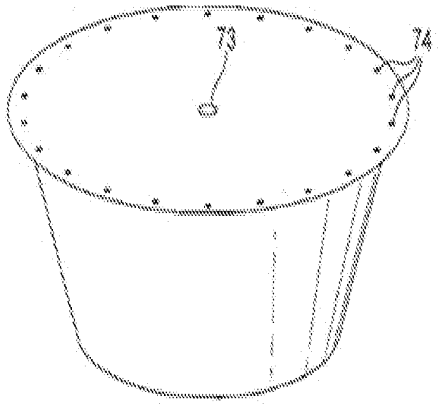
U.S. Patent No. 10,858,176	Disclosure
	 Panesar at FIG. 10:

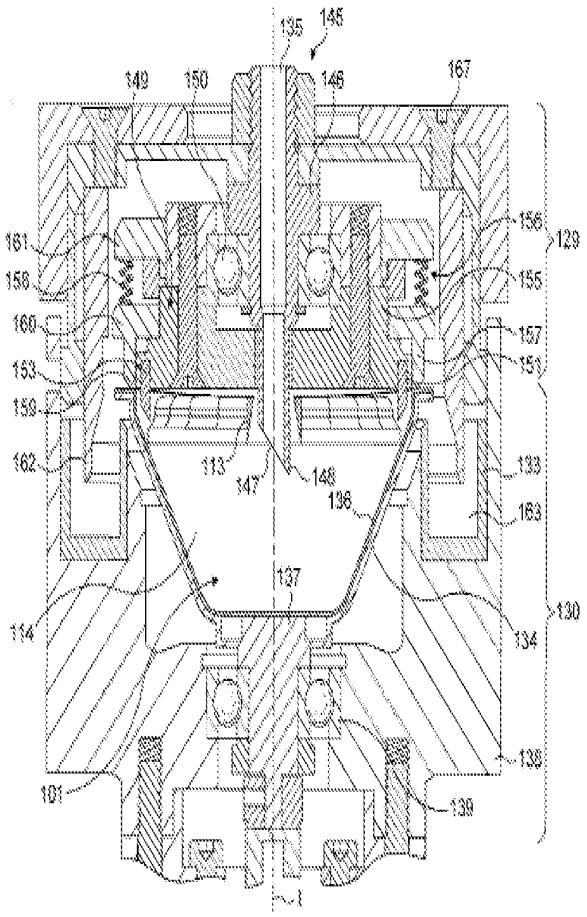
U.S. Patent No. 10,858,176	Disclosure
	FIG. 10  Sweeney at Abstract: A beverage filter cartridge includes a cup-shaped outer container with a bottom and a side wall extending upwardly from the bottom wall to a circular rim surrounding an upper opening. The side wall has an upper section extending downwardly from the rim to an intermediate section, and a tapered lower section configured to provide a plurality of circumferentially spaced flutes extending downwardly from the intermediate section to the bottom wall. A filter element subdivides the interior of the container into first and second chambers. A beverage medium is stored in the first chamber. A cover is joined to the side wall at the rim to close the upper opening. The cover is yieldably pierceable to accommodate an injection of liquid into the first chamber for combination with the beverage medium to produce a beverage. The filter element is permeable to accommodate a flow of the beverage from the first chamber into the second chamber, and the bottom wall is yieldably pierceable

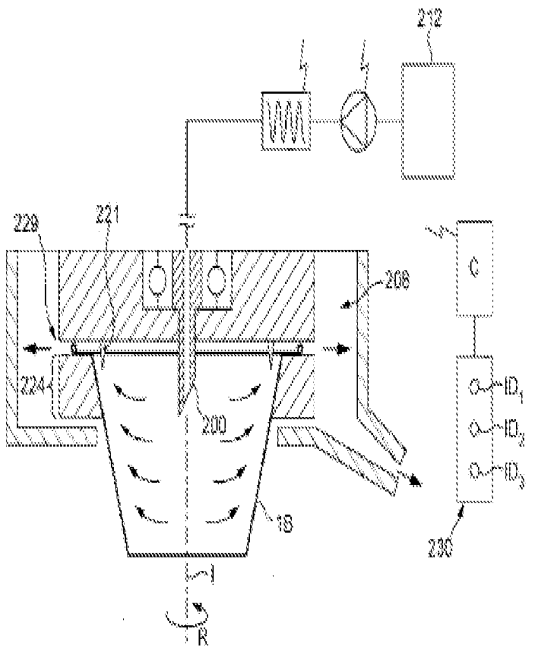
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	to accommodate an outflow of the beverage from the second chamber to the exterior of the cartridge. Sweeney at 1:19–32: This beverage filter cartridge is comprised basically of an impermeable yieldably-pierceable cup-shaped outer container internally subdivided by a permeable cone-shaped filter into first and second chambers. A granular or powdered dry beverage medium, e.g., roasted ground coffee, is stored in the first chamber, and the container is closed by an impermeable yieldably pierceable lid. During a processing cycle, the lid and container bottom are pierced, respectively, by tubular inlet and outlet probes. The inlet probe admits heated liquid under pressure into the first chamber for infusion with the beverage medium, and the resulting brewed beverage passes through the filter into the second chamber from which it exits via the outlet probe for delivery to an underlying cup. Sweeney at 4:20–23: The lid may be cut or blanked from any suitable impermeable heat sealable and yieldably pierceable material, such as for example, a metallic/polymer laminate supplied by Winpak Heat Seal Packaging, Inc. of Montreal, Canada. Sweeney at 4:35–42: At the onset of a processing cycle, the lid 16 and container bottom 18 are pierced, respectively, by tubular inlet and outlet probes 28, 30 (see FIG. 3). The inlet probe 28 admits a heated liquid, typically hot water, into chamber A where it infuses and combines with the beverage medium M to produce a beverage. The beverage passes through the filter element 14 into chamber B, from which it exits via outlet probe 30. Yoakim at [0186]:

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	At the inside surface of the injection lid 40 is placed a piercing structure 450 which has the function of piercing the injection side 30 of the capsule. A water injector or lance 50 is provided which traverses the injection side 30 and which comprises an injection conduit for carrying water from the water circuit into the capsule. The water injector 50 is preferably located in the center of the capsule. Yoakim at [0187]: A series of needles 51 . . . positioned on the side of the lid 40 to form small perforations at the periphery of the upper side of the capsule. Yoakim at FIG. 4:

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	 FIG. 4 Yoakim at FIG. 7:

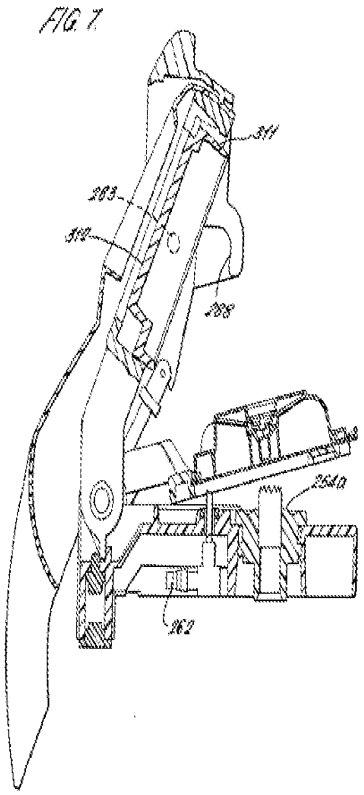
U.S. Patent No. 10,858,176	Disclosure
	 FIG. 7 Yoakim at [0435]: About the water injector is mounted a capsule rotary engaging part 149. The engaging part 149 has a central bore for receiving the water injector and rotational guiding means such as a ball or needle bearing 150 inserted between the part 149 and the injector 145. The engaging part further comprises outlet piercing members 151,152, 153, 154 protruding from a disc-shaped engaging wall 155 of the part 149. The piercing members can be small cylindrical portions with a slanted cutting surface able to cut or perforate small holes in the sealing foil 103 of the capsule. The piercing members are arranged at the periphery of the wall 155, preferably evenly distributed to provide several openings in the capsule for the centrifuged liquid to leave the capsule forming several streams of liquid. . . .

	Yoakim at FIG. 35:  FIG. 35 Yoakim at [0507]: . . . .The assembly 213 comprises a central injection needle 200 capable of being introduced precisely along the axis of rotation I of the capsule. At its periphery the interface assembly 213 can comprise a series of outlet perforators 221 for allowing centrifuged beverage to

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	leave the capsule through the peripheral outlet 229 between the capsule holder 214 and the interface assembly 213. . . . Yoakim at FIG. 55:  FIG. 55
[1.h] sealing the first foil lid against a seal of the apparatus;	The below cited art discloses, either expressly or inherently, sealing the first foil lid against a seal of the apparatus. *See, e.g.*: Jarisch at [0021]: In an embodiment, the container comprises a body and a lid connected to the body and wherein the code is present on the lid of the container. The lid may be a closed foil and/or a filter, for example.

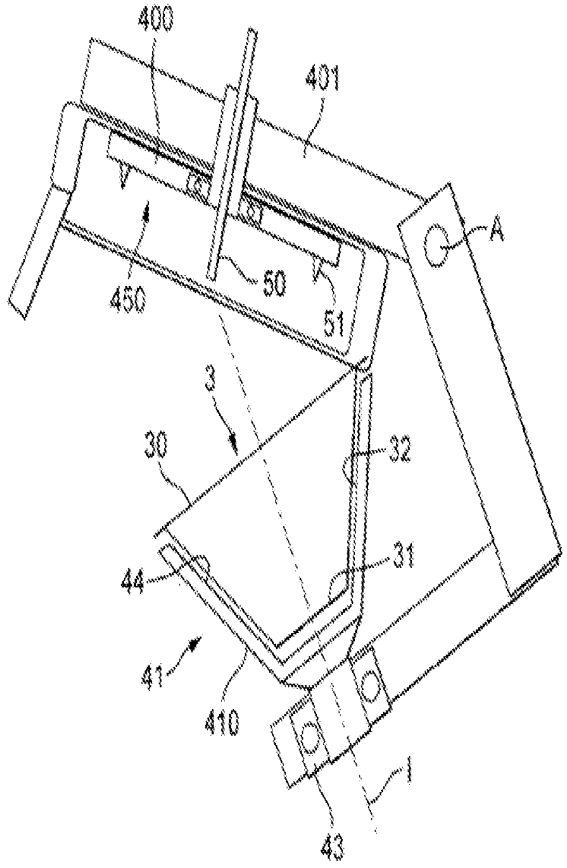
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	Jarisch at [0036]: In the following examples (see FIG. 4), the capsule comprises a cup-shaped body 69 extending by a flange-like rim 73. A lid such as a foil or membrane (liquid-tight or permeable to liquid) 60 is connected to the body, e.g., sealed on the rim. The capsule is filled with beverage ingredient such as ground coffee. Panesar at p. 28 at line 22 – p. 29 at line 2: When the holder 251 is in the closed position, the viewing window 312 bears against the beverage cartridge 1 biasing it against the lower part 256. In one arrangement, the rim 311 of the viewing window contacts and bears against the flange 35 of the beverage cartridge. At the same time the window 312 contacts the closed top 11 of the cartridge 1. In an alternative arrangement, only the viewing window 312 contacts the closed top 11 of the cartridge 1, and there is no bearing contact between the rim 311 and the flange 35. The pressure exerted by the rim 311 on the flange 35 and/or by the window 312 on the closed top 11 ensures a fluid tight seal between the cartridge 1 and the holder 251. Panesar at p. 31 at line 19 – p. 32 at line 8: During this last stage of rotation the cartridge 1 is compressed between the cartridge mount 257 and the viewing window 312. As a result, the viewing window 312 is moved axially relative to the circular body 310 of the upper part 256 against the bias of the wave spring or helical springs. This movement allows for a take up of tolerances in the beverage cartridge 1 and beverage preparation machine and ensures that the amount of compressive force applied to the cartridge is kept within an acceptable range. The clamping force of the mechanism as moderated by the action of the wave spring or helical springs ensures a clamping pressure on the cartridge. For the arrangement where bearing pressure is applied to both the flange 35 and the closed top 11 of the cartridge 1, it has been found that a pressure of between 130 and 280N is required. Preferably the force is approximately 200N. A force less than about 130N does not provide an adequate seal, whilst a force greater than about 280N leads to plastic

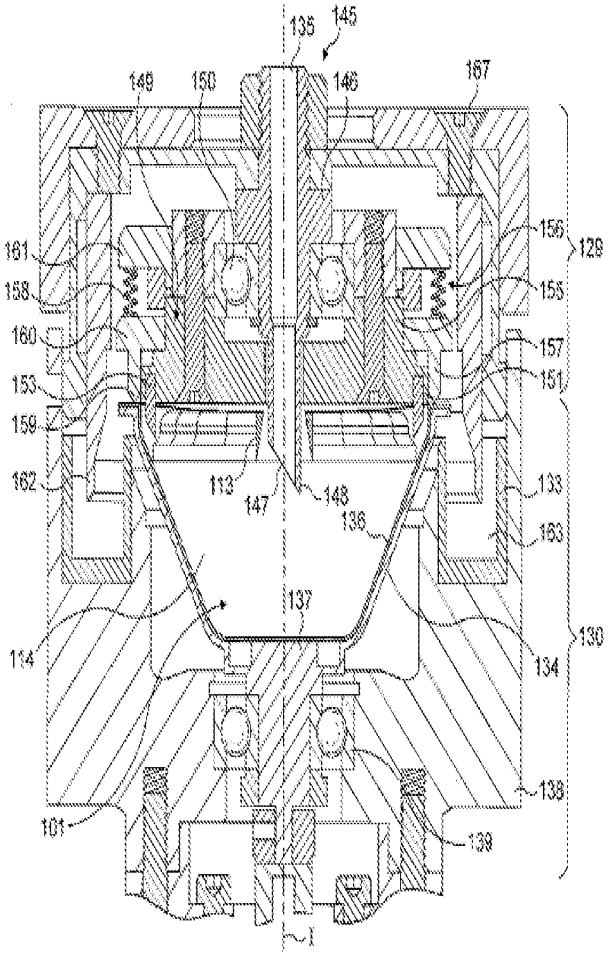
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	failure of the components of the cartridge 1. For the arrangement where bearing pressure is applied only to the closed top 11 of the cartridge 1 it has been found that a pressure of between 50N and 280N is required. Panesar at p. 32, ll. 19–30: In the closed position the cartridge 1 may thus be clamped around the flange 35 by means of the rim 311 of the viewing window 312 and is always firmly clamped between the closed top 11 of the cartridge and the outer tube 42 of the inner member 3 by contact with the viewing window 312 and the ledge 254a. These clamping forces help prevent failure of the cartridge 1 during pressurisation and also ensure that the inner member 3 and outer member 2 are fully seated relative to one another and thus that all internal passageways and apertures remain at their intended dimensions even during internal pressurisation. Panesar at p. 36, ll. 5–10: When closed the holder 251 grips the cartridge 1 around the rim 35 between the cartridge mount 257 and the upper part 256 and/or between the window 311 and the top 11 of the cartridge 1 to form a fluid tight seal of sufficient integrity to withstand the pressures developed during the dispense cycle. Panesar at Fig. 7:

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	 Sealing the first foil lid against a seal of the apparatus. *See, e.g.*: Yoakim at [0384]: A valve means in the device provide the advantage of a control of the pressure of liquid exerted in the capsule at the level of the device. The valve means can be designed to open at a certain pressure threshold, for example by calibration or adjustment, for matching the

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	features of various or specific beverages, e.g., coffee extract, tea extract, instant beverages, etc. Yoakim at [0388]: For example, the engaging portion of the valve means can also comprise an annular pressing edge which is arranged to seal on the engaging portion of the capsule. The pressing edge may take different forms such as a V, W or U shape in order to exert a sufficient sealing pressure on the capsule when the pressure of liquid is still under a predetermined threshold. Yoakim at [0436]: According to one aspect of the invention, the water injection subassembly 129 further comprises a valve system 156 for controlling the flow of liquid that is discharged from the device. . . .The annular engaging portion 157 includes a pressing peripheral surface 159 which applies a closing force on the peripheral rim 104 of the capsule to be able to restrict the flow of liquid under the force of the elastic loading means. The surface 159 can form a cone or V for increasing the sealing pressure in a localized area. Yoakim at [0445]: [T]he valve system 156 of the device can start opening as pressure of liquid increases on the valve when liquid leaves the capsule. Therefore, a certain time delay before opening can be controlled by the valve system to enable sufficient interaction between water and the substance contained in the capsule. This controlled delay depends on various parameters . . . . Yoakim at [0446]: In another mode of the invention illustrated in FIGS. 37 and 38, the same numeral references have been taken to identify the same or equivalent technical means. In this mode, the valve system 156 differs in that the elastic loading means is obtained by a rubber elastic O-ring

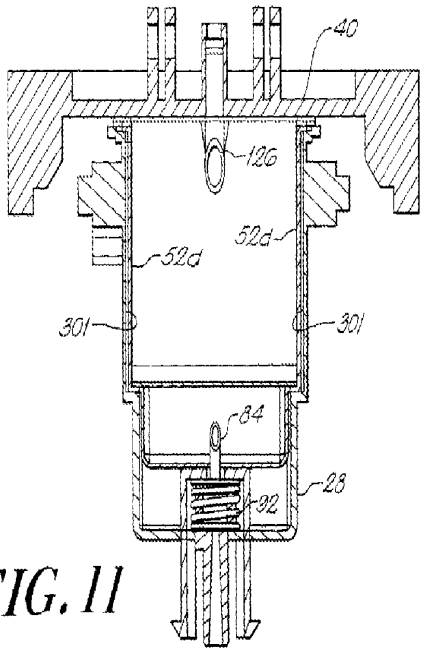
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	169 inserting between a lower member comprising a pinching surface 159 and an upper fixed portion 161 of the water injection subassembly 129. The O-ring is maintained in place between two concave surfaces 170, 171 of valve system. Again during brewing, the pressure of liquid in the capsule tends to lift the pinching surface 159 to create an annular passage between the rim 104 of the capsule and the pinching Surface. The pinching surface can be shaped with a sharp tip or edge that can create a concentration of the pinching forces onto the rim.

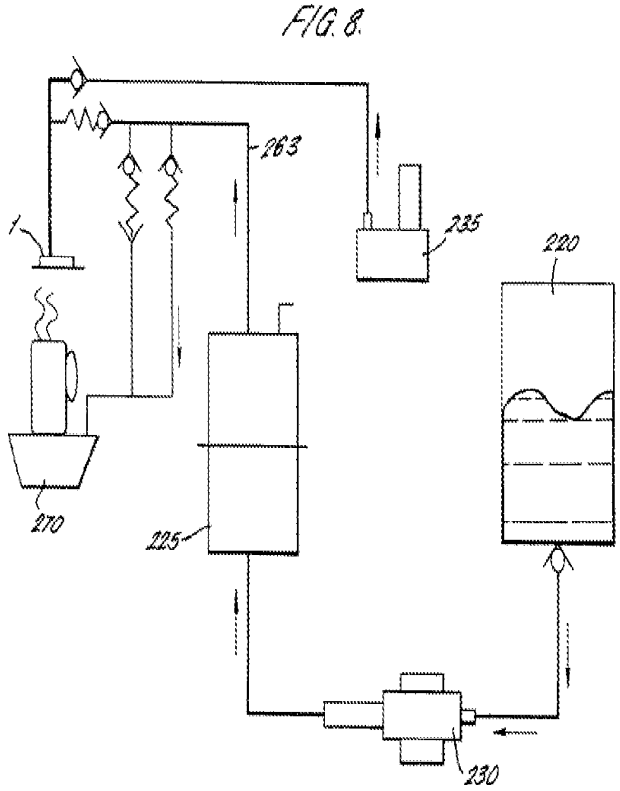
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	Yoakim at FIG. 2:  FIG. 2 Yoakim at FIG. 35:

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	 FIG. 35

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	Unloading the first portion capsule from the apparatus. *See, e.g.*: Yoakim at [0107]–[0109]: In one embodiment, the invention provides for a method of preparing a beverage or food liquid from a food substance contained in a filtering receptacle by passing water through the substance using brewing centrifugal forces comprising: wherein the receptacle is formed by a sealed capsule before it use which is opened for water to be introduced in the capsule; said capsule containing a predetermined dose of food substance and being discarded after use. Yoakim at [0118]: . . . wherein the capsule is placed in the beverage preparation device[.] Yoakim at [0120]: . . . wherein the capsule is removed from the beverage preparation device for being discarded after the liquid has been brewed from the capsule by centrifugation of the capsule in the beverage preparation device. Yoakim at [0180]: The system 1 of the invention is illustrated in FIG. 1 in the more general sense. The system comprises a device 2 and a capsule 3. The device has a brewing module 4 into which the capsule can be inserted for being brewed and is removed after use for being discarded (e.g., for waste of recycling). Yoakim at [0427]: Thus, the system comprises a capsule 101 as aforementioned and a beverage preparation device 123. The device has a module 124 into which a capsule can be inserted. The capsule contains a food substance for being brewed and the capsule is removed from the module

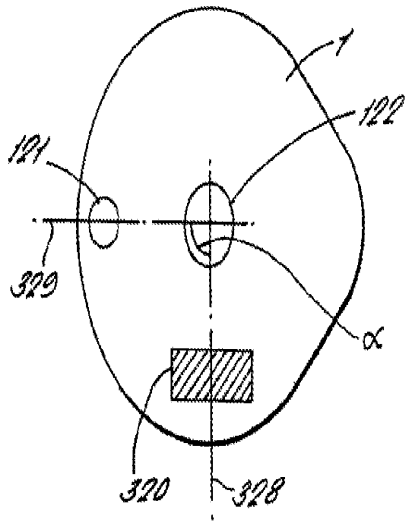
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	after use for being discarded (e.g., for waste or recycling of the organic and inorganic raw materials).
[1.i] introducing heated water into the first portion capsule through a water inlet of the apparatus that is arranged along the central axis of the portion capsule to form the first coffee beverage;	The below cited art discloses, either expressly or inherently, introducing heated water into the first portion capsule through a water inlet of the apparatus that is arranged along the central axis of the portion capsule to form the first coffee beverage. *See, e.g.*: Lazaris at [0010]: The holder of the present invention is designed for use in an apparatus for brewing a beverage by infusing heated liquid with a beverage medium contained in a single serve disposable cartridge. In one embodiment of the present invention, the holder is configured for use within a cartridge having an inverted frustum-shaped side wall specially contoured to provide at least one and preferably a plurality of strategically placed surface irregularities. The cartridge is removably received in a cup-shaped housing having a side wall configured and dimensioned to surround the cartridge side wall. Locating elements are arranged to coact with the one or plural surface irregularities in the cartridge side wall to rotatably immobilize the cartridge within the housing. A lid is mounted for manipulation between an open position accommodating insertion and removal of the cartridge, and a closed position confining the cartridge within the housing. Tubular probes associated with the lid and housing are arranged to pierce the thus confined cartridge to thereby accommodate a through flow of heated liquid for infusion with the beverage medium contained in the cartridge. Lazaris at [0037]: In FIG. 2B, the lid 40 has been lowered, resulting in the cartridge 50 and the cartridge platform 86 being forced downwardly against the action of spring 92. As a result, the cartridge lid and base are pierced respectively by the inlet and outlet probes 126, 84, thus accommodating a flow of heated liquid through the cartridge. The heated liquid infuses a beverage medium (not shown) contained in the cartridge to thereby produce a beverage which exits the cartridge via the outlet probe 84.

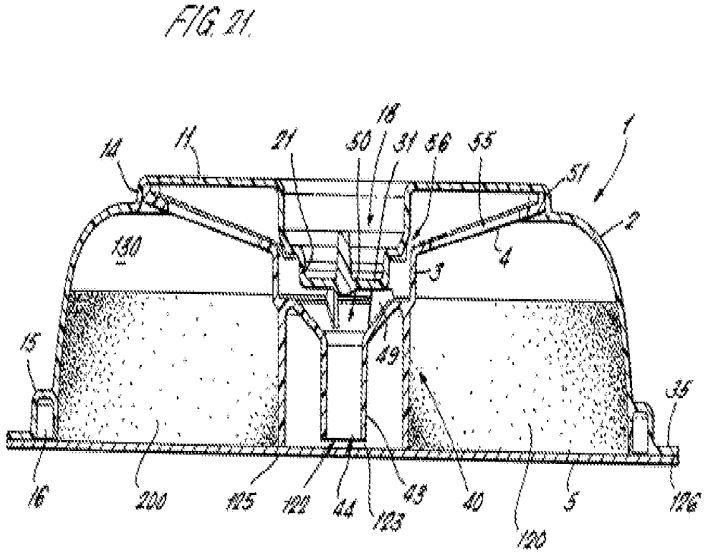
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	Lazaris at Fig. 11:  FIG. 11 Panesar at p. 17 at line 29 – p. 18 at line 5: An aqueous medium, typically water, under pressure enters the cartridge 1 through the inlet 121 into the inlet chamber 26 at a pressure of between 0.1–2.0 bar. From there the water is directed to flow through the slots 30 and round the manifold 16 and into the filtration chamber 130 of the cartridge 1 through the plurality of slots 17. The water is forced radially inwardly through the filtration chamber 130 and mixes with the beverage ingredients 200 contained therein. Panesar at p. 23, ll. 23–32: The water pump 230 is operatively connected between the water tank 220 and the water heater 225 as shown schematically in Figure 8 and is controlled by the control processor.

