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(54) Title: CLEANING DEVICE AND ASSEMBLY

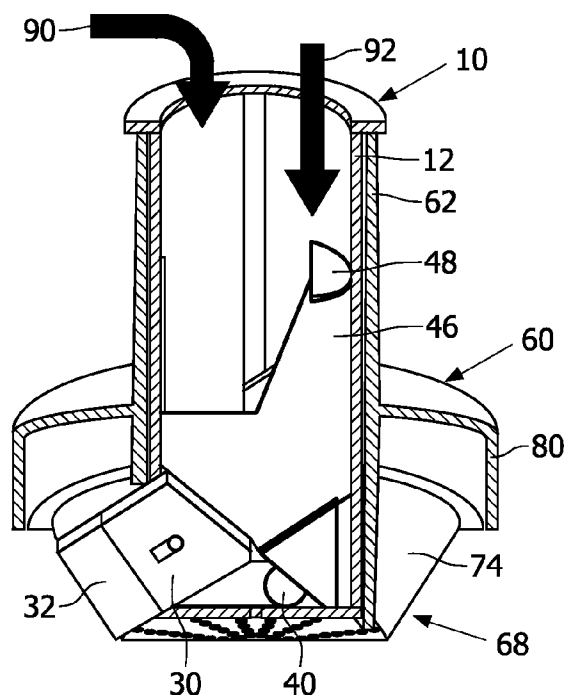


FIG. 4

(57) Abstract: The invention provides a cleaning device and an assembly. The assembly comprises a juicer, blender, or similar appliance, comprising a rotatable separation filter (68), and a feeding tube (62) that is directed to the separation filter. The cleaning device (10) for cleaning of separation filter comprises a tubular body (12) having a shape that fits to the feeding tube of the appliance; a brush assembly (30, 32) that is arranged in the tubular body; wherein the tubular body is provided with guiding means for guiding the brush assembly between a starting position within the tubular body and an extended position wherein a brush of the brush assembly extends outside the tubular body for contacting the separation filter.

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Cleaning device and assembly

FIELD OF THE INVENTION

The present invention relates to a cleaning device and an assembly comprising the device. The cleaning device is suitable for cleaning a rotatable separation filter of a juicer, blender, or similar appliance.

5

BACKGROUND OF THE INVENTION

Juicers are available for juicing fresh fruits or vegetables. To increase the juice output, the fresh fruits or vegetables are shredded inside the juicer. Using a special sieve and a high rotation speed (for instance more than 10.000 rpm), the juice is centrifuged out of the fruit fibers. Juicing the fruits or vegetables however produces a lot of waste material, like pulp or skins. The waste material is deposited into a special container that is integrated or added onto the appliance.

10

The sieve or separation filter is provided with a lot of relatively small holes. The holes are large enough for the juice to pass, but small enough to stop the waste material. During juicing, the sieve becomes polluted with the pulp and fruit fibers. To clean the many small holes from the sieve completely, the sieve must be disassembled from the appliance, to manipulate the sieve with a special brush and water.

15

JP-2005-318918-A discloses a juicer including a brush type washing device for cleaning the separation filter without disassembling the filter from the juicer. Washing water should be provided through an opening in the top part of the juicer. The brush is inserted by hand via another opening in the top part. An end of the brush contacts the separation filter. Upon rotating the filter and supplying water, the brush cleans the separation filter.

20

OBJECT OF THE INVENTION

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Although the device of JP-2005-318918-A enables cleaning the filter without disassembling the juicer, holding the brush by hand can be inconvenient.

It is an object of the present invention to enable cleaning of the separation filter in a more convenient, user friendly fashion.

SUMMARY OF THE INVENTION

The present invention therefore provides a cleaning device for cleaning a rotatable separation filter of a juicer, blender, or similar appliance, the device comprising:

- 5 - a tubular body having a shape that fits to a feeding tube of the appliance;
- a brush assembly that is arranged in the tubular body;
- wherein the tubular body is provided with guiding means for guiding the brush assembly between a starting position within the tubular body and an extended position wherein a brush of the brush assembly extends outside the tubular body for contacting the separation filter.

