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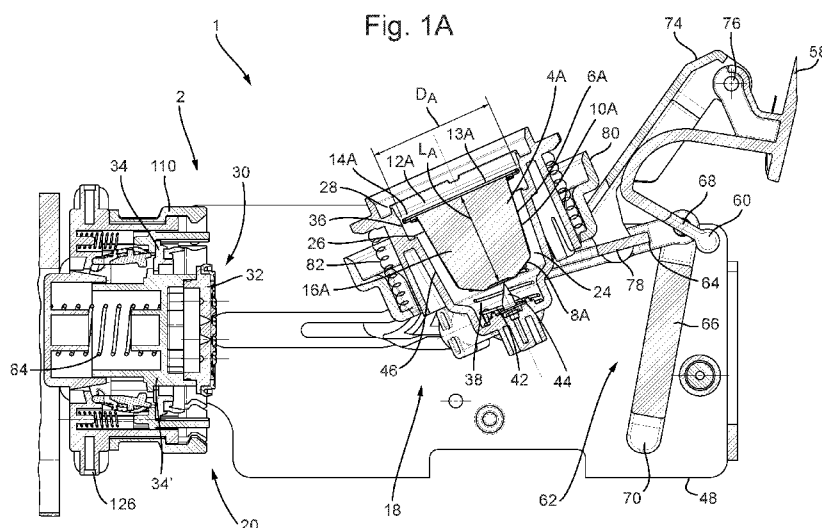
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(54) Title: SYSTEM AND METHOD FOR PREPARING A BEVERAGE FIELD AND BACKGROUND



(57) Abstract: A system (1) and method for preparing a consumable beverage. The system (1) comprises an apparatus (2) including a first brew chamber part (18) having a cavity (24) for selectively holding an exchangeable first or second capsule (4A, 4B). An exit area (13B) of the second capsule (4B) has a diameter (DB) that is larger than a diameter (DA) of an first exit area (13A) of the first capsule (4A). The apparatus includes a second brew chamber part (20) for closing the first brew chamber part (18) around the first or second capsule. The second brew chamber part (20) has an extraction plate (30) for abutting against the first or second exit area (13A, 13B). The extraction plate (30) includes a central portion (32) and a peripheral portion (34). The central portion (32) is movable relative to the peripheral portion (34).

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System and method for preparing a beverage field and background

FIELD OF THE INVENTION

The invention generally relates to a system for preparing a beverage. The invention also relates to an apparatus and method for preparing a beverage. More specifically the invention relates to a system for preparing a beverage using a capsule.

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BACKGROUND OF THE INVENTION

Beverages such as coffee can be conveniently prepared in a brewing apparatus using a capsule with ingredients, e.g. ground coffee. The capsule may be designed for the purpose of producing a predetermined amount of beverage. For example, a known amount of ingredients is provided in the capsule which the apparatus will mix with a known quantity of liquid, e.g. hot water. However, it may be desirable to sometimes provide a beverage with a different quantity than standard. Alternatively, or in addition, it may be desirable to increase the amount of ingredients, e.g. to get produce stronger coffee. Alternatively, or in addition, it may be desirable to provide a different type of beverage for which the amount and/or volume of ingredients may vary. To allow an increased amount of ingredients, the standard size of a capsule may be insufficient and it may be desirable to provide a larger capsule. To keep options open with regards to the amount of ingredients, a brewing system may preferably allow different types of capsules wherein the volume for storing ingredients is variable.

For example, the international patent publication WO 2015/004613 A1 describes a system for the preparation of beverages. The known system comprises capsules of at least a first type and a second type, having outwardly protruding transverse flanges, and respective different axial lengths. The known system comprises a brewing unit, in which there is defined a variable-volume brewing chamber with a lateral delimiting part and a slidable end delimiting part, for receiving capsules of said types introduced into said chamber. The known system is characterized in that the capsules of said different types have flanges of correspondingly different shapes, and said end delimiting part of the brewing chamber carries stop means adapted to be coupled to the flanges of said different types of capsules when the latter are introduced into the brewing chamber, so as to allow

correspondingly different relative movements of the end delimiting part relative to the lateral delimiting part of said chamber.

However, merely varying a shape of the flange may not provide efficient extraction of different amounts of fluid from different capsules. Furthermore, it may be undesirable to provide capsules with variation in shape. For example, some shapes may deteriorate a desired appearance of the capsules and make them difficult to handle. The use of irregular shapes may also add further effort to place the capsule more precisely in the apparatus. There is a need for a brewing system that may alleviate one or more disadvantages of the prior art while maintaining at least some of the advantages.

SUMMARY OF THE INVENTION

According to one aspect, the present disclosure provides a system for preparing a beverage suitable for (human) consumption. The system comprises an apparatus and may optionally include one or more types of corresponding capsules with ingredients that are specifically adapted to fit in the apparatus, and vice versa. The apparatus typically comprises a brew chamber. The brew chamber as described herein is configured for receiving a capsule with ingredients, e.g. ground coffee. For example, the capsule is pierced in the brew chamber to allow hot water being mixed with ingredients for producing the beverage.

Preferably, the brew chamber comprises two or more parts that close around the capsule to form the brew chamber. For example, a first brew chamber part comprises a cavity for holding an exchangeable capsule while a second brew chamber part may cooperate with the first brew chamber part, e.g. closing the first brew chamber part. The capsules typically comprise a body with an exit area, e.g. an exit face through which ingredients are to be extracted. One of the brew chamber parts may have an extraction plate for abutting against the exit area of the capsule. The extraction plate may be configured for extracting the beverage via the exit area of the capsule e.g. through holes in the extraction plate.

Preferably, the parts forming the brew chamber are adapted for handling different types of capsules, e.g. having different volumes for holding ingredients. Notably, the capsules may be different e.g. in that a diameter of the exit area is larger for one capsule compared to that of another capsule. Accordingly, the extraction plate may be configured to handle extraction from capsules having a first diameter or having a second (larger) diameter exit area. Thereto, the extraction plate may include a central portion and a peripheral portion wherein the central portion is movable relative to the peripheral portion, preferably in an axial direction.

By providing the extraction plate with a central and peripheral portion, a size of the extraction plate may be adapted to a diameter of the exit area of the capsule. For example, when the cavity holds a first capsule with a relatively small (e.g. standard) diameter, the central portion of the extraction plate may abut the exit area while the peripheral portion e.g. abuts against the first brew chamber part. Conversely, when the cavity holds a second capsule with a relatively large diameter, the peripheral portion of the extraction plate may abut against the second exit area alternatively, or in addition to, the central portion. For example, a larger extraction surface may be provided which may enable less flow restriction.

In some embodiments, the extraction plate may be provided with one or more apertures to allow beverage to pass there through. The apertures may be disposed for example in the central portion and preferably also in the peripheral portion. Alternatively, or in addition one or more parts of the extraction plate may comprises one or more relief elements to facilitate tearing of the exit area. For example pointed objects may be used to perforate the exit area at one or more positions to extract the liquid there through. The relief elements may also be combined with the apertures, e.g. one or more relief elements may be retracted or extended through the apertures to pierce the exit area of the capsule. In some embodiments, the brew chamber parts may be moveable between different positions. The positions may be biased in a desired direction. For example, the first brew chamber part is movable between a first position and a second position, wherein the first brew chamber part includes a first biasing member arranged for biasing a capsule towards the second brew chamber part. For example, the second brew chamber part is movable between a third position and a fourth position, wherein the second brew chamber part comprises a second biasing member arranged for biasing the second brew chamber towards the first brew chamber part. Alternatively, or in addition a biasing member may be provided which control a biasing of the capsule towards the piercing plate, or vice versa. It will be appreciated that a piercing sequence may be controlled by setting a relative stiffness of the biasing members, e.g. to first close the brewing chamber before piercing the capsule, and/or only pierce the capsule when adding the pressurized liquid.

Optionally, the cavity of the first brew chamber part is arranged for receiving the first or second capsule. The cavity of the first brew chamber part can be a predetermined cavity arranged for holding the first or second capsule. The cavity can have an invariable shape for holding the first or second capsule. The first brew chamber part can be arranged for

holding the first or second capsule without changing a configuration of the first brew chamber part. The first brew chamber part can be a monolithic part.

Typically, the apparatus comprises an outlet from which the beverage will flow after preparation. For example, liquid such as hot water may flow through a hole pierced into the capsule via its bottom. The water can mix, e.g. under pressure, with ingredients in the capsule. The liquid with ingredients in the capsule may form the beverage which can be extracted e.g. via the extraction plate. For example, liquid flows from the capsule through the extraction plate to the beverage outlet of the apparatus. To provide liquid to the capsule, the apparatus may comprises a fluid dispensing device. The fluid dispensing device may be configured to supply an amount of fluid, such as water, under pressure to a selected one of the exchangeable capsules, so as to press its respective exit area onto the relief elements, for opening the respective exit area. The amount of liquid may be adapted to the type, e.g. size, of capsule. Preferably, the extraction plate and the second (larger) exit area of the second capsule are adapted to each other such that a flow resistance of the second exit area when opened is less than a flow resistance of the first (smaller) exit area when opened.

In some embodiments, the central portion may be movable from a ready position (receiving the capsule) to a first or second brewing position which may be a different position depending on which capsule is received. Additionally, the central position may normally be biased in the ready position which may be different from the first and second brewing positions. By allowing different positions of at least the central portion of the extraction plate, the system may be more versatile to adapt also to different axial lengths of the capsule. For example, an axial length of the second capsule can be larger than an axial length of the first capsule, e.g. to maintain the same or similar diameter to length ratio. Preferably, the capsules are substantially rotation symmetric around an axis extending from a bottom of the capsule to a lid of the capsule. In this way it does not matter how the capsule is placed in the brew chamber.

In some embodiments, the exit area of a respective capsule may be recessed further into the cavity when the cavity holds the first capsule than when holding the second larger capsule. Accordingly, the central portion may abut against the second exit area in the second brewing position when the first and second brew chamber part are closed around the second capsule. Alternatively, or in addition, the central portion may abut against the first exit area in the first brewing position when the first and second brew chamber part are closed around the first capsule. By allowing the exit area of a respective capsule to be recessed at different depths, mechanisms at the rear end of the capsule may need less adaptation. For

example the mechanism for piercing the bottom of the capsule need not be adapted to different sized of the capsule.

Some embodiments may be adapted such that the first capsule moves the central portion from the ready position to the first brewing position while the second capsule moves the central portion from the ready position to the second brewing position. For example, when the first brew chamber part is arranged for being moved towards the second brew chamber part, the first brew chamber part may push the first or second capsule against the central portion, e.g. wherein the central portion is locked at different positions. For example a different locking mechanism may be mechanically triggered by a different diameter of the capsule.

In one embodiment, a locking mechanism may lock the central portion of the extraction plate in an extended first brewing position when the cavity holds the first capsule. Alternatively, or in addition, the locking mechanism may be configured to release or bypass the locking mechanism to provide the central portion of the extraction plate in a second brewing position when the cavity holds the second capsule. The locking mechanism may also work reversely, e.g. locking in the second position while releasing in the first position. Also multiple locking mechanisms may be provided to each lock at a different position depending on a diameter of the capsule exit surface. By changing the locking position in dependence of a diameter, the same shape flange can be used, e.g. the shape circular shape with different diameter

Optionally, an actuator may be provided for actuating the locking mechanism, e.g. while closing the first brew chamber part against the second brew chamber part. In one embodiment, when closing the first brew chamber part against the second brew chamber part while holding the second capsule, the central portion may be pushed beyond the locking mechanism by the second capsule before the locking mechanism is actuated by the first brew chamber part. In a further embodiment, when closing the first brew chamber part against the second brew chamber part while holding the first capsule, the locking mechanism is actuated by the first brew chamber part before the central portion is pushed beyond the locking mechanism by the first capsule. For example, the locking mechanism includes a locker designed as a pivotable finger that can open or close the locking mechanism depending on the capsule diameter.

In some embodiments, the capsule has a flange-like rim around the exit area. When using capsules with different diameter exit areas, the diameter of the flange-like rim may also be different. The cavity may be adapted to accept one, two, or more different

diameter capsules. The adaptation of the cavity may include e.g. abutment surfaces at different (axial) positions and/or with different diameters in the cavity. For example, the cavity may have a substantially annular first abutment surface arranged for abutting the flange-like first rim of the first capsule there against when the cavity holds the first capsule.

- 5 Alternatively, or in addition, the cavity may have a second abutment surface arranged for abutting the rim of the second capsule (with larger diameter) there against. For example, a substantially annular second abutment surface is arranged at an open end of the cavity. The first abutment surface may be spaced from the second abutment surface in an axial direction of the first brew chamber part, e.g. recessed into the cavity further away from the open end.
- 10 Preferably, first abutment surface and the second abutment surface are immobile relative to each other. This may improve structural integrity.

- In some embodiments, a sensor may be arranged for determining that the central part of the extraction plate passes a predetermined position between an extended position and a retracted position. For example, the type of capsule may be determined by
- 15 measuring the position of the central part. Some parts of the system may be adapted in accordance with information about the type of capsule inserted in the brewing chamber. For example, a flow control unit may be arranged for controlling a parameter of fluid to be supplied to the capsule. In some cases, the flow control unit may be arranged to switch from operating in a first mode to operating in a second mode when the sensor determines that the
- 20 central extraction plate has passed the predetermined position between the extended position and the retracted position.

- In some embodiments, capsules have different sizes, e.g. the second capsule is larger than the first capsule. In some embodiments with different sized capsules, the first brew chamber part includes a first volume not occupied by the first capsule when the cavity
- 25 holds the first capsule, which first volume is arranged for holding part of the second capsule when the cavity holds the second capsule. Alternatively, or in addition, the first brew chamber part includes a second volume not occupied by the second capsule when the cavity holds the second capsule, which second volume is arranged for receiving the second brew chamber part when the cavity holds the first capsule.

- 30 In some embodiments, the first brew chamber part and the first capsule are adapted to each other such that a flange-like first rim of the first capsule engages an inner circumferential wall of cavity when loading the first capsule into the cavity. Alternatively, or in addition, the first brew chamber part and the second capsule are adapted to each other such that an outer part of the second capsule engages the inner circumferential wall of the cavity

when loading the second capsule into the cavity. It will thus be appreciated that the cavity may be adapted for specific capsules.

In some embodiments, the central portion includes a first sealing member arranged for providing a fluid sealing engagement between the central portion and the first
5 brew chamber part when forming the brew chamber for holding the first capsule.

Alternatively, or in addition, the peripheral portion includes a second sealing member arranged for providing a fluid sealing engagement between the peripheral portion and the first brew chamber part when forming the brew chamber for holding the second capsule. This may allow different capsules to be adequately sealed.