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	The pump provides a maximum flow rate of 900 ml/min of water at a maximum pressure of 2.5 bar. Preferably, in normal use, the pressure will be limited to 2 bar. The flow rate of water through the machine 201 can be controlled by the control processor to be a percentage of the maximum flow rate of the pump by cycle chopping the electrical supply to the pump. *Panesar* at FIG. 8: FIG. 8.  The control processor of the beverage preparation machine 201 comprises a processing module and a memory. The control processor is operatively connected to, and controls

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	operation of, the water heater 225, water pump 230, air compressor 235 and user interface 240. The memory of the control processor includes one or more variables for one or more operational parameters for the beverage preparation machine 201. The operational parameters are the temperature of the water passed through the beverage cartridge 1 during the operating stage, the speed of charging the beverage cartridge 1, the presence or otherwise of a soak step, the total dispensed volume of the beverage, the flow rate of the water during the discharge stage, and the flow rate and period of the purge stage. Panesar at p. 25, ll. 8–29: The variables for the operational parameters are stored in the memory. The cartridge 1 comprises a code provided on or in the cartridge 1 representing the operational parameters required for optimal dispensation of the beverage in that cartridge 1 The code is in binary format and comprises a plurality of data bits corresponding to the variables stored in the control processor memory. Panesar at p. 34, ll. 5–12: The purpose of the recognition means 252 is to allow the machine 201 to recognise the type of beverage cartridge 1 that has been inserted and to adjust one or more operational parameters accordingly. In a typical embodiment, the recognition means 252 comprises an optical barcode reader which reads the printed barcode 320 provided on the laminate 5 of the beverage cartridge 1 as shown in Figure 10 and discussed above. Panesar at p. 34, line 28 – p. 35, line 4: The software can recognize whether the read of the barcode contained errors, although the occurrence of these is minimized as described above by specific location of the barcode 320 relative to the inlet. The barcode 320 may be rescanned a number of times before an error message is presented to the consumer. If the machine 201 is unable to read the barcode the

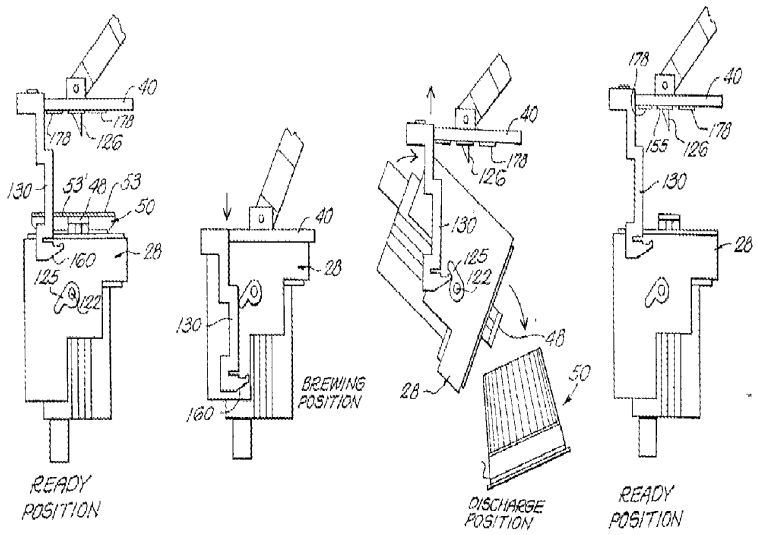
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	consumer is able to use the beverage cartridge 1 to dispense a beverage using a manual mode of operation. Panesar at p. 36, ll. 15–31: Cartridge recognition is performed by the optical recognition means 252 as described above assuming that the outputs from the cartridge sensor and lock sensor are satisfactory. Once the barcode 320 or RFID has been decoded the operational parameters of the machine 201 are adjusted by the control processor. The discharge cycle is then automatically commenced. The discharge cycle has four main stages, not all of which are used for all beverage types: (i) Pre-wet (ii) Pause (iii) Brew/Mixing (iv) Purge In the pre-wet stage the cartridge 1 is charged with water from the water storage tank 220 by means of the water pump 230. The charging with water causes the beverage ingredients 200 in the filtration chamber 130 to be wetted. Panesar at p. 37, ll. 17–24: In the brew/mixing stage water is passed through the cartridge 1 in order to produce the beverage from the beverage ingredients 200. The temperature of the water is determined by the control processor which sends instructions to the water heater 225 to heat the water passing from the water tank 220 to the brew head 250. Water enters the lower part 255 of the holder 251 through the conduit 262 via the inlet valve and the inlet piercer 253 into the inlet chamber 25 126 of the beverage cartridge 1.

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	Panesar at p. 24, ll. 10–14: The water heater 225 is located in the interior of the housing 210. The heater 225 has a power rating of 1550 W and is able to heat water received from the water pump 230 from a starting temperature of approximately 20 °C to an operating temperature of around 85 °C in under 1 minute. *Panesar* at FIG. 10: FIG. 10. 

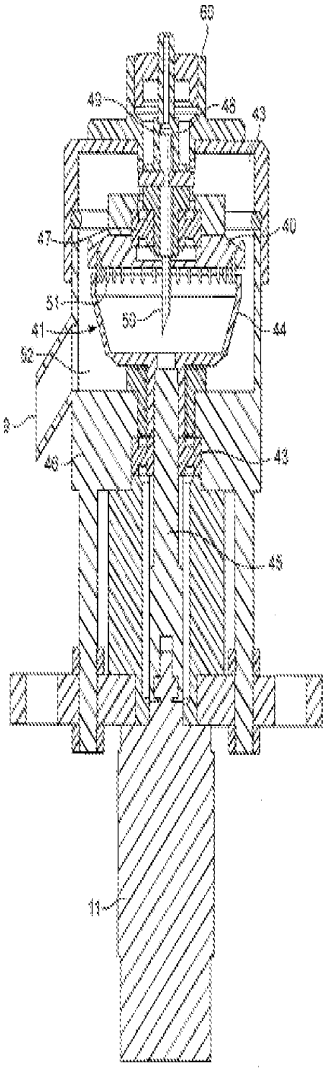
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	Panesar at FIG. 21:  Sweeney at Abstract: A beverage filter cartridge includes a cup-shaped outer container with a bottom and a side wall extending upwardly from the bottom wall to a circular rim surrounding an upper opening. The side wall has an upper section extending downwardly from the rim to an intermediate section, and a tapered lower section configured to provide a plurality of circumferentially spaced flutes extending downwardly from the intermediate section to the bottom wall. A filter element subdivides the interior of the container into first and second chambers. A beverage medium is stored in the first chamber. A cover is joined to the side wall at the rim to close the upper opening. The cover is yieldably pierceable to accommodate an injection of liquid into the first chamber for combination with the beverage medium to produce a beverage. The filter element is permeable to accommodate a flow of the beverage from the first chamber into the second chamber, and the bottom wall is yieldably pierceable

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	to accommodate an outflow of the beverage from the second chamber to the exterior of the cartridge. Sweeney at 1:19–32: This beverage filter cartridge is comprised basically of an impermeable yieldably-pierceable cup-shaped outer container internally subdivided by a permeable cone-shaped filter into first and second chambers. A granular or powdered dry beverage medium, e.g., roasted ground coffee, is stored in the first chamber, and the container is closed by an impermeable yieldably pierceable lid. During a processing cycle, the lid and container bottom are pierced, respectively, by tubular inlet and outlet probes. The inlet probe admits heated liquid under pressure into the first chamber for infusion with the beverage medium, and the resulting brewed beverage passes through the filter into the second chamber from which it exits via the outlet probe for delivery to an underlying cup. Sweeney at 4:20–23: The lid may be cut or blanked from any suitable impermeable heat sealable and yieldably pierceable material, such as for example, a metallic/polymer laminate supplied by Winpak Heat Seal Packaging, Inc. of Montreal, Canada. Sweeney at 4:35–42: At the onset of a processing cycle, the lid 16 and container bottom 18 are pierced, respectively, by tubular inlet and outlet probes 28, 30 (see FIG. 3). The inlet probe 28 admits a heated liquid, typically hot water, into chamber A where it infuses and combines with the beverage medium M to produce a beverage. The beverage passes through the filter element 14 into chamber B, from which it exits via outlet probe 30.

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[1.j] unloading the first portion capsule from the apparatus;	The below cited art discloses, either expressly or inherently, unloading the first portion capsule from the apparatus. *See, e.g.*: Lazaris at [0036]–[0038]: A typical brewing cycle is illustrated in FIGS. 2A-2D. Beginning with FIG. 2A, the lid 40 is elevated above the housing 28, and a cartridge 50 is received in the housing chamber 36. The lip 53′ of the cartridge lid 53 is supported in the upper surfaces 108, 110 of the cartridge ejection arms 46, 48. An inlet probe 126 carried by the lid 40 is located over the cartridge lid 53. In FIG. 2B, the lid 40 has been lowered, resulting in the cartridge 50 and the cartridge platform 86 being forced downwardly against the action of spring 92. As a result, the cartridge lid and base are pierced respectively by the inlet and outlet probes 126, 84, thus accommodating a flow of heated liquid through the cartridge. The heated liquid infuses a beverage medium (not shown) contained in the cartridge to thereby produce a beverage which exits the cartridge via the outlet probe 84. As shown in FIG. 2C, at the conclusion of the brewing cycle, the lid 40 is raised, and hooks 160 on legs 130 depending from the lid engage the pawls 125, causing the housing 28 to rotate to a discharge position at which the spent cartridge is ejected. Cartridge ejection is assisted by the spring loaded ejection arms 46, 48. The housing 28 is then returned to its original "ready" position as shown in FIG. 2D. Lazaris at Figs. 2A-2D:

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	 FIG. 2A FIG. 2B FIG. 2C FIG. 2D Mahlich at [0034]: The magazine unit 10 essentially consists of a turntable 11 whereby magazine tubes 12 to 16 are arranged on the turntable in an approximately circular manner. Each magazine tube is designed to hold a stack of single-serving capsules 1 whose bases 2 are each facing downwards, whereby each of the magazine tubes 12 to 16 contains single-serving capsules containing one of several available coffee types. Each magazine tube is provided with an ejection opening 17 adjacent to the outer edge (no reference number given) of the turntable 11, whereby the respective single-serving capsule 1 that is in the lowest position is ejected by means not described here through the magazine tube opening 17 that has been rotated to a dispensing position, i.e. dispensing station 18. Panesar at p. 38, lines 8–14:

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	Once the operating cycle has been completed the consumer removes the cartridge 1 by opening the holder 251 and manually removing and disposing of the cartridge. Alternatively, the machine 201 may be provided with an automatic ejection mechanism for removing the cartridge automatically on opening the holder 251. Introducing heated water into the first portion capsule through a water inlet of the apparatus that is arranged along the central axis of the portion capsule to form the first coffee beverage. *See, e.g.*: Yoakim at [1080]: The module is in fluid communication with a water reservoir 5 containing fresh or, alternatively heated water. A fluid transport means such as a low pressure pump 6 can be provided in the water circuit to transport water from the reservoir to the module. A water heater 7 is further provided to heat water to the desired temperature. It can be noted that water could be heated in the reservoir itself and water could be transported from the reservoir by effect of vaporization. Yoakim at [0019]: The inlet port [is] aligned with the central axis of the capsule, wherein the liquid to be injected into the capsule is water[.] Yoakim at [0220]: . . . a water injector, as part of the water injection head, arranged for introducing water along a central axis relative to the capsule holder[.]

	Yoakim at FIG. 4:  FIG. 4 Yoakim at [0021]:

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	The liquid introducing means preferably comprises at least one needle for injecting liquid into the capsule at or near its central axis . . .
[1.k] inserting a second portion capsule into the apparatus, the second portion capsule including a second foil lid sealed to a base element having a cavity within which a powdered coffee material is located, the cavity of the second portion capsule being free of a filter and includes a central portion and a plurality of ribs that are radially spaced, vertically oriented, and configured to extend toward the central portion of the cavity, the base element of the second portion capsule including a circumferential flange having a top side to which the second foil is sealed and an opposing bottom side with a second barcode located on the bottom side and being different from the first barcode, the base element of the second portion capsule includes an outside surface having a plurality of vertically oriented grooves; reading the second barcode with the barcode reader; controlling a second production process of a second coffee beverage based upon the reading of the second barcode, the	The below cited art discloses, either expressly or inherently, inserting a second portion capsule into the apparatus, the second portion capsule including a second foil lid sealed to a base element having a cavity within which a powdered coffee material is located, the cavity of the second portion capsule being free of a filter and includes a central portion and a plurality of ribs that are radially spaced, vertically oriented, and configured to extend toward the central portion of the cavity, the base element of the second portion capsule including a circumferential flange having a top side to which the second foil is sealed and an opposing bottom side with a second barcode located on the bottom side and being different from the first barcode, the base element of the second portion capsule includes an outside surface having a plurality of vertically oriented grooves; reading the second barcode with the barcode reader; controlling a second production process of a second coffee beverage based upon the reading of the second barcode, the second production process being different than the first production process; piercing the second foil lid with the mandrel of the apparatus in a region that is offset from a central axis of the second portion capsule; sealing the top side of the flange and/or the second foil lid of the second portion capsule against the seal of the apparatus; and introducing the heated water into the second portion capsule to form the second coffee beverage. *See, e.g.*: *See* [1.b]–[1.i] Jarisch at [0014]–[0015]: The aim of the present invention is to propose an improved way to identify the capsule within a beverage pro-duction machine to ensure a more reliable and convenient retrieval or reading of information so as to adjust working parameters of the machine. This aim is achieved by a capsule for the preparation of a beverage comprising a container and a beverage ingre-dient contained therein, wherein the container comprises a code adapted for being identified or read by external reading means, wherein the code is arranged

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second production process being different than the first production process; piercing the second foil lid with the mandrel of the apparatus in a region that is offset from a central axis of the second portion capsule; sealing the top side of the flange and/or the second foil lid of the second portion capsule against the seal of the apparatus; and introducing the heated water into the second portion capsule to form the second coffee beverage.	on the container to be read while the capsule is rotated around an axis of rotation traversing the capsule. Panesar at p. 5, ll. 7–8: Preferably the barcode reader or RFID reader window is located at or near a periphery of the brew head. Panesar at p. 34, ll. 5–26: The purpose of the recognition means 252 is to allow the machine 201 to recognize the type of beverage cartridge 1 that has been inserted and to adjust one or more operational parameters accordingly. In a typical embodiment, the recognition means 252 comprises an optical barcode reader which reads the printed barcode 320 provided on the laminate 5 of the beverage cartridge 1 as shown in Figure 10 and discussed above. The optical barcode reader comprises one or more LEDs 321 to illuminate the barcode 320, a focusing lens 322 to acquire an image of the barcode, a charge coupled device (CCD) 323 for producing an electrical signal representative of the acquired image and support circuitry for the LEDs and CCD. The space in the lower part for accommodating the barcode reader is limited. A mirror or mirrors 324 may be used to reflect the light from the LEDs 321 to a focusing lens which is not located in the lower part 255. Schematic arrangements are shown in Figures 9a and 9b. The lower part 255 comprises an aperture 326 which is the same size as the barcode 320 on the beverage cartridge 1. The aperture 326 is closed by a window, preferably glass, which can transmit the signals produced by the barcode reader. Panesar at p. 35, ll. 4–6: Alternatively, an RFID reader is provided to read an RFID located on the cartridge 1. *See also* Panesar at Claims 24, 27, 30.

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	Rossi at 1–2: The necessary operating conditions of the machine vary depending on the substance within the load element. Such operating conditions may include the amount of water used for each product, the temperature and pressure of the water supplied, as well as the time required for operation. For each substance or type of substance, the operating conditions affect the quality of the final edible product. In order to achieve a desired quality, the contents of the load element must be known and the appropriate operating conditions must be set. Rossi at 3: Furthermore, edible-product making machines of the prior art, such as coffee machines fed with capsules containing coffee powder, are usually designed so as to operate with a certain design or type of load element. Use of an incorrect load element may cause the machine to malfunction and can prejudice the safety and integrity of the machine and the may harm the user. These types of machines often involve the use of high pressure, high temperature water, which poses a potential health hazard if the machine is not used correctly or malfunctions. Alternatively, use of the wrong operating conditions with the correct load element may also lead to these consequences. For example, use of an insufficient amount of water could lead to the contents of the load element not being fully dissolved and blocking channels within the machine, thereby potentially causing accumulation and overflow of hot water. Rossi at 5: The use of an identification element and recognition means, as well as the step of recognising the identification element allows the machine to recognise the load element and, hence, its contents. This in turn enables the machine to automatically select the operating conditions appropriate for that specific load element. This prevents the user from having to verify the contents of the load element, and from having to know and select the operating

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	conditions appropriate therefor. It also helps to prevent the safety hazard associated with the use of inappropriate operating conditions. Rossi at 5–6: The use of a validation element and validation means, as well as the step allowing the machine to take further steps only if it also recognises on the load element the validation element help to prevent the use of an already-used single use load element in the machine, thereby avoiding the production of an edible product of inferior quality and ensuring the proper functioning of the machine. In the case of re-use of a load element originally containing a water soluble aromatic substance, the dynamics of the fluid flow through the machine could be different if there is no substance in the load unit for the water to contact, thereby causing incorrect functioning of the machine and the associated health hazard. The use of an activation step of automatically activating the cycle of edible-product production only when the same identifying element is recognised in combination with the validated validation element ensures that the operating conditions actually used are the correct conditions as selected by the machine in the first recognition step. This helps to prevent the user from making the mistake of inserting into the machine a different load element to the one that was first recognised, for which the operating conditions are set. Rossi at 6: The identification element preferably contains information about the contents of the load element. This permits the optional further step of self -programming of the edible- product making machine according to the specific load element recognised such that the appropriate operating conditions are automatically set. Yoakim at [0025]: The device is useful for preparing beverages from a plurality of different capsules, in which case it further comprises identification means for identifying the different capsules, and control means capable of operating the device in centrifugation for any of the different

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	capsules according to predetermined liquid food preparation parameters including the flow rate and the volume of liquid to be injected into the capsule. . . Yoakim at [0192]: Depending on the type of beverage to be brewed, the control unit can be programmed to adjust the optimal centrifugal conditions. For instance, the control unit may be associated to a capsule recognition system enabling to recognize the types of capsules, i.e., espresso, lungo, cappuccino, long coffee (e.g., 180–400 ml), latte, tea, etc., and to adjust the speed and/or other brewing parameters (e.g., water temperature) according [to] the capsule which is inserted in the device. A recognition system uses a code on the capsule and recognized by the device, such as a . . . barcode. Yoakim at [0477]: The capsule system further comprises an identification means associated to the different capsules in the set for identifying each capsule and adjusting brewing parameters accordingly. The adjustable parameters can be the rotational speed, the back-pressure at the outlet of the capsule, and/or the volume of liquid fed in the capsule. The identification means participates to deliver a wider range of beverages having differentiated characteristics (volume, taste, strength, crema, colour, etc.
[redacted]	
2. The method according to claim 1, wherein one or both of the introducing steps include: inducing turbulent flow of the heated water by the ribs.	The below cited art discloses, either expressly or inherently, the method according to claim 1, wherein one or both of the introducing steps include: inducing turbulent flow of the heated water by the ribs. *See, e.g.*: Panesar at 16:23–27:

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	Optionally, the interior 120 may contain one or more bodies, such as spheres, which are freely movable within the interior 120 to aid mixing by inducing turbulence and breaking ' down deposits of beverage ingredients during discharge of the beverage. Sweeney at 2:30–35: The channels formed between the circumferentially spaced flutes serve to efficiently direct the brewed beverage downwardly towards the pierced container bottom, with an accompanying beneficial increase in turbulence in the head space defined between the filter element and container side wall. Sweeney at 5:11–19: In all embodiments, the downwardly diverging and gradually deepening of the flutes serves to promote downward flow of the brewed beverage in chamber B while beneficially encouraging turbulence. The upwardly protruding bosses 18 a, 318 a on the container bottoms of the first and third embodiments provide readily accessible support platforms for the bottoms of the filter elements. Securing the bottoms of the filter elements to the bosses 18 a, 218 a insures that the filter elements will not be punctured by the outlet probe 30. Yoakim at [0218]: In FIG. 25, is illustrated another embodiment of the brewing system of the invention. The difference is here that a water by-pass conduit 500 is provided in addition to the main water conduit 50 for adding a volume of water in the collecting assembly 52. A volume of water may be added before, during or after the centrifugal brewing operation in the capsule. The by-pass conduit ends on the upper surface of the rotating lid 400. The upper surface of the lid 400 may comprise a water distribution structure such as radial grooves or recesses to promote the flow of water toward the surface of the collecting assembly. The control unit may control the delivery of the added volume of water so that the volume is added at the

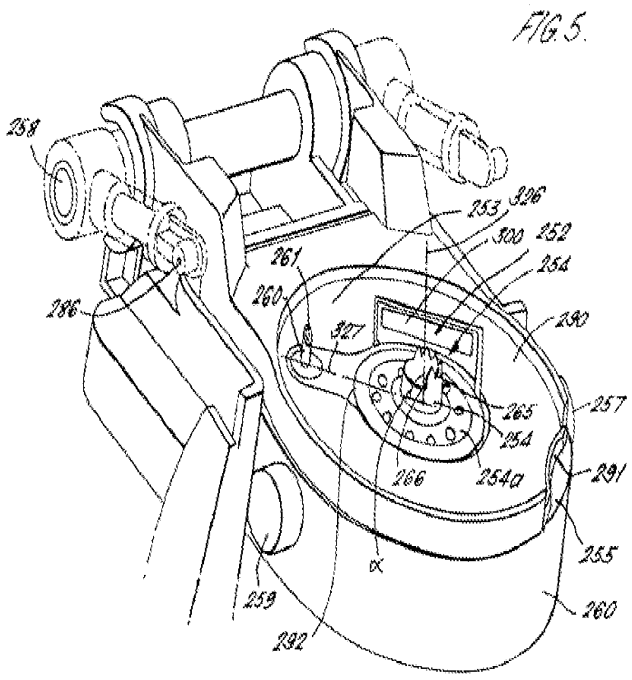
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	same time as the coffee extract is delivered by centrifugation so that the foam that is created on the top of the beverage is not destroyed. *See also* [1].
[redacted]	
3. The method according to claim 1, wherein the method comprises: comparing the read barcode with a stored reference.	The below cited art discloses, either expressly or inherently, the method according to claim 1, wherein the method comprises: comparing the read barcode with a stored reference. *See, e.g.*: Lazaris at [0042]: It is contemplated that the housings may be mounted such that they do not pivot to automatically eject the cartridges at the end of the brewing cycle, thus requiring users to manually remove the used cartridges. The holder may also employ multiple inlet probes to increase liquid distribution within the cartridge. The inlet probes also may have different heights to improve saturation of the beverage medium within the cartridge. It is also contemplated that the brewer may include a control system for automatically determining the type of cartridge (e.g., the beverage medium within the cartridge) and adjust the brewing cycle accordingly. This may include providing machine readable data such as bar codes, data matrixes, dielectric encoding, etc, on a portion of the cartridge exterior accessible to a corresponding reader in the brewer. Mahlich at [0008]: It is thus the task of the present invention to equip the actual single-serving units to be selected with suitable machine readable identification whereby complicated voluminous double mirror scanners are not required for reading the identification code and whereby the accurate alignment of the single-serving pouch with regard to the scanner or its reading unit does not matter. In particular, the difficult process of aligning a rotation-symmetrical single-

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	serving unit, whereby the shape of the capsule is mainly frustoconical and the pouch is mainly lozenge-shaped, is thus eliminated. Mahlich at [0010]: According to the invention, direct scanning or immediate reading of the identification on the single-serving unit, particularly of the single-serving capsule itself and not of any part of the storage magazine adjacent to the capsule, guarantees that the selected type of coffee is correctly identified with the single-serving unit and is actually being brewed after removal of the single-serving unit from the storage magazine. The identification can be read easily and accurately via an uncomplicated and compact reading head able to read in a linear manner, provided that the reading head is able to register the rotation-symmetrical identification. However, the rotational or angular position of the rotation-symmetrical identification with regard to the reading head that reads in a linear manner is not important, whereby the alignment of the single-serving unit with regard to the reading head is greatly simplified. In addition, the rotation-symmetrical identification is suitable for testing via a simple procedure according to claim 12. Mahlich at [0014]–[0016]: Apart from coffee type identification, the identification on any single-serving unit may also contain producer identification, whereby the latter in conjunction with an adapted evaluation system for controlling the espresso machine can block operation of the espresso machine if the producer identification on the single-serving unit does not correspond to the machine's preprogrammed producer identification. As mentioned above, an uncomplicated system for the registration of the machine readable identification on a single-serving unit according to the invention may consist of a registration device with at least one reading head able to read in a linear manner. The reading head comprises a reading sensor consisting of a transmitter scanning a luminous spot on the identification or part thereof, and of a decoder receiver. The latter may be equipped with a controlling device whereby the setting, particularly that of a magazine unit, can be controlled

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	in order to convey the single-serving units containing the desired coffee type into the dispensing position. According to claim 7 the linear reading head is located in a compact and secure position below the magazine tubes of the magazine unit. The reading head is directed upwards towards the plane where the bases of the single-serving capsules are positioned within the magazine tubes, in such a way that the rotation-symmetrical identification on the base of the respective lowest single-serving capsule can be read. Mahlich at [0019]: However, according to claim 9 it may also be sufficient to provide one reading station with just one scanning head for all magazine tubes, whereby the reading station is positioned before the dispensing station in the conveying direction, at the conveying path of those sections of the carrier that are able to move together with the carrier and are transparent so that the identification can be read. In this way it is possible to check if a single-serving unit containing the desired coffee type is conveyed into the dispensing position, whereby conveyance is controlled according to the stored positions of the single-serving capsules containing the various types of coffee. Mahlich at [0020]: The invention can be used to great advantage in a compact system according to claim 11, whereby the magazine tubes are arranged in a mainly circular manner on a turntable serving as carrier. A Maltese-cross-type drive mechanism is positioned below the turntable and is connected to the latter via an actuation connection. The turntable is adjustable whereby its adjustment may be controlled via the registration device containing the reading head/s for reading the identification of the respective lowest single-serving capsule within the magazine tubes. Mahlich at [0037]:

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	The support frame 26 also carries a reading head 27 mainly consisting of a scan transmitter and an encoder receiver. Reading head 27 is pointing from below towards the turntable 11 in such a way that it is able to register and scan the single-serving capsules stacked with their base facing downwards inside the magazine tubes 12 to 16 when the magazine tubes are moved across the reading head 27. For this purpose at least part of turntable 11 is transparent to the scanning of the ID code: windows 29 located below the magazine tubes 12 to 16 are designed as slits and are each arranged at equal radial distance to a main axis 30 of turntable 11, cf. FIG. 3. The ID codes 3 on the bases 2 of the single-serving capsules can be registered across their greatest radius r1 and r2 through these slits, according to FIG. la. In this case ID code 3 is being registered on entering and on leaving the reading station when the base 2 of the capsule, equipped with the ID code, passes on its circular path across reading head 27 arranged in front of dispensing station 18 in the direction of rotation 28 of the turntable. It is thus guaranteed, via comparison of the two registered ID codes as well as via data processing, that only one single-serving capsule 1 containing the desired coffee type is conveyed to the dispensing station 18, once the desired coffee type has been selected, for example by means of a control panel or a knob. Panesar at p. 4, ll. 24–29: The beverage preparation machine may comprise a brew head comprising an upwardly directed inlet for supplying water to the brew head, a downwardly directed outlet for outflow of beverage produced by the machine and a barcode or RFID reader having a window in the brew head through which signals may be transmitted . . . Panesar at p. 5, ll. 7–8: Preferably the barcode reader or RFID reader window is located at or near a periphery of the brew head. *See*, *e.g.*, .

