APPARATUS FOR MAKING BEVERAGES BY PASSING HOT WATER IN A CAPSULE CONTAINING A FOOD SUBSTANCE

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DESCRIPTION

This invention relates to an apparatus for making beverages by passing hot water in a capsule containing a food substance.

In particular, this invention is for apparatuses able to automatically supply two beverages one after another using two single-dose capsules. That operating method may be used both for making a double quantity of beverage for a single user (for example, a double coffee), or for making two beverages simultaneously, using an outfeed spout with double outlet, typical of any prior art coffee machine or the like.

An apparatus able to automatically make two beverages is the subject matter of patent application WO 2013/042011 by this Applicant. Patent US 6,240,832 discloses an assembly for feeding prepackaged coffee portions to a brewing unit of a coffee machine. That assembly has a magazine adapted to receive the coffee portion to be brewed. The magazine is rotatable and adapted to receive a plurality of cartridges, each containing a coffee portion. Further, there is provided a device for individually feeding the coffee portions into the brewing unit. The device for individually feeding the coffee portions comprises two latch members rotatable around respective central axes and which, at their lower side, have a first support surface for catching the coffee portions ready to be dispensed, and at their upper side, have a second support surface for supporting the succeeding coffee portion.

By means of a rocking lever member, actuated by an electromagnet two actuating rod members can be driven in upwards direction, opposite to the force of a spring member, with the result that the latch members are rotated in opposite direction to release the lowermost coffee portion while the subsequent coffee portion is fixed in a ready position.

The assembly of US 6,240,832 also comprises a drawer member adapted to manually feed a single coffee portion instead of using the device for individually feeding a coffee portion from the magazine into the brewing unit.

This invention is intended, in particular, to provide an apparatus in which a user who wants to make the two beverages one after another can load the apparatus with both capsules to be used, before starting to supply the beverages. That avoids having to wait until supplying of the first beverage has been completed, or even just started.

The need to do that is particularly felt where the apparatus is of the professional type, or in any case is intended for professional use. In fact, in such cases, the person using the apparatus is usually a person assigned several tasks (typically he or she may be the bartender), so time is precious and therefore he or she cannot waste time waiting to put the second capsule in the machine.

Although this is the main context for which this invention was devised, the invention may in any case have other applications for making single beverages, simply allowing the user to have a capsule available ready for use, already loaded in the machine.

In this context the technical purpose which forms the basis of this invention is to provide an apparatus for making beverages by passing hot water in a capsule containing a food substance, which overcomes the above-mentioned disadvantages.

beverages using two capsules;

- Figure 11 shows the step of Figure 10 with reference to the apparatus in section according to the line XI - XI of Figure 12;

- Figure 12 shows the operating step of Figure 10 with reference to the apparatus seen from the side;

- Figure 13 is an enlarged view of the detail XIII of Figure 12;

- Figure 14 shows the apparatus of Figure 10 in a second operating step;

- Figure 15 is an axonometric view of the apparatus of Figure 14;

- Figure 16 is an axonometric view of the apparatus in the operating step of Figure 14, in section as in Figure 11;

- Figure 17 is an enlarged view of the detail XVII of Figure 16;

- Figure 18 is an axonometric view of the apparatus of Figure 10 in a third operating step;

- Figure 19 shows the apparatus in the operating step of Figure 18, in section as in Figure 11;

- Figure 20 is an axonometric view of the apparatus of Figure 10 in a fourth operating step;

- Figure 21 shows the apparatus in the operating step of Figure 20, in section as in Figure 11;

- Figure 22 is an axonometric view of the apparatus in section as in Figure 11, in a final operating step after discharging a second capsule;

- Figures 23 and 24 jointly show, in an exploded view, two fixed parts of a detail of the part of the apparatus of the preceding figures

- Figure 25a shows a slide that is part of the apparatus of Figure 1, equipped with two vertical supporting arms that in use are positioned between the two fixed parts of Figures 23 and 24;

- Figure 25b shows the slide of Figure 25a from a different viewpoint;

- Figure 26 shows the part of Figure 24 in section according to the line VI - VI of Figure 2;

- Figure 27 is an enlarged view of the detail XXVII of Figure 25b;

- Figure 28 is a section in a plane corresponding to the line IV - IV of Figure 3, of a second embodiment of the main part of the

teeth 24.

As regards the second embodiment illustrated in Figure 28, as already indicated, it is substantially identical to the first embodiment, expect for the fact that it does not comprise the presence of the second supporting element 35. Therefore, in use, a capsule 2, 3 that in the first embodiment would be supported by the second supporting element 35, in the second embodiment rests directly on the closing element 20.

In the first two embodiments, the first supporting element 21 is also positioned at a distance from the infeed section 19 that, with the closing element 20 in the closed position, allows the insertion of two capsules 2, 3 in the insertion path, in such a way that the first supporting element 21 is located in an intermediate position relative to the positions of the parts of the flanges 16 of the capsules 2, 3 inserted in the channels 23. As is also described in more detail below, in particular, upon insertion, the first capsule 2 inserted rests respectively on the second supporting element 21 (in the first embodiment) or on the closing element 20 (in the second embodiment) and the second capsule 3 inserted rests on the first capsule 2, and the part of its flange 16 that is inserted in the channel 23 is at a height (distance from the infeed section 19) greater than that at which the first supporting element 21 is located in the inactive configuration. In this way, following switching of the first supporting element 21 to the active position and the shifting of the closing element 20 to the disengaged position, the first capsule 2 inserted can reach the standby position, whilst the second capsule 3 inserted can advance until its flange 16 rests on the first supporting element 21.

