

(21) Application No: 0710731.1
(22) Date of Filing: 05.06.2007

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(51) INT CL:
A47J 27/04 (2006.01) **A47J 19/04** (2006.01)

(56) Documents Cited:
GB 2390985 A **GB 1261416 A**
WO 2005/094648 A1 **WO 2001/074174 A1**
US 7172335 B1 **US 6089143 A**

(58) Field of Search:
INT CL **A23L, A47J**
Other: **EPODOC, WPI**

(54) Abstract Title: **Apparatus for cooking and mashing a starchy vegetable food**

(57) Apparatus 2 for cooking and mashing a starchy vegetable food such as, for example, yams or potatoes, comprises a first container 4 which is for the food, and in which the food is cooked by steaming under pressure a second container 6 for containing water; an electrically-operated heating element 8 for heating the water in the second container 6 and generating steam for cooking the food in the first container 4, mashing means 10 for mashing the food after it has been steamed an electrically operated motor 12 for operating the masher means 10 and control means 14 for controlling the cooking of the food by the steaming under pressure, and the mashing of the food by the mashing means 10.

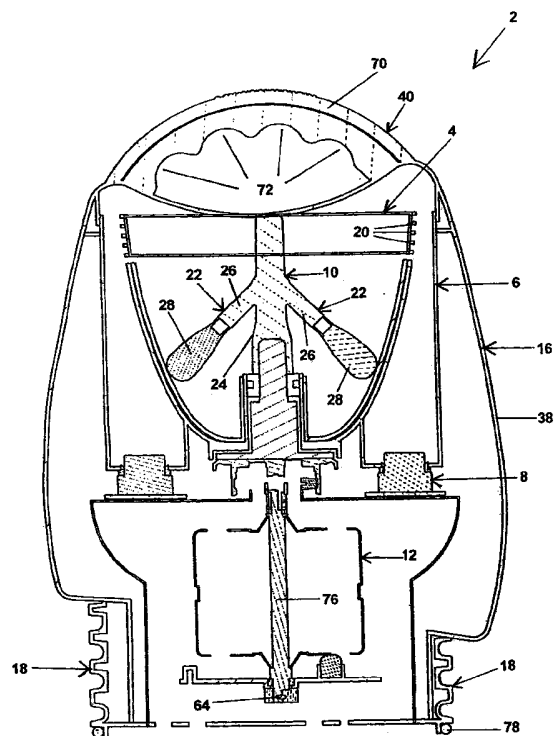


FIG. 1

1/7

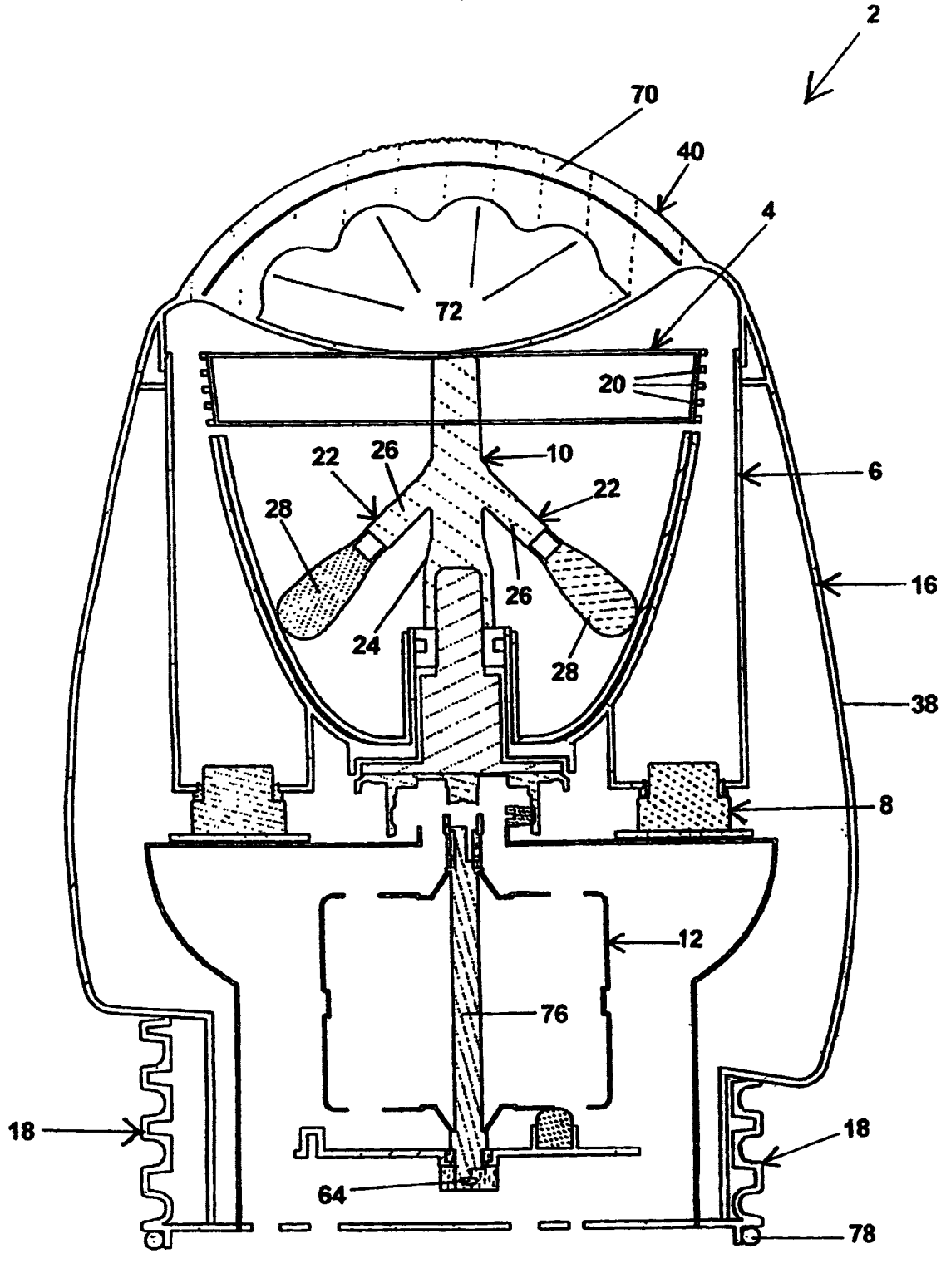


FIG. 1

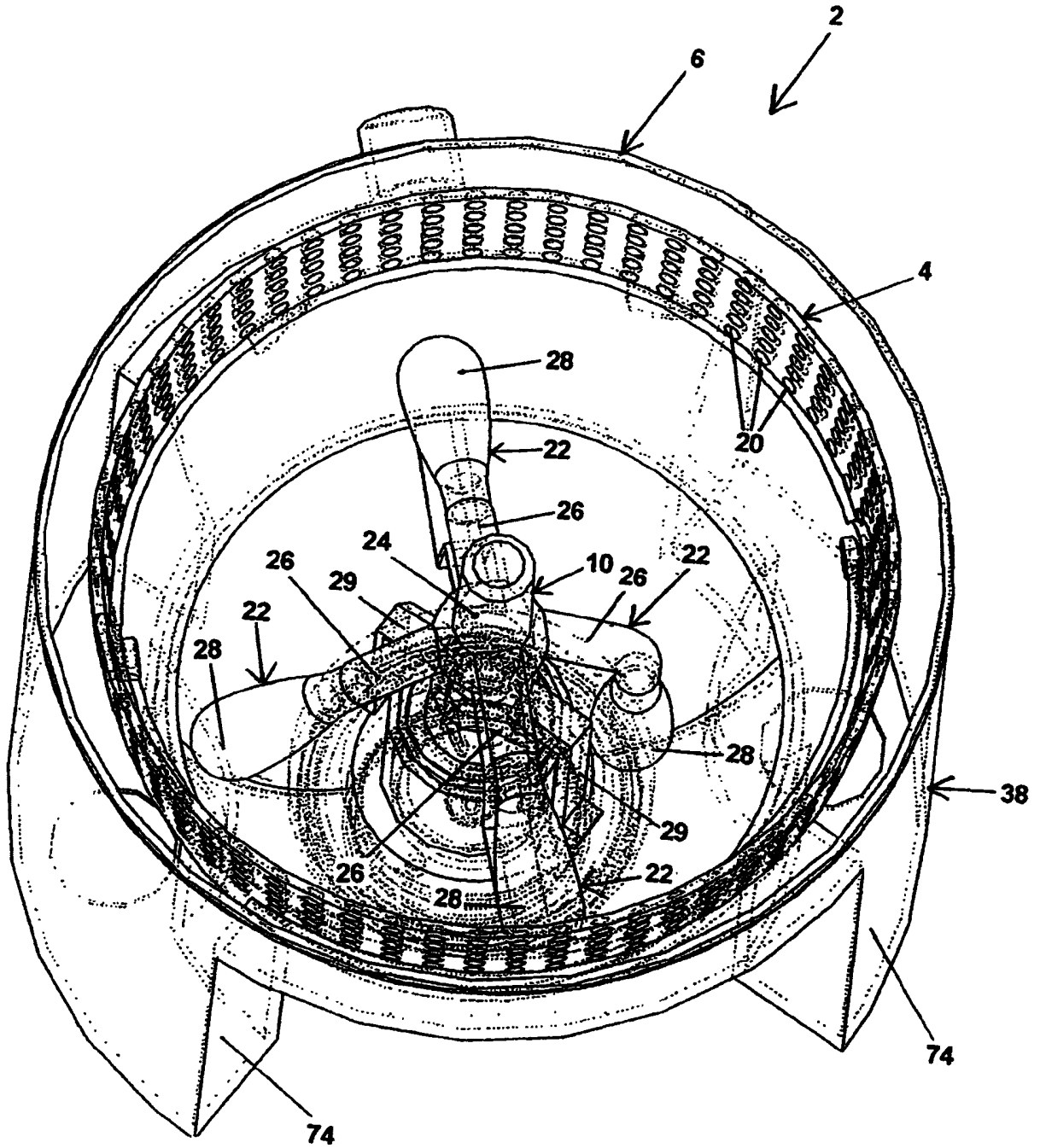


FIG. 2

3/7

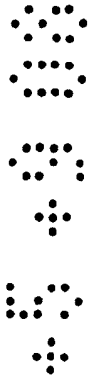
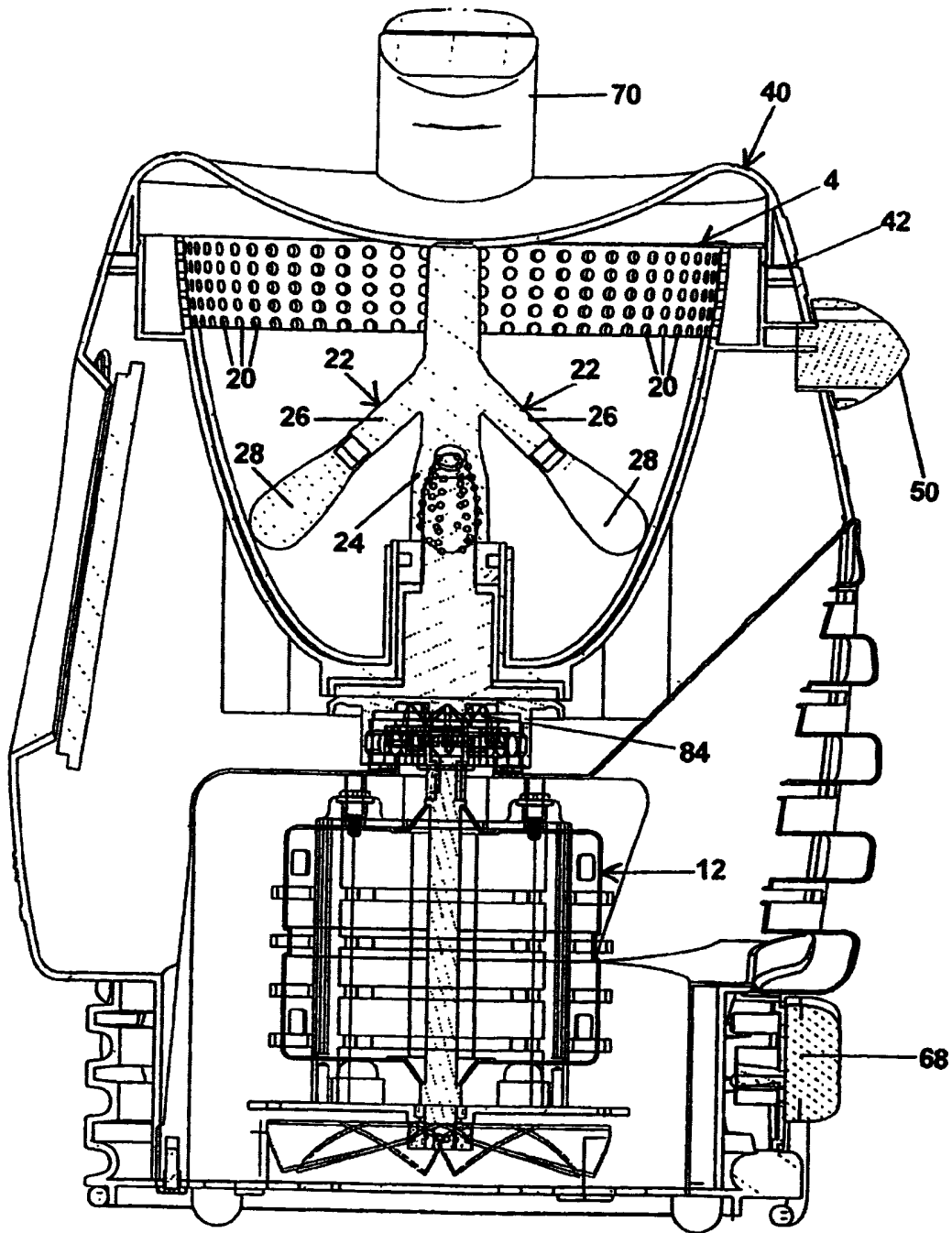