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	Panesar at p. 34, ll. 5–26: The purpose of the recognition means 252 is to allow the machine 201 to recognize the type of beverage cartridge 1 that has been inserted and to adjust one or more operational parameters accordingly. In a typical embodiment, the recognition means 252 comprises an optical barcode reader which reads the printed barcode 320 provided on the laminate 5 of the beverage cartridge 1 as shown in Figure 10 and discussed above. The optical barcode reader comprises one or more LEDs 321 to illuminate the barcode 320, a focusing lens 322 to acquire an image of the barcode, a charge coupled device (CCD) 323 for producing an electrical signal representative of the acquired image and support circuitry for the LEDs and CCD. The space in the lower part for accommodating the barcode reader is limited. A mirror or mirrors 324 may be used to reflect the light from the LEDs 321 to a focusing lens which is not located in the lower part 255. Schematic arrangements are shown in Figures 9a and 9b. The lower part 255 comprises an aperture 326 which is the same size as the barcode 320 on the beverage cartridge 1. The aperture 326 is closed by a window, preferably glass, which can transmit the signals produced by the barcode reader. *See*, *e.g.*, . Panesar at p. 35, ll. 4–6: Alternatively, an RFID reader is provided to read an RFID located on the cartridge 1. *Panesar* at FIG. 5:

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	 *See also* Panesar at Claims 24, 27, 30. Rossi at 9–10: The system further optionally comprises checking means connected to a control unit of the machine. This may be in the form of a computer programme within the control unit. The checking means compares the signal from the recognising means for the identifying element and the validation element with pre-stored data in order to allow the machine to proceed to activation only if it recognises the identifying element and the unvalidated validation element. The checking means may be connected to unlocking means for unlocking the machine when said recognition takes place. Rossi at 10:

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	Figure 1 shows a schematic view of one embodiment of the system of the present invention. With reference to the above figure, the system comprises an edible-product making machine 1 and a single use load element in the form of a capsule 2. The load element contains a brewable or water soluble aromatic substance 3 for preparation of an edible product. The capsule 2 comprises an identifying element in the form of a barcode 4 and a validation element also in the form of a barcode 5, both located externally on a protective sheet 6 of the outlet base of the capsule. The machine 1 comprises recognising means in the form of an infrared barcode reader 7. This is connected to checking means 8 stored within a control unit 9 of the machine. The checking means allow the machine activation means 10 to be engaged only if the barcode reader 7 recognises the identification barcode 4 and the validation barcode 5. The machine 1 further comprises validation means in the form of a mechanical tool 11 having a plurality of tips for destroying the validation barcode 5, for example by ripping, cutting, scratching or piercing, such that the barcode reader 7 cannot recognise it as an unvalidated validation barcode. If, after the positive signal from the checking means 8 from the first recognition of the identification and validation barcodes 4,5, the barcode reader 7 performs a second recognition of the identification barcode 4 combined with the validated validation barcode 5, the activation means 10, connected to the barcode reader 7 through the control unit 9, automatically activate a cycle of production of the edible product. Rossi at Claim 13. Yoakim at [0025]: The device is useful for preparing beverages from a plurality of different capsules, in which case it further comprises identification means for identifying the different capsules, and control means capable of operating the device in centrifugation for any of the different capsules according to predetermined liquid food preparation parameters including the flow rate and the volume of liquid to be injected into the capsule, with the identification means comprising capsule recognition means which are recognized by sensing means connected to the control means of the device to control the preparation parameters accordingly.

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	Yoakim at [0477]: The capsule system further comprises an identification means associated to the different capsules in the set for identifying each capsule and adjusting brewing parameters accordingly. The adjustable parameters can be the rotational speed, the back-pressure at the outlet of the capsule, and/or the volume of liquid fed in the capsule. The identification means participates to deliver a wider range of beverages having differentiated characteristics (volume, taste, strength, crema, colour, etc.). The identification means are associated to control means placed in the centrifugal brewing device which controls the adjustment of the said parameters, by controlling the rotational motor driving the capsule holder or/and the pump supplying liquid in the capsule. *See also* [1].
10. The method according to claim 1, wherein the base element of the first portion capsule is made of metal.	The below cited art discloses, either expressly or inherently, the method according to claim 1, wherein the base element of the first portion capsule is made of metal. *See, e.g.*: Jarisch at [0007]: Recognition means can comprise one or more strips of a magnetic material applied to the body of the package, which can be read by an appropriate magnetic sensor, one or more shaped or divided areas of metal foil applied to the package body which cause an inductive effect on movement of the package in the machine, which inductive effect can be sensed; or one or more electrically conductive areas formed on the body of the package which can be sensed electrically. Jarisch at [0093]–[0095]: -Printing on the inner surface of a capsule container, using the curl as information support (Aluminum capsule technology)

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	4 Inductive Code Reading: Another mode consists in sensing a code provided on a metallic surface of the capsule using an inductive sensor. The code is formed by reliefs or recesses in the metallic surface. Mahlich at [0005]: The single-serving capsules consist mostly of a deep-drawn plastic or aluminium foil and their advantage, when compared to pouches, lies in the fact that they have an air-tight seal and that certain manufacturers fill them with a protective gas containing the coffee aroma as well. Such pre-proportioned single-serving units are available for approximately 10 different coffee fillings. Due to this variety the consumer is able to stock smaller amounts of different types of coffee. In addition, the use of these single-serving units in conjunction with the special brewing heads of those espresso machines equipped to process such single-serving units results in a reliably constant optimum brew. Mock at [0026]: The packaging comprises a side wall, an end wall and a closure element comprising a welded seal. Mock at [0027]: The packaging according to the invention may be produced with very diverse shapes and in very diverse materials. It may be rigid, for example made of thermoforming plastic or stamping thin metal sheet, for example made of aluminum, and have an outline that is, for example, circular, rectangular or hexagonal. Panesar at p. 9, ll. 8–18: Cartridge for use in the system As shown in Figure 10 to 21, the cartridge 1 generally comprises an outer member 2, an inner member 3 and a laminate 5. The outer member 2, inner member 3 and laminate 5 are assembled

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	to form the cartridge 1 which has an interior 120 for containing one or more beverage ingredients, an inlet 121, an outlet 122 and a beverage flow path linking the inlet 121 to the outlet 122 and which passes through the interior 120. The inlet 121 and outlet 122 are initially sealed by the laminate 5 and are opened in use by piercing or cutting of the laminate 5. Panesar at p. 35, ll. 24–31: To insert the cartridge 1 the holder 251 is opened as described above to expose the cartridge mount 257. The cartridge 1 is then placed on the cartridge mount 257 received within the recess 290 such that the handle 24 of the cartridge is located in the irregularity 291. The optical or magnetic barcode 320 or RFID of the cartridge 1 is oriented directly above the aperture 326 in the cartridge mount 257. Panesar at p. 38, ll. 15–21: <u>Insert for use in the system</u> As described above, the machine 201 of the present invention may also be used with other inserts not necessarily of a cartridge form. An example of another suitable form of insert will now be described. The insert 400 comprises an upper part 401 and a lower part 402. Panesar at p. 14 at line 21 – p. 15 at line 2: The laminate 5 is formed from two layers, a first layer of aluminium and a second layer of cast polypropylene. The aluminium layer is between 0.02 and 0.07 mm in thickness. . . . In one embodiment the aluminium layer is 0.06 mm and the polypropylene layer is 0.025 mm thick. This laminate is particularly advantageous as it has a high resistance to curling during assembly. As a result the laminate 5 may be pre-cut to the correct size and shape and subsequently transferred to the assembly station on the production line without undergoing distortion. Consequently, the laminate is particularly well suited to welding. Other laminate materials may be used including PET/Aluminium/PP, PE/EVOH/PP, PET/metallised/PP and Aluminium/PP laminates.

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	Yoakim at [0128]: The capsule can comprise a sealing lid. The sealing lid can comprise a flexible membrane. The membrane can comprise gas barrier and support layers made of polymers, aluminium and/or aluminium alloys. Yoakim at [0129]: The capsule can also comprise a cup-shaped body onto which the sealing lid is sealed. The cup-shaped body may also comprise gas barrier materials, such as metal, e.g., thin aluminium and/or plastic. Yoakim at [0215]: The body of the capsule can be made of plastic and/or aluminium or aluminium alloy. For example, it can be moulded by injection of plastic or deep drawn in aluminium. Yoakim at [0461]: FIGS. 45 to 50 are other variants of capsules according to the invention. For example, the capsule of FIG. 45 has a cylindrical side wall 700, an upper wall 701 and a lower wall 702 both sealed or connected to the sidewall 700. The capsule is gastight by choosing materials for the walls, e.g., aluminium and/or suitable plastics, which have gas barrier properties. *See also, e.g.*, [0414]. *See also* [1].
[redacted]	
11. The method according to claim 10, wherein the base element of the	The below cited art discloses, either expressly or inherently, the method according to claim 10, wherein the base element of the second portion capsule is made of metal. *See, e.g.*:

K-FEE SYSTEM GMBH, EX2012, page 762
NESPRESSO USA, INC. v. K-FEE SYSTEM GMBH
IPR2023-00485, U.S. PATENT 11,230,430

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second portion capsule is made of metal.	Jarisch at [0007]: Recognition means can comprise one or more strips of a magnetic material applied to the body of the package, which can be read by an appropriate magnetic sensor, one or more shaped or divided areas of metal foil applied to the package body which cause an inductive effect on movement of the package in the machine, which inductive effect can be sensed; or one or more electrically conductive areas formed on the body of the package which can be sensed electrically. Jarisch at [0093]–[0095]: -Printing on the inner surface of a capsule container, using the curl as information support (Aluminum capsule technology) 4 Inductive Code Reading: Another mode consists in sensing a code provided on a metallic surface of the capsule using an inductive sensor. The code is formed by reliefs or recesses in the metallic surface. Mock at [0026]: The packaging comprises a side wall, an end wall and a closure element comprising a welded seal. Mock at [0027]: The packaging according to the invention may be produced with very diverse shapes and in very diverse materials. It may be rigid, for example made of thermoforming plastic or stamping thin metal sheet, for example made of aluminum, and have an outline that is, for example, circular, rectangular or hexagonal. Mahlich at [0005]:

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	The single-serving capsules consist mostly of a deep-drawn plastic or aluminium foil and their advantage, when compared to pouches, lies in the fact that they have an air-tight seal and that certain manufacturers fill them with a protective gas containing the coffee aroma as well. Such pre-proportioned single-serving units are available for approximately 10 different coffee fillings. Due to this variety the consumer is able to stock smaller amounts of different types of coffee. In addition, the use of these single-serving units in conjunction with the special brewing heads of those espresso machines equipped to process such single-serving units results in a reliably constant optimum brew. Panesar at p. 9, ll. 8–18: Cartridge for use in the system As shown in Figure 10 to 21, the cartridge 1 generally comprises an outer member 2, an inner member 3 and a laminate 5. The outer member 2, inner member 3 and laminate 5 are assembled to form the cartridge 1 which has an interior 120 for containing one or more beverage ingredients, an inlet 121, an outlet 122 and a beverage flow path linking the inlet 121 to the outlet 122 and which passes through the interior 120. The inlet 121 and outlet 122 are initially sealed by the laminate 5 and are opened in use by piercing or cutting of the laminate 5. Panesar at p. 35, ll. 24–31: To insert the cartridge 1 the holder 251 is opened as described above to expose the cartridge mount 257. The cartridge 1 is then placed on the cartridge mount 257 received within the recess 290 such that the handle 24 of the cartridge is located in the irregularity 291. The optical or magnetic barcode 320 or RFID of the cartridge 1 is oriented directly above the aperture 326 in the cartridge mount 257. Panesar at p. 38, ll. 15–21: Insert for use in the system

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	As described above, the machine 201 of the present invention may also be used with other inserts not necessarily of a cartridge form. An example of another suitable form of insert will now be described. The insert 400 comprises an upper part 401 and a lower part 402. Panesar at p. 14 at line 21 – p. 15 at line 2: The laminate 5 is formed from two layers, a first layer of aluminium and a second layer of cast polypropylene. The aluminium layer is between 0.02 and 0.07 mm in thickness. . . . In one embodiment the aluminium layer is 0.06 mm and the polypropylene layer is 0.025 mm thick. This laminate is particularly advantageous as it has a high resistance to curling during assembly. As a result the laminate 5 may be pre-cut to the correct size and shape and subsequently transferred to the assembly station on the production line without undergoing distortion. Consequently, the laminate is particularly well suited to welding. Other laminate materials may be used including PET/Aluminium/PP, PE/EVOH/PP, PET/metallised/PP and Aluminium/PP laminates. Yoakim at [0128]: The capsule can comprise a sealing lid. The sealing lid can comprise a flexible membrane. The membrane can comprise gas barrier and support layers made of polymers, aluminium and/or aluminium alloys. Yoakim at [0129]: The capsule can also comprise a cup-shaped body onto which the sealing lid is sealed. The cup-shaped body may also comprise gas barrier materials, such as metal, e.g., thin aluminium and/or plastic. Yoakim at [0215]:

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	The body of the capsule can be made of plastic and/or aluminium or aluminium alloy. For example, it can be moulded by injection of plastic or deep drawn in aluminium. Yoakim at [0461]: FIGS. 45 to 50 are other variants of capsules according to the invention. For example, the capsule of FIG. 45 has a cylindrical side wall 700, an upper wall 701 and a lower wall 702 both sealed or connected to the sidewall 700. The capsule is gastight by choosing materials for the walls, e.g., aluminium and/or suitable plastics, which have gas barrier properties. *See also* Yoakim at [0414]. *See also* [10].
12. The method according to claim 1, wherein the first foil lid and/or the second foil lid is made of metal.	The below cited art discloses, either expressly or inherently, the method according to claim 1, wherein the first foil lid and/or the second foil lid is made of metal. *See, e.g.*: Jarisch at [0021]: In an embodiment, the container comprises a body and a lid connected to the body and wherein the code is present on the lid of the container. The lid may be a closed foil and/or a filter, for example. Jarisch at [0036]: In the following examples (see FIG. 4), the capsule comprises a cup-shaped body 69 extending by a flange-like rim 73. A lid such as a foil or membrane (liquid-tight or permeable to liquid) 60 is connected to the body, e.g., sealed on the rim. The capsule is filled with beverage ingredient such as ground coffee.

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	Mahlich at [0005]: The single-serving capsules consist mostly of a deep-drawn plastic or aluminium foil and their advantage, when compared to pouches, lies in the fact that they have an air-tight seal and that certain manufacturers fill them with a protective gas containing the coffee aroma as well. Such pre-proportioned single-serving units are available for approximately 10 different coffee fillings. Due to this variety the consumer is able to stock smaller amounts of different types of coffee. In addition, the use of these single-serving units in conjunction with the special brewing heads of those espresso machines equipped to process such single-serving units results in a reliably constant optimum brew. Panesar at p. 9, ll. 8–18: Cartridge for use in the system As shown in Figure 10 to 21, the cartridge 1 generally comprises an outer member 2, an inner member 3 and a laminate 5. The outer member 2, inner member 3 and laminate 5 are assembled to form the cartridge 1 which has an interior 120 for containing one or more beverage ingredients, an inlet 121, an outlet 122 and a beverage flow path linking the inlet 121 to the outlet 122 and which passes through the interior 120. The inlet 121 and outlet 122 are initially sealed by the laminate 5 and are opened in use by piercing or cutting of the laminate 5. Panesar at p. 35, ll. 24–31: To insert the cartridge 1 the holder 251 is opened as described above to expose the cartridge mount 257. The cartridge 1 is then placed on the cartridge mount 257 received within the recess 290 such that the handle 24 of the cartridge is located in the irregularity 291. The optical or magnetic barcode 320 or RFID of the cartridge 1 is oriented directly above the aperture 326 in the cartridge mount 257. Panesar at p. 38, ll. 15–21: Insert for use in the system

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	capsule can be inserted for being brewed and is removed after use for being discarded (e.g., for waste or recycling). Yoakim at [0197]: FIGS. 6 and 7 illustrate a capsule that can suit the device according to the different embodiments of FIGS. 2 to 5. In FIG. 6, the capsule 7 comprises a cup-shaped body 70 with upwardly oriented sidewall 76 and a bottom wall 77. The sidewall forms a portion of cone which promotes the collection of the brewed liquid internally. The body terminates by an upper edge 72 raising outwards onto which is sealed a lid 71. The lid may be a flexible pierceable membrane of several microns in aluminium and/or plastic. The lid can be welded on the upper edges 72 of the body. It can be pointed out that the membrane and body preferably comprise gas barrier layers such as aluminium and/or EVOH. *See also* [1].
[redacted]	
[13.pre] A method of making a coffee beverage, comprising steps of:	The below cited art discloses, either expressly or inherently, a method of making a coffee beverage. *See* [1.pre].
[13.a] providing an apparatus including a barcode reader configured to read a barcode, the apparatus including a mandrel, a water inlet, and a seal;	The below cited art discloses, either expressly or inherently, providing an apparatus including a barcode reader configured to read a barcode, the apparatus including a mandrel, a water inlet, and a seal. *See* [1.a], [1.g], [1.i], [1.h].
[13.b] inserting a first portion capsule into the apparatus, the first portion capsule being free of a filter	The below cited art discloses, either expressly or inherently, inserting a first portion capsule into the apparatus, the first portion capsule being free of a filter and including a first lid that is sealed to a base element having a cavity within which a powdered coffee material is

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and including a first lid that is sealed to a base element having a cavity within which a powdered coffee material is located, the base element has been shaped to define a wall that defines the cavity with a central interior portion,	located, the base element has been shaped to define a wall that defines the cavity with a central interior portion. *See, e.g.*: *See* [1.b].
[13.c] having a plurality of ribs that are radially spaced, vertically oriented, and configured to extend toward the central interior portion and an outside surface of the wall having plurality of vertically oriented grooves,	The below cited art discloses, either expressly or inherently, having a plurality of ribs that are radially spaced, vertically oriented, and configured to extend toward the central interior portion and an outside surface of the wall having plurality of vertically oriented grooves. *See, e.g.*: *See* [1.c], [1.e].
[13.d] the base element having a circumferential flange having a top side to which the first lid is sealed and an opposing bottom side with a first barcode located on the bottom side;	The below cited art discloses, either expressly or inherently, the base element having a circumferential flange having a top side to which the first lid is sealed and an opposing bottom side with a first barcode located on the bottom side. *See, e.g.*: *See* [1.d].
[13.e] piercing the first lid with the mandrel in a region that is offset from a central axis of the first portion capsule;	The below cited art discloses, either expressly or inherently, piercing the first lid with the mandrel in a region that is offset from a central axis of the first portion capsule. *See, e.g.*: *See* [1.g].
[13.f] sealing the top side of the flange of the first portion capsule	The below cited art discloses, either expressly or inherently, sealing the top side of the flange of the first portion capsule and/or the first lid against the seal of the apparatus. *See, e.g.*:

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and/or the first lid against the seal of the apparatus;	*See* [1.h].
[13.g] reading the first barcode with the barcode reader; controlling production of a first coffee beverage based upon the reading of the first barcode; introducing heated water into the first portion capsule via the water inlet that is arranged along the central axis of the first portion capsule according to production conditions associated with the first barcode to form the first coffee beverage;	The below cited art discloses, either expressly or inherently, reading the first barcode with the barcode reader; controlling production of a first coffee beverage based upon the reading of the first barcode; introducing heated water into the first portion capsule via the water inlet that is arranged along the central axis of the first portion capsule according to production conditions associated with the first barcode to form the first coffee beverage. *See, e.g.*: *See* [1.f], [1.i]; s*ee also* [1.a] and [1.d]. Yoakim at [0180]: The module is in fluid communication with a water reservoir 5 containing fresh or, alternatively heated water. A fluid transport means such as a low pressure pump 6 can be provided in the water circuit to transport water from the reservoir to the module. A water heater 7 is further provided to heat water to the desired temperature. It can be noted that water could be heated in the reservoir itself and water could be transported from the reservoir by effect of vaporization. Water can be fed into the module 4 at low or substantially no pressure. For example, a pressure between 0 and 2 bars above atmospheric pressure can be envisaged at the inlet 8 of the module. Yoakim at [0192]: Therefore, as much as two, three, four or even more different flow rates and/or speed ranges can be provided in function of the types of coffee to be delivered. Therefore, depending on the types of beverage to be brewed, the control unit can be programmed to adjust the optical centrifugal conditions. For instance, the control unit may be associated to a capsule recognition system enabling to recognize the types of capsules, i.e., espresso, lungo, cappuccino, long coffee (e.g., 180-400 ml), latte, tea, etc., and to adjust the speed and/or other brewing parameters (e.g., water temperature) according the capsule which is inserted in the device. A recognition system uses a code on the capsule and recognized by the device,

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	such as a color, a barcode, an RFID, a magnetic code, ferromagnetic micro-wires or labels, shapes and combinations thereof. Yoakim at [0477]: The capsule system further comprises an identification means associated to the different capsules in the set for identifying each capsule and adjusting brewing parameters accordingly. The adjustable parameters can be the rotational speed, the back-pressure at the outlet of the capsule, and/or the volume of liquid fed in the capsule. The identification means participates to deliver a wider range of beverages having differentiated characteristics (volume, taste, strength, crema, colour, etc.). The identification means are associated to control means placed in the centrifugal brewing device which controls the adjustment of the said parameters, by controlling the rotational motor driving the capsule holder or/and the pump supplying liquid in the capsule. Yoakim at [0494]-[0496]: The identification means can be sensed by sensing means connected to the control means for an active control of the parameters or can be passive identification means, e.g., selective flow restriction means. In particular, the identification means comprises capsule recognition means which are recognized by the sensing means connected to the control means of the brewing device which controls the brewing parameters accordingly. The recognition means can be differentiable by a visual code such as a barcode, a colour, a sign, a logo, etc., or by a radio-frequency (RFID), a magnetic element or by an identifiable shape.
[13.h] unloading the first portion capsule from the apparatus;	The below cited art discloses, either expressly or inherently, unloading the first portion capsule from the apparatus. *See, e.g.*: *See* [1.j].
[13.i] inserting second portion capsule into the apparatus, the	The below cited art discloses, either expressly or inherently, inserting second portion capsule into the apparatus, the second portion capsule being free of a filter and including a second lid

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second portion capsule being free of a filter and including a second lid sealed to a base element having a cavity within which a powdered coffee material is located, the base element has been shaped to define a wall that defines a cavity with a central interior portion, and having a plurality of ribs that are radially spaced, vertically oriented, and configured to extend toward the cavity central interior portion, and an outside surface of the wall having a plurality of vertically oriented grooves, the base element has a circumferential flange having a top side to which the second lid is sealed and an opposing bottom side with a second barcode that is located on the bottom side and being different from the first barcode; piercing the second lid with the mandrel in a region that is offset from a central axis of the second portion capsule; sealing the top side of the flange of the second portion capsule and/or the second lid against the seal of the apparatus; reading the second barcode with the barcode reader; controlling production of a second coffee beverage based upon the reading of	sealed to a base element having a cavity within which a powdered coffee material is located, the base element has been shaped to define a wall that defines a cavity with a central interior portion, and having a plurality of ribs that are radially spaced, vertically oriented, and configured to extend toward the cavity central interior portion, and an outside surface of the wall having a plurality of vertically oriented grooves, the base element has a circumferential flange having a top side to which the second lid is sealed and an opposing bottom side with a second barcode that is located on the bottom side and being different from the first barcode; piercing the second lid with the mandrel in a region that is offset from a central axis of the second portion capsule; sealing the top side of the flange of the second portion capsule and/or the second lid against the seal of the apparatus; reading the second barcode with the barcode reader; controlling production of a second coffee beverage based upon the reading of the second barcode; introducing the heated water into the second portion capsule via the water inlet that is arranged along the central axis of the second portion capsule according to production conditions associated with the second barcode to form the second coffee beverage. *See* [1.k]. *See also* [13.a]-[13.g].

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the second barcode; introducing the heated water into the second portion capsule via the water inlet that is arranged along the central axis of the second portion capsule according to production conditions associated with the second barcode to form the second coffee beverage.	
14. The method according to claim 13, wherein the production conditions associated with the first barcode are different from the production conditions associated with the second barcode, the production conditions include: pressure, temperature and/or an amount of the heated water.	The below cited art discloses, either expressly or inherently, the method according to claim 13, wherein the production conditions associated with the first barcode are different from the production conditions associated with the second barcode, the production conditions include: pressure, temperature and/or an amount of the heated water. *See, e.g.*: *See* [1.f] and [1.k]. Yoakim at [0477]: The capsule system further comprises an identification means associated to the different capsules in the set for identifying each capsule and adjusting brewing parameters accordingly. . . . The identification means are associated to control means placed in the centrifugal brewing device which controls the adjustment of the said parameters, by controlling the rotational motor driving the capsule holder and/or the pump supplying liquid in the capsule.

	Yoakim at [0192]: Therefore, as much as two, three, four or even more different flow rates and/or speed ranges can be provided in function of the types of coffee to be delivered. Therefore, depending on the types of beverage to be brewed, the control unit can be programmed to adjust the optimal centrifugal conditions. For instance, the control unit may be associated to a capsule recognition system enabling to recognize the types of capsules, i.e., espresso, lungo, cappuccino, long coffee (e.g., 180–400 ml), latte, tea, etc., and to adjust the speed and/or other brewing parameters (e.g., water temperature) according the capsule which is inserted in the device. A recognition system uses a code on the capsule and recognized by the device, such as a color, a barcode, an RFID, a magnetic code, ferromagnetic micro-wires or labels, shapes and combinations thereof. Jarisch at [0014]–[0015]: The aim of the present invention is to propose an improved way to identify the capsule within a beverage pro-duction machine to ensure a more reliable and convenient retrieval or reading of information so as to adjust working parameters of the machine. This aim is achieved by a capsule for the preparation of a beverage comprising a container and a beverage ingre-dient contained therein, wherein the container comprises a code adapted for being identified or read by external reading means, wherein the code is arranged on the container to be read while the capsule is rotated around an axis of rotation traversing the capsule. Panesar at p. 5, ll. 7–8: Preferably the barcode reader or RFID reader window is located at or near a periphery of the brew head. Panesar at p. 34, ll. 5–26: The purpose of the recognition means 252 is to allow the machine 201 to recognize the type of beverage cartridge 1 that has been inserted and to adjust one or more operational

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	parameters accordingly. In a typical embodiment, the recognition means 252 comprises an optical barcode reader which reads the printed barcode 320 provided on the laminate 5 of the beverage cartridge 1 as shown in Figure 10 and discussed above. The optical barcode reader comprises one or more LEDs 321 to illuminate the barcode 320, a focusing lens 322 to acquire an image of the barcode, a charge coupled device (CCD) 323 for producing an electrical signal representative of the acquired image and support circuitry for the LEDs and CCD. The space in the lower part for accommodating the barcode reader is limited. A mirror or mirrors 324 may be used to reflect the light from the LEDs 321 to a focusing lens which is not located in the lower part 255. Schematic arrangements are shown in Figures 9a and 9b. The lower part 255 comprises an aperture 326 which is the same size as the barcode 320 on the beverage cartridge 1. The aperture 326 is closed by a window, preferably glass, which can transmit the signals produced by the barcode reader. Panesar at p. 35, ll. 4–6: Alternatively, an RFID reader is provided to read an RFID located on the cartridge 1. *See also* Panesar at Claims 24, 27, 30. Rossi at 1–2: The necessary operating conditions of the machine vary depending on the substance within the load element. Such operating conditions may include the amount of water used for each product, the temperature and pressure of the water supplied, as well as the time required for operation. For each substance or type of substance, the operating conditions affect the quality of the final edible product. In order to achieve a desired quality, the contents of the load element must be known and the appropriate operating conditions must be set. Rossi at 3:

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	Furthermore, edible-product making machines of the prior art, such as coffee machines fed with capsules containing coffee powder, are usually designed so as to operate with a certain design or type of load element. Use of an incorrect load element may cause the machine to malfunction and can prejudice the safety and integrity of the machine and the may harm the user. These types of machines often involve the use of high pressure, high temperature water, which poses a potential health hazard if the machine is not used correctly or malfunctions. Alternatively, use of the wrong operating conditions with the correct load element may also lead to these consequences. For example, use of an insufficient amount of water could lead to the contents of the load element not being fully dissolved and blocking channels within the machine, thereby potentially causing accumulation and overflow of hot water. Rossi at 5: The use of an identification element and recognition means, as well as the step of recognising the identification element allows the machine to recognise the load element and, hence, its contents. This in turn enables the machine to automatically select the operating conditions appropriate for that specific load element. This prevents the user from having to verify the contents of the load element, and from having to know and select the operating conditions appropriate therefor. It also helps to prevent the safety hazard associated with the use of inappropriate operating conditions. Rossi at 5–6: The use of a validation element and validation means, as well as the step allowing the machine to take further steps only if it also recognises on the load element the validation element help to prevent the use of an already-used single use load element in the machine, thereby avoiding the production of an edible product of inferior quality and ensuring the proper functioning of the machine. In the case of re-use of a load element originally containing a water soluble aromatic substance, the dynamics of the fluid flow through the machine could be different if there is no substance in the load unit for the water to contact, thereby causing incorrect functioning of the machine and the associated health hazard. The

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	use of an activation step of automatically activating the cycle of edible-product production only when the same identifying element is recognised in combination with the validated validation element ensures that the operating conditions actually used are the correct conditions as selected by the machine in the first recognition step. This helps to prevent the user from making the mistake of inserting into the machine a different load element to the one that was first recognised, for which the operating conditions are set. Rossi at 6: The identification element preferably contains information about the contents of the load element. This permits the optional further step of self -programming of the edible- product making machine according to the specific load element recognised such that the appropriate operating conditions are automatically set. *See also* [1.a], [1.d], and [13].