10 In other or further aspects of the present disclosure, the system as described herein may be used in a method for preparing a consumable beverage. For example, the method comprises providing an apparatus including a first brew chamber part having a cavity for selectively holding an exchangeable first or second capsule as described herein, e.g. with different sizes. During operation, the first brew chamber part may be closed by engaging with
15 a second brew chamber part. Preferably the second brew chamber part has an extraction plate for abutting against the exit area of a respective capsule. More preferably, the extraction plate includes a central portion and a peripheral portion, wherein the central portion is movable relative to the peripheral portion or vice versa.

In some embodiments, the first capsule is inserted in the apparatus and used
20 for preparing the consumable beverage. In other or further embodiments, the second (larger) capsule is inserted in the apparatus and used for preparing the consumable beverage. The method of preparation may comprise e.g. supplying fluid under pressure to the capsule in the brew chamber. Preferably, the exit area opens against the extraction plate. For example, a rise in pressure inside the capsule causes the exit area to tear against relief elements provided on
25 the extraction plate allowing beverage to exit the capsule.

According to an aspect is provided an apparatus of the system as described herein.

According to an aspect is provided a capsule, and a set of a first and second capsule as described herein.

30 It will be appreciated that any of the embodiments, aspects, features and options described in view of the system apply equally to the apparatus, capsules and method. It will also be clear that any one or more of the above embodiments, aspects, features and options can be combined.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will further be elucidated on the basis of exemplary embodiments which are represented in a drawing. The exemplary embodiments are given by way of non-limitative illustration. It is noted that the figures are only schematic representations of embodiments of the invention that are given by way of non-limiting example.

In the drawing:

Figs. 1A and 1B illustrate cross sectional views of a system for preparing a beverage;

Figs. 2A and 2B illustrate a perspective and partly translucent view, respectively, of a lever mechanism for closing a brew chamber;

Figs. 3A and 3B illustrate cross sectional views of the functioning of a locking mechanism when a first capsule is inserted;

Figs. 4A and 4B illustrate cross sectional views of the functioning of a locking mechanism when a second capsule is inserted;

Figs. 5A-5C illustrate functioning of an arresting ring;

Figs. 6A and 6B illustrate the presence of a first or second capsule in the brew chamber during extraction;

Figs. 7A and 7B illustrate how a first brew chamber part may swivel downwardly to promote ejection of the a capsule;

Figs. 8A and 8B illustrate a first or second capsule, respectively, inserted in the brew chamber.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Figs. 1A and 1B show schematic cross sectional views of a system 1 for preparing a beverage. The system includes an apparatus 2 and an exchangeable capsule. Here the system 1 is arranged for cooperating with a first capsule 4A and a second capsule 4B. The apparatus 2 shown in Figs. 1A and 1B is one and the same apparatus. The apparatus 2 is arranged for selectively cooperating with either the first capsule 4A (see Fig. 1A) or the second capsule 4B (see Fig. 1B). It will be appreciated that the system 1 can include the apparatus 2, the first capsule 4A and the second capsule 4B.

The first and second capsules 4A, 4B are of a different type. In this example, the second capsule 4B is larger than the first capsule 4A. An axial length L_B of the second capsule 4B is larger than an axial length L_A of the first capsule 4A. A diameter D_B of the

second capsule 4B is a larger than a diameter D_A of the first capsule 4A. For example, the diameter D_B of the second capsule 4B is between 1.05 and 2 times the diameter D_A of the first capsule 4B, preferably between 1.1 and 1.5 time D_A , more preferably between 1.1 and 1.3 times D_A , e.g. $D_B = 1.2 * D_A$ or about twenty percent larger.

5 Notwithstanding the differences, in this example the first and second capsules 4A, 4B are designed to make a similar visual impression. The first and second capsules 4A, 4B are designed to have a familiar look and feel. Here a ratio of the axial length and diameter L_A/D_A of the first capsule 4A is substantially the same as a ratio of the axial length and diameter L_B/D_B of the second capsule 4B. Preferably, the length to diameter ratio of the first
10 and second capsules is identical within 20%, preferably within 10%, e.g. identical. It will be appreciated that providing an enlarged diameter ($D_B > D_A$), while maintaining the same or similar proportions ($L_A/D_A \sim L_B/D_B$) may result in an even larger volume for holding ingredients. For example, a twenty percent increased diameter may result in a volume increase of more than seventy percent ($1.2^3 = 1.728$).

15 In view of the similarity, both capsules 4A, 4B will now be described simultaneously. In this example, the capsules 4A, 4B both include a cup-shaped body 6A, 6B. Here the cup-shaped body 6A, 6B includes a bottom 8A, 8B and a circumferential wall 10A, 10B. The bottom 8A, 8B and the circumferential wall 10A, 10B can form a monolithic part. The capsules 4A, 4B both include a lid 12A, 12B. The lid 12A, 12B closes off an open
20 end of the cup-shaped body 6A, 6B. The lid 12A, 12B includes an exit area exit area 13A, 13B, e.g. flat exit face, through which beverage can be drained from the capsule as explained below. In this example the lid 12A, 12B is connected to a flange-like rim 14A, 14B of the capsule 4A, 4B. Here the rim 14A, 14B is an outwardly extending rim. The bottom 8A, 8B, the circumferential wall 10A, 10B and the rim 14A, 14B can form a monolithic part. Here the
25 exit area 13A, 13B defines the area of the lid 12A, 12B through which the beverage can potentially exit the capsule 4A, 4B. Hence, an area of the lid 12A, 12B sealed to the rim 14A, 14B does not constitute part of the exit area 13A, 13B. In this example, the capsules 4A, 4B are substantially rotation symmetric around an axis extending from the bottom 8A, 8B to the lid 12A, 12B. The cup-shaped body 6A, 6B and the lid 12A, 12B enclose an inner space 16A,
30 16B of the capsule. The inner space 16A, 16B includes a quantity of beverage ingredient, such as an extractable or soluble substance. The beverage ingredient can e.g. be roast and ground coffee, tea, or the like. The beverage ingredient can be powdered coffee. The beverage ingredient can be a liquid. In view of the difference in size of the capsules 4A, 4B it will be appreciated that the second capsule 4B can include a larger quantity of beverage

ingredient than the first capsule 4A. In this example, the inner space 16B of the second capsule 4B is about twice the inner space 16A of the first capsule 4A. For example, the first capsule 4A may include 4-8 grams, e.g. about 6 grams, of ground coffee. For example, the second capsule 4B may include 8-16 grams, e.g. about 12 grams, of ground coffee.

5 The cup-shaped body 6A, 6B can be manufactured from a metal foil, such as aluminium foil, a plastics material, such as polypropylene or polyethylene, or a combination thereof. The cup-shaped body 6A, 6B can be manufactured by pressing, deep-drawing, vacuum forming, injection moulding or the like. The lid can be manufactured from a metal foil, such as aluminium foil, a plastics material, such as polypropylene or polyethylene, or a
10 combination thereof. In the example the capsules 4A, 4B are so-called closed capsules. This indicates capsules that are hermetically closed prior to insertion into the apparatus. The closed capsules can be opened by the apparatus as described below. Alternatively, non-sealed or refillable capsules could also be used.

 The apparatus includes a first brew chamber part 18 and a second brew
15 chamber part 20. The first and second brew chamber parts 18, 20 can be closed against each other to form a brew chamber 22A, 22B (not shown in Figs. 1A, 1B).

 The first brew chamber part 18 includes a cavity 24. The cavity 24 is arranged for receiving the first or second capsule 4A, 4B. Here the cavity 24 of the first brew chamber part 18 is a predetermined cavity 24 arranged for holding the first or second capsule 4A, 4B.
20 Here the cavity 24 has an invariable shape for holding the first or second capsule 4A, 4B. Here the first brew chamber part 18 is arranged for holding the first or second capsule 4A, 4B without changing a configuration of the first brew chamber part 18. In this example the first brew chamber part 18 is a monolithic part. In this example the first brew chamber part 18 includes a first abutment surface 26. The first abutment surface is positioned inside the cavity
25 24. Here the first abutment surface 26 is a first generally annular abutment surface. The first generally annular abutment surface 26 can be continuously annular, or it may be interrupted annular, such as comprising a plurality of segments along an annulus. The first abutment surface 26 may for example take the shape of one or more, e.g. arched, ridges which protrude into cavity 22. Here the first abutment surface 26 provides the cavity 22 with a stepped shape.
30 In this example the first brew chamber part 18 includes a second abutment surface 28. The second abutment surface is positioned near the open end of the cavity 24. Here the second abutment surface 28 is a second generally annular abutment surface. The second generally annular abutment surface 28 can be continuously annular, or it may be interrupted annular, such as comprising a plurality of segments along an annulus. The second abutment surface 28

may for example take the shape of one or more, e.g. arched, ridges. It will be appreciated that the first abutment surface 26 and the second abutment surface 28 are spaced at a mutual distance in an axial direction of the first brew chamber part 18. The first abutment surface 26 and the second abutment surface are positioned at a fixed spacing. The first abutment surface 26 and the second abutment surface are immobile relative to each other. Here, the first brew chamber part 18 includes an ejector 38. In this example the ejector 38 includes a conical ring and/or a resilient element 42, here a helical spring. The first brew chamber part 18 includes piercing means 44 for piercing the bottom of the capsule. Here the piercing means includes a plurality of knives, such as three knives.

The second brew chamber part 20 includes an extraction plate 30. In this example, the extraction plate 30 includes a central portion 32 and a peripheral portion 34. The central portion 32 is movable relative to the peripheral portion 34. Here the central portion 32 is movable in an axial direction of the second brew chamber part 20.

The system 1 as describes thus far can be used for preparing a beverage as follows. Further features of the system 1 will be explained along the way.

In the example of Figs. 1A and 1B the apparatus 2 is in a state ready for receiving a capsule. In Figs. 1A and 1B the capsule 4A, 4B has just been inserted into the cavity of the first brew chamber part 18. The first brew chamber part 18 is in an inclined position. The open end of the cavity 24 points upwards.

As shown in Fig. 1A, the first capsule 4A can fall into the cavity 24 under the influence of gravity. Herein the rim 14A of the first capsule 4A is guided by an inner surface 36 of the first brew chamber part 18. The bottom 8A of the first capsule 4A lowers into the cavity 24 until it abuts against the ejector 38. Here the bottom 8A of the first capsule 4A centers on the ejector 38. It will be appreciated that the rim 14A of the first capsule 4A is positioned between the first abutment surface 26 and the second abutment surface 28. The bottom 8A of the first capsule 4A is not yet pierced in this state.

As shown in Fig. 1B, the second capsule 4B can also fall into the cavity 24 under the influence of gravity. Herein the circumferential wall 10B of the second capsule 4B is guided by an inner surface 46 of the first brew chamber part 18. The bottom 8B of the second capsule 4B lowers into the cavity 24 until it abuts against the ejector 38. Here the bottom 8B of the second capsule 4B centres on the ejector 38. It will be appreciated that the rim 14B of the second capsule 4B is positioned beyond the second abutment surface 28 when seen from the piercing means 44. The bottom 8B of the second capsule 4B is not yet pierced in this state.

Once the capsule 4A, 4B is inserted into the cavity 24 as shown in Figs. 1A and 1B, the first brew chamber part 18 can be moved towards the second brew chamber part 20 for closing the brew chamber around the capsule 4A, 4B. The first brew chamber part 18 is guided in a frame 48 of the apparatus.

5 Figs. 2A and 2B show an example wherein the first brew chamber part 18 includes first bosses 50 and second bosses 52. The first bosses 50 are guided in a first groove 54 of the frame 48. The second bosses 52 are guided in a second groove 56 of the frame 48. It will be appreciated that the bosses 50, 52 and grooves 54, 56 determine the path that will be followed by the first brew chamber part 18. Here the first groove 54 and the second groove
10 56 are provided in a side wall 57 of the frame 48. The first groove 54 extends into the side wall 57 to a first depth. The second groove 56 extends into the side wall to a second depth. The second depth is larger than the first depth. The first boss 50 has a larger diameter than the second boss 52. The first groove 54 has a larger width than the second groove 56. The width of the first groove 54 corresponds to the diameter of the first boss 50. The width of the
15 second groove 56 corresponds to the width of the second boss 52. It will be appreciated that the first groove 54 extends along a different trajectory than the second groove 56. The different widths and depths of the grooves allow the first and second bosses 50, 52 to follow different trajectories. This construction allows a very compact construction for guiding the first and second bosses 50, 52.

20 The apparatus 2 includes a lever 58. The lever can be actuated manually by a user. The lever is pivotally connected to the frame 48 around a lever axis 60. The first brew chamber part 18 is connected to the frame 48 via a knee joint 62. The knee joint 62 includes a push rod 64 and a crank 66. The push rod 64 is pivotally connected to the crank 66 at a knee axis 68. The crank 66 is pivotally connected to the frame 48 at a crank axis 70. The lever 58
25 is connected to the knee joint 62 for actuating the first brew chamber part 18 in motion. Here the lever 58 is connected to the knee joint 62 through a lever link 74. The lever link 74 is pivotally connected to the lever 58 at a lever link axis 76. The lever link 74 is pivotally connected to the push rod 74 at a knee link axis 78.

An arresting ring 80 is arranged surrounding the first brew chamber part 18.
30 The arresting ring 80 is axially movable relative to the first brew chamber part 18. Here, the arresting ring 80 is guided by an external surface of the first brew chamber part 18. The arresting ring is connected to the first brew chamber part via one or more resilient elements 82, here helical springs. The push rod is pivotally connected to the arresting ring 80 at a push rod axis 72. Hence, here the knee joint 62 is indirectly connected to the first brew chamber

part 18, viz. via the arresting ring 80 and one or more resilient elements 82. The function of the arresting ring will be set out below.

When the lever 58 is moved in a downward direction the knee joint 62 will push the first brew chamber part 18 towards the second brew chamber part 20.

- 5 Simultaneously, due to the shape of the first and second grooves 54, 56, the first brew chamber part 18 will be rotated from the upwards inclined orientation into an aligned orientation in which an axial direction of the first brew chamber part 18 is aligned with an axial direction of the second brew chamber part 20.

As mentioned above, the apparatus 2 is arranged for selectively cooperating
10 with either the first capsule 4A or the second capsule 4B. Here, the system 1 is arranged for automatically adjusting the brew chamber depending on whether the first or the second capsule has been inserted. This provides the advantage that no user input is required for selecting proper handling of the first or second capsule. Hence, the risk of errors is greatly reduced.

- 15 As mentioned before, with reference to Figs. 1A and 1B, the second brew chamber part 20 includes an extraction plate 30 with a central portion 32 and a peripheral portion 34. Here the central portion 32 is movable in an axial direction of the second brew chamber part 20. The central portion 32 in this example includes a shaft 32' axially slidably movable with respect to the frame 48. The central portion 32 is connected to the frame 48 via
20 a resilient member 84, here a helical spring. The resilient member 84 biases the central portion into a ready position in Figs. 1A and 1B. The ready position is an extended position in this example. The central portion 32 can be positioned in a first brewing position for cooperating with the first capsule 4A. The central portion can be positioned in a second brewing position for cooperating with the second capsule 4B. In this example, the system 1
25 includes a locking mechanism 86 arranged for locking the central portion 32 in or near the first brewing position when the cavity 24 holds the first capsule 4A.