10 The device of the present invention guides and positions the brush against the rotating filter, and fixates the brush in the correct, predetermined position with respect to the filter. As the device obviates holding the brush by hand, the device is more convenient than prior art devices. The device reduces the time that is needed to clean the filter. Disassembling the filter from the juicer for cleaning is obviated. In a professional environment, such as catering, time reduction for cleaning increases turnover and consumer satisfaction.

15 In an embodiment, the tubular body has a first open end, and an opposite closed end comprising a plate that is provided with a number of openings for passage of water. The openings allow water to reach the rotating filter, while at the same time forcing part of the water to reach the brush assembly.

20 In another embodiment, the device comprises a spring member for retracting the brush assembly in the starting position, the spring member having a first end that is connected to the brush assembly, and a second end that is connected to the tubular body. The spring member provides a robust, reliable and cost efficient means for retracting the brush assembly to its starting position.

25 In an embodiment, the guiding means comprise two parallel guiding strips that are arranged on opposite sides of the brush assembly. The guiding strips provide a relatively simple solution for guiding and positioning the brush towards and in contact with the filter.

30 In an embodiment, the parallel guiding strips are inclined with respect to the length direction of the tubular body. Thus, the guiding strips allow the brush to contact an inclined wall of the filter. At the same time, part of the supplied wash water can pass the brush and clean part of the filter.

 In a particular embodiment, the brush assembly comprises a brush holder having a releasable connection to a brush. The brush can easily be replaced with another,

clean brush. Easy replacement of the brush may obviate cleaning the brush, or at least reduce the time that is needed to clean the device.

In a relatively simple and robust embodiment, the brush holder is provided with a first sliding surface that contacts a second sliding surface of an adjustment member for
5 adjusting the position of the brush assembly.

According to another aspect, the present invention provides an assembly, comprising:

- a juicer, blender, or similar appliance, the appliance comprising a rotatable separation filter, and a feeding tube that is directed to the separation filter;

- a cleaning device for cleaning of separation filter, comprising:

- a tubular body having a shape that fits to the feeding tube of the appliance;

- a brush assembly that is arranged in the tubular body;

- wherein the tubular body is provided with guiding means for guiding the

brush assembly between a starting position within the tubular body and an extended position
15 wherein a brush of the brush assembly extends outside the tubular body for contacting the separation filter. Preferably, the feeding tube and the tubular body are provided with aligned openings for the passage of the brush assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

20 Further features and advantages of the invention are elucidated below, referring to the drawings, wherein:

Figure 1 shows a perspective sectional view of a device according to the invention;

Figure 2 shows a sectional view of a top part of a juicer;

25 Figure 3 shows a sectional view of the assembly of the top part of Fig. 2 including the device of Fig. 1 in a state of use;

Figure 4 shows the assembly of Figure 3 in another state of use; and

Figure 5 shows a perspective bottom view of the device of Fig. 1.

30 DETAILED DESCRIPTION OF EXAMPLES

Figure 1 shows a cleaning device 10 according to the present invention. The cleaning device comprises a hollow tube 12. The tube 12 has an open top side 14 that is provided with a flange 16. The bottom end of the tube is provided with a plate 18 having a number of holes 20 (Fig. 5). A guiding ridge 22 and a guiding groove 23 are arranged on the

inside of the tube 12, along the length thereof. The tube 12 is provided with an opening 24 near the bottom thereof. Parallel guiding strips 26, 28, which are arranged near and directed to the opening 24, are inclined with respect to the length of the tube 12.