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[1.pre] A beverage system for producing a beverage, comprising:	The below cited art discloses, either expressly or inherently, a beverage system for producing a beverage. *See, e.g.*: Boyd at Abstract: A brewing packet is provided for use in the preparation of hot or cold beverages. The brewing packet envelops a brewing ingredient chosen according to the tastes of a beverage drinker. The packet includes a machine interpret-able feature that contains encoded data capable of being read by a beverage producing device. Furthermore, the data on the packet is capable of directing the beverage producing device to employ a specific brewing operation suited for the particular brewing packet. This allows for producing the optimal beverage from the brewing ingredient. The packet may be utilized with a variety of brewing ingredients to produce a variety of beverages. Similarly, the packet may be configured to produce single or multiple servings of a beverage. Boyd at [0005]: Despite these advantages, however, coffee machines which employ such pre-measured coffee packets typically do not consider variations in individual taste, or the particular characteristics of the packaged coffee grounds. The use of such packets also has heretofore been reserved for espresso coffee making machines, which typically employ consistent size, shape and grind characteristics. Accordingly, applicants have developed a system whereby coffee packets may be encoded with data for use in directing the coffee brewing process to accommodate individual tastes and the particular characteristics of the ground coffee used. Boyd at [0006]: A brewing packet is provided for use in the preparation of hot or cold beverages. The brewing packet envelops a brewing ingredient chosen according to the tastes of a beverage drinker. The packet includes a machine interpret-able feature that contains encoded data capable of being read by a beverage producing device. Furthermore, the data on the packet may be capable of directing the beverage producing device to employ a specific brewing

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	operation suited for the particular brewing packet. This allows for producing the optimal beverage from the brewing ingredient. The packet may be utilized with a variety of brewing ingredients to produce a variety of beverages. Similarly, the packet may be configured to produce single or multiple servings of a beverage. Boyd at [0019]-[0021]: Although the present invention may be used in virtually any brewing machine, it is described herein for use in the context of machines such as those disclosed in U.S. Pat. No. 5,974,949 to Weber et al. and U.S. Pat. No. 6,035,762 to Ruckstuhl. Those patents disclose machines for brewing espresso using espresso espresso packets in the form of filter capsules which are received through a funnel into a brewing chamber where water is passed through the filter capsule to produce an espresso beverage. The subject matter of each of these patents is incorporated herein by this reference. The invention also may be practiced in connection with espresso machines such as those disclosed in U.S. Pat. Nos. 4,253,385, 4,254,694, 4,353,293, 4,429,623, 4,484, 515, 4,555,894 and 4,852,333, all to Illy. These patents disclose various aspects of espresso machines which include brewing chambers configured to receive pre-fabricated espresso packets through which water is passed to produce an espresso drink. The subject matter of each of these patents also is incorporated herein by this reference. While the aforementioned machines generally are described for use in connection with espresso packets which contain a single serving of espresso, it will be appreciated hat the present invention considers application of the relevant principles to machines which employ coffee packets for use in brewing multiple cups, which employ coffee packets of various size and shape, which employ various filter media and which contain coffee of various varieties, roasts, and grinds. Furthermore, the packet and methodology described herein may also produce other types of beverages such as tea, cider, and/or any beverage which is produced by mixing various ingredients. The packet and methodology is not limited to hot beverages and may be used to produce cold beverages.

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	Boyd at [0032]-[0037]: Coffee machine 100 includes a sensor 130 designed to read machine interpretable feature 30 of packet 10. Sensor 130 is in turn operatively connected to a processor 140 which controls coffee machine 100. Machine interpretable feature 30 may store data which is read by sensor 130 and passed to processor 140. Processor 140 may then direct the brewing operation in accordance with its interpretation of the data derived from machine interpretable feature 30. For example, processor 140 may direct coffee machine 100 to brew using a pre-selected contact time, contact pattern, fluid quantity, fluid temperature, fluid pressure, and/or fluid pass-through rate expressed in machine interpretable feature 30. Alternatively, the processor may itself make determinations of contact time, contact pattern, fluid quantity, fluid temperature, fluid pressure, and/or fluid pass-through rate based on information contained in machine interpretable feature 30. The processor may also, based on information contained in machine interpretable feature 30, direct the coffee machine to add water, milk, cream, sugar, or any suitable condiment to the coffee beverage. As alluded to above, machine interpretable feature 30 need not store data specifically including brewing directives and ingredient characteristics. Instead machine interpretable feature 30 may act as an identifier so that brewing directives and ingredient characteristics may be looked up from data storage 150 within (or external to) coffee machine 100. Sensor 130 thus may read machine interpretable feature 30 and processor 140 may match the machine interpretable feature with predefined brewing operation instructions stored in such memory. Processor 140 may then direct the brewing operation based on brewing operation instructions. In one embodiment, the brewing operation instructions are matched to a machine interpretable feature using a look-up table in which brewing operation instructions correspond in a one-to-one ratio with each known ingredient variety, packet size, packet construction, user preference, etc. It will be appreciated, however, that other arrangements for matching machine interpretable feature 30 with brewing directives similarly may be used. Referring now to FIG. 4, a method of operation for the present invention is illustrated at 200. At 202, a brewing packet encoded with packet-characteristic data is placed into a brewing

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	device. At 204, the packet-characteristic data is read by a sensor. At 206, the packet-characteristic data is interpreted by a processor. Finally, at 208, brewing is directed in accordance with the packet-characteristic data read by the sensor and interpreted by the processor. Because the processor may be employed to effect the aforementioned predefined brewing directives based on the machine interpretable feature associated with each packet. The brewing operation may be made consistent based on consistent machine interpretable features from packet to packet. Similarly, the brewing operation may be altered in accordance with desired brewing characteristics each time the packet is replaced. Particular brew characteristics thus may be controlled simply by selection of a packet with the desired encoded brewing directives (whether or not such directives are known to the coffee machine operator). Control of the brewing process thus may be handed off to the brewing professionals who produce the packets, rather than relying on untrained machine operators. This may be done without sacrificing variety in brew operation based on differing characteristics of the packet contents or consumer tastes. For example, a person desiring weaker coffee may purchase packets designated such in order to direct the machine to add water to the brewed coffee beverage in accordance with proper brewing procedure. This avoids problems associated with ill-advised attempts to dilute coffee by decreasing the quantity of coffee used, a change which may result in a corresponding change in bed depth, and thus in an undesirable change in coffee taste. The encoded packets also may be used to track brewing information which may be useful in ensuring satisfaction with the brewed coffee beverage. For example, the packet may include an encoded date for use in tracking freshness of the coffee grounds contained within the packet. Upon determining that the packet is stale, the processor may direct the machine to note such staleness, thus avoiding an unsatisfactory beverage. Similarly, the packet may contain encoded data related to the coffee blend contained within the packet, such data being stored in memory to provide a history of coffee blends. The encoded packet also may

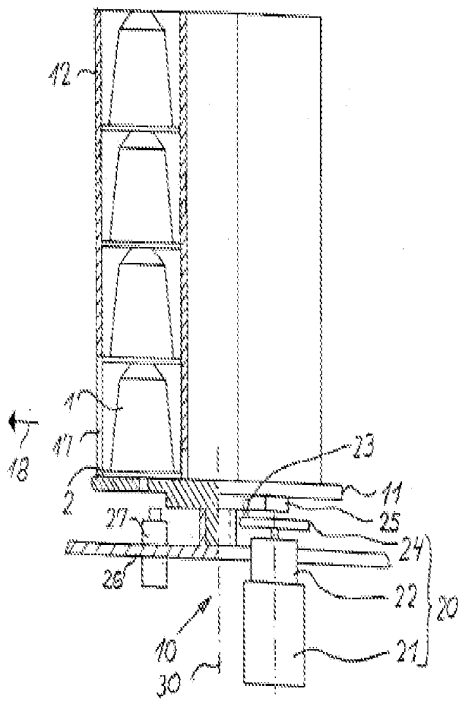
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	contain encoded data defining the source of the packet so as to prohibit use of counterfeit packets, or packets from unauthorized suppliers. *See also* Boyd at Claims 1-25. Jarisch at Abstract: Capsule for the preparation of a beverage comprising a con-tainer and a beverage ingredient contained therein, wherein the container comprises a code (65) adapted for being iden-tified or read by external reading means (62), wherein the code is arranged on the container to be read while the capsule is rotated around an axis of rotation traversing the capsule. Jarisch at [0014]: The aim of the present invention is to propose an improved way to identify the capsule within a beverage production machine to ensure a more reliable and convenient retrieval or reading of information so as to adjust working parameters of the machine. Jarisch at [0023]: The invention further relates to a system for preparing a beverage from a capsule as aforementioned and further comprising a beverage preparation device; wherein the device comprises capsule holding means for holding the capsule and rotational drive means for driving the holding means and capsule in rotation along said axis of rotation and reading means arranged for reading the code when the capsule is rotated along said axis. Jarisch at [0034]: FIG. 1 illustrates an example of a beverage preparation system 1 as described in WO2010/026053 for which the capsule of the invention can be used. Jarisch at FIG. 1:

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	Lazaris at Abstract: A brewer operates during a brew cycle to brew a beverage by infusing heated liquid with a dry beverage medium contained in a single serve disposable cartridge. During the brew cycle, the cartridge is contained in a cup-shaped housing closed by a lid. Rotation of the cartridge within the housing is resisted by locating surfaces arranged to interengage with at least one surface irregularity in the cartridge sidewall. Inlet and outlet probes pierce the cartridge and serve, respectively, to admit the heated liquid and to remove the served beverage. Mahlich at [0008]: It is thus the task of the present invention to equip the actual single-serving units to be selected with suitable machine readable identification whereby complicated voluminous double mirror scanners are not required for reading the identification code and whereby the accurate alignment of the single-serving pouch with regard to the scanner or its reading unit does not matter. In particular, the difficult process of aligning a rotation-symmetrical single-serving unit, whereby the shape of the capsule is mainly frustoconical and the pouch is mainly lozenge-shaped, is thus eliminated. Mahlich at [0010]: According to the invention, direct scanning or immediate reading of the identification on the single-serving unit, particularly of the single-serving capsule itself and not of any part of the storage magazine adjacent to the capsule, guarantees that the selected type of coffee is correctly identified with the single-serving unit and is actually being brewed after removal of the single-serving unit from the storage magazine. The identification can be read easily and accurately via an uncomplicated and compact reading head able to read in a linear manner, provided that the reading head is able to register the rotation-symmetrical identification. However, the rotational or angular position of the rotation-symmetrical identification with regard to the reading head that reads in a linear manner is not important, whereby the alignment of the single-serving unit with regard to the reading head is greatly simplified. In

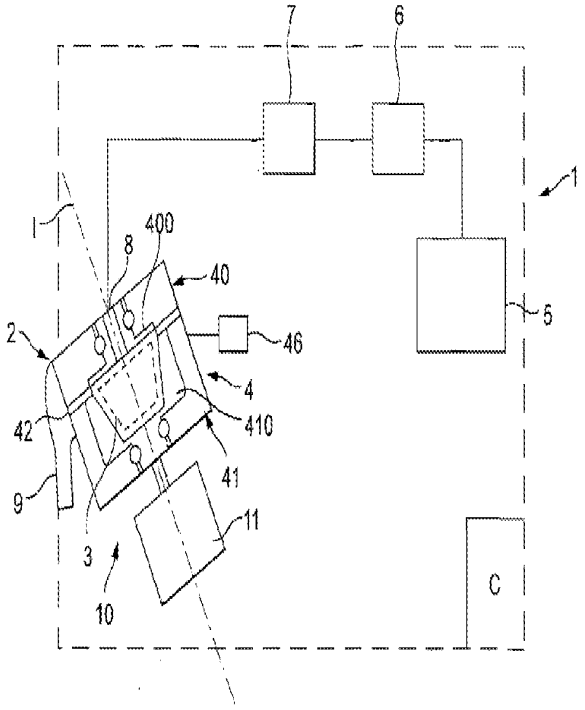
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	addition, the rotation-symmetrical identification is suitable for testing via a simple procedure according to claim 12. Mahlich at [0014]-[0016]: Apart from coffee type identification, the identification on any single-serving unit may also contain producer identification, whereby the latter in conjunction with an adapted evaluation system for controlling the espresso machine can block operation of the espresso machine if the producer identification on the single-serving unit does not correspond to the machine's preprogrammed producer identification. As mentioned above, an uncomplicated system for the registration of the machine readable identification on a single-serving unit according to the invention may consist of a registration device with at least one reading head able to read in a linear manner. The reading head comprises a reading sensor consisting of a transmitter scanning a luminous spot on the identification or part thereof, and of a decoder receiver. The latter may be equipped with a controlling device whereby the setting, particularly that of a magazine unit, can be controlled in order to convey the single-serving units containing the desired coffee type into the dispensing position. According to claim 7 the linear reading head is located in a compact and secure position below the magazine tubes of the magazine unit. The reading head is directed upwards towards the plane where the bases of the single-serving capsules are positioned within the magazine tubes, in such a way that the rotation-symmetrical identification on the base of the respective lowest single-serving capsule can be read. Mahlich at [0037] The support frame 26 also carries a reading head 27 mainly consisting of a scan transmitter and an encoder receiver. Reading head 27 is pointing from below towards the turntable 11 in such a way that it is able to register and scan the single-serving capsules stacked with their

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	base facing downwards inside the magazine tubes 12 to 16 when the magazine tubes are moved across the reading head 27. For this purpose at least part of turntable 11 is transparent to the scanning of the ID code: windows 29 located below the magazine tubes 12 to 16 are designed as slits and are each arranged at equal radial distance to a main axis 30 of turntable 11, cf. FIG. 3. The ID codes 3 on the bases 2 of the single-serving capsules can be registered across their greatest radius r_1 and r_2 through these slits, according to FIG. la. In this case ID code 3 is being registered on entering and on leaving the reading station when the base 2 of the capsule, equipped with the ID code, passes on its circular path across reading head 27 arranged in front of dispensing station 18 in the direction of rotation 28 of the turntable. It is thus guaranteed, via comparison of the two registered ID codes as well as via data processing, that only one single-serving capsule 1 containing the desired coffee type is conveyed to the dispensing station 18, once the desired coffee type has been selected, for example by means of a control panel or a knob. Mahlich at Fig. 3:

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	Schnitt A- B Fig.3  *See also* Mahlich at Claims 1-12. Panesar at p. 1, ll. 4-5: The present invention relates to an insert, a machine and a system for the preparation of beverages. Panesar at p. 1, ll. 20–28: In the domestic market consumers may not wish to use separate machines when preparing beverages from different beverage ingredient containing containers or, indeed, loose beverage ingredients. It is therefore an object of the present 25 invention to provide an insert, a beverage

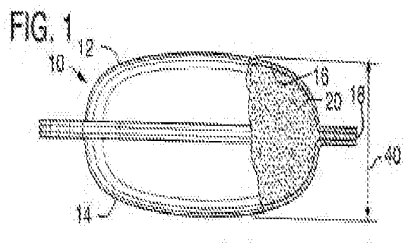
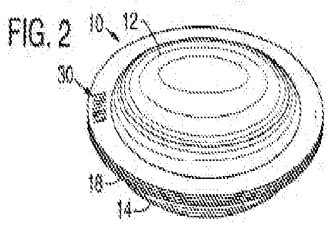
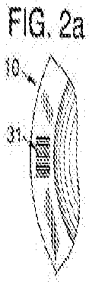
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	preparation machine and a beverage preparation system which allows consumers to use a variety of containers or loose ingredients in a single beverage preparation machine. Panesar at p. 8, ll. 17–26; FIG. 8. Beverage Preparation System A beverage preparation machine 201 of the beverage preparation system of the present invention is shown in Figures la to 9b. The beverage preparation machine 201 generally comprises a housing 210 containing a water tank 220, a water heater 225, a water pump 230, an air compressor 235, a control processor, a user interface 240 and a brew head 250. The brew head 250 in turn generally comprises a holder 251, recognition means 252 and inlet and outlet piercers 253, 254. Panesar at Claims 23–31. Rubino at Claim 21: An automatic machine for making beverages such as coffee and the like from a capsule (1) according to the preceding claim and containing a substantially granular infusion, said machine comprising: extraction means apt to cause the passing through the capsule itself by an extraction fluid; and a housing apt to receive said capsule (1) and having a contour of shape substantially complementary to that of the shaped external contour of the capsule itself. Rossi at 1: The present invention relates to a system of an edible- product making machine and a load element, and a process for controlling the operation of the edible-product making machine . Edible-product making machines of the type being fed with a single use load element having a brewable or water soluble aromatic substance for preparation of said edible product are often used for the preparation of coffee, tea, or other beverages, as well as for soups. The

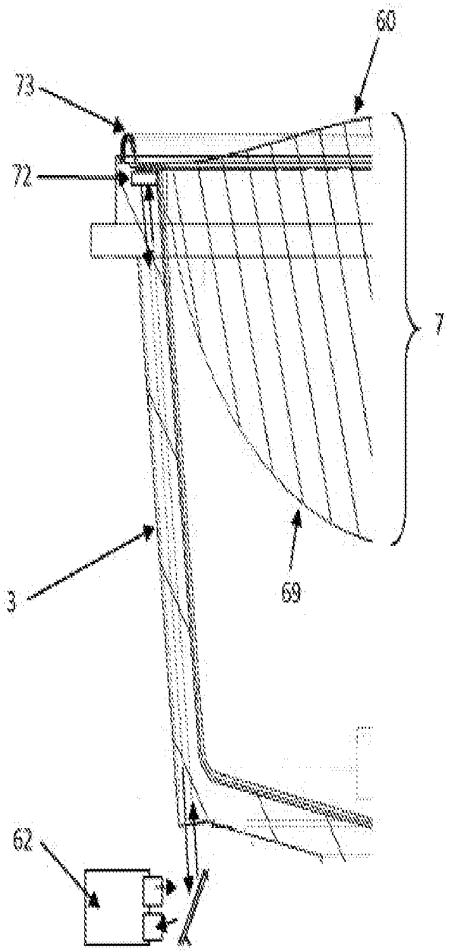
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	load element generally comprises a capsule containing coffee powder, instant coffee granules, tea leaves, freeze-dried soup granules or other substances designed to be put in contact with water within machine. The load element is usually sealed, and the element is inserted into the machine, without the user being in contact with the substance therein. Inside the machine, the load element is generally pierced to allow water to pass through it, or the contents of the load element are emptied out into a different container for the preparation of the edible product. The contents of the load element are brewed or dissolved in the water in order to make the edible product. *See also* Rossi at 3-6. Yoakim at [0002]: The present invention relates to a capsule, device, system, and method for preparing a beverage or food liquid from a food substance which is brewed or extracted by using centrifugal forces exerted on a capsule which contains the substance. Yoakim at [0139]-[0144]: The invention also concerns a system for preparing a beverage or food liquid from a food substance contained in a filtering receptacle by passing water through the substance using centrifugal forces . . . wherein the system further comprises referencing means for positioning and referencing the capsule in a removable manner in the device and in operational relationship with the water feed means and along an axis of rotation along the driving means. Yoakim at [0180]:The system 1 of the invention is illustrated in FIG. 1 in the more general sense. The system comprises a device 2 and a capsule 3. The device has a brewing module 4 into which the capsule can be inserted for being brewed and is removed after use for being discarded (e.g., for waste or recycling). The module is in fluid communication with a water reservoir 5 containing fresh or, alternatively heated water. A fluid transport means such as a low pressure pump 6 can be provided in the water circuit to transport water from the reservoir to the module. A water heater 7 is further provided to heat water to the desired temperature. It can be noted that water could be heated in the reservoir itself and water could be transported

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	from the reservoir by effect of vaporization. Water can be fed into the module 4 at low or substantially no pressure. For example, a pressure between 0 and 2 bars above atmospheric pressure can be envisaged at the inlet 8 of the module. Yoakim at FIG. 1:  FIG. 1 w
[1.a] a portion capsule comprising: a foil lid sealed to a base element having a cavity within which a beverage raw material is provided,	The below cited art discloses, either expressly or inherently, a portion capsule comprising: a foil lid sealed to a base element having a cavity within which a beverage raw material is provided. *See, e.g.*:

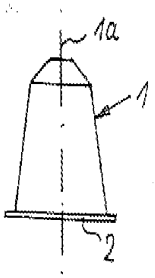
Appendix B – Obviousness Chart for U.S. Patent No. 10,858,177

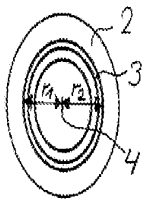
U.S. Patent No. 10,858,177	Disclosure
	Boyd at [0006]: A brewing packet is provided for use in the preparation of hot or cold beverages. The brewing packet envelops a brewing ingredient chosen according to the tastes of a beverage drinker. The packet includes a machine interpretable feature that contains encoded data capable of being read by a beverage producing device. Furthermore, the data on the packet may be capable of directing the beverage producing device to employ a specific brewing operation suited for the particular brewing packet. This allows for producing the optimal beverage from the brewing ingredient. The packet may be utilized with a variety of brewing ingredients to produce a variety of beverages. Similarly, the packet may be configured to produce single or multiple servings of a beverage. Boyd at [0028]: As shown in FIG. 2, packet 10 includes a machine interpretable feature 30 which directs operation of the coffee machine in accordance with predefined brewing directives. In the first depicted embodiment, the machine interpretable feature is a barcode 31 as depicted in FIG. 2 and 2a. It will be understood that the machine interpretable feature may be any machine readable feature associated with packet 10. Boyd at [0034]: Referring now to FIG. 4, a method of operation for the present invention is illustrated at 200. At 202, a brewing packet encoded with packet-characteristic data is placed into a brewing device. At 204, the packet-characteristic data is read by a sensor. At 206, the packet-characteristic data is interpreted by a processor. Finally, at 208, brewing is directed in accordance with the packet-characteristic data read by the sensor and interpreted by the processor.

	Boyd at Fig. 1:  Boyd at Fig. 2:  Boyd at Fig. 2a:  Boyd at Claims 1-25. Jarisch at [0036]: In the following examples (see FIG. 4), the capsule comprises a cup-shaped body 69 extending by a flange-like rim 73. A lid such as a foil or membrane (liquid-tight or

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	permeable to liquid) 60 is connected to the body, e.g., sealed on the rim. The capsule is filled with beverage ingredient such as ground coffee. *See also* Jarisch at FIG. 4:  Fig. 4 *See also* Jarisch at FIGS 5-7.