Figs. 3A and 3B show an example wherein the locking mechanism 86 includes a locker 88. Here the locker 88 is designed as a pivotable finger, pivotable around a pivoting axis 90. The locker 88 is biased into a position pivoted away from the shaft 32'. The locker
30 could also be biased into any other suitable position. The locking mechanism 86 further includes a pusher 92. The pusher is slidably guided in a body 94 of the second brew part 20. The pusher 92 is connected to the body 94 via a resilient member 96, here a helical spring. The resilient member 96 biases the pusher in an extended position. The first brew chamber

part 18 includes an actuator 98. Here the actuator is formed by a frontal surface of the first brew chamber part 18.

Figs. 3A and 3B show functioning of the locking mechanism 86 when the cavity 24 holds the first capsule 4A. In this example, an outermost part of the first capsule 4A, here formed by the lid 12A, exit area 13A and/or rim 14A, is positioned rearwards, i.e. more towards the piercing means 44, relative to the actuator 98. As a result, when advancing the first capsule 4A towards the second brew chamber part 20, the actuator 98 will touch the pusher 92 before the outermost part of the first capsule 4A will touch the central portion 32. The pusher is pushed against the biasing force of the resilient member 96. A lip 100 of the pusher 92 will slide along a sloping surface 102 of the locker 88, causing the locker 88 to pivot towards the shaft 32'. As a result, a thumb 104 of the locker 88 is placed in a path of movement of part 106 of the central portion 32 (see Fig. 3B). When the first capsule 4A is advanced further towards the second brew chamber part 20 the first capsule 4A will abut against the central portion 32. This can cause the central portion to be pushed against the biasing force of the resilient member 84. The pivoted locker 88 prevents travel of the central portion beyond a position where the part 106 abuts against the thumb 104. This is herein defined as the first brewing position. Hence, the first capsule 4A is arranged for moving the central portion 32 from the ready position to the first brewing position. The first capsule 4A is held between the first and second brew chamber parts 18, 20 while brewing, wherein the central portion 32 is in the first brewing position.

Figs. 4A and 4B show functioning of the locking mechanism 86 when the cavity 24 holds the second capsule 4B. In this example, an outermost part of the second capsule 4B, here formed by the lid 12B, exit area 13B and/or rim 14B, is positioned forwardly, i.e. more towards the second brew chamber part 20, relative to the actuator 98. As a result, when advancing the second capsule 4B towards the second brew chamber part 20, the outermost part of the second capsule 4B will abut against the central portion 32 before the actuator 98 will touch the pusher 92. The central portion 32 is pushed against the biasing force of the resilient member 84 while the locker 88 is still pivoted away from the shaft 32'. As a result, the part 106 passes underneath the thumb 104. Only after the part 106 has passed the thumb 104 the pusher is pushed against the biasing force of the resilient member 96 by the actuator 98. The lip 100 of the pusher 92 will still slide along the sloping surface 102 of the locker 88, causing the locker 88 to pivot towards the shaft 32'. However, the part 106 has already passed the thumb 104 at that moment. In this example, the second capsule 4B pushes the central portion 32 in abutment with the body 94. This is herein defined as the second

brewing position. Hence, the second capsule 4B is arranged for moving the central portion 32 from the ready position to the second brewing position. The second capsule 4B is held between the first and second brew chamber parts 18, 20 while brewing, wherein the central portion 32 is in the second brewing position.

5 Thus, the locking mechanism 86 is arranged for locking the central portion 32 in the first brewing position when the cavity 24 holds the first capsule 4A. It is noted that the locking may be single-sided, viz. the locking mechanism may prevent the central portion 32 from being moved beyond the first brewing position when the cavity 24 holds the first capsule 4A. However movement of the central portion 32 from the first brewing position to
10 the ready position may be not prevented. The locking unit 86 is arranged for selectively preventing the central portion 32 being locked in or near the first brewing position when the second capsule 4B is included in the brew chamber. The locking unit 86 is arranged for selectively allowing the central portion 32 being moved into the second brewing position when the second capsule is included in the brew chamber.

15 When comparing Figs. 3A and 4A it will be appreciated that while advancing the first brew chamber part 18 towards the second brew chamber part 20 the first capsule 4A is recessed further into the first brew chamber part than the second capsule 4B. Then the first lid 12A, exit area 13A and/or rim 14B is recessed further into the first brew chamber part 18 than the second lid 12B, exit area 13B and/or rim 14B.

20 When comparing Figs. 3B and 4B it will be appreciated that when the brew chamber holds the first capsule 4A, the central portion 32 extends into the cavity 24. The central portion 32 extends into the first brew chamber part 18 beyond a position where the lid 12B, exit area 13B and/or rim 14B of the second capsule 4B would have been, had the second capsule been included in the first brew chamber part 18.

25 Figs. 5A-5C demonstrate functioning of the arresting ring 80. As mentioned above, the knee joint 62 is indirectly connected to the first brew chamber part 18, viz. via the arresting ring 80 and one or more resilient elements 82.

30 In Fig. 5A the first capsule 4A abuts against the central portion 32 with the central portion in the first brewing position. The arresting ring 80 is still in the rearward position. It will be appreciated that the lever 58 will not yet have reached its end position. The first brew chamber part 18 includes a protrusion 108. Here the protrusion 108 is a substantially annular protrusion. The protrusion 108 extends outwardly. Here the protrusion 108 forms an outermost edge of the first brew chamber part 18. The second brew chamber part 20 includes a retainer 110. Here the retainer 110 is designed as a circumferential ring of

retainer lips. The retainer 110 is pivotally connected to the body 94. Here the retainer 110 is resiliently pivotally connected to the body 94. The retainer 110 includes a tooth 112. The tooth here has a first inclined surface 114 and a second inclined surface 116.

When lowering the lever 58, the arresting ring 80 will be advanced towards
5 the second brew chamber part 20. The one or more resilient elements 82 will push the first brew chamber part 18 ahead of the arresting ring 80 until the first brew chamber part abuts against the second brew chamber 20 part, e.g. with the capsule 4A, 4B clamped in between. During this movement, the protrusion 108 will advance against the first inclined surface 114. This causes the retainer 110 to be pivoted outwardly (see Fig. 5A). Further advancing causes
10 the protrusion 108 to pass beyond the second inclined surface 116, causing the retainer 110 to pivot inwardly (see Fig. 5B). Further lowering of the lever 58 first brew chamber part abuts against the second brew chamber 20 part will cause the one or more resilient elements 82 to be compressed. As a result, the arresting ring 80 will advance towards the second brew chamber part 20. Fully lowering the lever 58 will cause the arresting ring 80 to be interposed
15 between the retainer 110 and a locking ring 118 (see Fig. 5C). The arresting ring 80 surrounding the retainer 110 prevents the retainer 110 from pivoting outwardly. Hence, the first brew chamber part is locked with respect to the second brew chamber part 20. The first brew chamber part is locked onto the second brew chamber part 20.

The apparatus can include a fluid supply system for supplying a fluid, e.g. a
20 liquid, such as hot water under pressure, to the first brew chamber part 18. When the brew chamber is pressurized with the fluid for brewing a beverage, the first and second brew chamber parts 18, 20 will be pushed away from each other by the fluid pressure. The retainer 110 and arresting ring 80, and optionally the locking ring 118, will bear all, or part of, the force exerted by the fluid pressure. The arresting ring 80 interposed between the retainer 110
25 and the locking ring 118 increases mechanical stability. The arresting ring 80 does not have to bear all forces exerted onto it by the retainer 110, since it can abut against the locking ring 118 and transmit at least part of the forces to the locking ring 118. The locking ring 118 can be immobile, and hence can easily be reinforced. Since the first brew chamber part is locked onto the second brew chamber part 20 the frame 48 and the actuation mechanism, e.g. the
30 knee joint, do not have to bear this force, or at least a smaller part thereof. Hence the frame and/or the actuation mechanism can be designed weaker and/or cheaper.

Although the functioning of the arresting ring 80 has been shown in Figs. 5A-5C with respect to the first capsule 4A, it will be appreciated that the arresting ring 80 can function identically with respect to the second capsule 4B.

Fig. 6A shows the first capsule 4A in the brew chamber during extraction. Fig. 6B shows the second capsule 4B in the brew chamber during extraction.

The piercing member 44 is arranged for piercing the bottom 8A, 8B of the capsule 4A, 4B. As can also be seen in Figs. 5A-5C, in this example the piercing member 44 does not pierce the bottom 8A, 8B until the lid 12A, 12B of the capsule 4A, 4B abuts against the central portion 32 in the first or second brewing position. Thereto, stiffnesses of the resilient element 42 and the resilient member 84 can be chosen. In this example, the stiffness of the resilient element 42 is chosen to be larger than the stiffness of the resilient member 84. However, it will be appreciated that it is also possible that the stiffness of the resilient element 42 is equal to the stiffness of the resilient member 84 or that the stiffness of the resilient element 42 is smaller than the stiffness of the resilient member 84.

Once the capsule 4A, 4B is included in the brew chamber, and the bottom 8A, 8B has been pierced, a fluid, in this example hot water under pressure, can be supplied to the brew chamber. Therefore it is desired that the brew chamber is leak tight. Thereto the central portion 32 is provided with a first sealing member 120. The peripheral portion 34 is provided with a second sealing member 122. The beverage preparation apparatus 2 is arranged for preparing a quantity of a beverage, suitable for consumption, using either a first capsule 4A or a second capsule 4B. The quantity can be a predetermined quantity. The quantity can also be a user selectable, user settable, or user programmable quantity.

Referring to Fig. 3B sealing in view of the first capsule 4A is described. The first sealing member 120 is arranged for providing a fluid sealing engagement between the central portion 32 and the first brew chamber 18 part when forming the brew chamber for holding the first capsule 4A. In this example, the first sealing member 120 abuts against the first brew chamber part 18 when the first capsule 4A is included in the brew chamber. This provides a seal for water being present in the cavity 24 outside the capsule 4A. This way, brewing fluid injected into the brew chamber 22A is prevented from bypassing around the outside of the capsule 4A. In the example of Fig. 3B the first sealing member 120 includes a resilient lip 121. The resilient lip 121 is arranged to provide a self-reinforcing sealing engagement between the central portion 32 and the first brew chamber part 18 under the effect of fluid pressure in the brew chamber. In this example the first sealing member 120 abuts against the rim 14A of the first capsule 4A. The rim 14A is pressed against the first sealing member 120 by the first abutment surface 26. This provides a sealing engagement between the central portion 32 and the capsule 4A against beverage exiting the capsule 4A via the exit area 13A. It will be appreciated that here the side of the rim 14A facing away

from the cup-shaped body 6A is sealed against the second brew chamber part 20.

Alternatively, or additionally, the side of the rim 14A facing towards the cup-shaped body 6A can be sealed against the first brew chamber part 18. Thereto an additional seal can be provided on the first brew chamber part 18, e.g. on the first abutment surface 26, and/or on the capsule 4A, e.g. on the rim 14A. It will be clear that a seal on the capsule may be additional to the seal between the first brew chamber part 18 and the second brew chamber part 20. This may reduce the sealing effort by the first sealing member 120.

Referring to Fig. 4B sealing in view of the second capsule 4B is described.

The second sealing member 122 is arranged for providing a fluid sealing engagement between the peripheral portion 34 and the first brew chamber 18 part when forming the brew chamber for holding the second capsule 4B. In this example, the second sealing member 122 abuts against the first brew chamber part 18 when the second capsule 4B is included in the brew chamber. This provides a seal for water being present in the cavity 24 outside the capsule 4B.

In the example of Fig. 3B the second sealing member 122 includes a resilient lip 123. The resilient lip 123 is arranged to provide a self-reinforcing sealing engagement between the peripheral portion 34 and the first brew chamber part 18 under the effect of fluid pressure in the brew chamber. In this example the second sealing member 122 abuts against the rim 14B of the second capsule 4B. The rim 14B is pressed against the second sealing member 122 by the second abutment surface 28. This may provide a sealing engagement between the peripheral portion 34 and the capsule 4B against beverage exiting the capsule 4B via the exit area 13B.

In Fig. 4B the first sealing member 120 provides a sealing engagement between the central portion 32 and the peripheral portion 34 when forming the brew chamber for holding the second capsule 4B. This sealing engagement between the central portion 32 and the peripheral portion 34 can be self-reinforcing. Thereto the engagement between peripheral portion 34 and the second capsule 4B may allow brewing fluid to pass to the first sealing member 120. Hence, the first sealing member 120 provides a sealing engagement between the central portion 32 and the capsule 4B against beverage exiting the capsule 4B via the exit area 13B. It will be appreciated that here the side of the rim 14B facing away from the cup-shaped body 6B, which rim may or may not be covered by a lid, for example by a foil, is sealed against the second brew chamber part 20. Alternatively, or additionally, the side of the rim 14B facing towards the cup-shaped body 6B can be sealed against the first brew chamber part 18. Thereto an additional seal can be provided on the first brew chamber

part 18, e.g. on the second abutment surface 28, and/or on the capsule 4B, e.g. on the rim 14B. It will be clear that a seal on the capsule may be additional to the seal between the first brew chamber part 18 and the second brew chamber part 20. This may reduce the sealing effort by the second sealing member 122.

5 When the fluid under pressure is supplied to the capsule 4A, 4B in the brew chamber, the exit area 13A, 13B may open against the extraction plate 30. The extraction plate 30 in this example includes a plurality of relief elements 124. Here the relief elements 124 are truncated pyramids. A rise in pressure inside the capsule 4A, 4B can cause the exit area 13A, 13B to tear against the relief elements allowing beverage to exit the capsule 4A,
10 4B.

 The beverage can pass through the extraction plate 30 via apertures in the extraction plate. Next the beverage can flow to an outlet 126. From the outlet 126 the beverage can flow into a receptacle, such as a cup.

 Once the beverage has been brewed, the lever 58 can be moved upwardly.
15 This causes the arresting ring 80 to be moved away from the retainer 110. Next, the first brew chamber part 18 will be moved rearwards. The second inclined surface 116 of the retainer 110 can allow the retainer to pass the projection 108. The first brew chamber 18 part will move away from the second brew chamber part 20. The central portion 32 will return to the ready position. The bosses 50, 52 and grooves 54, 56 determine the path that will be followed
20 by the first brew chamber part 18.

 Figs. 7A and 7B illustrate how the first brew chamber part may swivel downwardly. This promotes ejection of the used capsule 4A, 4B from the cavity 24 under the effect of gravity. The ejector 38 can assist in pushing the capsule 4A, 4B off the piercing member 44 and out of the cavity 24. The used capsule 4A, 4B can fall into a waste basket of
25 the apparatus 2.

 Figs. 8A and 8B show examples how the capsule 4A or 4B can be inserted in the brew chamber. In this example the first and second capsules 4A, 4B are designed to make a similar visual impression.