A brush assembly is arranged within the tube 12. The brush assembly comprises brush holder 30, which is provided with brush 32. The brush holder 30 comprises a replacing mechanism for replacing the brush 32. The replacing mechanism comprises for instance a click-mechanism. The brush 32 is releasable by pin 36 that is moveably arranged in slot 38 of the brush holder. The assembly of brush holder 30 and brush 32 is moveably arranged between the guiding strips 26, 28 of the tube 12. One end of a spring 40 contacts the brush holder 30, whereas another end of the spring is connected to the bottom 18 of the tube 12. The spring 40 retains the brush holder 30 in its starting position (Fig. 1). The brush holder 30 can move between the guiding strips from the starting position (Fig. 1) to an extended position (shown in Fig. 4). The spring 40 is arranged to retract the brush holder from the extended position to the starting position in the absence of external forces.

An end of the brush holder 30 opposite from the brush 32 is provided with sliding surface 42. The sliding surface 42 contacts a second sliding surface 44 of an operating assembly. The operating assembly comprises an adjustment member 46 having the second sliding surface 44. The adjustment member 46 is at a top end provided with a user operable knob 48. The opposite end of the adjustment member 46 may be provided with reinforcement 50. The reinforcement 50 and the guiding strips 26, 28 have a size that allows vertical movement of the reinforcement past the guiding strips.

The inside of the tube 12 is provided with suitable guiding means, such as guiding ridge 22 or guiding groove 23, for guiding the adjustment member between the starting position (shown in Fig. 1), and a depressed position (shown in Fig. 4). When the adjustment member is in the starting position, the top surface of the knob 48 is substantially level with the top surface of the flange 16.

The above described cleaning device is suitable for cleaning a rotatable separation filter of a juicer, blender, or similar appliance. The top end 60 of an embodiment of such an appliance comprises for instance a vertical feeding tube 62 having an open top end 64 and opening 66. The opposite end of the feeding tube 62 is arranged above a rotatable separation filter 68. In the embodiment of Fig. 2, the filter 68 comprises a disc 70 having holes 72. A slanting wall 74 is connected to the edge of the disc. The slanting wall 74 may be provided with holes (not shown). The filter may be replaceable depending on the purpose thereof, for instance with a rotatable shredder or grater, or with a filter having larger or

smaller holes. Near the filter, the feeding tube 62 is provided with an opening or slit 78 for passage of the brush 32 and brush holder 30 (Fig. 4). A cover 80 having any suitable shape may be provided around the feeding tube. The inside of the feeding tube may be provided with positioning means, such as ridge 82, for positioning the tube 12.

5 The feeding tube 62 has a dual function. Principally, the feeding tube allows a user to input for instance fruits or vegetable into the juicer for juicing the same. If however the filter is clogged, the cleaning device 10 can be inserted into the feeding tube 62, as shown in Fig. 3. The outer diameter of the tube 12 fits within the inner diameter of the feeding tube 62. The adjustment member 46 and the brush 32 and brush holder 30 are in their starting
10 position, as described above.

 To start cleaning the filter, the filter is rotated. Subsequently, water is inserted via the tube 12, as indicated by arrow 90. At the same time, the user pushes the knob 48 to the depressed position (Fig. 4), as indicated by arrow 92. In the depressed position, the brush 32 contacts the filter 68. The stream of dishwater through the holes 72 of the filter or
15 shredding-plate 68 and the fast rotation speed of the filter (up to 10,000 rpm or more) forces the water along the filter. At the same time, the brush 32 contacts the sloping wall 74, and brushes the surface of filter to remove the fruit fibers. The water washes the fruit fibers into a container for waste (not shown). After cleaning, the consumer releases the knob 48 and the metal spring 40 forces the brush holder 30 with brush and the adjustment member 46 in the
20 retracted starting position (Fig. 3).

 Fig. 5 shows the bottom end 18 of the cleaning device 10. The holes 20, and optionally also the additional slits 21, allow the water to reach the rotating filter 68. Preferably, the holes 20 have a size that allows water to pass, whereas the combined area of the holes 20 and slits 21 is small enough to force part of the water through the opening 24.
25 Fig. 5 also shows positioning groove 83, having a shape that corresponds to the ridge 82 of the feeding tube.