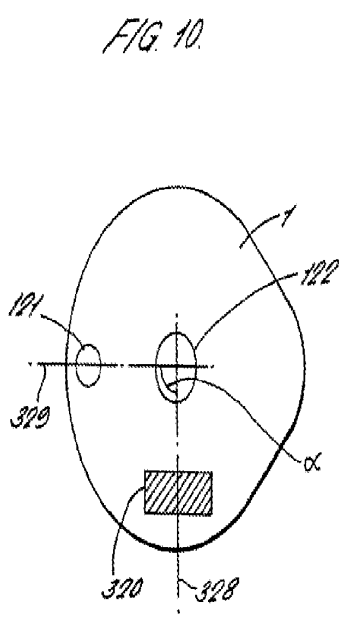
Appendix B – Obviousness Chart for U.S. Patent No. 10,858,177

U.S. Patent No. 10,858,177	Disclosure
	Mahlich at Abstract: A machine readable identification on a single-serving unit containing coffee powder for espresso machines, designed so that it can be read easily and accurately, is structured in a rotation-symmetrical manner and is applied to an essentially level surface of the single-serving unit, whereby the single-serving unit preferably consists of a single-serving capsule (1) having an essentially circular base (2) where-upon the identification is applied in a coaxial manner. Mahlich at [0030]-[0032]: FIGS. 1, la and 3 show a single-serving capsule 1 of an essentially frustoconical design arranged in a rotation-symmetrical manner around a symmetrical axis la. Mahlich at Fig 1: Fig.1 

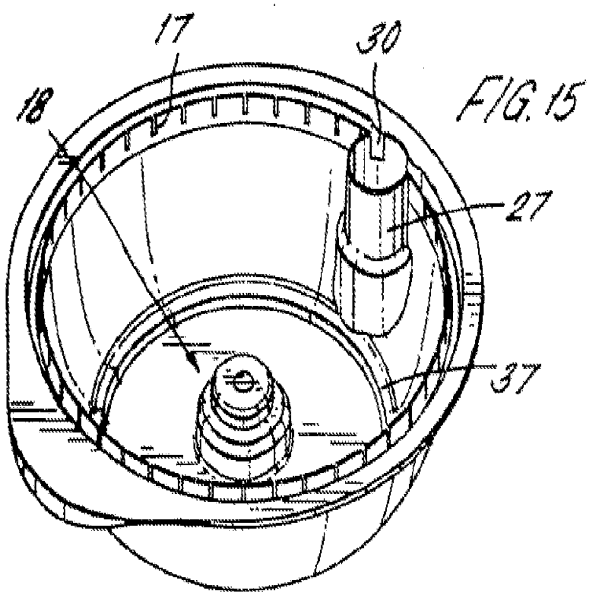
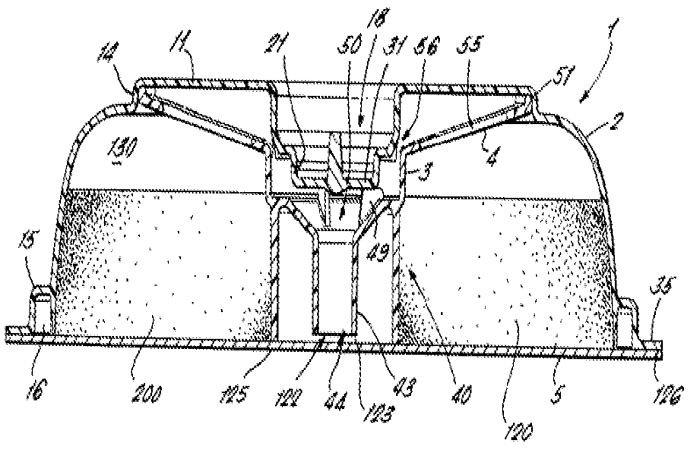
	Mahlich at Fig. 1a: Fig.1a  *See also* Mahlich at Claims 1-12. Panesar at p. 9, ll. 8–18: <u>Cartridge for use in the system</u> As shown in Figure 10 to 21, the cartridge 1 generally comprises an outer member 2, an inner member 3 and a laminate 5. The outer member 2, inner member 3 and laminate 5 are assembled to form the cartridge 1 which has an interior 120 for containing one or more beverage ingredients, an inlet 121, an outlet 122 and a beverage flow path linking the inlet 121 to the outlet 122 and which passes through the interior 120. The inlet 121 and outlet 122 are initially sealed by the laminate 5 and are opened in use by piercing or cutting of the laminate 5. Panesar at p. 38, ll. 15–21: <u>Insert for use in the system</u> As described above, the machine 201 of the present invention may also be used with other inserts not necessarily of a cartridge form. An example of another suitable form of insert will now be described. The insert 400 comprises an upper part 401 and a lower part 402. Panesar at p. 14 at line 21 – p. 15 at line 2:

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	The laminate 5 is formed from two layers, a first layer of aluminium and a second layer of cast polypropylene. The aluminium layer is between 0.02 and 0.07 mm in thickness. . . . In one embodiment the aluminium layer is 0.06 mm and the polypropylene layer is 0.025 mm thick. This laminate is particularly advantageous as it has a high resistance to curling during assembly. As a result the laminate 5 may be pre-cut to the correct size and shape and subsequently transferred to the assembly station on the production line without undergoing distortion. Consequently, the laminate is particularly well suited to welding. Other laminate materials may be used including PET/Aluminium/PP, PE/EVOH/PP, PET/metallised/PP and Aluminium/PP laminates. Panesar at p. 16, ll. 28-31: The laminate 5 is then affixed to the outer member 2 by forming a weld 126 around the periphery of the laminate 5 to join the laminate 5 to the lower surface of the outwardly extending flange 35. Panesar at p. 5, ll. 23–32: The insert of the present invention may contain or be loaded with one or more beverage ingredients suitable for 25 the formation of a beverage product. The beverage product may be, for example, one of coffee, tea, chocolate or a dairy-based beverage including milk. The beverage ingredients may be powdered, ground, leaf-based or liquid. The beverage ingredients may be insoluble or soluble. 30 Examples include roast and ground coffee, leaf tea, powdered chocolate and soup, liquid milk-based beverages, carbonated drinks and concentrated fruit juices. Panesar at p. 9, ll. 24–29: The cartridge 1 is particularly designed for use in dispensing filtered products such as roast and ground coffee or leaf tea. However, the cartridge 1 may be used with other products such

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	as chocolate, coffee, tea, sweeteners, cordials, flavourings, alcoholic beverages, flavoured milk, fruit juices, squashes, sauces and desserts. Panesar at FIGs. 10, 15, 21: 

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	 FIG. 15 FIG. 21. 

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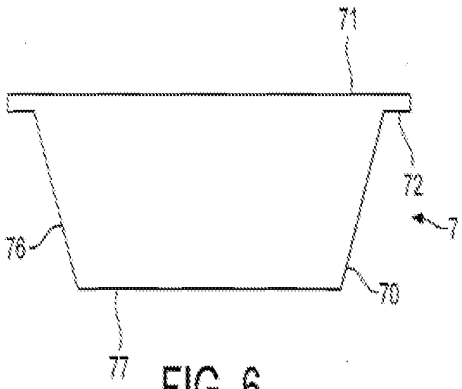
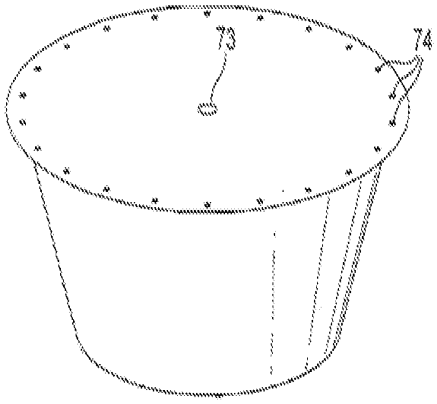
Appendix B – Obviousness Chart for U.S. Patent No. 10,858,177

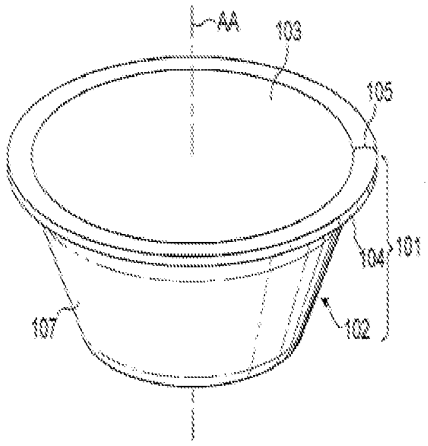
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	Sweeney at 1:19-25: This beverage filter cartridge is comprised basically of an impermeable yieldably-piercable cup-shaped outer container internally subdivided by a permeable cone-shaped filter into first and second chambers. A granular or powdered dry beverage medium, e.g., roasted ground coffee, is stored in the first chamber, and the container is closed by an impermeable yieldably piercable lid. Sweeney at 4:20-23: The lid may be cut or blanked from any suitable impermeable heat sealable and yieldably piercable material, such as for example, a metallic/polymer laminate supplied by Winpak Heat Seal Packaging, Inc. of Montreal, Canada. Yoakim at [0129]: The capsule can also comprise a cup-shaped body onto which the sealing lid is sealed. The cup-shaped body may also comprise gas barrier materials, such as metal, e.g., thin aluminium and/or plastic. Yoakim at [0197]: FIGS. 6 and 7 illustrate a capsule that can suit the device according to the different embodiments of FIGS. 2 to 5. In FIG. 6, the capsule 7 comprises a cup-shaped body 70 with upwardly oriented sidewall 76 and a bottom wall 77. The sidewall forms a portion of cone which promotes the collection of the brewed liquid internally. The body terminates by an upper edge 72 raising outwards onto which is sealed a lid 71. The lid may be a flexible pierceable membrane of several microns in aluminium and/or plastic. The lid can be welded on the upper edges 72 of the body. It can be pointed out that the membrane and body preferably comprise gas barrier layers such as aluminium and/or EVOH.

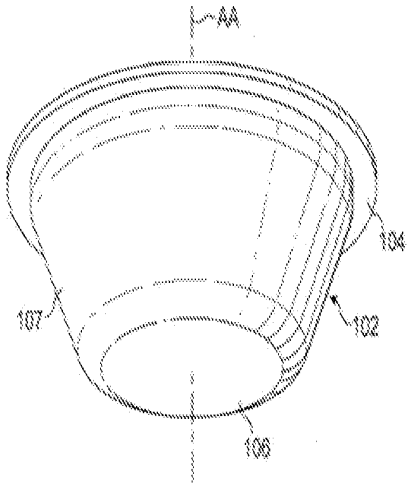
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NESPRESSO USA, INC. v. K-FEE SYSTEM GMBH
IPR2023-00485, U.S. PATENT 11,230,430

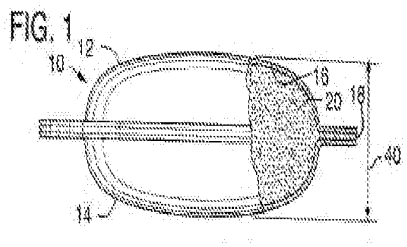
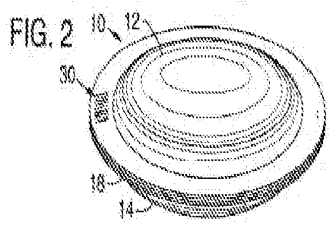
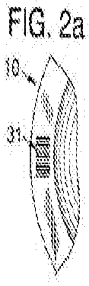
Appendix B – Obviousness Chart for U.S. Patent No. 10,858,177

U.S. Patent No. 10,858,177	Disclosure
	Yoakim at [0198]: The capsule contains a substance chosen among the list consisting of ground coffee, soluble coffee, tea, a whitener such as dairy or non-dairy ingredient(s), herbal tea, nutritional substance, culinary ingredients and a mixture thereof. Yoakim at FIGS. 6-7:

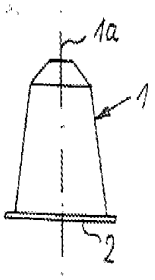
U.S. Patent No. 10,858,177	Disclosure
	 FIG. 6  FIG. 7 Yoakim at [0414]: As shown in FIGS. 26 and 27, a preferred capsule 101 of the invention generally comprises a dished body 102 onto which is sealed a sealing foil 103. The sealing foil 103 is sealed onto a peripheral rim 104 of the body at a sealing annular portion 105. The rim 104 can extend outwards forming a small annular portion, e.g., of about 2-5mm. The dished body comprises a

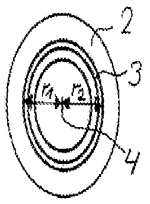
U.S. Patent No. 10,858,177	Disclosure
	bottom wall 106 and a side wall 107 which preferably widens in direction of the large open end of the body opposed to the bottom wall. The dished body is preferably rigid or semi-rigid. It can be formed of a food grade plastics, e.g., polypropylene, with a gas barrier layer such as EVOH and the like or aluminium alloy or a complex of plastic and aluminium alloy. The sealing foil 103 can be made of a thinner material such as a plastic laminate also including a barrier layer or aluminium alloy or a combination of plastic and aluminium alloy. The sealing foil is usually of a thickness between 30 and 250 microns, for example. The sealing foil membrane can be pierced for creating the water inlet and the beverage outlet(s) as will be described later in the description. Yoakim at FIGS. 26 and 27:  FIG. 26

U.S. Patent No. 10,858,177	Disclosure
	 FIG. 27
[1.b] the base element comprising a circumferential flange having a top side to which the lid is attached	The below cited art discloses, either expressly or inherently, the base element comprising a circumferential flange having a top side to which the lid is attached. *See, e.g.*: Boyd at [0027]: As indicated above, opposing filter portions 12 and 14 are secured together about their respective perimeters to form cavity 16. In the depicted embodiment, the filter portions are secured to an orbicular gasket 18. The gasket is deformable to allow for an optimum seal. In an alternative embodiment, the packet may be integrally formed from a continuous filter in which no gasket is required. Although the depicted packet is circular, it will be appreciated that the cavity may take virtually any shape capable of containing coffee grounds. The size and bed depth 40 of the packet is determined by the quantity of coffee grounds, the density of coffee grounds, and the desired coffee beverage taste.

	Boyd at Fig. 1:  Boyd at Fig. 2:  Boyd at Fig. 2a:  Boyd at Claim 3. Jarisch at [0016]: More particularly, the capsule has a circumference wherein the code is arranged on the container along an arc-shaped or circular path of the circumference. In a particular mode, the

U.S. Patent No. 10,858,177	Disclosure
	capsule has a circumference wherein the code comprises successive segments which are individually rectilinear but extend substantially along at least a part of the circumference. More particularly, the code is arranged along at least a eighth of the circumference. This configuration provides a reliable reading or retrieval of information as well as an effective portion for information. In order to ensure a reliable reading or retrieval of information, the code is repeated along said circumference. The repetition ensures a higher probability that at least one code is readable but also may potentially reduce the reading time. Jarisch at [0036]-[0037]: In the following examples (*see* FIG. 4), the capsule comprises a cup-shaped body 69 extending by a flange-like rim 73. A lid such as a foil or membrane (liquid-tight or permeable to liquid) 60 is connected to the body, e.g., sealed on the rim. The capsule is filled with beverage ingredient such as ground coffee. The capsule is designed for rotating around an axis A. This axis A crosses perpendicularly the center of the membrane which has the form of a disk. This axis A exits at the center of the bottom of the body. This axis A will help to define the notion of circumference which is a circular path located on the capsule and having the axis A as reference axis. This circumference can be on the lid, e.g., membrane or on the body part such as on the flange-like rim. The lid may be impervious to liquid before insertion in the device or it may be pervious to liquid by means of small openings or pores provided in the center and/or periphery of the lid. The code is spread along the circumference or a part of the circumference. The code may comprise successive arch-shaped segments. The code may also comprise successive segments which are individually rectilinear but extend along at least a part of the circumference. According to one embodiment, the sensor cannot read the code without the rotation of the capsule. This is the case where the code is spread along at least a eighth, preferably at least a quarter of the circumference or even more. The fact that the code is placed along an arc-shaped line render the reading by a sweep beam very difficult. This is why the rotation of the capsule plays an important role. In case that the code is located on the body, it is then necessary to rotate the capsule to have access, for the sensor, to the entire set of marks

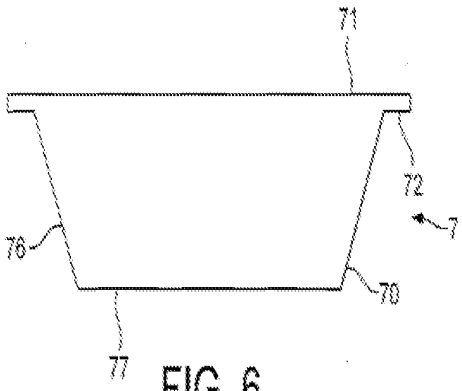
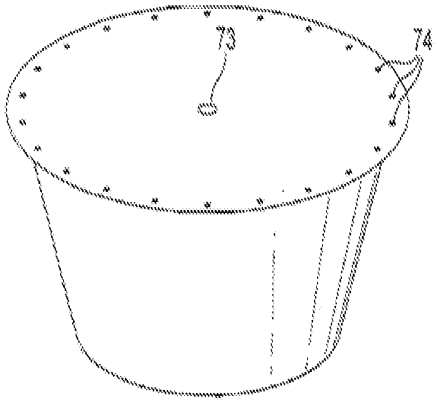
U.S. Patent No. 10,858,177	Disclosure
	composing the code. The code is further located close to the peripheral edge of the capsule. The peripheral edge is defined as the outermost circular line of the capsule. Preferably, the distance of the code from the peripheral edge is not more than 10 mm, more preferably not more than 8 mm. Mahlich at [0030]-[0032]: FIGS. 1, la and 3 show a single-serving capsule 1 of an essentially frustoconical design arranged in a rotation-symmetrical manner around a symmetrical axis la. Mahlich at Fig 1: Fig.1 

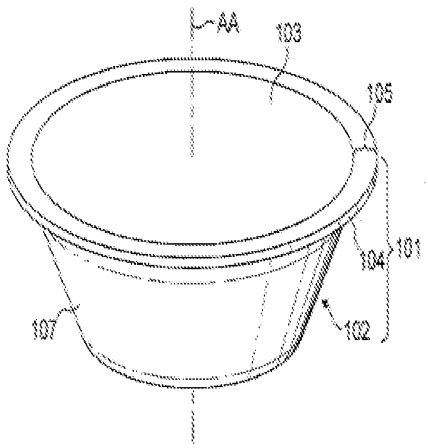
	Mahlich at Fig. 1a: Fig.1a  Panesar at p. 12, ll. 1–7: A lower end of the outwardly extending shoulder 33 is provided with an outwardly extending flange 35 which extends perpendicularly to the major axis X. Typically the flange 35 has a width of between 2 and 4 mm. A portion of the flange 35 is enlarged to form a handle 24 by which the outer member 2 may be held. The handle 24 is provided with an upturned rim 25 to improve grip. Panesar at p. 16, ll. 28–32: The laminate 5 is then affixed to the outer member 2 by forming a weld 126 around the periphery of the laminate 5 to join the laminate 5 to the lower surface of the outwardly extending flange 35. Panesar at FIGs. 10, 15, 21. Yoakim at [0129]: The capsule can also comprise a cup-shaped body onto which the sealing lid is sealed. The cup-shaped body may also comprise gas barrier materials, such as metal, e.g., thin aluminium and/or plastic.

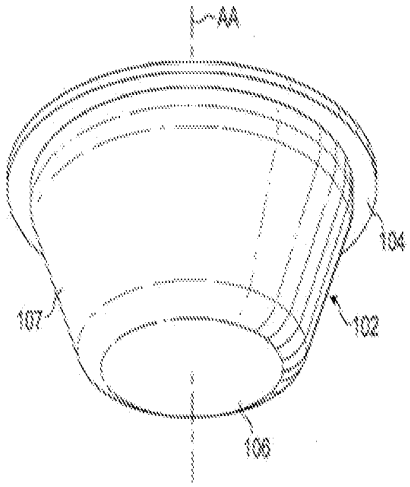
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U.S. Patent No. 10,858,177	Disclosure
	Yoakim at [0197]: FIGS. 6 and 7 illustrate a capsule that can suit the device according to the different embodiments of FIGS. 2 to 5. In FIG. 6, the capsule 7 comprises a cup-shaped body 70 with upwardly oriented sidewall 76 and a bottom wall 77. The sidewall forms a portion of cone which promotes the collection of the brewed liquid internally. The body terminates by an upper edge 72 raising outwards onto which is sealed a lid 71. The lid may be a flexible pierceable membrane of several microns in aluminium and/or plastic. The lid can be welded on the upper edges 72 of the body. It can be pointed out that the membrane and body preferably comprise gas barrier layers such as aluminium and/or EVOH. Yoakim at FIGS. 6-7:

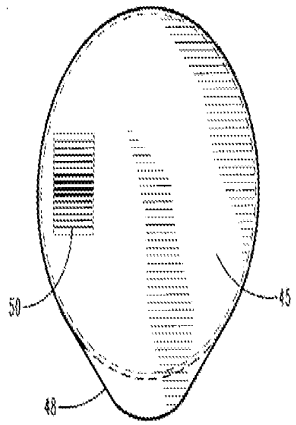
U.S. Patent No. 10,858,177	Disclosure
	 FIG. 6  FIG. 7 Yoakim at [0414]: As shown in FIGS. 26 and 27, a preferred capsule 101 of the invention generally comprises a dished body 102 onto which is sealed a sealing foil 103. The sealing foil 103 is sealed onto a peripheral rim 104 of the body at a sealing annular portion 105. The rim 104 can extend

U.S. Patent No. 10,858,177	Disclosure
	outwards forming a small annular portion, e.g., of about 2-5mm. The dished body comprises a bottom wall 106 and a side wall 107 which preferably widens in direction of the large open end of the body opposed to the bottom wall. The dished body is preferably rigid or semi-rigid. It can be formed of a food grade plastics, e.g., polypropylene, with a gas barrier layer such as EVOH and the like or aluminium alloy or a complex of plastic and aluminium alloy. The sealing foil 103 can be made of a thinner material such as a plastic laminate also including a barrier layer or aluminium alloy or a combination of plastic and aluminium alloy. The sealing foil is usually of a thickness between 30 and 250 microns, for example. The sealing foil membrane can be pierced for creating the water inlet and the beverage outlet(s) as will be described later in the description. Yoakim at FIGS. 26 and 27:  FIG. 26

U.S. Patent No. 10,858,177	Disclosure
	 FIG. 27
[1.c] and a bottom side with a barcode located on the bottom side, and	The below cited art discloses, either expressly or inherently, a bottom side with a barcode located on the bottom side. *See, e.g.*: Aker at Abstract: A method of associating a barcode with a product that has a product body with a round ending section. The method includes positioning the barcode repetitively along a circle sharing a common center with an outer-ring of the round ending section. A method of reading such a barcode on such a product includes positioning at least a portion of the round ending section of the product within a field of view of a barcode reader such that a complete barcode can be construed from a portion of a first instance of the barcode and a portion of the second distance of the barcode. Aker at [0003]:

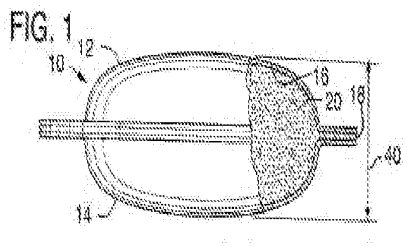
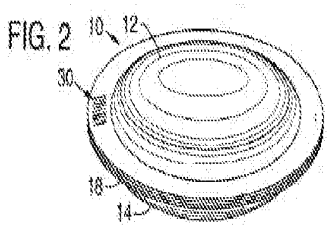
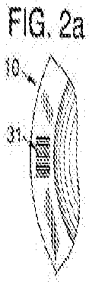
Appendix B – Obviousness Chart for U.S. Patent No. 10,858,177

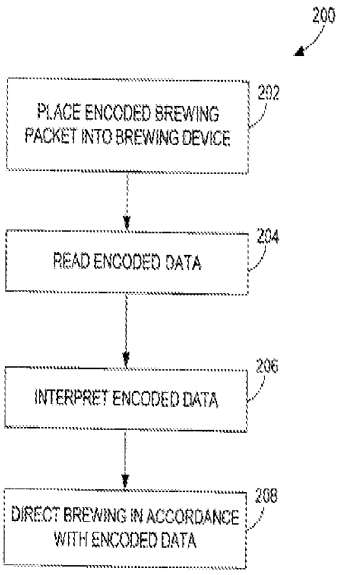
U.S. Patent No. 10,858,177	Disclosure
	Generally, if a product is somewhat cylindrically symmetric and has some of its information coded with barcodes, when such product is to be handled by certain handling-machine, it may be desirable for a barcode reader in the handling-machine to find the barcode on such product repeatedly and reliably. Aker at [0004]: In one aspect, the invention is directed to a product. The product includes a product body with a round ending section, and a barcode repetitively positioned along a circle sharing a common center with an outer-ring of the round ending section. Aker at [0006]: In another aspect, the invention is directed to a method of associating a barcode with a product that has a product body with a round ending section. The method includes positioning the barcode repetitively along a circle sharing a common center with an outer-ring of the round ending section of the product body. Aker at [0017]: FIG. 2A-FIG. 2B illustrate a product with a product body 40 that is somewhat cylindrically symmetric and some information of the product is coded with barcodes in accordance with some embodiments. In FIG. 2A, the product body 40 is generally in the shape of a conic cylinder. The product body 40 is terminated with a round ending section 45. FIG. 2B is a top view of the product body 40. In FIG. 2B, a barcode is repetitively positioned along an out-ring 46 of the round ending section 45. Multiple instances of the same barcode, 50A-50H, are printed on the surface of the round ending section 45. In other implementations, the barcode can be repetitively positioned along a circle sharing a common center with an outer-ring of the round ending section, and the diameter of such circle can be smaller than the diameter of the outer-ring. In general, the product body 40 can be in the shape of a conic cylinder as

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	shown in FIG. 3A, in the shape of a cylinder as shown in FIG. 3B, or in any other shape that is somewhat cylindrically symmetric as shown in FIG. 3C. Aker at Fig. 1B:  *FIG. 1B* *See also* Aker at [0018]-[0022]; *id.* at Figs. 1A, 2A, 2B, 4A, 4B, 4C, 5A, 5B. Boyd at [0023]: With the foregoing in mind, it will be appreciated that it would be desirable to automatically customize the brew operation based on particular characteristics of the packet, the characteristics of the coffee, and/or the tastes of the user, whether or not the user is aware of what changes in the brew operation will lead to the desired taste. The present invention provides a vehicle for such customization in the form of an encoded packet configured to provide the brewing machine with data useful in directing the brewing operation in accordance with packet or packet content characteristics and/or the user's tastes.

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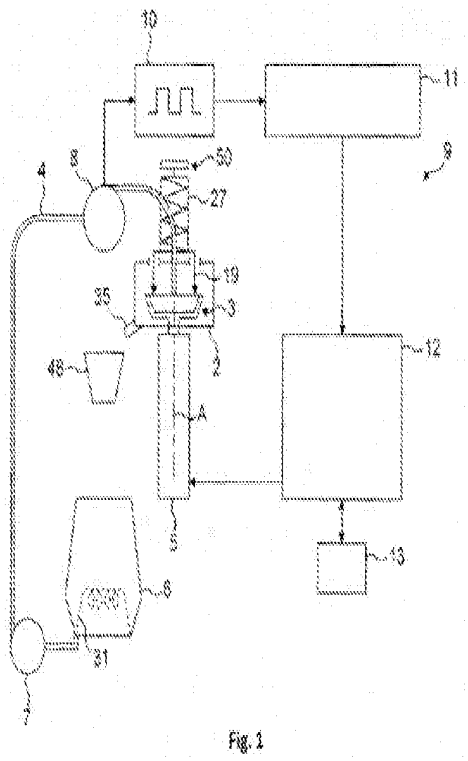
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	Boyd at [0028]: As shown in FIG. 2, packet 10 includes a machine interpretable feature 30 which directs operation of the coffee machine in accordance with predefined brewing directives. In the first depicted embodiment, the machine interpretable feature is a barcode 31 as depicted in FIG. 2 and 2a. It will be understood that the machine interpretable feature may be any machine readable feature associated with packet 10. Boyd at [0034]: Referring now to FIG. 4, a method of operation for the present invention is illustrated at 200. At 202, a brewing packet encoded with packet-characteristic data is placed into a brewing device. At 204, the packet-characteristic data is read by a sensor. At 206, the packet-characteristic data is interpreted by a processor. Finally, at 208, brewing is directed in accordance with the packet-characteristic data read by the sensor and interpreted by the processor. Boyd at [0037]: The encoded packets also may be used to track brewing information which may be useful in ensuring satisfaction with the brewed coffee beverage. For example, the packet may include an encoded date for use in tracking freshness of the coffee grounds contained within the packet. Upon determining that the packet is stale, the processor may direct the machine to note such staleness, thus avoiding an unsatisfactory beverage. Similarly, the packet may contain encoded data related to the coffee blend contained within the packet, such data being stored in memory to provide a history of coffee blends. The encoded packet also may contain encoded data defining the source of the packet so as to prohibit use of counterfeit packets, or packets from unauthorized suppliers.