 Fig. 8A shows an example of the first capsule 4A inserted in the brew chamber
30 22A formed by the first brew chamber part 18 and the second brew chamber part 20. It will be appreciated that the circumferential wall 10A is narrower than the cavity 24 at that location. As a result there is a first volume 126 surrounding the first capsule 4A inside the cavity 24.

Fig. 8B shows an example of the second capsule 4B inserted in the brew chamber 22B formed by the first brew chamber part 18 and the second brew chamber part 20. It will be appreciated that a part 128 of the circumferential wall 10B is narrower than the cavity 24 at that location. This part 128 is formed by the part of the circumferential wall 10B extending beyond the first abutment surface 26. As a result there is a second volume 130 surrounding the second capsule 4B inside the cavity 24.

It is noted that the first volume 126 is not occupied by the first capsule 4A when the brew chamber holds the first capsule 4A. However, this first volume 126 is occupied by part of the second capsule 4B when the brew chamber holds the second capsule 4B. The second volume 130 is not occupied by the second capsule 4B when the brew chamber holds the second capsule 4B. This second volume 130 receiving the central portion 32 of the extraction plate 30 when the brew chamber holds the first capsule 4A.

When brewing a beverage using the first capsule 4A, the first volume 126 will fill with fluid, such as water, which fluid is not used for brewing the beverage. This fluid can be drained to the waste basket after brewing. When brewing a beverage using the second capsule 4B, the second volume 130 will fill with fluid, such as water, which fluid is not used for brewing the beverage. This fluid can be drained to a container, e.g. the waste basket, after brewing. In this example the first volume 126 is substantially equal to the second volume 130. Hence, the volume of fluid directed to the waste basket is substantially equal when brewing a beverage using a first capsule 4A and when brewing a beverage using a second capsule 4B.

Herein, the invention is described with reference to specific examples of embodiments of the invention. It will, however, be evident that various modifications and changes may be made therein, without departing from the essence of the invention. For the purpose of clarity and a concise description features are described herein as part of the same or separate embodiments, however, alternative embodiments having combinations of all or some of the features described in these separate embodiments are also envisaged.

In the examples, the central portion of the extraction plate includes a plurality of relief elements. The peripheral portion includes no relief elements. However, it will be appreciated that the peripheral portion may also include relief elements. The extraction plate and the second exit area can be adapted to each other such that a flow resistance of the second exit area when opened is less than a flow resistance of the first exit area when opened. The extraction plate and the second exit area may be adapted to each other such that the second exit area tears on the extraction plate over a larger surface area than the first exit area.

The extraction plate and the second exit area may be adapted to each other such that the second exit area tears on the extraction plate on more locations than the first exit area. Outer relief elements may be designed for tearing both the first and second exit area wherein the second exit area tears on the outer relief elements over a larger surface area than the first exit area. The extraction plate can include relief elements of a first type and at least one relief element of a second type, wherein the relief elements of the first type are arranged within an area corresponding to the first exit area, and the at least one relief element of the second type being arranged within an area corresponding to the second exit area and outside the area corresponding to the first exit area. The relief element of the second type may have a sharper edge than the relief elements of the first type. The second exit area may include a weakened zone. The weakened zone may be located in a peripheral area of the second exit area.

In the examples, the first and second capsules have substantially the same shape. It is also possible to provide a third capsule having a different shape. The third capsule can e.g. be shaped to substantially fill the brew chamber when the central portion is in the first brewing position. It is also possible to provide a fourth capsule having a different shape. The fourth capsule can e.g. be shaped to substantially fill the brew chamber when the central portion is in the second brewing position.

In the examples, the first capsule has an outwardly extending flange-like rim. It will be appreciated that it is possible that the first capsule does not include an outwardly extending rim. In the examples, the second capsule has an outwardly extending flange-like rim. It will be appreciated that it is possible that the second capsule does not include an outwardly extending rim.

In the examples, the capsule body and lid are made of aluminium foil, preferable polymer coated aluminium foil to allow easy welding of the lid to the body. It will be appreciated that the capsule body and/or lid can be made of a wide variety of materials considered suitable by the skilled person and capable of being processed into a sheet, film or foil using techniques conventionally known in the art such as extrusion, co-extrusion, injection molding, blow molding, vacuum forming etc. Suitable materials for the capsule body and/or lid include, without being limited thereto, plastic materials, in particular thermoplastic materials, for example a polyolefin polymer, for example polyethylene or polypropylene, PVC, polyesters for example polyethylene terephthalate (PET); metal foils such as aluminum, stainless steel, metal alloys etc.; or sheets of a woven or a non-woven or otherwise processed fibrous material, like paper, polyester, etc.; or combinations thereof, e.g. multilayers. The material for the capsule can be a biodegradable polymer or another

biodegradable material. The skilled person will be capable of selecting the appropriate material taking into account the envisaged use with food material and any other relevant circumstances during use of the capsule. The thickness of the sheet or foil may be chosen such that a form stable capsule is provided. The thickness of the sheet or foil may vary with the nature of the material.

In the examples, the capsules are closed capsules. It is also possible to provide the system with an open capsule. The open capsule is open prior to insertion into the apparatus. The open capsule can be preperforated. The open capsule can be packaged in a hermetically sealed package which has to be removed before inserting the open capsule in the apparatus. In the examples, the capsules are pierced by the piercing means. It is also possible to provide the system with a capsule that is not pierced by the piercing means. Such capsule can e.g. include an entrance filter. In the examples, the capsules open against the extraction plate. It is also possible to provide the system with a capsule that does not open against the extraction plate. Such capsule can e.g. include an exit filter.

In the examples, the capsules themselves do not include a sealing member. It will be appreciated that it is possible to provide the capsule with a sealing member, e.g. a resilient sealing member. The sealing member can e.g. be placed on the rim, e.g. on the side facing towards the cup-shaped body or on the side facing away from the cup-shaped body. Alternatively, or additionally, a sealing member can be provided on the circumferential wall and/or on the bottom.

In the examples the arresting ring and retainer extend along substantially the entire perimeter of the first and second brew chamber parts. This provides particular good locking of the two brew chamber parts onto each other. However, it will be appreciated that it is also possible that the arresting ring and retainer include arresting means and retaining means at one or more discrete positions along the perimeter, e.g. at two, three, four, six or eight positions.

It will be appreciated that it is also possible to provide a first apparatus arranged for brewing a beverage using a first capsule, but incapable of brewing a beverage using a second capsule. Such first apparatus can be included in a system with the apparatus as described in relation to the figures and a first capsule and optionally a second capsule.

It will be appreciated that it is also possible to provide a second apparatus arranged for brewing a beverage using a second capsule, but incapable of brewing a beverage using a first capsule. Such second apparatus can be included in a system with the apparatus as described in relation to the figures and a second capsule and optionally a first capsule.

However, other modifications, variations, and alternatives are also possible. The specifications, drawings and examples are, accordingly, to be regarded in an illustrative sense rather than in a restrictive sense.

For the purpose of clarity and a concise description features are described
5 herein as part of the same or separate embodiments, however, it will be appreciated that the scope of the invention may include embodiments having combinations of all or some of the features described.

In the claims, any reference signs placed between parentheses shall not be construed as limiting the claim. The word 'comprising' does not exclude the presence of
10 other features or steps than those listed in a claim. Furthermore, the words 'a' and 'an' shall not be construed as limited to 'only one', but instead are used to mean 'at least one', and do not exclude a plurality. The mere fact that certain measures are recited in mutually different claims does not indicate that a combination of these measures cannot be used to an advantage.

CLAIMS:

1. A system (1) for preparing a consumable beverage, the system (1) comprising:
an apparatus (2) including a first brew chamber part (18) having a cavity (24)
for selectively holding an exchangeable first or second capsule (4A,4B),
the first capsule (4A) having a first body (6A) with a first exit area (13A)
5 attached to the first body (6A), and the second capsule (4B) having a second body (6B) with
a second exit area (13B) attached to the second body (6B), the second exit area (13B) having
a diameter (D_B) that is larger than a diameter (D_A) of the first exit area (13A);
the apparatus further including a second brew chamber part (20) for closing
the first brew chamber part (18) around the first or second capsule; wherein the second brew
10 chamber part (20) has an extraction plate (30) for abutting against the first or second exit area
(13A,13B),
the extraction plate (30) including a central portion (32) and a peripheral
portion (34), the central portion (32) being movable relative to the peripheral portion (34).
- 15 2. The system according to claim 1, wherein the peripheral portion (34) is
arranged to abut against the second exit area (13B) when the cavity (24) holds the second
capsule (4B) while brewing.
3. The system according to any of the preceding claims, wherein the peripheral
20 portion (34) is arranged to abut against the first brew chamber part (18) when the cavity (24)
holds the first capsule (4A) while brewing.
4. The system according to any of the preceding claims, wherein the central
portion (32) is arranged to abut against the second exit area (13B) when the cavity (24) holds
25 the second capsule (4B) while brewing.
5. The system according to any of the preceding claims, wherein the central
portion (32) is arranged to abut against the first exit area (13A) when the cavity (24) holds
the first capsule (4A) while brewing.

6. The system according to any of the preceding claims wherein the central portion (32) is movable from a ready position to a second brewing position.

7. The system according to claim 6, wherein the central portion (32) is movable
5 from the ready position to a first brewing position.

8. The system according to claim 6 or 7, wherein the central portion (32) is biased in the ready position.

9. The system according to any of claims 6 – 8, wherein, when the cavity (24) holds the first capsule (4A), the first exit area (13A) is recessed into the cavity (24) further than the second exit area (13B) when the cavity (24) holds the second capsule (4B).

10. The system according to any of claims 6 – 9, wherein the central portion (32) is arranged to abut against the second exit area (13B) in the second brewing position when
15 the first and second brew chamber part are closed around the second capsule.

11. The system according to claim 7 or any claim dependent thereon, wherein the central portion (32) is arranged to abut against the first exit area (13A) in the first brewing
20 position when the first and second brew chamber part are closed around the first capsule (4A).

12. The system according to any of claims 6 – 11, wherein the second capsule (4B) is arranged for moving the central portion (32) from the ready position to the second
25 brewing position.

13. The system according to claim 7 or any claim dependent thereon, wherein the first capsule (4A) is arranged for moving the central portion (32) from the ready position to the first brewing position.

14. The system according to claim 12, wherein the first brew chamber part (18) is arranged for being moved towards the second brew chamber part (20), and wherein the first brew chamber part (18) pushes the second capsule (4B) against the central portion (32).

15. The system according to claim 13, wherein the first brew chamber part (18) is arranged for being moved towards the second brew chamber part (20), and wherein the first brew chamber part (18) pushes the first capsule (4A) against the central portion (32).

5 16. The system according to any of the preceding claims, wherein an axial length (L_B) of the second capsule is larger than an axial length (L_A) of the first capsule.

17. The system according to any of the preceding claims, wherein the first brew chamber part (18) has a substantially annular first abutment surface (26) in the cavity (24)
10 wherein the first abutment surface (26) is arranged for abutting a flange-like first rim (14A) of the first capsule (4A) there against when the cavity (24) holds the exchangeable first capsule (4A).

18. The system according to any of the preceding claims, wherein the first brew
15 chamber part (18) has a substantially annular second abutment surface (28), wherein the second abutment surface (28) is arranged for abutting a flange-like second rim (14B) of the second capsule (4B) there against when the cavity (24) holds the exchangeable second capsule (4B).

20 19. The system according to claim 18, wherein the substantially annular second abutment surface (28) is arranged at an open end of the cavity (24).

20. The system according to any of claims 17 – 19, wherein the substantially
annular first abutment surface (26) and the substantially annular second abutment surface
25 (28) are immobile relative to each other.

21. The system according to any of claims 17 – 20, wherein the substantially
annular first abutment surface (26) is spaced from the substantially annular second abutment
surface (28) in an axial direction of the first brew chamber part (18).

30

22. The system according to any one of claims 1-21, wherein the cavity (24) has an invariable shape for holding the first or second capsule.

23. The system according to any of the preceding claims, wherein the second brew chamber part (20) is movable into a first brewing position and a second brewing position,

24. The system according to claim 23, wherein the first brew chamber part (18) is
5 movable between a loading position and a brewing position,

25. The system according to claim 24, wherein the first brew chamber part (18) in the brewing position together with the second brew chamber part (20) in the first brewing position defines a closed position in which the first capsule (4A) fits in the brew chamber.

26. The system according to claim 24 or 25, wherein the first brew chamber part (18) in the brewing position together with the second brew chamber part (20) in the second brewing position defines a closed position in which the second capsule (4B) fits in the brew chamber.

27. The system according any of the preceding claims, including a locking mechanism (86) for locking the central extraction plate (30) in an extended first brewing position when the cavity (24) holds the first capsule (4A).

28. The system according to claim 27, wherein the locking mechanism (86) is configured for releasing the locking of the central portion (32) of the extraction plate (30) in a second brewing position when the cavity (24) holds the second capsule (4B).

29. The system according to claim 27 or 28, wherein the first brew chamber part
25 includes an actuator (98) for actuating the locking mechanism (86).

30. The system according to claim 29, wherein the locking mechanism (86) is actuated while closing the first brew chamber part (18) against the second brew chamber part (20).

31. The system according to any of claims 27 – 30, wherein the system is arranged such that, while closing the first brew chamber part (18) against the second brew chamber part (20), when the cavity (24) holds the second capsule (4B), the central portion (32) is

pushed beyond the locking mechanism (86) by the second capsule (4B) before the locking mechanism (86) is actuated by the first brew chamber part (18).

32. The system according to any one of claims 27 – 31, wherein the system is arranged such that, while closing the first brew chamber part (18) against the second brew chamber part (20), when the cavity (24) holds the first capsule (4A), the locking mechanism (86) is actuated by the first brew chamber part (18) before the central portion is pushed beyond the locking mechanism (86) by the first capsule (4A).

33. The system according to any of claims 27 – 32, wherein the locking mechanism (86) includes a locker (88) designed as a pivotable finger.

34. The system according to any of the preceding claims, including a sensor arranged for determining that the central extraction plate passes a predetermined position between the extended position and the retracted position.

35. The system according to claim 34, including a flow control unit arranged for controlling a parameter of fluid to be supplied to the capsule, wherein the flow control unit is arranged switch from operating in a first mode to operating in a second mode when the sensor determines that the central extraction plate has passed the predetermined position between the extended position and the retracted position.

36. The system according to any of the preceding claims wherein the capsules (4A, 4B) are substantially rotation symmetric around an axis extending from a bottom (8A, 8B) of the capsule to a lid (12A, 12B) of the capsule.

37. The system according to any of the preceding claims wherein the extraction plate (30) is provided with apertures to allow beverage to pass there through.

38. The system according to any of the preceding claims, wherein the extraction plate (30) comprises one or more relief elements (124) to facilitate tearing of the exit area (13A, 13B).

39. The system according to any of the preceding claims, the system comprising an outlet (126) from which outlet (126), in use, may flow the beverage.