In contrast, as regards the third embodiment, again the switching of the first supporting element 21 occurs by means of its shifting. But there are significant differences compared with what is described above relative to the first two embodiments.

In fact, in the third embodiment, firstly the first supporting element 21 is manually shiftable from the inactive position to the active position, when the first part 12 and the second part 13 are in the home position. For that purpose, the first supporting

CLAIMS

1. An apparatus for making beverages by passing hot water in a capsule containing a food substance, comprising:

an extraction unit (5) in which an extraction chamber (6) is made in which, in use, a capsule (2), (3) can be inserted, the extraction unit (5) in turn comprising a first part (12) and a second part (13), which are movable, at least one relative to the other, between a home position in which they are at a distance from one another and allow the positioning of a capsule (2), (3) between them and in which the extraction chamber (6) is open, and an extraction position in which they are coupled together and close the extraction chamber (6);

retaining means (14) for retaining the capsule (2), (3) between the first part (12) and the second part (13) when said parts are in the home position and during at least part of their shifting from the home position to the extraction position;

an insertion duct (18) for insertion of the capsule (2), (3) comprising a vertical main extension component and extending from an infeed section (19) to the retaining means (14), the insertion duct (18) forming the final stretch of a path for insertion of the capsules (2), (3) in the apparatus (1);

a closing element (20) positioned at the infeed section (19) and movable between a closed position in which it prevents the transit of a capsule (2), (3) through the infeed section (19) and a disengaged position in which it allows the transit of a capsule (2), (3);

means for making a beverage for, in use, making hot water circulate through a capsule (2), (3) contained in the closed extraction chamber (6), thereby causing the beverage to be formed, and for supplying the beverage to the outside of the apparatus (1); and

at least one first supporting element (21) positioned along the insertion path, upstream of the infeed section (19), for supporting a second capsule (3) outside the extraction unit (5) while a first capsule (2) is positioned at the extraction chamber (6), the first supporting element (21) being switchable between an active configuration in which it can support a capsule (2), (3) and an inactive configuration in which a capsule (2), (3) positioned at it

can freely advance towards the infeed section (19);

characterized in that:

the closing element (20) is operatively connected to the extraction unit (5) so that it is positioned in the closed position when the first part (12) and the second part (13) are in the extraction position, and in the disengaged position when the first part (12) and the second part (13) are in the home position;

the first supporting element (21) is in the inactive configuration when the first part (12) and the second part (13) are in the extraction position; and

during the shifting of the first part (12) and of the second part (13) from the home position to the extraction position, and of the closing element (20) from the disengaged position to the closed position, one of either the first part (12) or the second part (13), or the closing element (20), mechanically acts on the first supporting element (21) to switch it from the active configuration to the inactive configuration.

2. The apparatus according to claim 1, wherein at least upstream of the infeed section (19) the insertion path comprises two opposite channels (23) in which in use a flange (16) projecting from the capsule (2), (3) can slide, and wherein, at least at one of the channels (23), the first supporting element (21) comprises at least one first tooth (24) which in the active configuration is positioned inside the self-same channel (23) to in use prevent the transit of the flange (16) of the capsule (2), (3) and which in the inactive configuration is positioned outside the channel (23).

3. The apparatus according to claim 2, wherein the first supporting element (21) comprises two opposite first teeth (24), each positioned at one of the channels (23).

4. The apparatus according to any one of the preceding claims, wherein the first supporting element (21) is mounted on a slide (25) translatable orthogonally to a line of extension of the insertion path.

5. The apparatus according to any one of the preceding claims, wherein the first supporting element (21) is movable, and is switchable between the active configuration and the inactive configuration by means of a shifting of it, and wherein in the active configuration the first supporting element (21) is

positioned in an active position in which it intercepts the advancing path and in the inactive configuration it is positioned in an inactive position in which it does not interfere with the insertion path.

6. The apparatus according to any one of the preceding claims, wherein during the shifting of the first part (12) and of the second part (13) from the extraction position to the home position, and of the closing element (20) from the closed position to the disengaged position, one of either the first part (12) or the second part (13), or the closing element (20) mechanically acts on the first supporting element (21) to switch it from the inactive configuration to the active configuration, and wherein the first supporting element (21) is in the active configuration when the first part (12) and the second part (13) are in the home position.

7. The apparatus according to any one of the preceding claims, also comprising at least one second supporting element (35) for supporting a capsule (2), (3) outside the extraction unit (5) when the first part (12) and the second part (13) are in the extraction position, the second supporting element (35) being positioned along the insertion path upstream of the infeed section (19) and downstream of the first supporting element (21), and being switchable between an operating configuration in which it is able to support a capsule (2), (3) and a non-operating configuration in which a capsule (2), (3) positioned at it can freely advance towards the infeed section (19); wherein during the shifting of the first part (12) and of the second part (13) respectively from the home position to the extraction position and vice versa, and of the closing element (20) respectively from the disengaged position to the closed position and vice versa, one of either the first part (12) or the second part (13), or the closing element (20) mechanically acts on the second supporting element (35) to switch it respectively from the non-operating configuration to the operating configuration and vice versa; and wherein the second supporting element (21) is in the operating configuration when the first part (12) and the second part (13) are in the extraction position and in the non-operating configuration when the first part (12) and the second part (13) are in the home position.