	Boyd at Fig. 1:  Boyd at Fig. 2:  Boyd at Fig. 2a:  Boyd at Fig. 4:

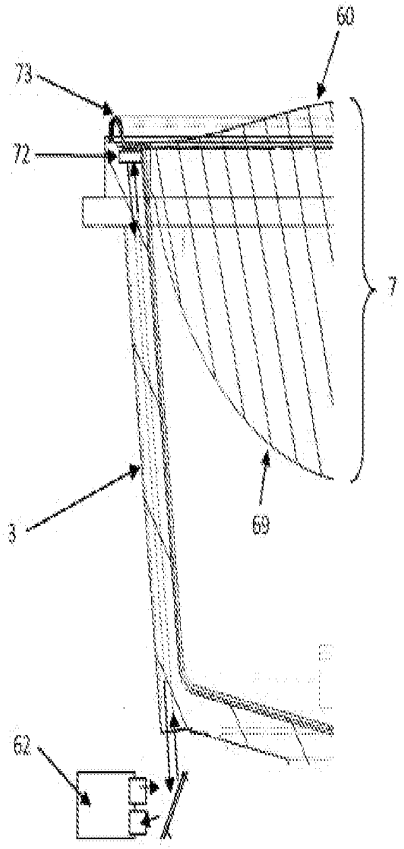
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	 FIG. 4 Boyd at Claims 1-25. Jarisch at [0016]-[0017]: More particularly, the capsule has a circumference wherein the code is arranged on the container along an arc-shaped or circular path of the circumference. In a particular mode, the capsule has a circumference wherein the code comprises successive segments which are individually rectilinear but extend substantially along at least a part of the circumference. More particularly, the code is arranged along at least a eighth of the circumference. This configuration provides a reliable reading or retrieval of information as well as an effective portion for information. In order to ensure a reliable reading or retrieval of information, the code is repeated along said circumference. The repetition ensures a higher probability that at least one code is readable but also may potentially reduce the reading time.

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	Preferably, the code is an optical code. The code may be a bit code formed by a series of discrete polygonal (e.g., rectangles or squares) or dot surfaces printed on the container and/or embossed in the container. Jarisch at [0019]: Preferably, the code is printed or embossed to form a pattern which possesses surfaces having different reflective and/or absorbing properties to light. In particular, the pattern possesses first surfaces and second surfaces having different reflective and/or absorbing properties to light. More particularly, the pattern possesses first surfaces inclined mirroring or absorbing properties to light and second surfaces having flat mirroring or flat reflective properties to light. Jarisch at [0022]: In another embodiment, the code is present on the rim of the capsule. In the most preferred embodiment, the code is present on the bottom of the rim of the capsule which is opposed to the lid of the capsule. The bottom of the rim is sufficiently away from the liquid injection and beverage delivery areas so that there is a lower risk for the code to become unreadable such if partly or totally hidden or soiled by beverage residues or otherwise (e.g., coffee particles). As a result, the reading is made more reliable. The reading may also be carried out while the capsule is in place in the beverage production device. Therefore, the preparation of the beverage is simplified and the preparation time can be reduced. Jarisch at [0024]: In particular the reading means may comprise a light emitter and a light sensor. In an alternative, the reading means comprises an inductive sensor. The optical reading means or inductive sensor may be arranged to detect a code on the rim of the capsule. Jarisch at [0063]-[0064]:

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	2) Optical reading on rim bottom side of capsule (figures 4 to 7): The capsule 7 may comprise a code 70 on the bottom side 72 of its rim 73. The bit code is formed of a succession of small rectangular surfaces having light mirroring properties and intermediate surfaces having flat mirroring and/or diffusing properties. Jarisch at FIG. 1:  Fig. 1 Jarisch at FIG. 4:

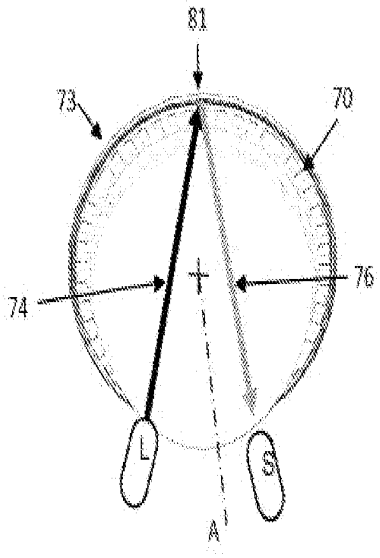
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	 Jarisch at [0022]: In the most preferred embodiment, the code is present on the bottom of the rim of the capsule which is opposed to the lid of the capsule. The bottom of the rim is sufficiently away from the liquid injection and beverage delivery areas so that there is a lower risk for the code to become unreadable such if partly or totally hidden or soiled by beverage residues or otherwise (e.g., coffee particles). As a result, the reading is made more reliable. The reading may also be carried out while the capsule is in place in the beverage production device. Therefore, the preparation of the beverage is simplified and the preparation time can be reduced.

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	Jarisch at [0042]-[0048]: Onto the capsule foil 60, a plurality of bits forming the code 61 is applied along a circular or arc-shaped path. Preferably, the code is placed on a flat portion of the lid and close to the peripheral edge of the capsule. The code is preferably placed the lid that is supported by the flange-like rim of the capsule or overlaps with the rim. Hence, the code is not distorted due to mechanical constraints and can be read more reliably. The marks may consist of: Mirroring or absorbing surfaces for providing bit 0 and, Diffusing and reflective surfaces for providing bit 1 The binary values 0 and 1 are arbitrary chosen and can be inversed. The code is read by rotating the capsule along a central axis A (FIG. 1). Jarisch at [0070]: The bit code is read by rotating the capsule along its central axis A. Jarisch at [0086]: Therefore, the number of bits and their bit code depend on the number and specific arrangement of mirror surfaces (e.g. rectangles) and diffusing or absorbing surfaces (e.g., zones between the rectangles). The same sequence of bits forming a code can be repeated several times on the circumference of the rim. This repetition provides redundancy and more reliability to the reading. Jarisch at [0099]: The code preferably comprises three sections, the synchronization section, the payload section and the verification section. The synchronization section serves for the synchronization purpose i.e. to inform the sensor when the code begins. Since the speed of the

K-FEE SYSTEM GMBH, EX2012, page 820
NESPRESSO USA, INC. v. K-FEE SYSTEM GMBH
IPR2023-00485, U.S. PATENT 11,230,430

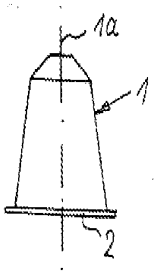
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	rotation of the capsule can vary, the synchronization is achieved through a known sequence of bits such as 0.1.0.1. Then the payload of the code identifying the capsule can be read. In order to avoid misinterpretation of the code, the payload can be followed by verification bits. These bits can be a checksum on the payload or a similar verification function. Jarisch at FIG. 5:  *See also* Jarisch at Claims 11-14; FIGs. 6-7. Mahlich at Abstract: A machine readable identification on a single-serving unit containing coffee powder for espresso machines, designed so that it can be read easily and accurately, is structured in a rotation-symmetrical manner and is applied to an essentially level surface of the single-serving unit, whereby the single-serving unit preferably consists of a single-serving capsule

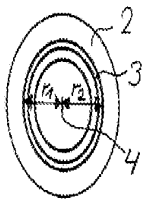
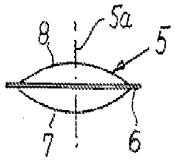
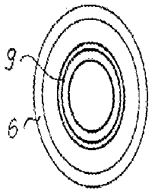
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	(1) having an essentially circular base (2) where-upon the identification is applied in a coaxial manner. Mahlich at [0001]-[0002]: The invention concerns machine readable identification on a single-serving unit containing coffee powder for espresso machines. Another aspect of the invention concerns a system particularly suitable for the registration of machine readable identification. Mahlich at [0006]: Such espresso machines, already known from EP 1 046 366 Al, for example, are provided with a storage magazine storing assorted single-serving units having different contents that are conveyed from the storage magazine into the brewing head during the course of an automatic brewing process. The storage magazine consists of car-touches, also termed magazine tubes, arranged on a turntable, wherein the individual single-serving units are stacked. In order to keep the different types of coffee separate and to select different coffee types, each magazine tube is stocked with only one type of coffee. At the start of the brewing process the selected magazine tube is rotated with the turntable into the dispensing position so that the desired type of coffee can be obtained. For this purpose the single-serving unit at the bottom of the stack inside the magazine tube is conveyed to a brewing chamber of the brewing head. Preferably each magazine tube is provided with a window so that the consumer is able to recognize the desired type of coffee, for example by means of a certain colour that is assigned to a certain type of coffee. It is also possible to equip the single-serving units with a certain identification code able to be registered by a reading device, so that the contents of the single-serving units can be recognized electronically. However, this method has thus far not been used for presently-known espresso machines. This may be due to the fact that the usual bar code structured in a linear manner to be read by a simple linear reading device must either be positioned correctly with regard to the position of the reading device, which is somewhat difficult in view of the inherent rotation-symmetric design of single-serving

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	capsules and pouches due the technology of their manufacture, or that an expensive and voluminous double mirror scanner is required as the reading device. Mahlich at [0012]-[0014]: In particular, according to claim 3 such rotation-symmetrical identification may be an ID code consisting of concentric circles, whereby the usual linear reading heads can be used. If the ID code is a multi-digit binary code, just four concentric circles are sufficient to reliably identify a great variety of coffee types. If the single-serving unit consists of a capsule with a mainly circular base, according to claim 4, the identification as defined above is applied to the base in a coaxial manner. If the single-serving unit consists of an essentially lozenge-shaped pouch with an upper and a lower surface, the identification is applied to each surface in a coaxial manner. Therefore it does not matter, with regard to the machine reading of the identification, whether the upper or the lower surface of a pouch is facing downwards when the pouches are inserted into the storage magazine. Apart from coffee type identification, the identification on any single-serving unit may also contain producer identification, whereby the latter in conjunction with an adapted evaluation system for controlling the espresso machine can block operation of the espresso machine if the producer identification on the single-serving unit does not correspond to the machine's preprogrammed producer identification. Mahlich at [0030]-[0032]: FIGS. 1, la and 3 show a single-serving capsule 1 of an essentially frustoconical design arranged in a rotation-symmetrical manner around a symmetrical axis la.

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	An ID code 3 consisting of concentric circles is shown on the base 2 of the single-serving capsule 1, whereby the symmetrical axis la of the single-serving capsule passes through the centre point 4 of the circles. FIGS. 2 and 2a show a pouch 5 containing one serving of pre-pressed coffee powder whereby the pouch, with the exception of its edge 6, is essentially lozenge-shaped. The pouch 5 with its edge 6 are arranged in a rotation-symmetrical manner around a symmetrical axis 5a. The lower surface 7 as well as the upper surface 8 of pouch 5 is provided with an ID code 9 consisting of concentric circles and extending in a rotation-symmetrical manner around the symmetrical axis 5a. Mahlich at Fig 1: Fig.1 

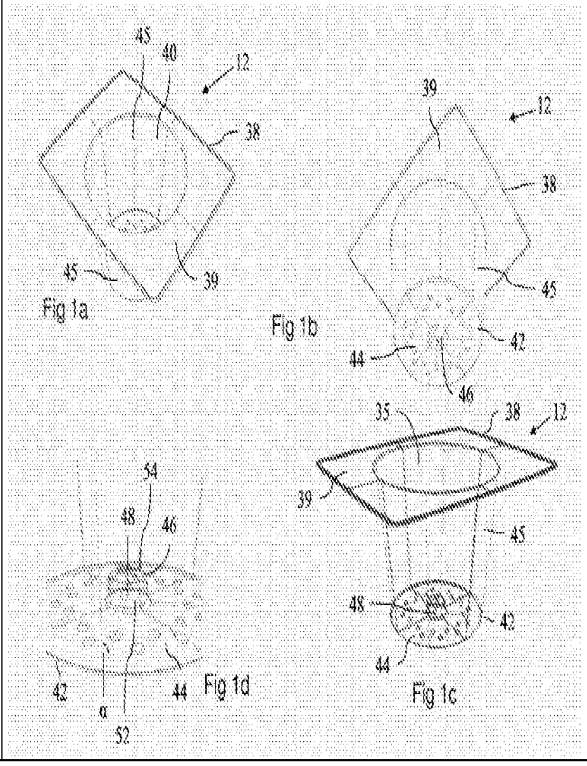
	Mahlich at Fig. 1a: Fig.1a  Mahlich at Fig. 2: Fig.2  Mahlich at Fig. 2a: Fig.2a 

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	See also Mahlich at Claims 1-12. Panesar at p. 2, ll. 19–28: [T]he lower surface of the insert further comprises a barcode or RFID which, in use, is readable by a barcode or RFID reader of the beverage preparation machine for controlling operation of the beverage preparation machine, wherein the barcode or RFID is located on the lower surface of the insert such that a line joining the outlet of the insert to a centre of the barcode and a line joining the outlet of the insert to the inlet of the insert [are] separated by a minimum angular separation of greater than 70 degrees. Panesar at p. 2 at line 29 – p. 3 at line 12: Advantageously, it has been found that this minimum angular separation of the barcode or RFID from the inlet improves the accuracy of the reading of the barcode or RFID by the recognition means of the machine. Firstly, the separation results in any distortion of the inlet area having a minimal affect [sic] on the region of the barcode or RFID. Secondly, it has been found that there may be a small degree of leakage of fluid from the inlet area during dispensation since dispensation occurs at pressure. This fluid may spread, in particular due to capillary effect between the insert and a brew to partial obfuscation of the resulting in a greater chance head of the machine, leading barcode or RFID by the fluid of the barcode or RFID being misread. With the barcode or RFID separated by an angle of greater than 70 degrees it has been found that this problem does not occur. Panesar at p. 3, ll. 18–20: The barcode or RFID is preferably located at or near a periphery of the lower surface. Panesar at p. 18, ll. 24–31:

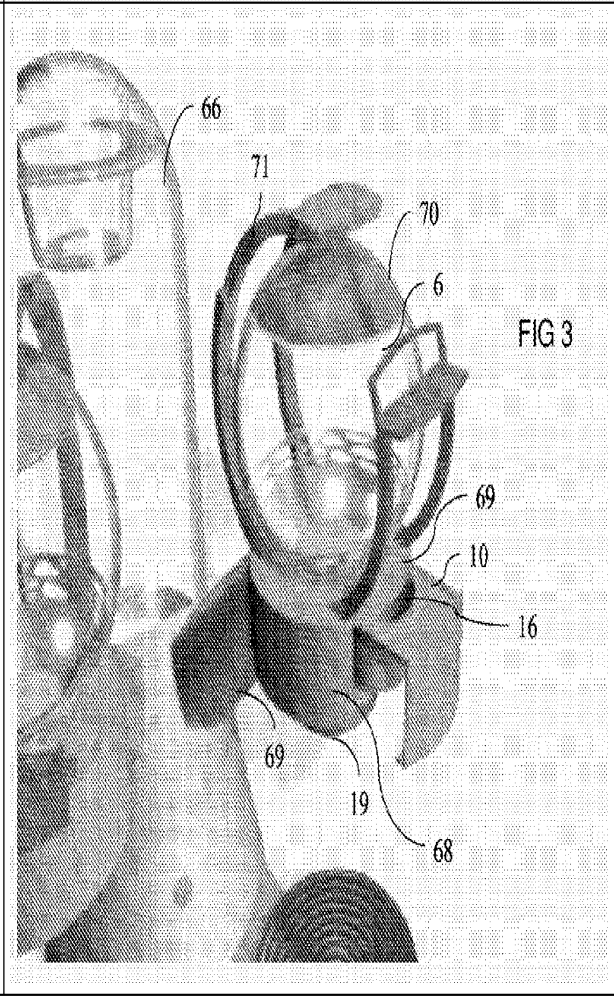
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	[T]he cartridge 1 is provided on the laminate with a barcode 320 as shown in Figure 10. The barcode 320 is formed from a plurality of bars of contrasting colour. Preferably the bar are black on a white background to maximise the contrast. The barcode 320 is not required to conform to a published standard but a standard format for barcodes, such as EAN-13, UPC-A, or Interleaf 2 of 5 may be used. Panesar at p. 20, ll. 10–13: Preferably, the barcode 320 is also located near a periphery of the laminate 5 so as to separate the barcode 320 from the outlet 122 so as to avoid distortion of the barcode 320 on piercing of the outlet 122. Panesar at p. 35, ll. 24–31: To insert the cartridge 1 the holder 251 is opened as described above to expose the cartridge mount 257. The cartridge 1 is then placed on the cartridge mount 257 received within the recess 290 such that the handle 24 of the cartridge is located in the irregularity 291. The optical or magnetic barcode 320 or RFID of the cartridge 1 is oriented directly above the aperture 326 in the cartridge mount 257. Van Belleghem at Figures 1a-d, 3, 8, 10A-C:

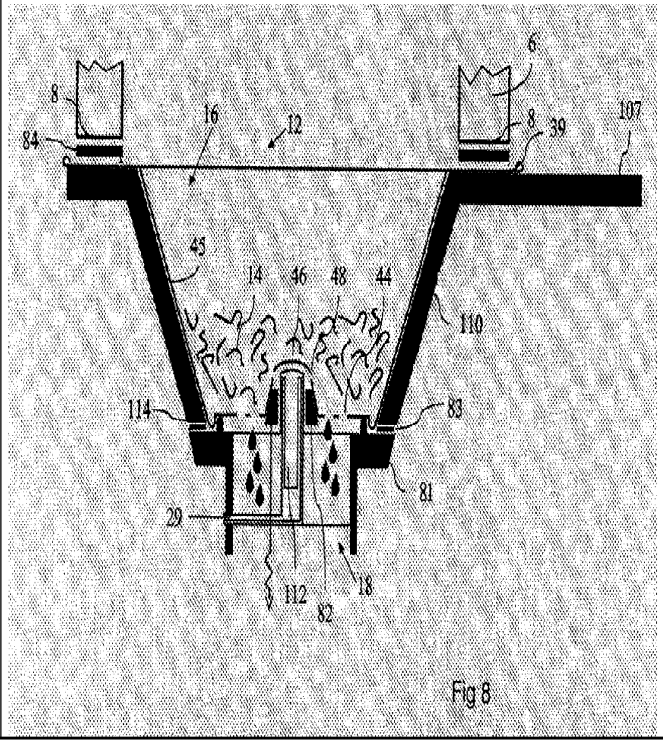
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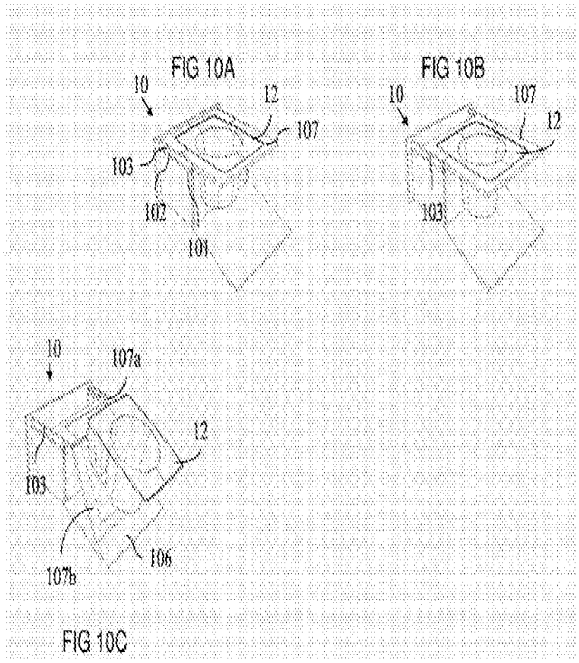
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	 FIG 3

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	 Fig 8

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	 FIG 10C Van Belleghem at [0032]: According to one embodiment, the cartridge includes automatic readable means adapted to be read or detect by a detecting or reading means. The readable means may comprise and/or inform on preparation parameters for indicating how to infuse the infusible substance of the cartridge at best. Van Belleghem at [0033]: Advantageously, the preparation parameters may consist of the infusion temperature and/or the infusion duration and/or when the gas injection takes place, how long it lasts, etc. Van Belleghem at [0046]:

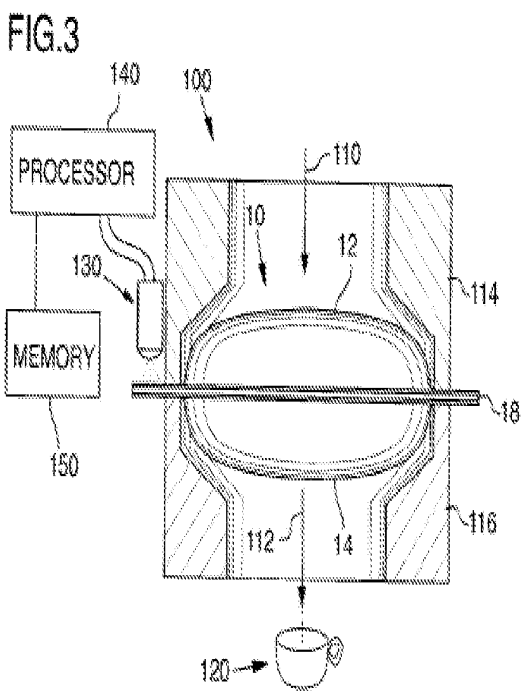
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	The cartridge 12 may comprise marks or any automatic readable means comprising or indicating infusion parameters. The marks or readable means may be located either on the outside surface of the side walls 45 or on the lip 39 or on the sheet 50. Van Belleghem at [0055]: Referring now to figure 3, the platform 68 comprises a receptacle 10 for receiving a cartridge 12 containing infusible substances 14. In this particular embodiment, the receptacle 10 consists of a drawer. The drawer 10 is operable between at least a first position and a second position. The drawer 10 slides from a closed position in the platform 68 to an opened position out of the platform 68. The drawer comprises a cavity 16 into which a cartridge 12 (not represented) containing infusible substances may be inserted. The drawer 10 may slide either automatically or manually. When the drawer 10 is closed in the platform 68, the cavity 16 of the drawer 10 communicates with the bottom opening 8 of the infusion container 6, so that the infusion container 6 and the cavity 16 form an infusion chamber. Van Belleghem at [0080]: Once the drawer 10 is closed within the platform 68 and once the top sheet 50 of the cartridge 12 has been cut out, the tray 107 is raised up away from the side panels 104a, 104b. The lip 39 of the cartridge 12 located in the recess 109 of the tray 107 is brought into contact with the bottom opening 8 of the infusion container 6. A gasket 84 disposed on the edge of the bottom opening 8 ensures a hermetic connection between the infusion container 6 and the lip 39. The cartridge 12 is firmly maintained blocked within the cavity 16. Van Belleghem at [0081]: The dimensions of the opening 8 of the infusion container 6 are equal or larger than those of the section of the cavity 16 on the tray 107 to surround the opening 35 of the cartridge 12.

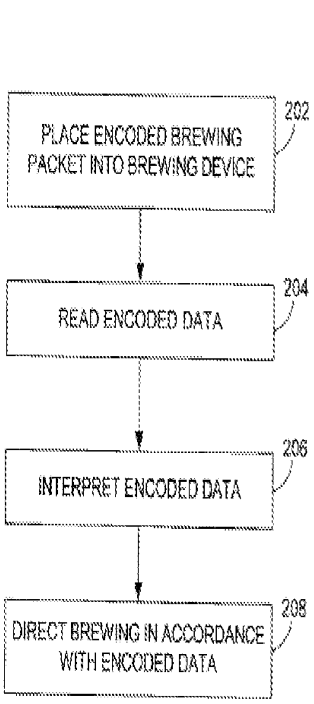
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	The dimensions of the opening 8 of the infusion container 6 are smaller than those of the section of the recess 109 of the tray 107. Yoakim at [0477]: The capsule system further comprises an identification means associated to the different capsules in the set for identifying each capsule and adjusting brewing parameters accordingly. Yoakim at [0496]: The recognition means can be differentiable by a visual code such as a barcode, a colour, a sign, a logo, etc., or by a radio-frequency code (RFID), a magnetic element or by an identifiable shape.
[1.d] a beverage machine comprising: a detector to read the barcode,	The below cited art discloses, either expressly or inherently, a beverage machine comprising: a detector to read the barcode. *See, e.g.*: Boyd at [0006]: A brewing packet is provided for use in the preparation of hot or cold beverages. The brewing packet envel-ops a brewing ingredient chosen according to the tastes of a beverage drinker. The packet includes a machine interpretable feature that contains encoded data capable of being read by a beverage producing device. Furthermore, the data on the packet may be capable of directing the beverage producing device to employ a specific brewing operation suited for the particular brewing packet. This allows for producing the optimal beverage from the brewing ingredient. The packet may be utilized with a variety of brewing ingredients to produce a variety of beverages. Similarly, the packet may be configured to produce single or multiple servings of a beverage. Boyd at [0019]-[0021]:

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	Although the present invention may be used in virtually any brewing machine, it is described herein for use in the context of machines such as those disclosed in U.S. Pat. No. 5,974,949 to Weber et al. and U.S. Pat. No. 6,035,762 to Ruckstuhl. Those patents disclose machines for brewing espresso using espresso espresso packets in the form of filter capsules which are received through a funnel into a brewing chamber where water is passed through the filter capsule to produce an espresso beverage. The subject matter of each of these patents is incorporated herein by this reference. The invention also may be practiced in connection with espresso machines such as those disclosed in U.S. Pat. Nos. 4,253,385, 4,254,694, 4,353,293, 4,429,623, 4,484, 515, 4,555,894 and 4,852,333, all to Illy. These patents disclose various aspects of espresso machines which include brewing chambers configured to receive pre-fabricated espresso packets through which water is passed to produce an espresso drink. The subject matter of each of these patents also is incorporated herein by this reference. While the aforementioned machines generally are described for use in connection with espresso packets which contain a single serving of espresso, it will be appreciated that the present invention considers application of the relevant principles to machines which employ coffee packets for use in brewing multiple cups, which employ coffee packets of various size and shape, which employ various filter media and which contain coffee of various varieties, roasts, and grinds. Furthermore, the packet and methodology described herein may also produce other types of beverages such as tea, cider, and/or any beverage which is produced by mixing various ingredients. The packet and methodology is not limited to hot beverages and may be used to produce cold beverages. Boyd at [0023]: With the foregoing in mind, it will be appreciated that it would be desirable to automatically customize the brew operation based on particular characteristics of the packet, the characteristics of the coffee, and/or the tastes of the user, whether or not the user is aware of what changes in the brew operation will lead to the desired taste. The present invention provides a vehicle for such customization in the form of an encoded packet configured to

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	provide the brewing machine with data useful in directing the brewing operation in accordance with packet or packet content characteristics and/or the user's tastes. Boyd at [0028]: As shown in FIG. 2, packet 10 includes a machine interpretable feature 30 which directs operation of the coffee machine in accordance with predefined brewing directives. In the first depicted embodiment, the machine interpretable feature is a barcode 31 as depicted in FIG. 2 and 2a. It will be understood that the machine interpretable feature may be any machine readable feature associated with packet 10. Boyd at [0030]: Machine interpretable feature 30, it will be appreciated, is capable of storing a significant amount of data, including specific brewing directives and/or packaging or ingredient characteristics. Examples of the types of brewing directives stored in machine interpretable feature 30 may include, for example, contact time, contact pattern, fluid volume, fluid temperature, fluid pressure, and/or fluid pass-through rate. The above brewing directives are all well known in the coffee brewing industry to affect the taste and quality of the coffee beverage. Examples of ingredient characteristics which may be stored in machine interpretable feature 30 include grind, blend, roast, quantity, bed depth, freshness, and expiration date. These examples are meant to be exemplary, not limiting in scope. Boyd at [0032]-[0034]: Coffee machine 100 includes a sensor 130 designed to read machine interpretable feature 30 of packet 10. Sensor 130 is in turn operatively connected to a processor 140 which controls coffee machine 100. Machine interpretable feature 30 may store data which is read by sensor 130 and passed to processor 140. Processor 140 may then direct the brewing operation in accordance with its interpretation of the data derived from machine interpretable feature 30. For example, processor 140 may direct coffee machine 100 to brew using a pre-selected contact time, contact pattern, fluid quantity, fluid temperature, fluid pressure, and/or fluid

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	pass-through rate expressed in machine interpretable feature 30. Alternatively, the processor may itself make determinations of contact time, contact pattern, fluid quantity, fluid temperature, fluid pressure, and/or fluid pass-through rate based on information contained in machine interpretable feature 30. The processor may also, based on information contained in machine interpretable feature 30, direct the coffee machine to add water, milk, cream, sugar, or any suitable condiment to the coffee beverage. As alluded to above, machine interpretable feature 30 need not store data specifically including brewing directives and ingredient characteristics. Instead machine interpretable feature 30 may act as an identifier so that brewing directives and ingredient characteristics may be looked up from data storage 150 within (or external to) coffee machine 100. Sensor 130 thus may read machine interpretable feature 30 and processor 140 may match the machine interpretable feature with predefined brewing operation instructions stored in such memory. Processor 140 may then direct the brewing operation based on brewing operation instructions. In one embodiment, the brewing operation instructions are matched to a machine interpretable feature using a look-up table in which brewing operation instructions correspond in a one-to-one ratio with each known ingredient variety, packet size, packet construction, user preference, etc. It will be appreciated, however, that other arrangements for matching machine interpretable feature 30 with brewing directives similarly may be used. Referring now to FIG. 4, a method of operation for the present invention is illustrated at 200. At 202, a brewing packet encoded with packet-characteristic data is placed into a brewing device. At 204, the packet-characteristic data is read by a sensor. At 206, the packet-characteristic data is interpreted by a processor. Finally, at 208, brewing is directed in accordance with the packet-characteristic data read by the sensor and interpreted by the processor.