40. The system according to claim 39, wherein the system is configured to flow a beverage from the first or second capsule (4A, 4B) through the extraction plate (30) to the outlet (126).

41. The system according to any of claims 38 – 40, the apparatus (2) including a fluid dispensing device for supplying an amount of fluid, such as water, under pressure to a selected one of the exchangeable capsules (4A, 4B), so as to press its respective exit area (13A, 13B) onto the relief elements (124), for opening the respective exit area (13A, 13B).

42. The system according to any of the preceding claims, wherein the extraction plate (30) and the second exit area (13B) are adapted to each other such that a flow resistance of the second exit area (13B) when opened is less than a flow resistance of the first exit area (13A) when opened.

43. The system according to any of the preceding claims, wherein the second capsule (4B) is larger than the first capsule (4A), wherein the first brew chamber part (18) includes a first volume not occupied by the first capsule (4A) when the cavity (24) holds the first capsule (4A), which first volume is arranged for holding part of the second capsule (4B) when the cavity (24) holds the second capsule (4B).

44. The system according to claim 43, wherein the first brew chamber part (18) includes a second volume not occupied by the second capsule (4B) when the cavity (24) holds the second capsule (4B), which second volume is arranged for receiving the second brew chamber part (20) when the cavity (24) holds the first capsule (4A).

45. The system according to any of the preceding claims, wherein the second capsule (4B) is larger than the first capsule (4A), wherein the first brew chamber part (18) and the first capsule (4A) are adapted to each other such that a flange-like first rim (14A) of the first capsule (4A) engages an inner circumferential wall of cavity (24) when loading the first capsule (4A) into the cavity (24).

46. The system according to claim 45, wherein the first brew chamber part (18) and the second capsule (4B) are adapted to each other such that an outer part of the second capsule (4B) engages the inner circumferential wall of the cavity (24) when loading the second capsule (4B) into the cavity (24).

5

47. The system according to any of the preceding claims, wherein the central portion (32) includes a first sealing member (120) arranged for providing a fluid sealing engagement between the central portion (32) and the first brew chamber part (18) when forming the brew chamber for holding the first capsule (4A).

10

48. The system according to any of the preceding claims, wherein the peripheral portion (34) includes a second sealing member (122) arranged for providing a fluid sealing engagement between the peripheral portion (34) and the first brew chamber part (18) when forming the brew chamber for holding the second capsule (4B).

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49. The system according to any of the preceding claims, wherein the first brew chamber part (18) is movable between a first position and a second position, wherein the first brew chamber part (18) includes a first biasing member arranged for biasing a capsule towards the second brew chamber part (20).

20

50. The system according to any of the preceding claims, wherein the second brew chamber part (20) is movable between a third position and a fourth position, wherein the second brew chamber part (20) comprises a second biasing member arranged for biasing the second brew chamber towards the first brew chamber part (18).

25

51. The system according to claims 49 and 50 wherein the first biasing member has a lower stiffness than the second biasing member.

52. The system according to any of the preceding claims, wherein the central portion (32) being movable relative to the peripheral portion (34).

30

53. A method for preparing a consumable beverage, the method comprising providing an apparatus (2) including a first brew chamber part (18) having a cavity (24) for selectively holding an exchangeable first or second capsule (4A,4B),

the first capsule (4A) having a first body (6A) with a first exit area (13A) attached to the first body (6A), and the second capsule (4B) having a second body (6B) with a second exit area (13B) attached to the second body (6B), the second exit area (13B) having a diameter (D_B) that is larger than a diameter (D_A) of the first exit area (13A);

5 the apparatus further including a second brew chamber part (20) for closing the first brew chamber part (18) around the first or second capsule; wherein the second brew chamber part (20) has an extraction plate (30) for abutting against the first or second exit area (13A, 13B),

10 the extraction plate (30) including a central portion (32) and a peripheral portion (34), the central portion (32) being axially movable relative to the peripheral portion (34).

54. The method of claim 53, wherein the second capsule (4B) is inserted in the apparatus (2) and used for preparing the consumable beverage.

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55. The method of claim 53 or 54, wherein the first capsule (4A) is inserted in the apparatus (2) and used for preparing the consumable beverage.

56. The method according to any of claims 53 – 55, comprising supplying fluid
20 under pressure to the capsule (4A, 4B) in the brew chamber.

57. The method according to claim 56, wherein the exit area (13A, 13B) opens against the extraction plate (30).

25 58. The method according to claim 57, wherein a rise in pressure inside the capsule (4A, 4B) causes the exit area (13A, 13B) to tear against relief elements provided on the extraction plate (30) allowing beverage to exit the capsule (4A, 4B).

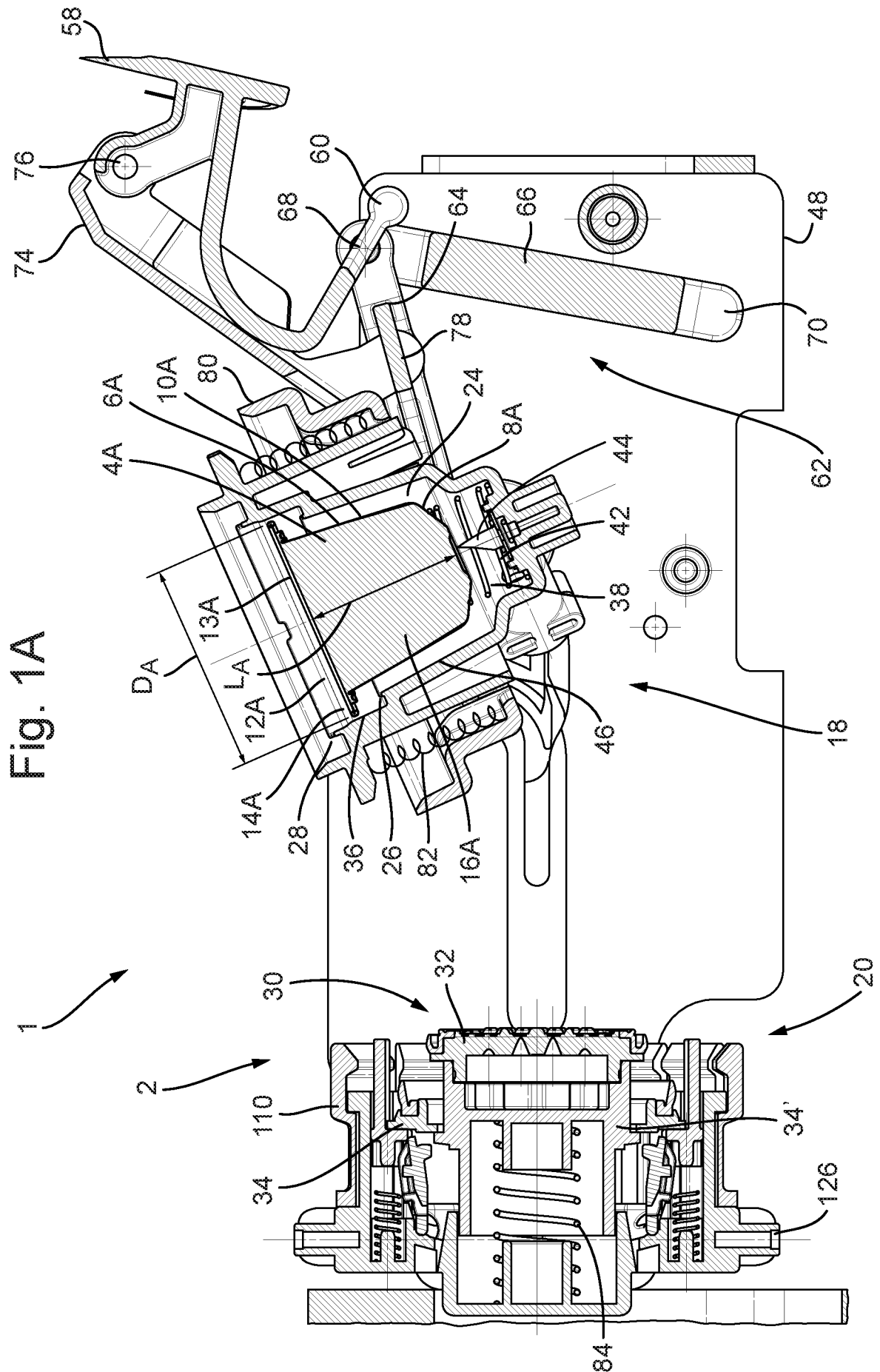


Fig. 1B

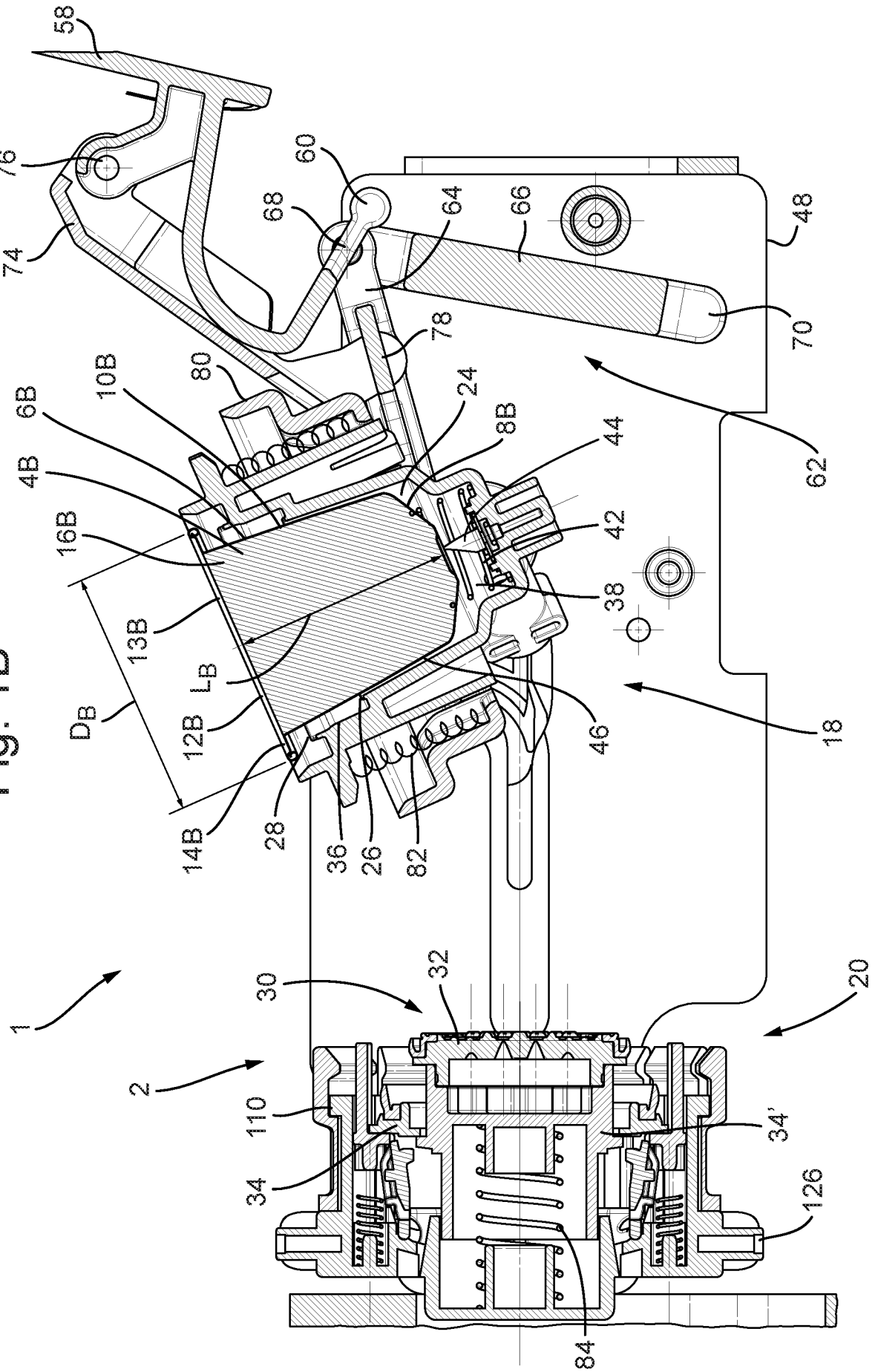
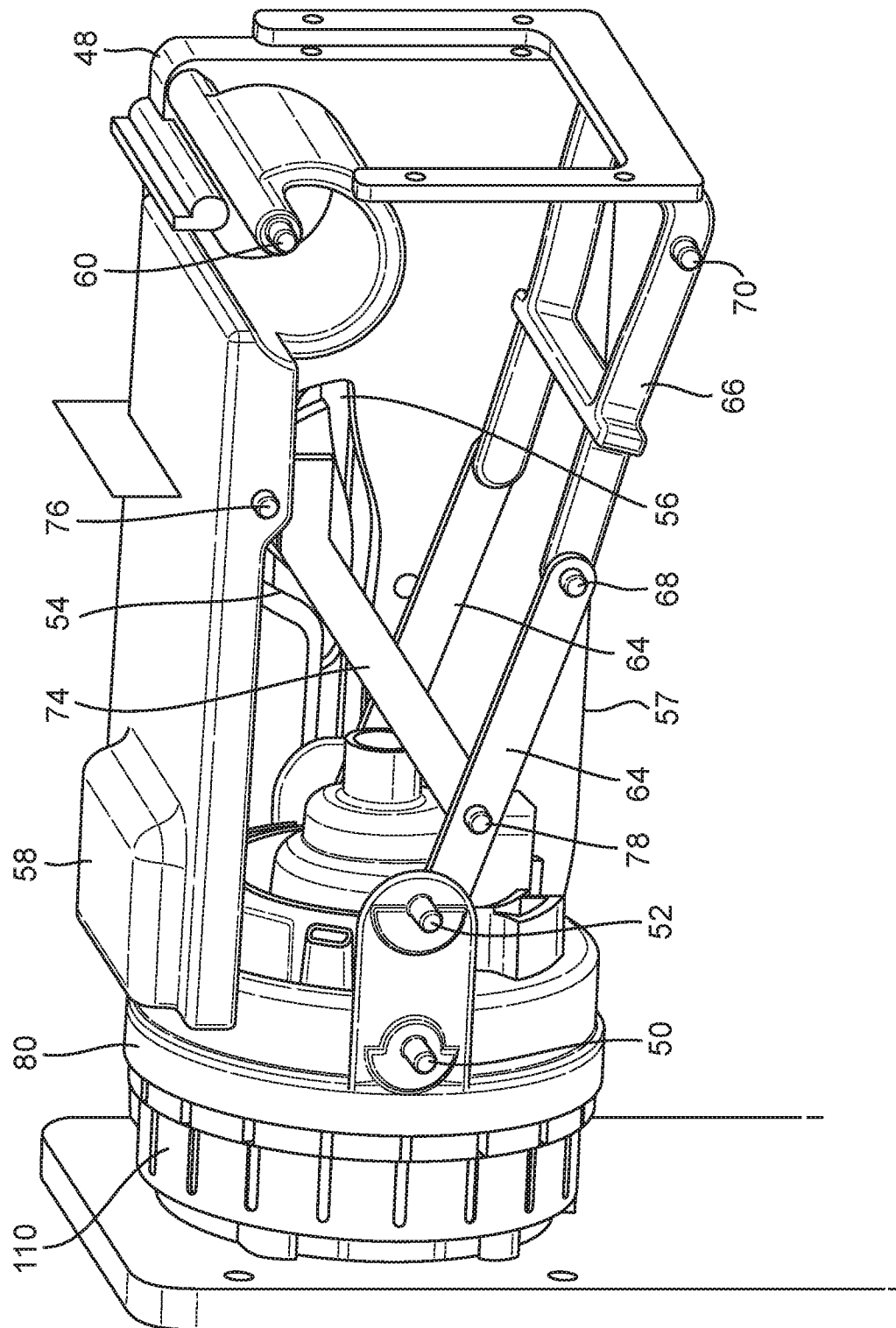