 When the filter is cleaned and suitable for juicing, the cleaning device could be cleaned in a dishwasher, or the brush 32 may be replaced with another, clean brush.

 The cleaning device is suitable for heavy duty appliances, for instance for
30 professional use. Heavy duty appliances may be operated daily, or sometimes even (substantially) continuously. Time consumption is an important factor in the catering industry. The pusher assembly of the present invention allows the user of the appliance to clean the filter without disassembling the filter from the appliance, which saves time and increases turnover. In addition, the cleaning device of the present invention is more

convenient to use and more fool proof than the apparatus of for instance JP-2005-318918-A. The convenience of the present device prevents failures and speeds up the process of cleaning the filter.

The present invention is not limited to the above described embodiments.

- 5 Many variations and combinations of features of the embodiments are possible, within the scope of the appended claims.

CLAIMS:

1. Cleaning device (10) for cleaning a rotatable separation filter of a juicer, blender, or similar appliance, the device comprising:

- a tubular body (12) having a shape that fits to a feeding tube of the appliance;
- a brush assembly (30, 32) that is arranged in the tubular body;

5 - wherein the tubular body is provided with guiding means for guiding the brush assembly between a starting position within the tubular body and an extended position wherein a brush of the brush assembly extends outside the tubular body for contacting the separation filter.

10 2. The device according to claim 1, wherein the tubular body has a first open end, and an opposite closed end comprising a plate (18) that is provided with a number of openings (20, 21) for passage of water.

15 3. The device according to claim 1 or 2, further comprising a spring member (40) for retracting the brush assembly in the starting position, the spring member having a first end that is connected to the brush assembly, and a second end that is connected to the tubular body.

20 4. The device according to any preceding claim, wherein the guiding means comprise two parallel guiding strips (26, 28) that are arranged on opposite sides of the brush assembly.

5. The device according to claim 4, wherein the parallel guiding strips are inclined with respect to the length direction of the tubular body.

25 6. The device according to claim 5, wherein the tubular body is provided with an opening (24) for passage of the brush assembly, wherein the parallel guiding strips are arranged near and directed to the opening (24).

7. The device according to any of the preceding claims, wherein the brush assembly comprises a brush holder (30) having a releasable connection to a brush (32).

8. The device according to claim 7, wherein the brush holder is provided with a first sliding surface that contacts a second sliding surface of an adjustment member (46) for adjusting the position of the brush assembly.

9. The device according to any of claims 8, wherein the guiding means comprise guiding ridge (22) or guiding groove (23) that is arranged along the length direction of the inner wall of the tubular body for guiding the adjustment member between the starting position, and a depressed position wherein the adjustment member forces the brush assembly in the extended position.

10. Assembly, comprising:

- a juicer, blender, or similar appliance, the appliance comprising a rotatable separation filter (68), and a feeding tube (62) that is directed to the separation filter;

- a cleaning device (10) for cleaning of separation filter, comprising:

- a tubular body (12) having a shape that fits to the feeding tube of the

appliance;

- a brush assembly (30, 32) that is arranged in the tubular body;

- wherein the tubular body is provided with guiding means for guiding the

brush assembly between a starting position within the tubular body and an extended position wherein a brush of the brush assembly extends outside the tubular body for contacting the separation filter.

11. The assembly of claim 10, wherein the feeding tube and the tubular body are provided with aligned openings (24, 78) for the passage of the brush assembly.