	Boyd at Fig. 3:  Boyd at Fig. 4:

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	 FIG. 4 Boyd at Claims 6, 25. *See also* [1.c]. Jarisch at [0023]: The invention further relates to a system for preparing a beverage from a capsule as aforementioned and further comprising a beverage preparation device; wherein the device comprises capsule holding means for holding the capsule and rotational drive means for driving

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	the holding means and capsule in rotation along said axis of rotation and reading means arranged for reading the code when the capsule is rotated along said axis. Jarisch at [0024]: In particular, the reading means may comprise a light emitter and a light sensor. In an alternative, the reading means comprises an inductive sensor. The optical reading means or inductive sensor may be arranged to detect a code on the rim of the capsule. Jarisch at [0071]-[0073]: The reader may consist of: • A light source with/without focusing optic, and • A light sensor with/without focusing optic. Jarisch at [0082]: In the embodiment of the figure 4, the light source is placed at the bottom of the centrifugal cell 3. This cell is light conductive allowing the beam to reach the bottom side 72 of its rim 73. The reflected light is conducted by the transparent (or light conductive) centrifugal cell 3 to reach the sensor 62. In case that the sensor 62 cannot be aligned with the transparent part of the centrifugal cell 3, a mirror can be placed as illustrated in the figure 4 to deflect the forward and backward beams. *See also* Jarisch at Claims 14-16; FIGs. 2-7. Lazaris at [0042]: It is contemplated that the housings may be mounted such that they do not pivot to automatically eject the cartridges at the end of the brewing cycle, thus requiring users to manually remove the used cartridges. The holder may also employ multiple inlet probes to increase liquid distribution within the cartridge. The inlet probes also may have different

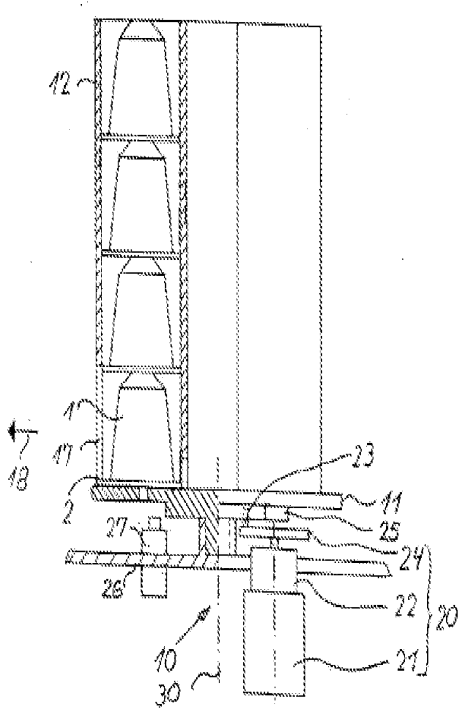
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	heights to improve saturation of the beverage medium within the cartridge. It is also contemplated that the brewer may include a control system for automatically determining the type of cartridge (e.g., the beverage medium within the cartridge) and adjust the brewing cycle accordingly. This may include providing machine readable data such as bar codes, data matrixes, dielectric encoding, etc, on a portion of the cartridge exterior accessible to a corresponding reader in the brewer. Mahlich at [0008]: It is thus the task of the present invention to equip the actual single-serving units to be selected with suitable machine readable identification whereby complicated voluminous double mirror scanners are not required for reading the identification code and whereby the accurate alignment of the single-serving pouch with regard to the scanner or its reading unit does not matter. In particular, the difficult process of aligning a rotation-symmetrical single-serving unit, whereby the shape of the capsule is mainly frustoconical and the pouch is mainly lozenge-shaped, is thus eliminated. Mahlich at [0010]: According to the invention, direct scanning or immediate reading of the identification on the single-serving unit, particularly of the single-serving capsule itself and not of any part of the storage magazine adjacent to the capsule, guarantees that the selected type of coffee is correctly identified with the single-serving unit and is actually being brewed after removal of the single-serving unit from the storage magazine. The identification can be read easily and accurately via an uncomplicated and compact reading head able to read in a linear manner, provided that the reading head is able to register the rotation-symmetrical identification. However, the rotational or angular position of the rotation-symmetrical identification with regard to the reading head that reads in a linear manner is not important, whereby the alignment of the single-serving unit with regard to the reading head is greatly simplified. In addition, the rotation-symmetrical identification is suitable for testing via a simple procedure according to claim 12.

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	Mahlich at [0014]-[0016]: Apart from coffee type identification, the identification on any single-serving unit may also contain producer identification, whereby the latter in conjunction with an adapted evaluation system for controlling the espresso machine can block operation of the espresso machine if the producer identification on the single-serving unit does not correspond to the machine's preprogrammed producer identification. As mentioned above, an uncomplicated system for the registration of the machine readable identification on a single-serving unit according to the invention may consist of a registration device with at least one reading head able to read in a linear manner. The reading head comprises a reading sensor consisting of a transmitter scanning a luminous spot on the identification or part thereof, and of a decoder receiver. The latter may be equipped with a controlling device whereby the setting, particularly that of a magazine unit, can be controlled in order to convey the single-serving units containing the desired coffee type into the dispensing position. According to claim 7 the linear reading head is located in a compact and secure position below the magazine tubes of the magazine unit. The reading head is directed upwards towards the plane where the bases of the single-serving capsules are positioned within the magazine tubes, in such a way that the rotation-symmetrical identification on the base of the respective lowest single-serving capsule can be read. Mahlich at [0037] The support frame 26 also carries a reading head 27 mainly consisting of a scan transmitter and an encoder receiver. Reading head 27 is pointing from below towards the turntable 11 in such a way that it is able to register and scan the single-serving capsules stacked with their base facing downwards inside the magazine tubes 12 to 16 when the magazine tubes are moved across the reading head 27.

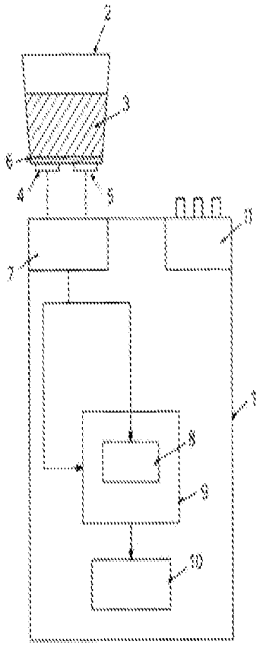
K-FEE SYSTEM GMBH, EX2012, page 841
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	For this purpose at least part of turntable 11 is transparent to the scanning of the ID code: windows 29 located below the magazine tubes 12 to 16 are designed as slits and are each arranged at equal radial distance to a main axis 30 of turntable 11, cf. FIG. 3. The ID codes 3 on the bases 2 of the single-serving capsules can be registered across their greatest radius r_1 and r_2 through these slits, according to FIG. la. In this case ID code 3 is being registered on entering and on leaving the reading station when the base 2 of the capsule, equipped with the ID code, passes on its circular path across reading head 27 arranged in front of dispensing station 18 in the direction of rotation 28 of the turntable. It is thus guaranteed, via comparison of the two registered ID codes as well as via data processing, that only one single-serving capsule 1 containing the desired coffee type is conveyed to the dispensing station 18, once the desired coffee type has been selected, for example by means of a control panel or a knob. Mahlich at Fig. 3:

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	Schnitt A- B Fig.3  *See also* Mahlich at Claims 1-12. Panesar at p. 4, ll. 24–29: The beverage preparation machine may comprise a brew head comprising an upwardly directed inlet for supplying water to the brew head, a downwardly directed outlet for outflow of beverage produced by the machine and a barcode or RFID reader having a window in the brew head through which signals may be transmitted . . . Panesar at p. 5, ll. 7–8:

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	Preferably the barcode reader or RFID reader window is located at or near a periphery of the brew head. Panesar at p. 34, ll. 5–26: The purpose of the recognition means 252 is to allow the machine 201 to recognize the type of beverage cartridge 1 that has been inserted and to adjust one or more operational parameters accordingly. In a typical embodiment, the recognition means 252 comprises an optical barcode reader which reads the printed barcode 320 provided on the laminate 5 of the beverage cartridge 1 as shown in Figure 10 and discussed above. The optical barcode reader comprises one or more LEDs 321 to illuminate the barcode 320, a focusing lens 322 to acquire an image of the barcode, a charge coupled device (CCD) 323 for producing an electrical signal representative of the acquired image and support circuitry for the LEDs and CCD. The space in the lower part for accommodating the barcode reader is limited. A mirror or mirrors 324 may be used to reflect the light from the LEDs 321 to a focusing lens which is not located in the lower part 255. Schematic arrangements are shown in Figures 9a and 9b. The lower part 255 comprises an aperture 326 which is the same size as the barcode 320 on the beverage cartridge 1. The aperture 326 is closed by a window, preferably glass, which can transmit the signals produced by the barcode reader. Panesar at p. 35, ll. 4–6: Alternatively, an RFID reader is provided to read an RFID located on the cartridge 1. Panesar at Claims 24, 27, 30. Rossi at Abstract:

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	The process for controlling the operation of an edible-product making machine (1) of the type being fed with a single use load element (2) having a brewable or water soluble aromatic substance (3) for preparation of the edible product, comprises a first step of recognition wherein the edible-product making machine (1) recognises an identifying element (4) on the load element (2) allowing the edible-product making machine (1) to take further steps only if it also recognises on the load element (2) a validation element (5) to be validated, a second step of validation of the validation element (5), and a third step of activation wherein the edible-product making machine (1) automatically activates a cycle of production of the edible product only after having recognised on the load element (2) the identifying element (4) in combination with the validation element (5) as validated. Rossi at Fig. 1:  FIG.1

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	Rossi at 4: The technical task, as well as these and other objects, are achieved according to the present invention by a process for controlling the operation of an edible-product making machine of the type being fed with a single use load element having a brewable or water soluble aromatic substance for preparation of said edible product, characterised in that it comprises a first step of recognition wherein said edible-product making machine recognises an identifying element on said load element allowing said edible-product making machine to take further steps only if it also recognises on said load element a validation element to be validated, a second step of validation of said validation element, and a third step of activation wherein said edible-product making machine automatically activates a cycle of production of said edible product only after having recognised on said load element said identifying element in combination with said validation element as validated. Rossi at 6: The process of the present invention comprises a first step of the edible-product making machine recognising an identifying element on the load element. This can optionally be through an infra red (IR) wave communication channel, a radio frequency (RF) wave communication channel, or an optical wave communication channel. The user may hold the identifying element on the load element up against recognition means located externally on the edible-product making machine. Rossi at 9: The load element of the system comprises an identifying element for its recognition and a validation element for its validation. These are preferably in the form of barcodes, antennae, or paints having optically measurable properties. The machine comprises means for recognising the load element and the validation element, such as at least one infra red barcode reader, radio frequency wave transmitter and receiver, or optical sensor. These are preferably

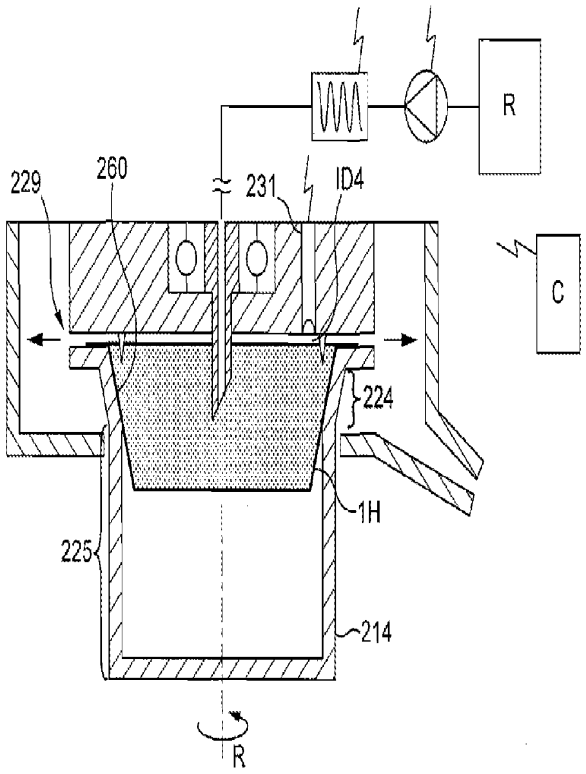
U.S. Patent No. 10,858,177	Disclosure
	located externally on a lateral wall of the capsule, externally on the protective packaging of the capsule, or externally on the protective sheet on the outlet base of the capsule. Rossi at 10: Figure 1 shows a schematic view of one embodiment of the system of the present invention. With reference to the above figure, the system comprises an edible-product making machine 1 and a single use load element in the form of a capsule 2. The load element contains a brewable or water soluble aromatic substance 3 for preparation of an edible product. The capsule 2 comprises an identifying element in the form of a barcode 4 and a validation element also in the form of a barcode 5, both located externally on a protective sheet 6 of the outlet base of the capsule. The machine 1 comprises recognising means in the form of an infrared barcode reader 7. This is connected to checking means 8 stored within a control unit 9 of the machine. The checking means allow the machine activation means 10 to be engaged only if the barcode reader 7 recognises the identification barcode 4 and the validation barcode 5. The machine 1 further comprises validation means in the form of a mechanical tool 11 having a plurality of tips for destroying the validation barcode 5, for example by ripping, cutting, scratching or piercing, such that the barcode reader 7 cannot recognise it as an unvalidated validation barcode. If, after the positive signal from the checking means 8 from the first recognition of the identification and validation barcodes 4,5, the barcode reader 7 performs a second recognition of the identification barcode 4 combined with the validated validation barcode 5, the activation means 10, connected to the barcode reader 7 through the control unit 9, automatically activate a cycle of production of the edible product. Rossi at Claim 15. Yoakim at [0477]: The capsule system further comprises an identification means associated to the different capsules in the set for identifying each capsule and adjusting brewing parameters accordingly.

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	Yoakim at [0496]: The recognition means can be differentiable by a visual code such as a barcode, a colour, a sign, a logo, etc., or by a radio-frequency code (RFID), a magnetic element or by an identifiable shape. Yoakim at [0025]: The device is useful for preparing beverages from a plurality of different capsules, in which case it further comprises identification means for identifying the different capsules, and control means capable of operating the device in centrifugation for any of the different capsules according to predetermined liquid food preparation parameters including the flow rate and the volume of liquid to be injected into the capsule, with the identification means comprising capsule recognition means which are recognized by sensing means connected to the control means of the device to control the preparation parameters accordingly. Yoakim at [0192]: Therefore, as much as two, three, four or even more different flow rates and/or speed ranges can be provided in function of the types of coffee to be delivered. Therefore, depending on the types of beverage to be brewed, the control unit can be programmed to adjust the optical centrifugal conditions. For instance, the control unit may be associated to a capsule recognition system enabling to recognize the types of capsules, i.e., espresso, lungo, cappuccino, long coffee (e.g., 180-400 ml), latte, tea, etc., and to adjust the speed and/or other brewing parameters (e.g., water temperature) according the capsule which is inserted in the device. A recognition system uses a code on the capsule and recognized by the device, such as a color, a barcode, an RFID, a magnetic code, ferromagnetic micro-wires or labels, shapes and combinations thereof. Yoakim at [0477]:

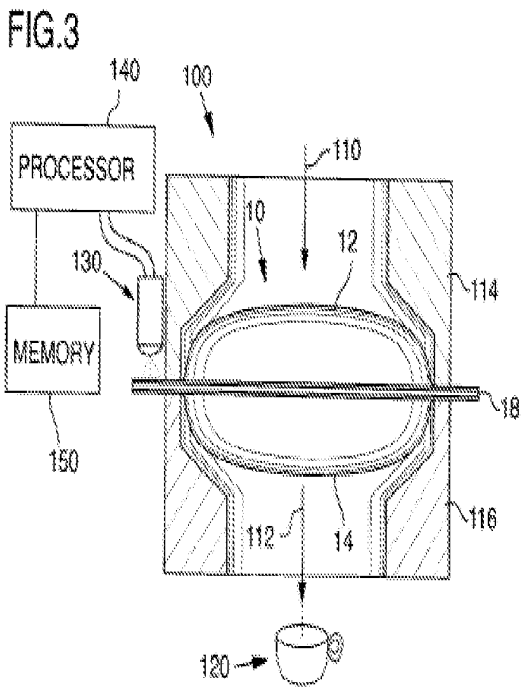
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	The capsule system further comprises an identification means associated to the different capsules in the set for identifying each capsule and adjusting brewing parameters accordingly. The adjustable parameters can be the rotational speed, the back-pressure at the outlet of the capsule, and/or the volume of liquid fed in the capsule. The identification means participates to deliver a wider range of beverages having differentiated characteristics (volume, taste, strength, crema, colour, etc.). The identification means are associated to control means placed in the centrifugal brewing device which controls the adjustment of the said parameters, by controlling the rotational motor driving the capsule holder or/and the pump supplying liquid in the capsule. Yoakim at [0494]-[0496]: The identification means can be sensed by sensing means connected to the control means for an active control of the parameters or can be passive identification means, e.g., selective flow restriction means. In particular, the identification means comprises capsule recognition means which are recognized by the sensing means connected to the control means of the brewing device which controls the brewing parameters accordingly. The recognition means can be differentiable by a visual code such as a barcode, a colour, a sign, a logo, etc., or by a radio-frequency (RFID), a magnetic element or by an identifiable shape. Yoakim at [0525]: In an alternative illustrated in FIGS. 61 and 62, the identification means are directly associated to the different capsules. In this case, the identification means ID4 and ID5 are capsule recognition means attached to or embedded in the capsules. The recognition means can be any mechanical, optical, magnetic, or radio-frequency recognition means capable of delivering information to the brewing device, via a sensing device 231, as to which type of capsule is inserted in the device. For example, the recognition means is a barcode, a colour code, a RFID tag, a magnetically sensitive element, or a mechanical key or shape.

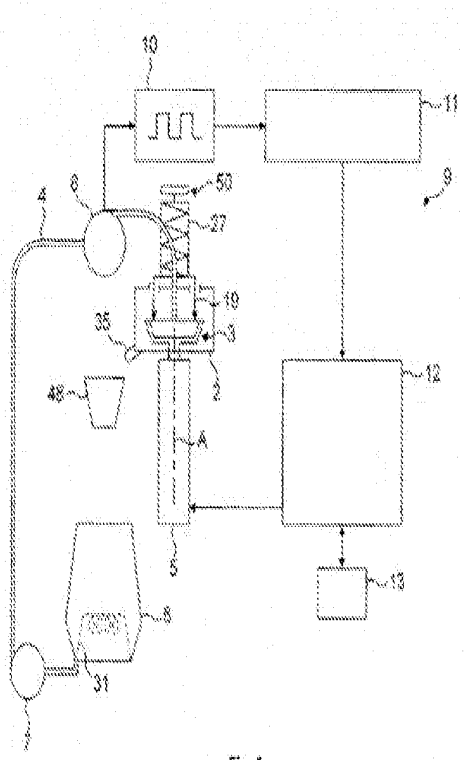
K-FEE SYSTEM GMBH, EX2012, page 849
NESPRESSO USA, INC. v. K-FEE SYSTEM GMBH
IPR2023-00485, U.S. PATENT 11,230,430

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	Yoakim at FIG. 61:  FIG. 61 *See also* [1.c].
[1.e] a media chute configured to receive and support the portion capsule,	The below cited art discloses, either expressly or inherently, a media chute configured to receive and support the portion capsule. *See, e.g.*: Boyd at [0019]-[0021]: Although the present invention may be used in virtually any brewing machine, it is described herein for use in the context of machines such as those disclosed in U.S. Pat. No. 5,974,949 to

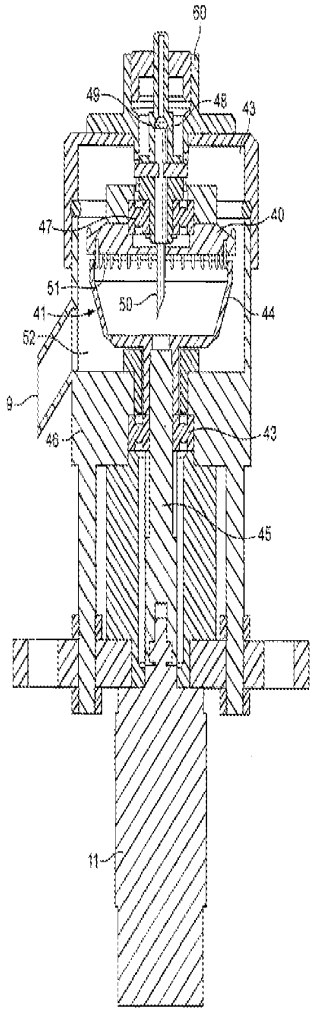
U.S. Patent No. 10,858,177	Disclosure
	Weber et al. and U.S. Pat. No. 6,035,762 to Ruckstuhl. Those patents disclose machines for brewing espresso using espresso espresso packets in the form of filter capsules which are received through a funnel into a brewing chamber where water is passed through the filter capsule to produce an espresso beverage. The subject matter of each of these patents is incorporated herein by this reference. The invention also may be practiced in connection with espresso machines such as those disclosed in U.S. Pat. Nos. 4,253,385, 4,254,694, 4,353,293, 4,429,623, 4,484, 515, 4,555,894 and 4,852,333, all to Illy. These patents disclose various aspects of espresso machines which include brewing chambers configured to receive pre-fabricated espresso packets through which water is passed to produce an espresso drink. The subject matter of each of these patents also is incorporated herein by this reference. While the aforementioned machines generally are described for use in connection with espresso packets which contain a single serving of espresso, it will be appreciated that the present invention considers application of the relevant principles to machines which employ coffee packets for use in brewing multiple cups, which employ coffee packets of various size and shape, which employ various filter media and which contain coffee of various varieties, roasts, and grinds. Furthermore, the packet and methodology described herein may also produce other types of beverages such as tea, cider, and/or any beverage which is produced by mixing various ingredients. The packet and methodology is not limited to hot beverages and may be used to produce cold beverages. Boyd at [0031]: FIG. 3 schematically depicts a coffee machine 100 designed to utilize packet 10. In the depicted embodiment, packet 10 is positioned between input fluid path 110 and output fluid path 112. Gasket 18 helps form a seal between chamber 114, defining the input fluid path, and chamber 116, defining the output fluid path. Gasket 18 also helps secure packet 10 in place. In other embodiments, packet 10 is held in place by gravity, water pressure, friction, adhesion, magnetism, or other suitable mechanisms. As depicted, water passes into packet 10 along input fluid path 110, passing through filter portion 12. The water contacts ground coffee

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	within packet 10, producing a coffee beverage. The coffee beverage then flows through packet 10 and out through filter portion 14. Thereafter, the coffee beverage continues along output fluid path 112 and into beverage receptacle 120. In one embodiment, water is stored in a reservoir (not shown) within coffee machine 100 and heated before entering input fluid path 110. Alternatively, water is externally heated before entering input fluid path 110, or not heated at all. Beverage receptacle 120 may be dimensioned to accommodate multiple servings of the brewed coffee beverage, or may be dimensioned to receive a single serving of brewed coffee. Boyd at Fig. 3:  Jarisch at [0023]:

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	The invention further relates to a system for preparing a beverage from a capsule as aforementioned and further comprising a beverage preparation device; wherein the device comprises capsule holding means for holding the capsule and rotational drive means for driving the holding means and capsule in rotation along said axis of rotation and reading means arranged for reading the code when the capsule is rotated along said axis. Jarisch at [0035]: The centrifugal unit 2 comprises a centrifugal cell 3. The cell 3 may comprise a capsule holder and a capsule received therein. The centrifugal unit is connected to driving means 5 such as a rotary motor. Jarisch at FIG. 1:

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	 Fig. 1 *See also* Jarisch at FIG. 4. Panesar at p. 5, ll. 9–22: The brew head may comprise a mount for receiving the insert so as to prevent relative rotation of the insert and the brew head once the brew head is closed. The mount may comprise a recess or opening for receiving an externally directed handle or tab portion of the insert. The mount may comprise an opening through which the inlet of the brew head, outlet of the brew head and barcode reader or RFID reader window are accessible. The brew head may comprise a cavity for receiving the insert wherein one of the insert and cavity comprises a key and the other of the insert and cavity comprises a recess, wherein interengagement of