Fig. 2A



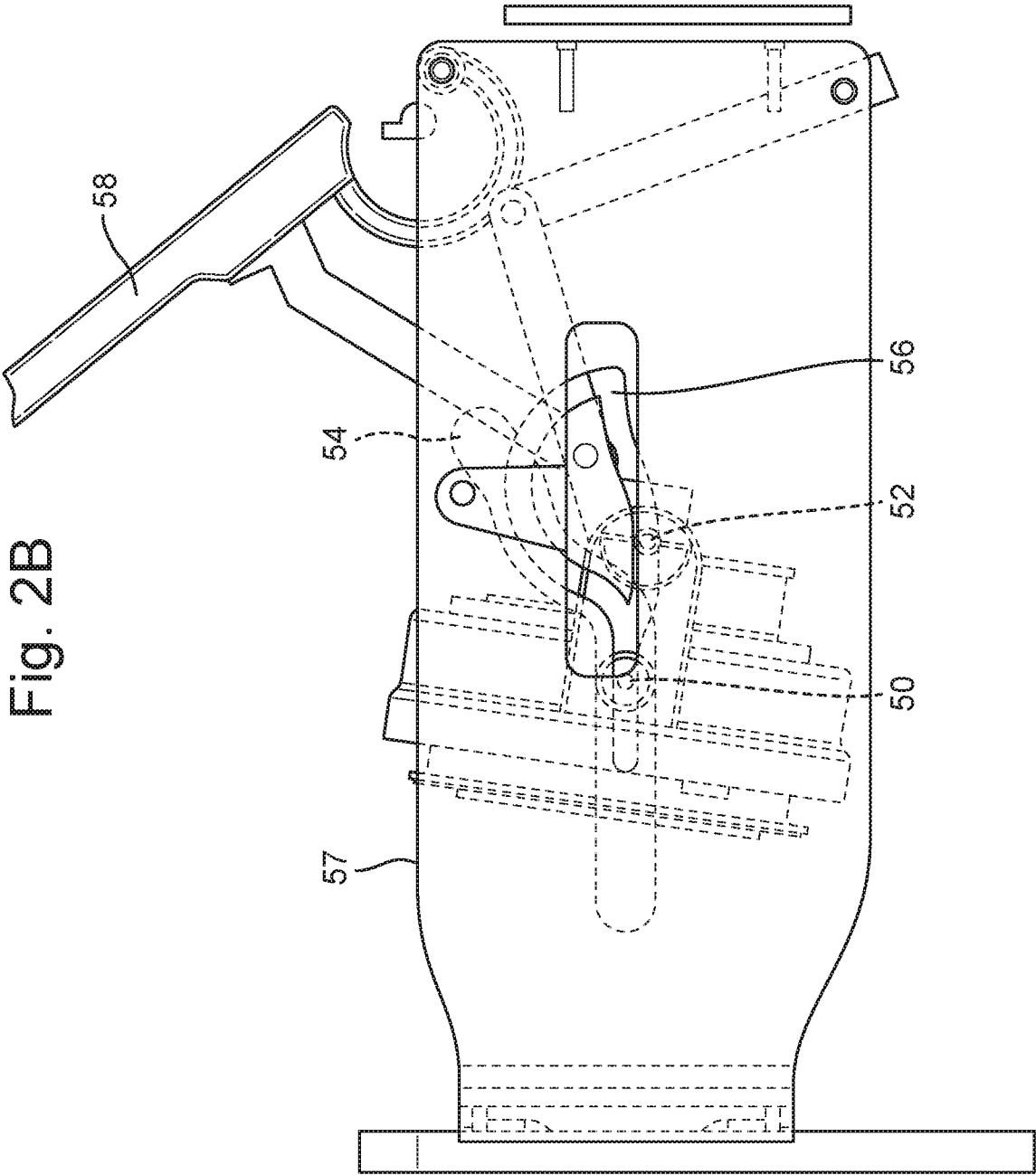


Fig. 3A

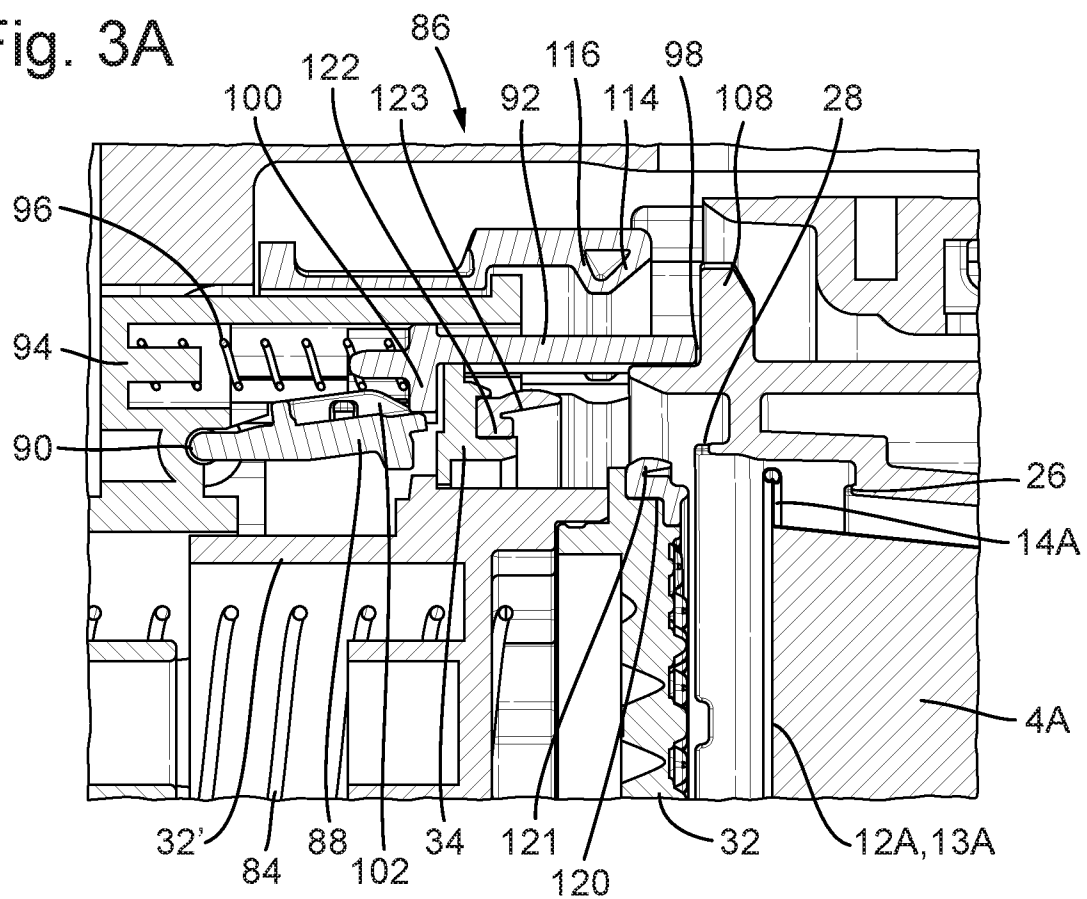


Fig. 3B

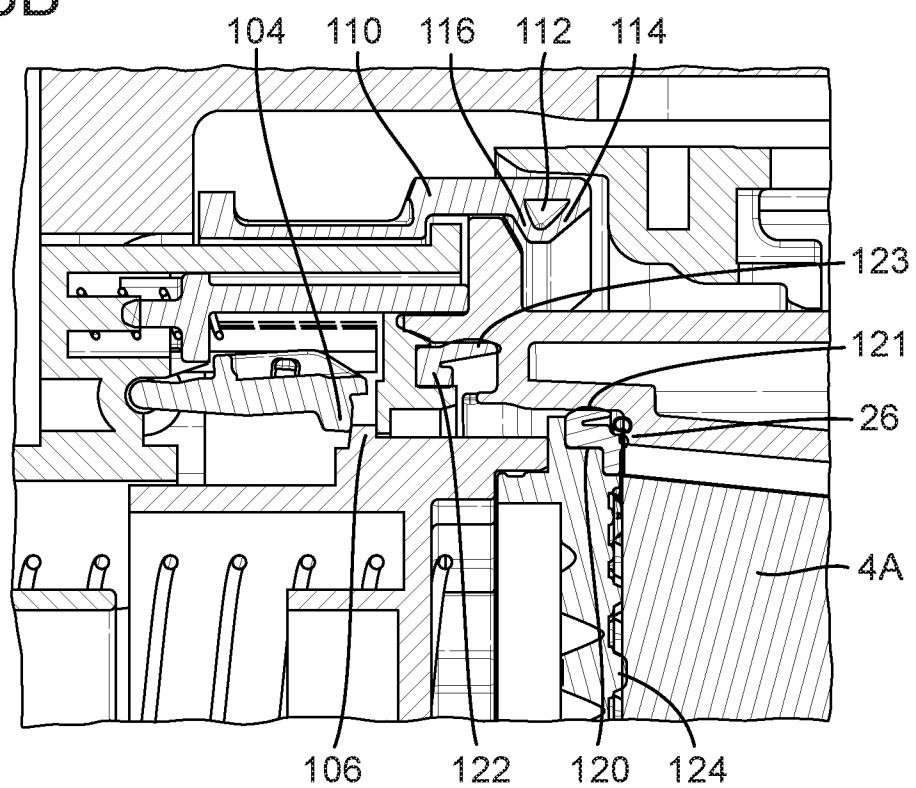


Fig. 4A

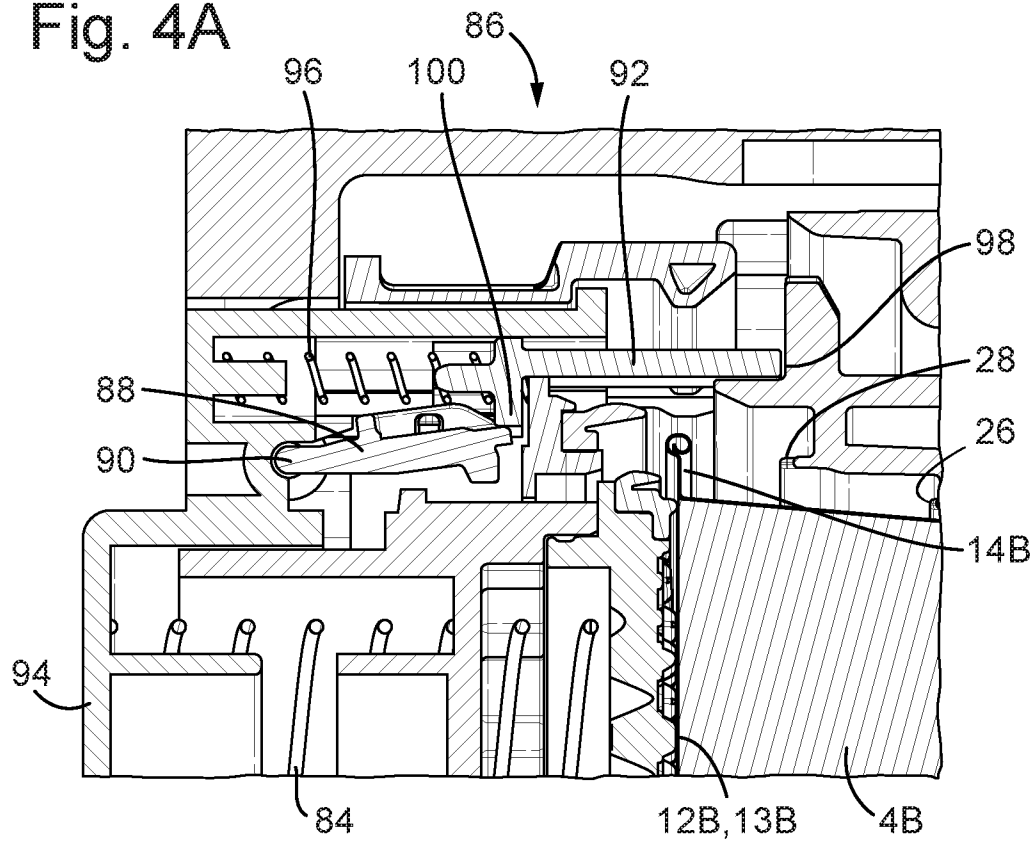


Fig. 4B

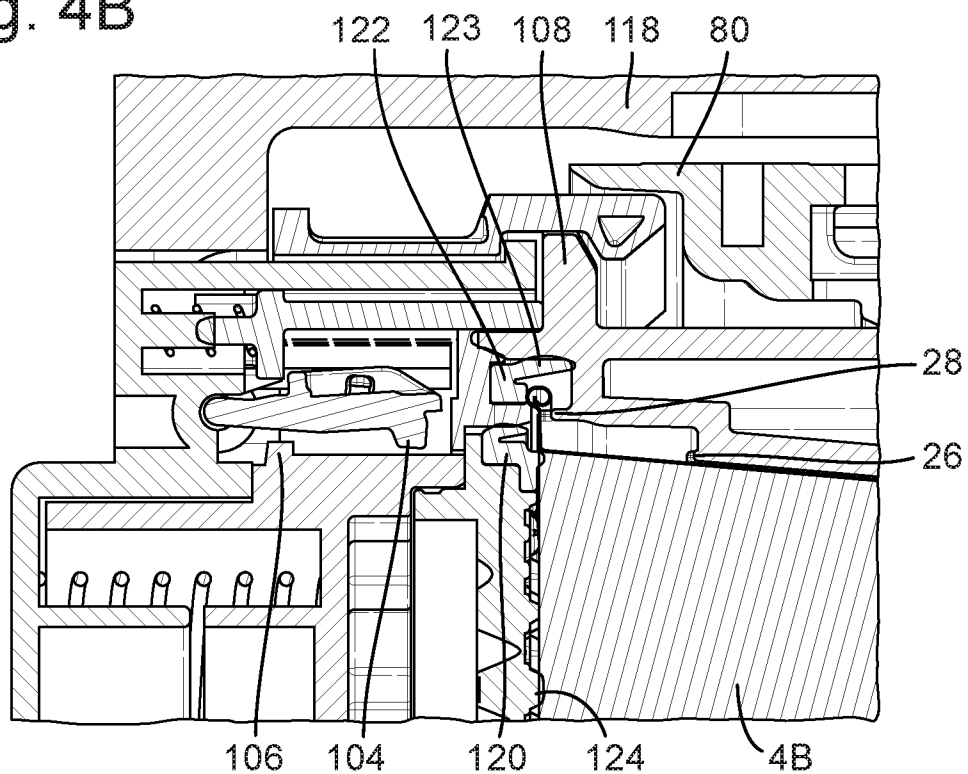