FIG. 3

4/7

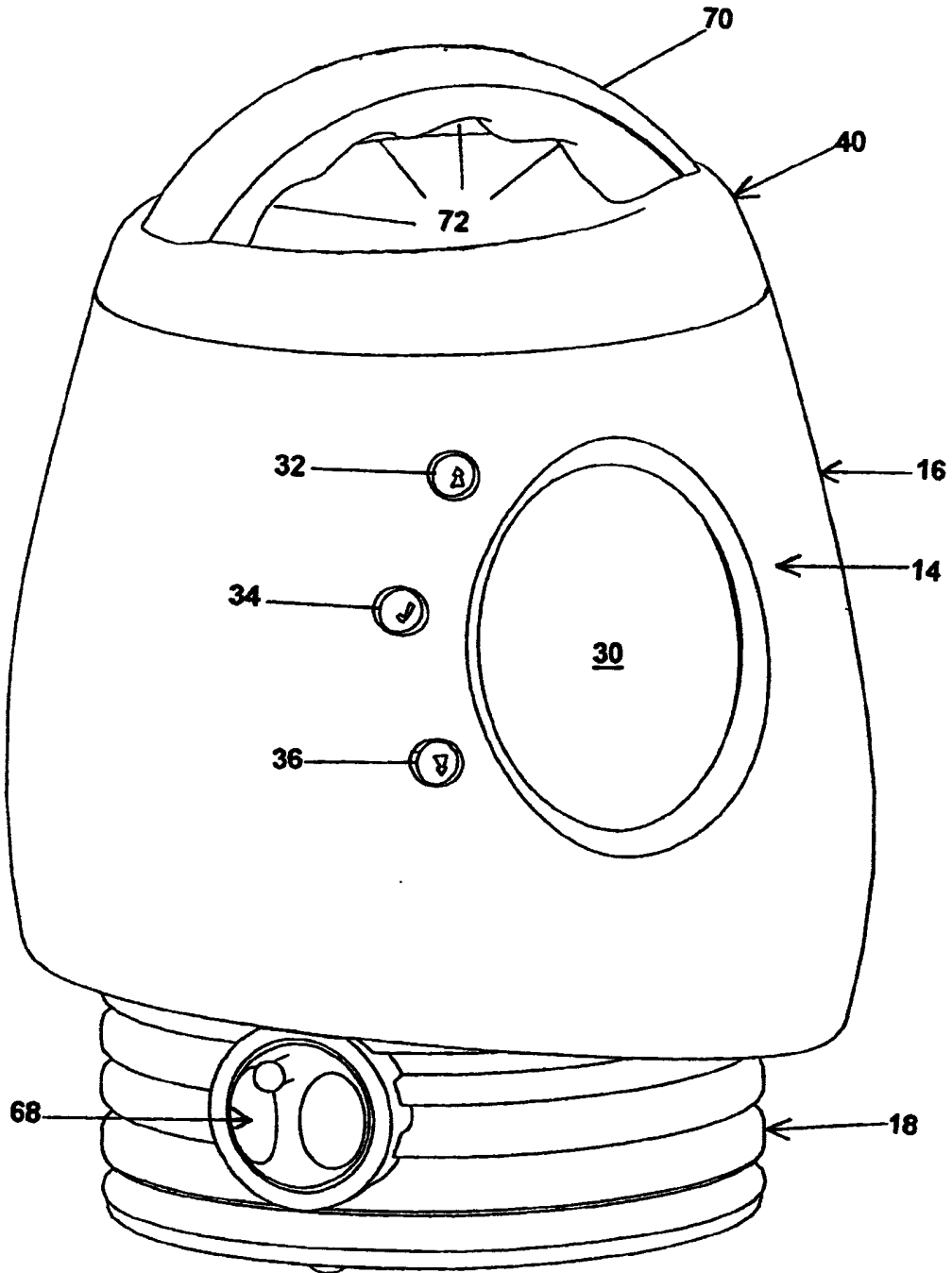
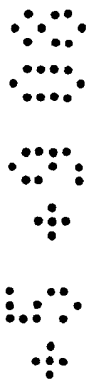