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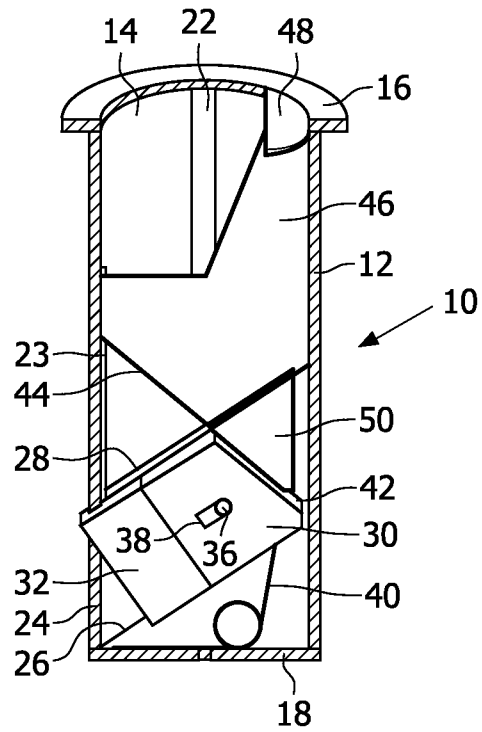


FIG. 1

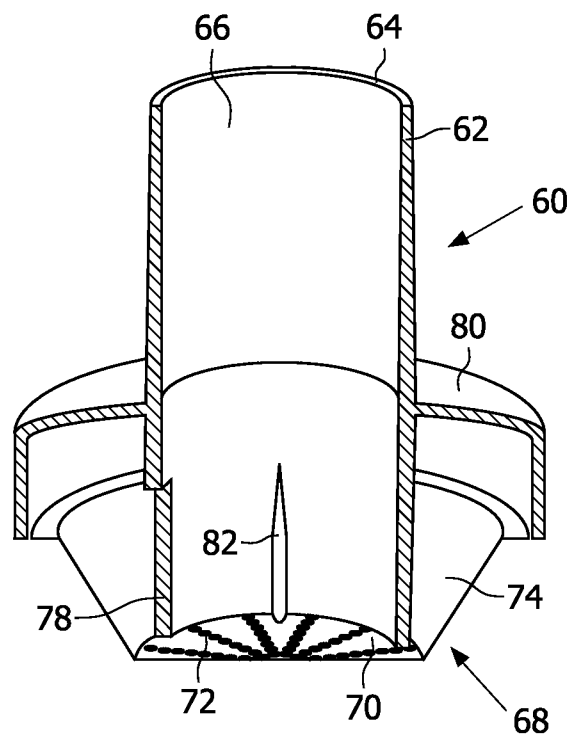


FIG. 2

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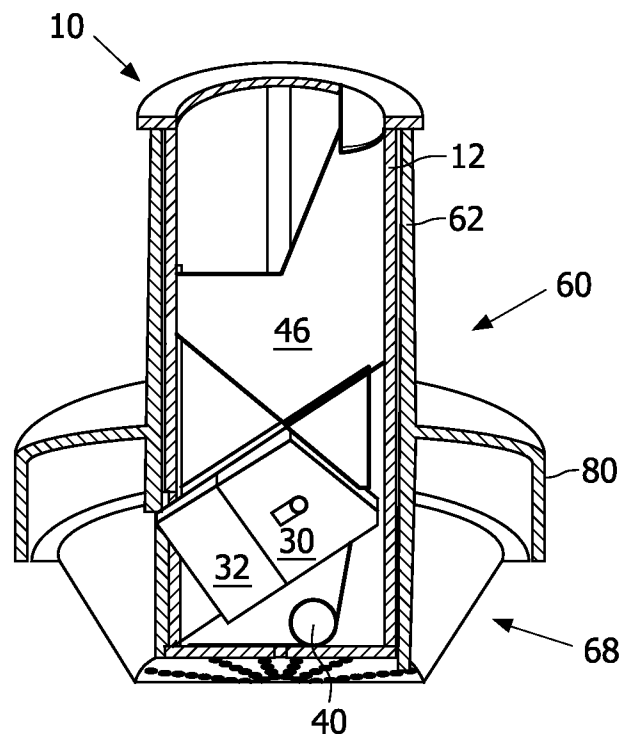