Fig. 5A

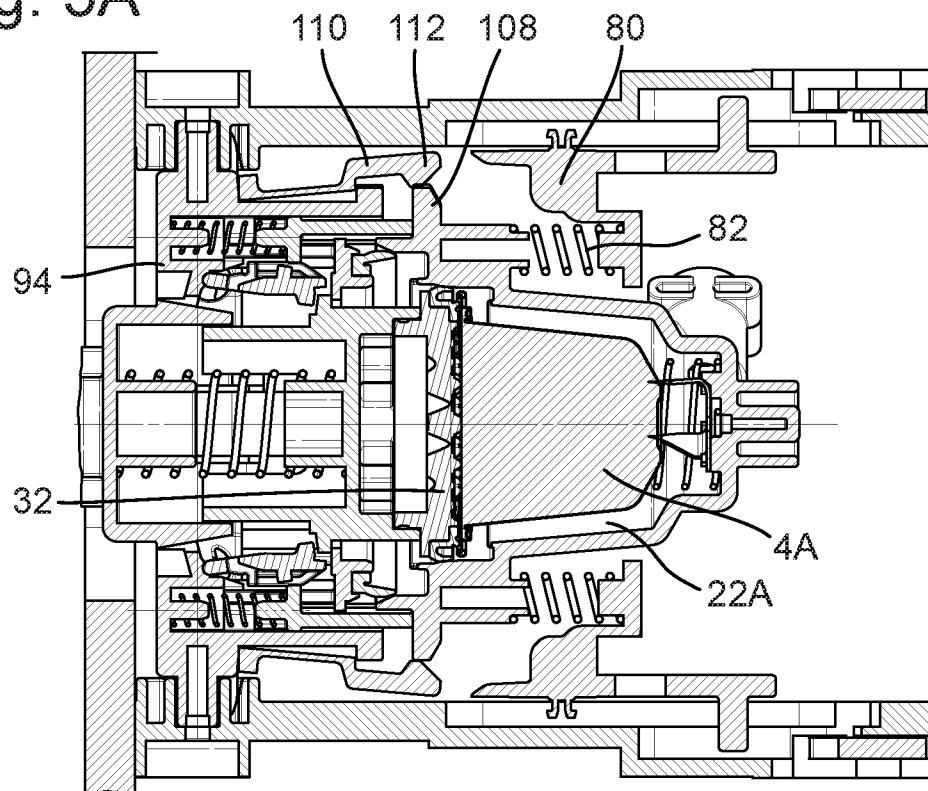


Fig. 5B

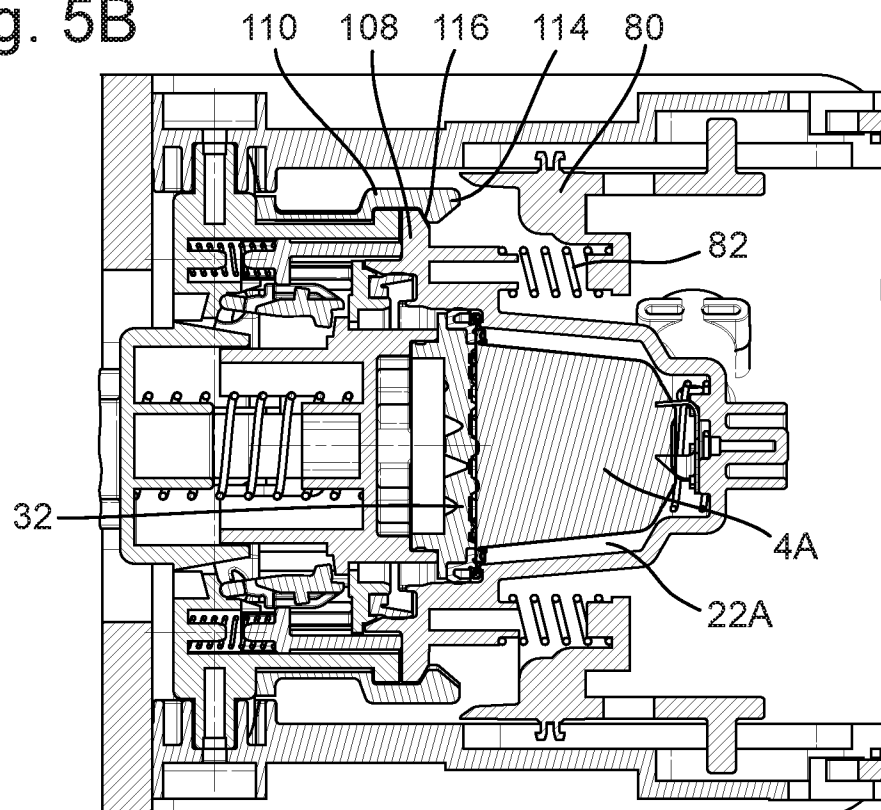


Fig. 5C

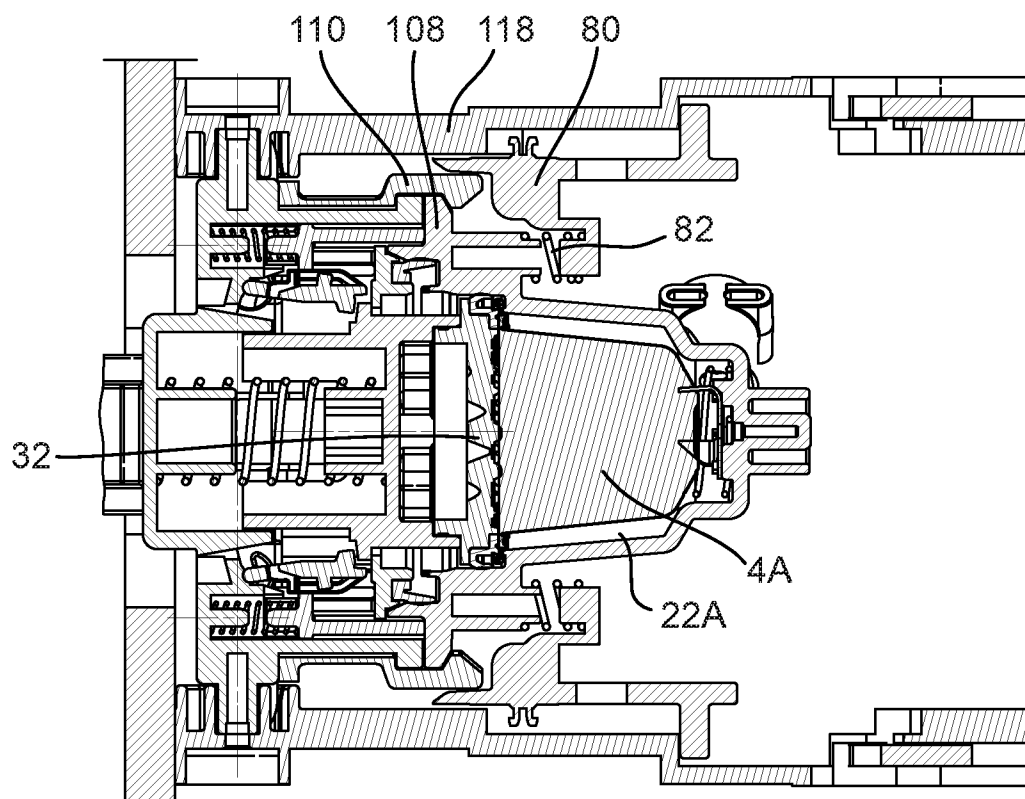


Fig. 6A

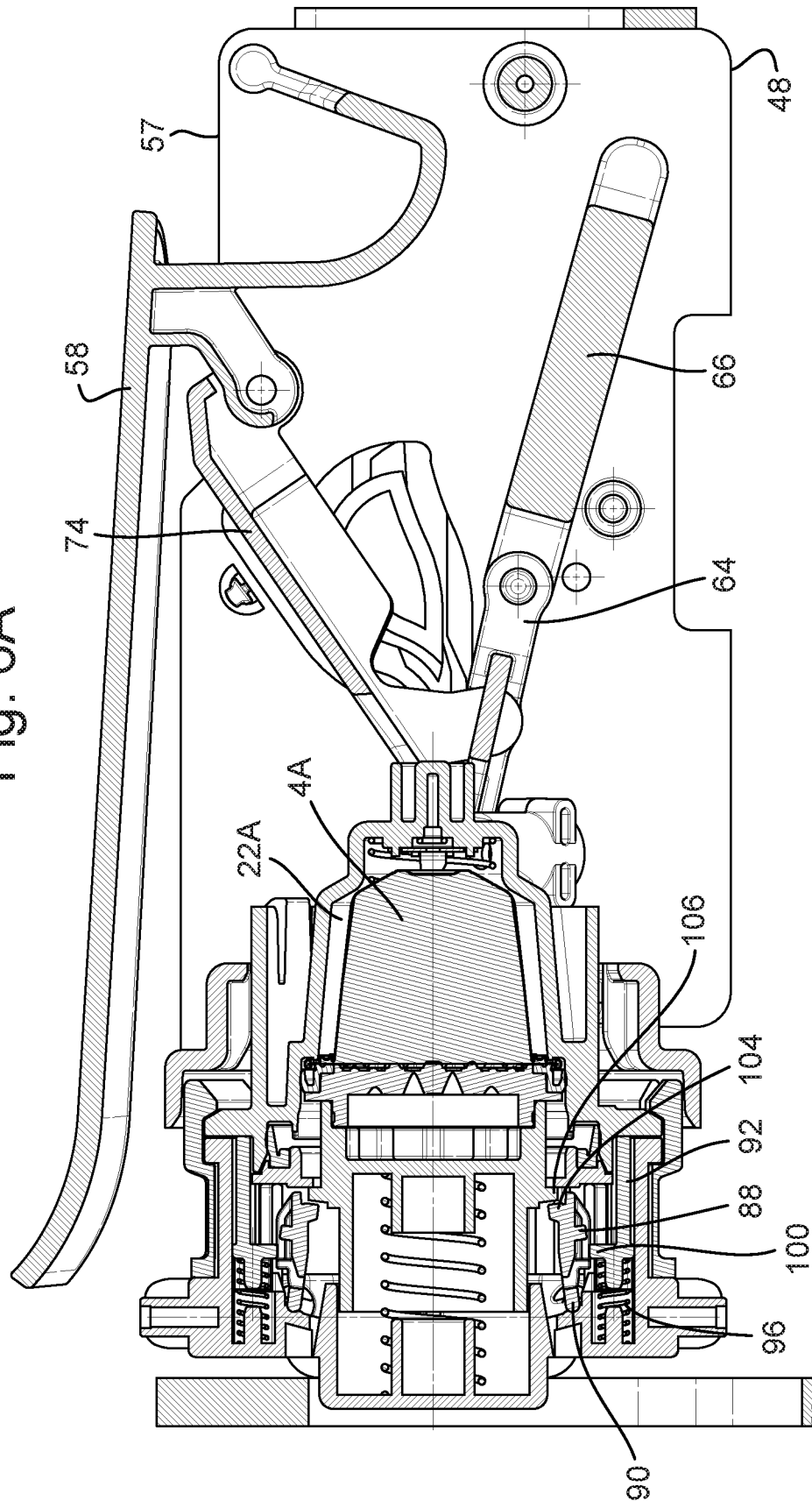
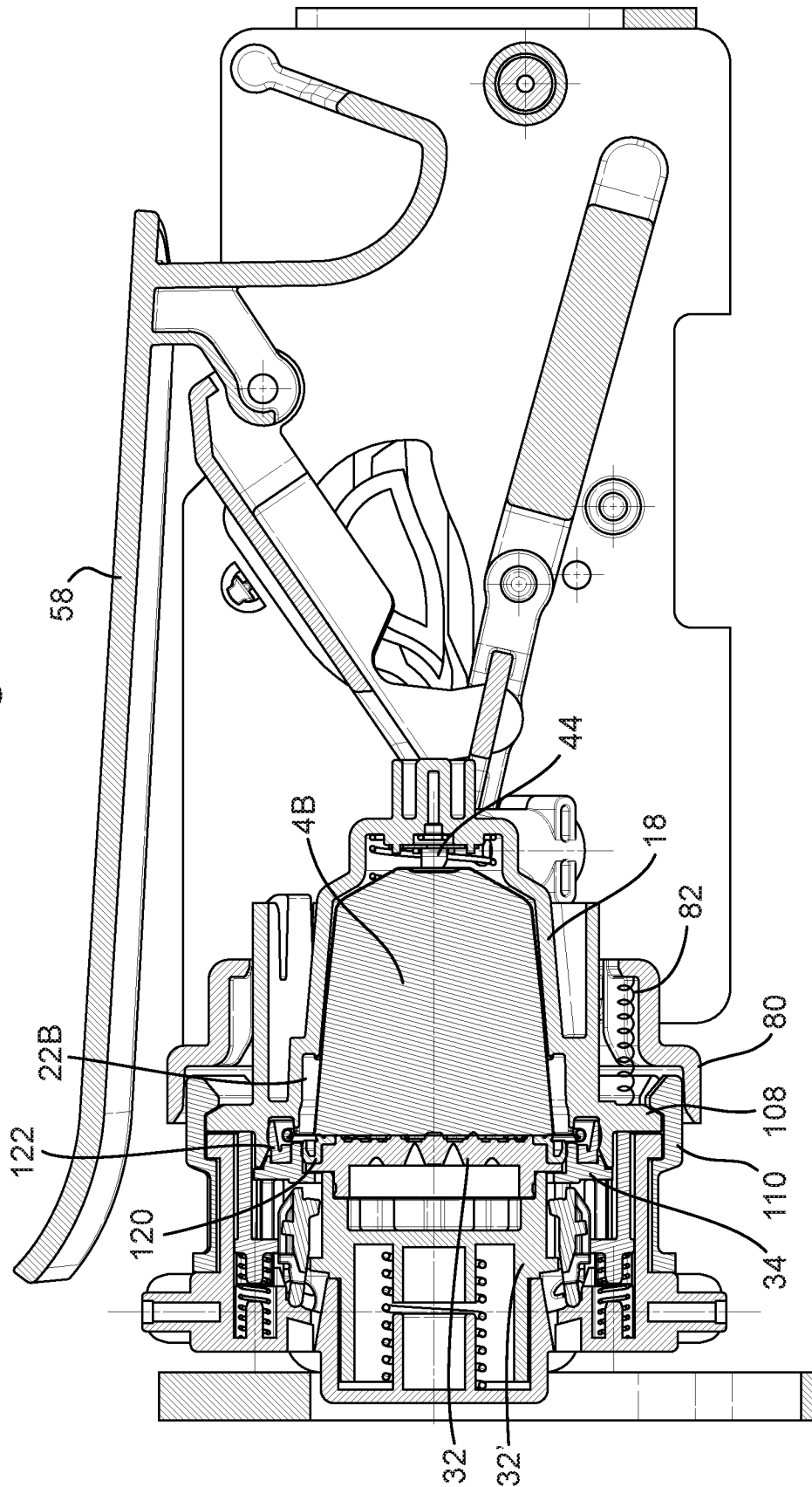