U.S. Patent No. 10,858,177	Disclosure
	the key and recess prevents relative rotation of the insert and the brew head once the brew head is closed. Panesar at p. 8, ll. 20–26: The beverage preparation machine 201 generally comprises a housing 210 containing a water tank 220, a water heater 225, a water pump 230, an air compressor 235, a control processor, a user interface 240 and a brew head 250. The brew head 250 in turn generally comprises a 25 holder 251, recognition means 252 and inlet and outlet piercers 253, 254. Panesar at p. 25 at line 29 – p. 26 at line 1: The holder 251 of the brew head 250 comprises a fixed lower part 255, a rotatable upper part 256 and a pivotable cartridge mount 257 positioned in between the fixed lower part 255 and the rotatable upper part 256. Panesar at p. 26, ll. 3–4: Figures 4 to 7 show the holder 251 with some components of the machine 201 omitted for clarity. Panesar at p. 27 at line 32—p. 28 at line 4: The cartridge mount 257 is provided with an aperture 292 for receiving there through the inlet and outlet piercers 253, 254 and a head 300 of the cartridge recognition means 252 when the cartridge mount 257 is moved into the closed position. Panesar at FIG. 5. Yoakim at [0187]:

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	The system comprises a capsule holder 41 which is associated to a central rotating rod 45 mounted along a lower bearing 43, which is supported on a support 46. Yoakim at FIG. 4:  FIG. 4

U.S. Patent No. 10,858,177	Disclosure
	Yoakim at [0433]: In relation to FIGS. 34 and 35, the rotary drum 134 is shaped as a hollow capsule holder with an internal cavity 136 complementary shaped to receive the capsule. ; FIG. 34. Yoakim at [0194]: The brewed liquid is collected in a collecting chamber 52 of the support 46 and drained through a collecting tube 9. Yoakim at [0195]: The capsule holder comprises a cavity 550 for receiving the capsule. Yoakim at [0204]: The capsule 8 of FIGS. 8 to 15 according to this embodiment can further include means 840 for gripping the bottom of the capsule and so enabling the capsule to be properly driven in rotational motion by the device. For this, the means 840 comprises a small tubular portion protruding in the bottom of the capsule and into which can be inserted a complementary tubular portion 450 of the rotational driving means of the device. Yoakim at [0205]: The driving means of the device further comprise a drive shaft 45 associated to a support 451 for holding the bottom of the capsule. Of course, the shape of the gripping means can take many other variations without departing from the scope of the present invention. FIGS. 12 and 13 show a gripping structure 840 having a central recess 841 and four arched recesses 842,843, 844,845 extending from the central recess 841. This gripping structure forms a lock into which is fitted a complementary engaging structure 450, i.e., a key, of the capsule holder 451. The complementary shapes of the capsule and capsule holder enable to fulfill both the gearing

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	function for driving the capsule at high speeds in rotation and a safety function for ensuring that only capsules adapted to the system can be used and brewed successfully. Yoakim at [0478]: In another feature of the invention, the brewing device comprises a rotary capsule holder with a support surface arranged for supporting a portion of the body of the capsules in the set; said portion of sidewall comprising a referencing diameter matching the insertion diameter of the capsules. Yoakim at [0479]: As a result, the risk of producing vibrations during centrifugation is reduced because all the capsules of the set are snugly fitted in the device with limited possible relative movement between each capsule and the device during rotation, i.e., capsule holder.
[1.f] and a pump controlled to push water into the portion capsule only upon a determination that the read barcode agrees with a stored reference,	The below cited art discloses, either expressly or inherently, a pump controlled to push water into the portion capsule only upon a determination that the read barcode agrees with a stored reference. *See, e.g.*: Boyd at [0003]: Automated coffee machines have long been used for brewing coffee, both in large-scale commercial settings and in smaller business and home settings. These machines typically operate on the principle of placing a quantity of ground coffee into a filter, and passing hot water through the ground coffee to produce a coffee beverage. Boyd at [0006]: A brewing packet is provided for use in the preparation of hot or cold beverages. The brewing packet envelops a brewing ingredient chosen according to the tastes of a beverage drinker. The packet includes a machine interpretable feature that contains encoded data capable of

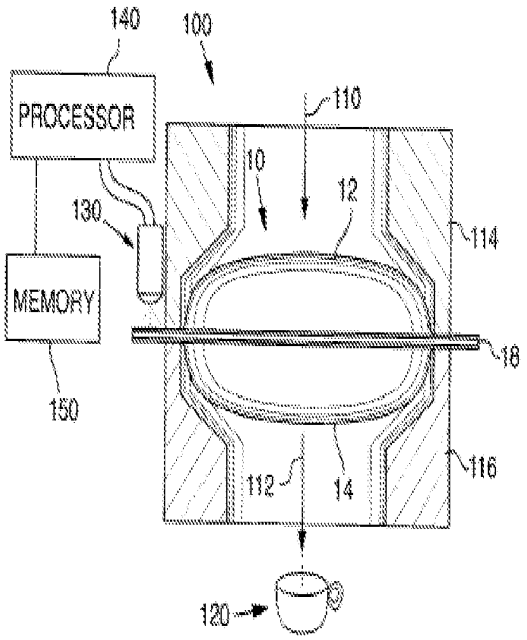
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	being read by a beverage producing device. Furthermore, the data on the packet may be capable of directing the beverage producing device to employ a specific brewing operation suited for the particular brewing packet. This allows for producing the optimal beverage from the brewing ingredient. The packet may be utilized with a variety of brewing ingredients to produce a variety of beverages. Similarly, the packet may be configured to produce single or multiple servings of a beverage. Boyd at [0019]-[0021]: Although the present invention may be used in virtually any brewing machine, it is described herein for use in the context of machines such as those disclosed in U.S. Pat. No. 5,974,949 to Weber et al. and U.S. Pat. No. 6,035,762 to Ruckstuhl. Those patents disclose machines for brewing espresso using espresso espresso packets in the form of filter capsules which are received through a funnel into a brewing chamber where water is passed through the filter capsule to produce an espresso beverage. The subject matter of each of these patents is incorporated herein by this reference. The invention also may be practiced in connection with espresso machines such as those disclosed in U.S. Pat. Nos. 4,253,385, 4,254,694, 4,353,293, 4,429,623, 4,484, 515, 4,555,894 and 4,852,333, all to Illy. These patents disclose various aspects of espresso machines which include brewing chambers configured to receive pre-fabricated espresso packets through which water is passed to produce an espresso drink. The subject matter of each of these patents also is incorporated herein by this reference. While the aforementioned machines generally are described for use in connection with espresso packets which contain a single serving of espresso, it will be appreciated that the present invention considers application of the relevant principles to machines which employ coffee packets for use in brewing multiple cups, which employ coffee packets of various size and shape, which employ various filter media and which contain coffee of various varieties, roasts, and grinds. Furthermore, the packet and methodology described herein may also produce other types of beverages such as tea, cider, and/or any beverage which is produced

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	by mixing various ingredients. The packet and methodology is not limited to hot beverages and may be used to produce cold beverages. Boyd at [0023]: With the foregoing in mind, it will be appreciated that it would be desirable to automatically customize the brew operation based on particular characteristics of the packet, the characteristics of the coffee, and/or the tastes of the user, whether or not the user is aware of what changes in the brew operation will lead to the desired taste. The present invention provides a vehicle for such customization in the form of an encoded packet configured to provide the brewing machine with data useful in directing the brewing operation in accordance with packet or packet content characteristics and/or the user's tastes. Boyd at [0024]: Focusing now particularly on the invented encoded coffee packet, it will be appreciated that such packet typically takes the form of a coffee-filled packet configured for placement in a fluid path of a coffee machine whereby hot water (or steam) flows through the packet to produce a coffee beverage. An exemplary packet is depicted in FIGS. 1-3, such packet being indicated generally at 10. Boyd at [0030]-[0037]: Machine interpretable feature 30, it will be appreciated, is capable of storing a significant amount of data, including specific brewing directives and/or packaging or ingredient characteristics. Examples of the types of brewing directives stored in machine interpretable feature 30 may include, for example, contact time, contact pattern, fluid volume, fluid temperature, fluid pressure, and/or fluid pass-through rate. The above brewing directives are all well known in the coffee brewing industry to affect the taste and quality of the coffee beverage. Examples of ingredient characteristics which may be stored in machine

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	interpretable feature 30 include grind, blend, roast, quantity, bed depth, freshness, and expiration date. These examples are meant to be exemplary, not limiting in scope. FIG. 3 schematically depicts a coffee machine 100 designed to utilize packet 10. In the depicted embodiment, packet 10 is positioned between input fluid path 110 and output fluid path 112. Gasket 18 helps form a seal between chamber 114, defining the input fluid path, and chamber 116, defining the output fluid path. Gasket 18 also helps secure packet 10 in place. In other embodiments, packet 10 is held in place by gravity, water pressure, friction, adhesion, magnetism, or other suitable mechanisms. As depicted, water passes into packet 10 along input fluid path 110, passing through filter portion 12. The water contacts ground coffee within packet 10, producing a coffee beverage. The coffee beverage then flows through packet 10 and out through filter portion 14. Thereafter, the coffee beverage continues along output fluid path 112 and into beverage receptacle 120. In one embodiment, water is stored in a reservoir (not shown) within coffee machine 100 and heated before entering input fluid path 110. Alternatively, water is externally heated before entering input fluid path 110, or not heated at all. Beverage receptacle 120 may be dimensioned to accommodate multiple servings of the brewed coffee beverage, or may be dimensioned to receive a single serving of brewed coffee. Coffee machine 100 includes a sensor 130 designed to read machine interpretable feature 30 of packet 10. Sensor 130 is in turn operatively connected to a processor 140 which controls coffee machine 100. Machine interpretable feature 30 may store data which is read by sensor 130 and passed to processor 140. Processor 140 may then direct the brewing operation in accordance with its interpretation of the data derived from machine interpretable feature 30. For example, processor 140 may direct coffee machine 100 to brew using a pre-selected contact time, contact pattern, fluid quantity, fluid temperature, fluid pressure, and/or fluid pass-through rate expressed in machine interpretable feature 30. Alternatively, the processor may itself make determinations of contact time, contact pattern, fluid quantity, fluid temperature, fluid pressure, and/or fluid pass-through rate based on information contained in machine interpretable feature 30. The processor may also, based on information contained in

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	machine interpretable feature 30, direct the coffee machine to add water, milk, cream, sugar, or any suitable condiment to the coffee beverage. As alluded to above, machine interpretable feature 30 need not store data specifically including brewing directives and ingredient characteristics. Instead machine interpretable feature 30 may act as an identifier so that brewing directives and ingredient characteristics may be looked up from data storage 150 within (or external to) coffee machine 100. Sensor 130 thus may read machine interpretable feature 30 and processor 140 may match the machine interpretable feature with predefined brewing operation instructions stored in such memory. Processor 140 may then direct the brewing operation based on brewing operation instructions. In one embodiment, the brewing operation instructions are matched to a machine interpretable feature using a look-up table in which brewing operation instructions correspond in a one-to-one ratio with each known ingredient variety, packet size, packet construction, user preference, etc. It will be appreciated, however, that other arrangements for matching machine interpretable feature 30 with brewing directives similarly may be used. Referring now to FIG. 4, a method of operation for the present invention is illustrated at 200. At 202, a brewing packet encoded with packet-characteristic data is placed into a brewing device. At 204, the packet-characteristic data is read by a sensor. At 206, the packet-characteristic data is interpreted by a processor. Finally, at 208, brewing is directed in accordance with the packet-characteristic data read by the sensor and interpreted by the processor. Because the processor may be employed to effect the aforementioned predefined brewing directives based on the machine interpretable feature associated with each packet. The brewing operation may be made consistent based on consistent machine interpretable features from packet to packet. Similarly, the brewing operation may be altered in accordance with desired brewing characteristics each time the packet is replaced. Particular brew characteristics thus may be controlled simply by selection of a packet with the desired encoded brewing directives (whether or not such directives are known to the coffee machine operator). Control of the brewing process thus may be handed off to the brewing professionals who produce the packets, rather than relying on untrained machine operators.

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	This may be done without sacrificing variety in brew operation based on differing characteristics of the packet contents or consumer tastes. For example, a person desiring weaker coffee may purchase packets designated such in order to direct the machine to add water to the brewed coffee beverage in accordance with proper brewing procedure. This avoids problems associated with ill-advised attempts to dilute coffee by decreasing the quantity of coffee used, a change which may result in a corresponding change in bed depth, and thus in an undesirable change in coffee taste. The encoded packets also may be used to track brewing information which may be useful in ensuring satisfaction with the brewed coffee beverage. For example, the packet may include an encoded date for use in tracking freshness of the coffee grounds contained within the packet. Upon determining that the packet is stale, the processor may direct the machine to note such staleness, thus avoiding an unsatisfactory beverage. Similarly, the packet may contain encoded data related to the coffee blend contained within the packet, such data being stored in memory to provide a history of coffee blends. The encoded packet also may contain encoded data defining the source of the packet so as to prohibit use of counterfeit packets, or packets from unauthorized suppliers. Boyd at Fig. 3:

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	FIG.3 

Boyd at Fig. 4:

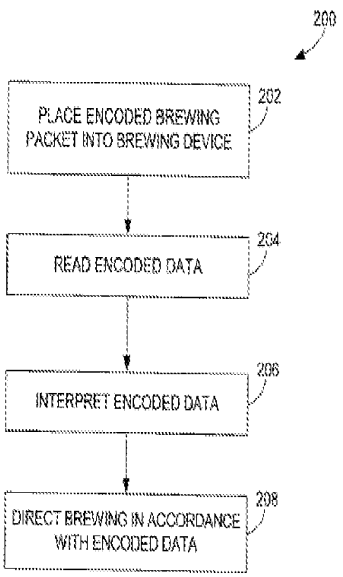


FIG. 4

Jarisch at [0023]:

The invention further relates to a system for preparing a beverage from a capsule as aforementioned and further comprising a beverage preparation device; wherein the device comprises capsule holding means for holding the capsule and rotational drive means for driving the holding means and capsule in rotation along said axis of rotation and reading means arranged for reading the code when the capsule is rotated along said axis.

Jarisch at [0024]:

In particular, the reading means may comprise a light emitter and a light sensor. In an alternative, the reading means comprises an inductive sensor. The optical reading means or inductive sensor may be arranged to detect a code on the rim of the capsule.

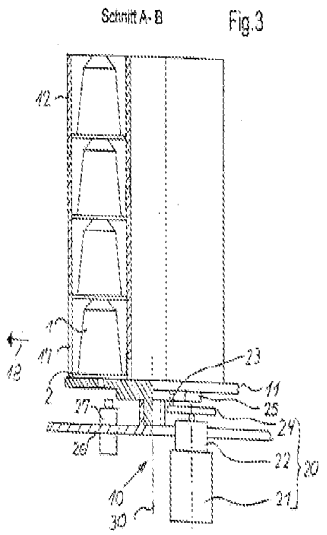
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	Jarisch at [0035]: The centrifugal unit 2 comprises a centrifugal cell 3. The cell 3 may comprise a capsule holder and a capsule received therein. The centrifugal unit is connected to driving means 5 such as a rotary motor. The centrifugal unit comprises a collecting part and an outlet 35. A receptacle 48 can be disposed below the outlet to collect the extracted beverage. The system further comprises liquid supply means such as a water reservoir 6 and a fluid circuit 4. Heating means 31 may also be provided in the reservoir or along the fluid circuit. The liquid supply means may further comprise a pump 7 connected to the reservoir. A flow restriction means 19 is provided to create a restriction to the flow of the centrifuged liquid which leaves the capsule. The system may further comprise a flow meter such as a flow-metering turbine 8 for providing a control of the flow rate of water supplied in the cell 3. The counter 11 can be connected to the flow-metering turbine 8 to enable an analysis of the generated impulse data 10. The analysed data is then transferred to the processor 12. Accordingly, the exact actual flow rate of the liquid within the fluid circuit 4 can be calculated in real-time. A user interface 13 may be provided to allow the user to input information that is transmitted to the control unit 9. Further characteristics of the system can be found in WO2010/026053. Jarisch at [0071]-[0073]: The reader may consist of: • A light source with/without focusing optic, and • A light sensor with/without focusing optic. Jarisch at [0082]: In the embodiment of the figure 4, the light source is placed at the bottom of the centrifugal cell 3. This cell is light conductive allowing the beam to reach the bottom side 72 of its rim 73. The reflected light is conducted by the transparent (or light conductive) centrifugal cell 3 to reach the sensor 62. In case that the sensor 62 cannot be aligned with the transparent part of the centrifugal cell 3, a mirror can be placed as illustrated in the figure 4 to deflect the forward and backward beams.

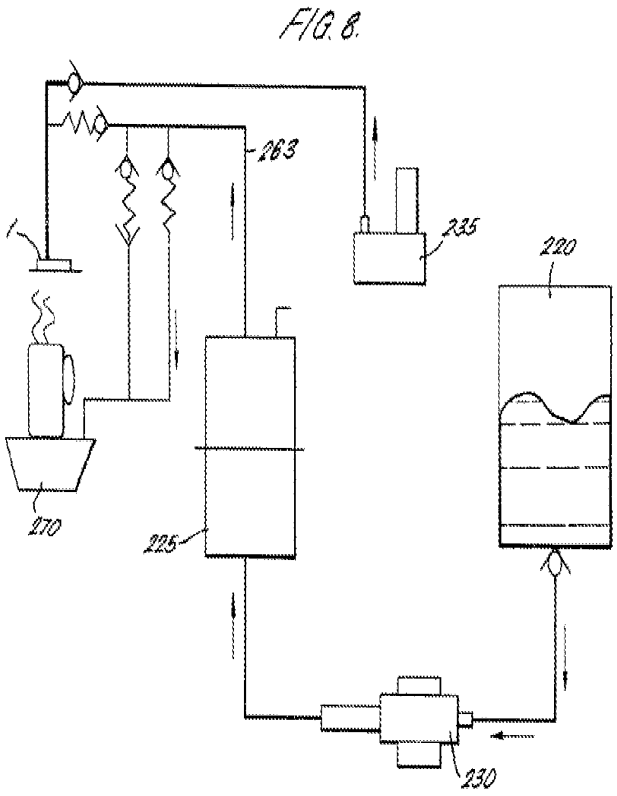
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	See also Jarisch at Claims 14-16; FIGs. 2-7. Mahlich at [0008]: It is thus the task of the present invention to equip the actual single-serving units to be selected with suitable machine readable identification whereby complicated voluminous double mirror scanners are not required for reading the identification code and whereby the accurate alignment of the single-serving pouch with regard to the scanner or its reading unit does not matter. In particular, the difficult process of aligning a rotation-symmetrical single-serving unit, whereby the shape of the capsule is mainly frustoconical and the pouch is mainly lozenge-shaped, is thus eliminated. Mahlich at [0010]-[0020]: According to the invention, direct scanning or immediate reading of the identification on the single-serving unit, particularly of the single-serving capsule itself and not of any part of the storage magazine adjacent to the capsule, guarantees that the selected type of coffee is correctly identified with the single-serving unit and is actually being brewed after removal of the single-serving unit from the storage magazine. The identification can be read easily and accurately via an uncomplicated and compact reading head able to read in a linear manner, provided that the reading head is able to register the rotation-symmetrical identification. However, the rotational or angular position of the rotation-symmetrical identification with regard to the reading head that reads in a linear manner is not important, whereby the alignment of the single-serving unit with regard to the reading head is greatly simplified. In addition, the rotation-symmetrical identification is suitable for testing via a simple procedure according to claim 12. The above-mentioned advantage, i.e. that the rotational or angular position of the single-serving unit with regard to the reading head does not matter, applies particularly to a rotation-symmetrical single-serving unit which does not have a preferred position, defined by its shape, around its symmetrical axis. In such cases the identification is preferably structured in

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	a rotation-symmetrical manner around this symmetrical axis. Thus the reading head, reading in a linear manner, can register the identification regardless of the rotational or angular position of the single-serving unit, so that a single-serving unit stored inside a magazine tube can be identified regardless of the rotational position of the single-serving unit inside the magazine tube. Thus any measures ensuring the definite alignment of the single-serving units inside the magazine tube can be eliminated. In particular, according to claim 3 such rotation-symmetrical identification may be an ID code consisting of concentric circles, whereby the usual linear reading heads can be used. If the ID code is a multi-digit binary code, just four concentric circles are sufficient to reliably identify a great variety of coffee types. If the single-serving unit consists of a capsule with a mainly circular base, according to claim 4, the identification as defined above is applied to the base in a coaxial manner. If the single-serving unit consists of an essentially lozenge-shaped pouch with an upper and a lower surface, the identification is applied to each surface in a coaxial manner. Therefore it does not matter, with regard to the machine reading of the identification, whether the upper or the lower surface of a pouch is facing downwards when the pouches are inserted into the storage magazine. Apart from coffee type identification, the identification on any single-serving unit may also contain producer identification, whereby the latter in conjunction with an adapted evaluation system for controlling the espresso machine can block operation of the espresso machine if the producer identification on the single-serving unit does not correspond to the machine's preprogrammed producer identification. As mentioned above, an uncomplicated system for the registration of the machine readable identification on a single-serving unit according to the invention may consist of a registration device with at least one reading head able to read in a linear manner. The reading head comprises a reading sensor consisting of a transmitter scanning a luminous spot on the identification or part thereof, and of a decoder receiver. The latter may be equipped with a controlling device whereby the setting, particularly that of a magazine unit, can be controlled

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	in order to convey the single-serving units containing the desired coffee type into the dispensing position. According to claim 7 the linear reading head is located in a compact and secure position below the magazine tubes of the magazine unit. The reading head is directed upwards towards the plane where the bases of the single-serving capsules are positioned within the magazine tubes, in such a way that the rotation-symmetrical identification on the base of the respective lowest single-serving capsule can be read. Furthermore, the carrier of a system whereby the magazine tubes are positioned on a carrier and may be conveyed together with that carrier, if desired, is provided with a transparent section at least in the area below the magazine tubes so that the base of any single-serving capsule can be scanned. The transparent section may be designed in particular as a radially positioned slit-shaped window. A scanner and a transparent section may be pro-vided below each magazine tube. This type of configuration ensures that the identification of all single-serving capsules in the lowest position inside each magazine tube can be read in a parallel manner. Based on the respective registered positions of the capsules containing various types of coffee, the magazine tube whose lowest-positioned single-serving capsule contains the selected coffee type is then conveyed to the dispensing position. However, according to claim 9 it may also be sufficient to provide one reading station with just one scanning head for all magazine tubes, whereby the reading station is positioned before the dispensing station in the conveying direction, at the conveying path of those sections of the carrier that are able to move together with the carrier and are transparent so that the identification can be read. In this way it is possible to check if a single-serving unit containing the desired coffee type is conveyed into the dispensing position, whereby conveyance is controlled according to the stored positions of the single-serving capsules containing the various types of coffee.

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	The invention can be used to great advantage in a compact system according to claim 11, whereby the magazine tubes are arranged in a mainly circular manner on a turntable serving as carrier. A Maltese-cross-type drive mechanism is positioned below the turntable and is connected to the latter via an actuation connection. The turntable is adjustable whereby its adjustment may be controlled via the registration device containing the reading head/s for reading the identification of the respective lowest single-serving capsule within the magazine tubes. Mahlich at [0037]: The support frame 26 also carries a reading head 27 mainly consisting of a scan transmitter and an encoder receiver. Reading head 27 is pointing from below towards the turntable 11 in such a way that it is able to register and scan the single-serving capsules stacked with their base facing downwards inside the magazine tubes 12 to 16 when the magazine tubes are moved across the reading head 27. For this purpose at least part of turntable 11 is transparent to the scanning of the ID code: windows 29 located below the magazine tubes 12 to 16 are designed as slits and are each arranged at equal radial distance to a main axis 30 of turntable 11, cf. FIG. 3. The ID codes 3 on the bases 2 of the single-serving capsules can be registered across their greatest radius r_1 and r_2 through these slits, according to FIG. la. In this case ID code 3 is being registered on entering and on leaving the reading station when the base 2 of the capsule, equipped with the ID code, passes on its circular path across reading head 27 arranged in front of dispensing station 18 in the direction of rotation 28 of the turntable. It is thus guaranteed, via comparison of the two registered ID codes as well as via data processing, that only one single-serving capsule 1 containing the desired coffee type is conveyed to the dispensing station 18, once the desired coffee type has been selected, for example by means of a control panel or a knob.

	Mahlich at Fig. 3:  *See also* Mahlich at Claims 1-12. Panesar at p. 23, ll. 23–32: The water pump 230 is operatively connected between the water tank 220 and the water heater 225 as shown schematically in Figure 8 and is controlled by the control processor. The pump provides a maximum flow rate of 900 ml/min of water at a maximum pressure of 2.5 bar. Preferably, in normal use, the pressure will be limited to 2 bar. The flow rate of water through the machine 201 can be controlled by the control processor to be a percentage of the maximum flow rate of the pump by cycle chopping the electrical supply to the pump. Panesar at FIG. 8:

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	 Panesar at p. 25, ll. 8–29: The control processor of the beverage preparation machine 201 comprises a processing module and a memory. The control processor is operatively connected to, and controls operation of, the water heater 225, water pump 230, air compressor 235 and user interface 240. The memory of the control processor includes one or more variables for one or more operational parameters for the beverage preparation machine 201. The operational parameters are the temperature of the water passed through the beverage cartridge 1 during the operating stage, the speed of charging the beverage cartridge 1, the presence or otherwise of a soak step,

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	the total dispensed volume of the beverage, the flow rate of the water during the discharge stage, and the flow rate and period of the purge stage. The variables for the operational parameters are stored in the memory. The cartridge 1 comprises a code provided on or in the cartridge 1 representing the operational parameters required for optimal dispensation of the beverage in that cartridge 1 The code is in binary format and comprises a plurality of data bits corresponding to the variables stored in the control processor memory. Panesar at p. 34, ll. 5–12: The purpose of the recognition means 252 is to allow the machine 201 to recognise the type of beverage cartridge 1 that has been inserted and to adjust one or more operational parameters accordingly. In a typical embodiment, the recognition means 252 comprises an optical barcode reader which reads the printed barcode 320 provided on the laminate 5 of the beverage cartridge 1 as shown in Figure 10 and discussed above. Panesar at p. 34, line 28 – p. 35, line 4: The software can recognize whether the read of the barcode contained errors, although the occurrence of these is minimized as described above by specific location of the barcode 320 relative to the inlet. The barcode 320 may be rescanned a number of times before an error message is presented to the consumer. If the machine 201 is unable to read the barcode the consumer is able to use the beverage cartridge 1 to dispense a beverage using a manual mode of operation. Panesar at p. 36, ll. 15–31: Cartridge recognition is performed by the optical recognition means 252 as described above assuming that the outputs from the cartridge sensor and lock sensor are satisfactory. Once the barcode 320 or RFID has been decoded the operational parameters of the machine 201 are adjusted by the control processor. The discharge cycle is then automatically commenced.