FIG. 3

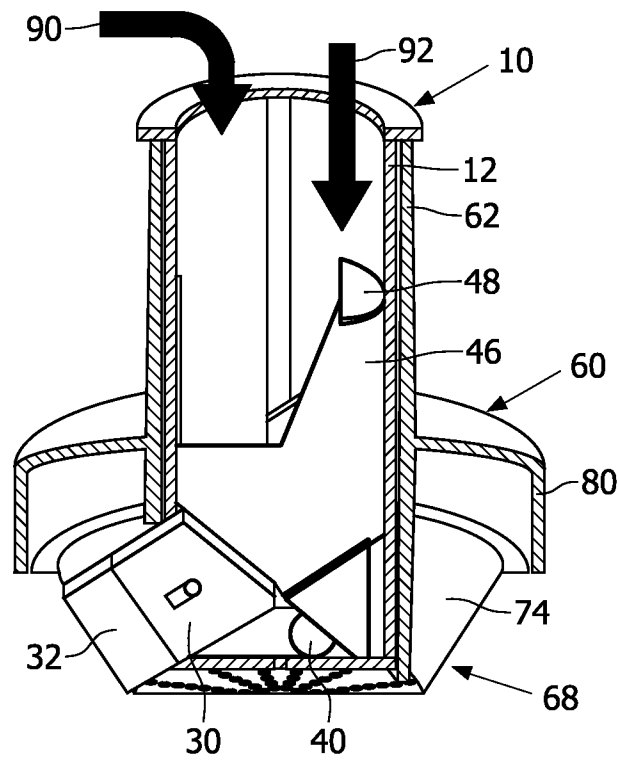


FIG. 4

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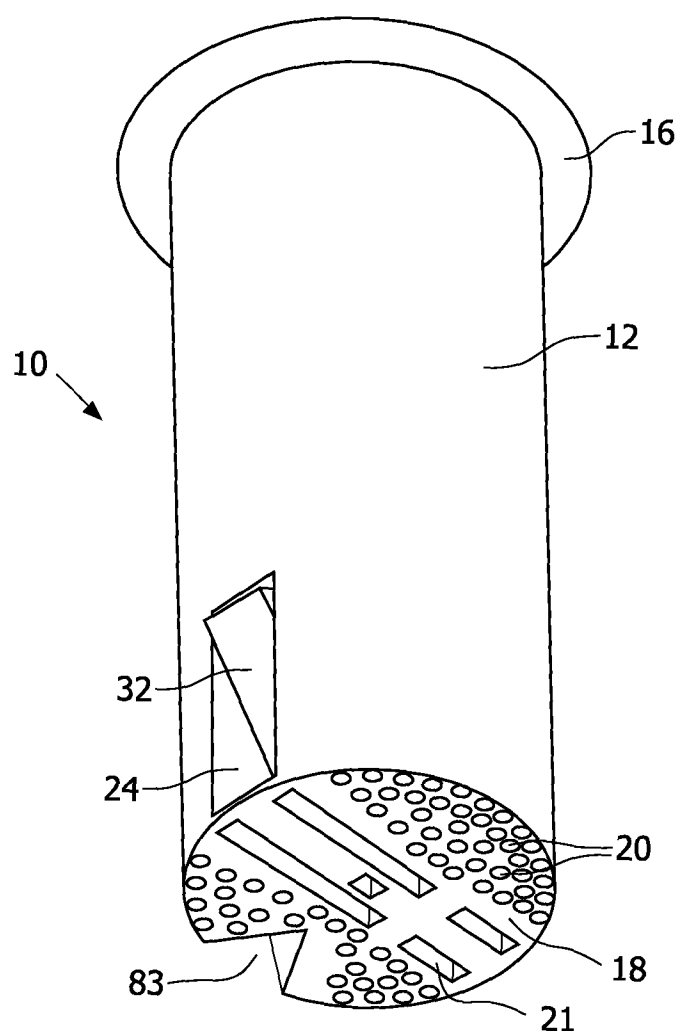


FIG. 5