Fig. 6B



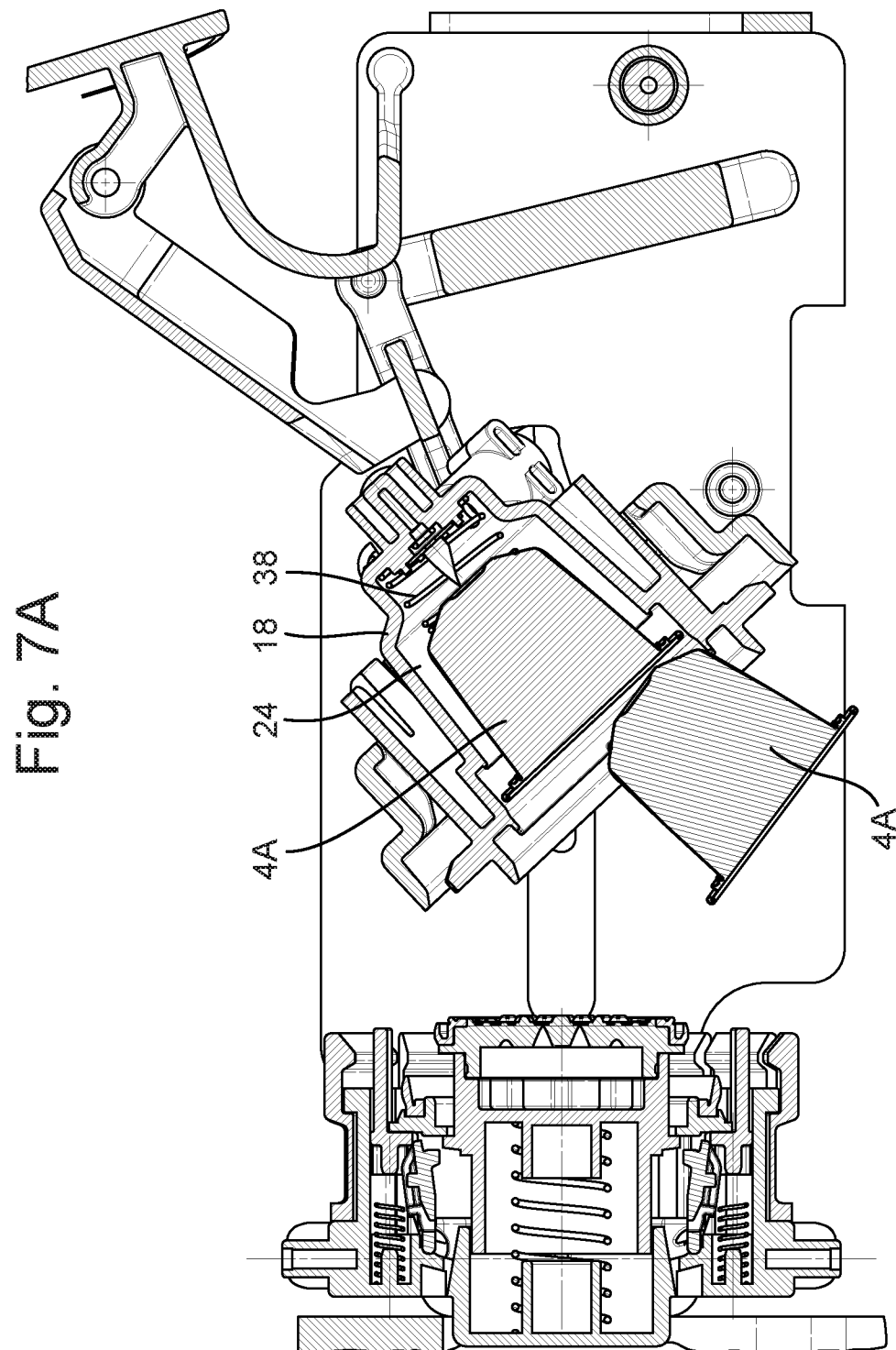


Fig. 7B

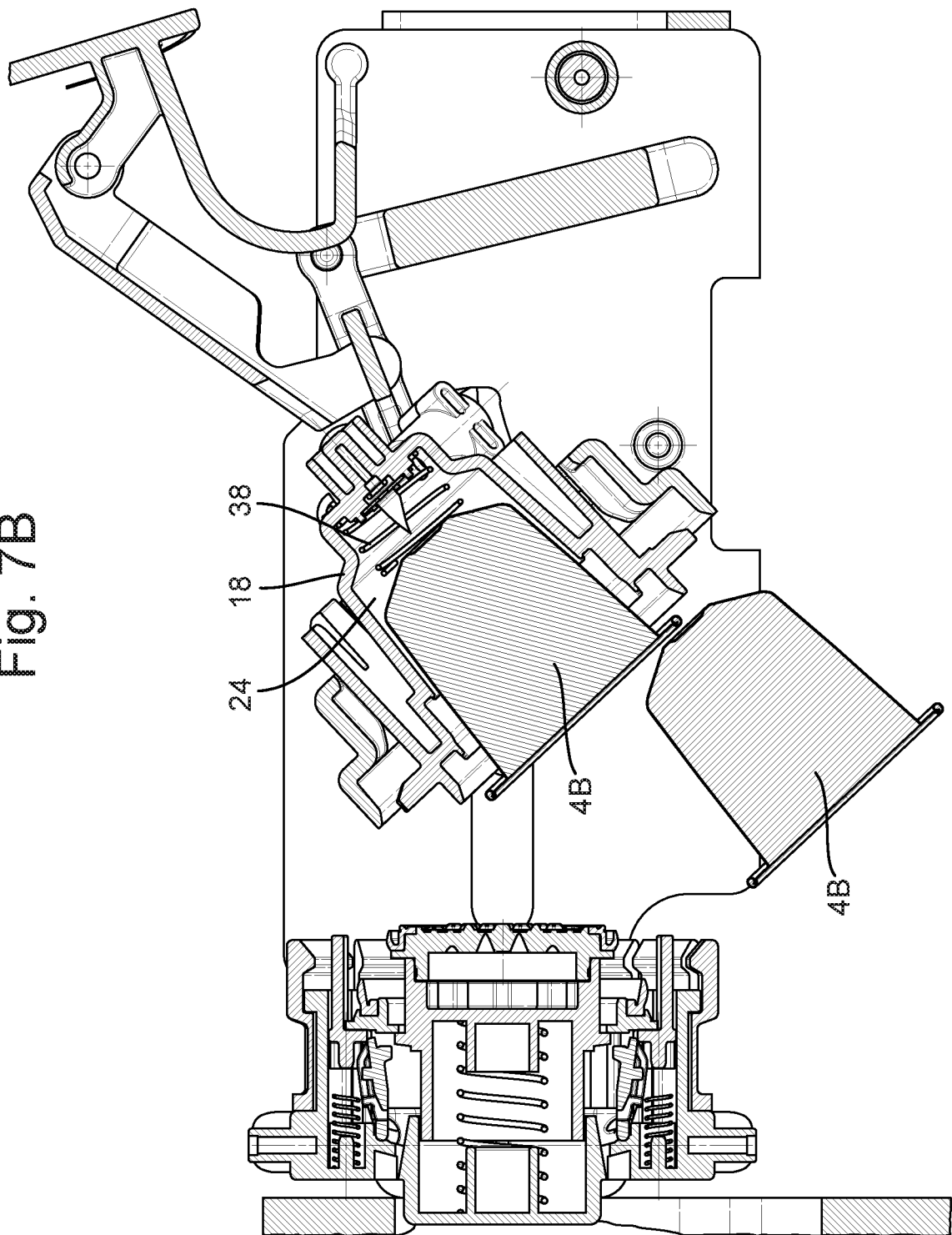


Fig. 8A

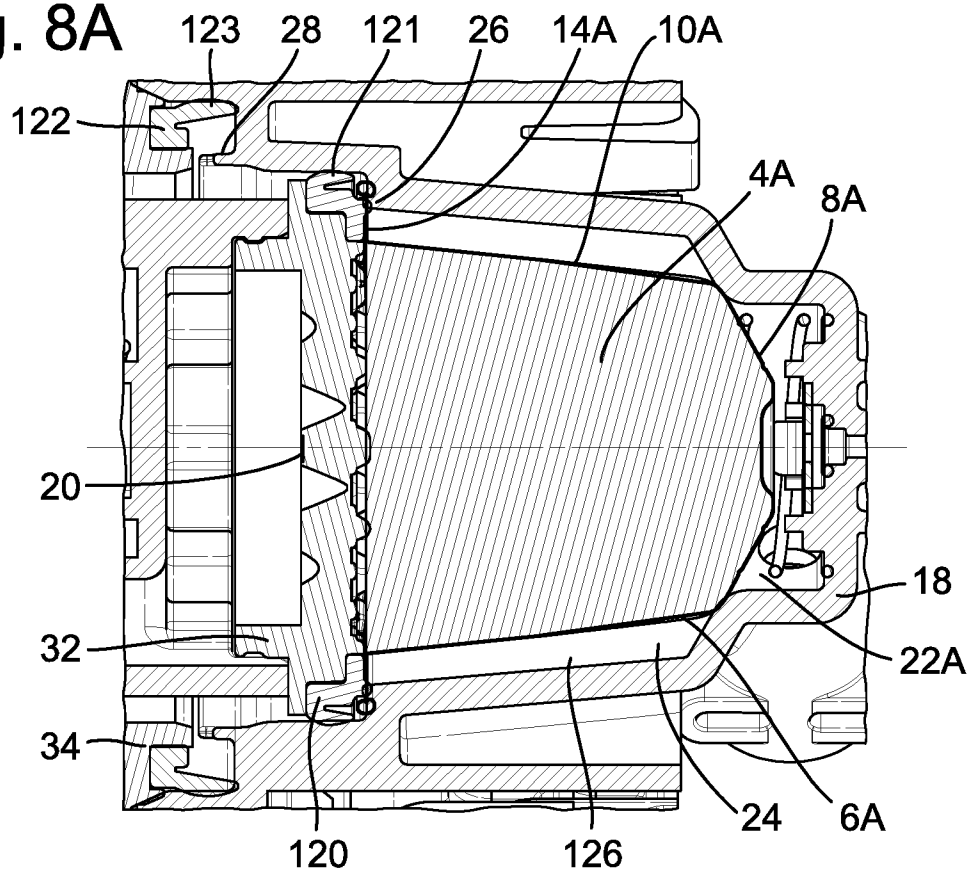
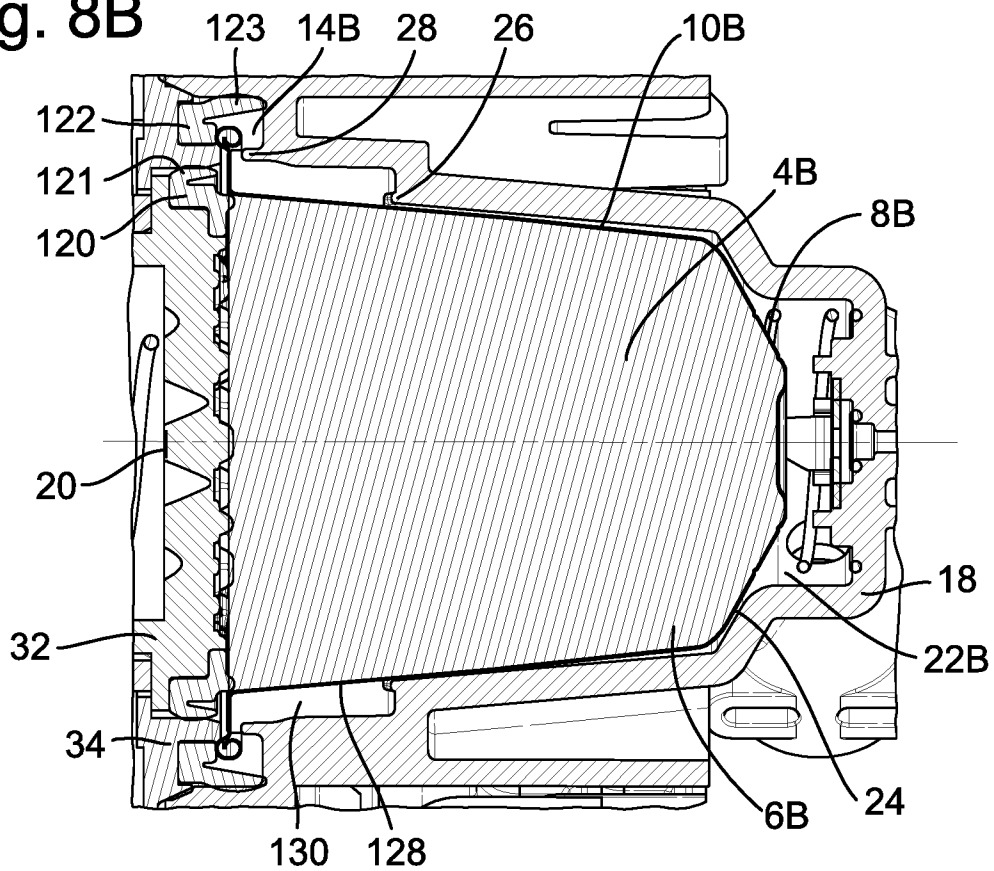


Fig. 8B



INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2017/050513

A. CLASSIFICATION OF SUBJECT MATTER

INV. A47J31/36 A47J31/06 B65D85/804
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47J B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2015/155145 A1 (NESTEC SA [CH]) 15 October 2015 (2015-10-15) figures 2a,b, refnrs.2a,b -----	1-58
A	WO 2015/082662 A1 (NESTEC SA [CH]) 11 June 2015 (2015-06-11) figures 6a-8b -----	1-58
A	WO 2014/056862 A1 (NESTEC SA [CH]) 17 April 2014 (2014-04-17) figures 1a,1b -----	1-58
A	WO 2013/079814 A1 (FRYDMAN ALAIN [FR]; FRYDMAN PHILIPPE [FR]; BACCOUCHE MOHAMED [FR]) 6 June 2013 (2013-06-06) figures 8-10 -----	1-58



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

21 November 2017

Date of mailing of the international search report

22/12/2017

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Behammer, Frank

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/NL2017/050513

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