FIG. 4



5/7

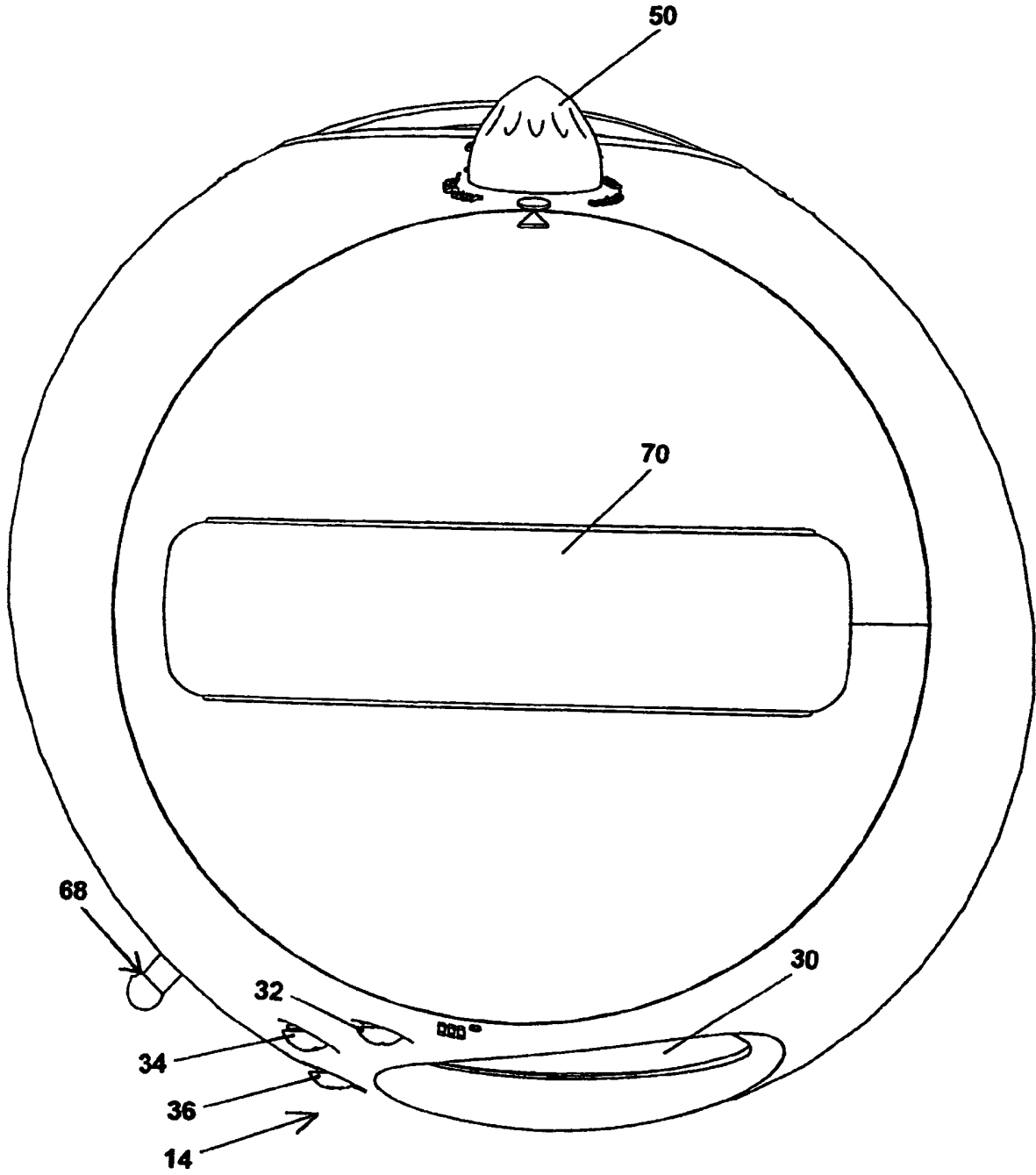


FIG. 5

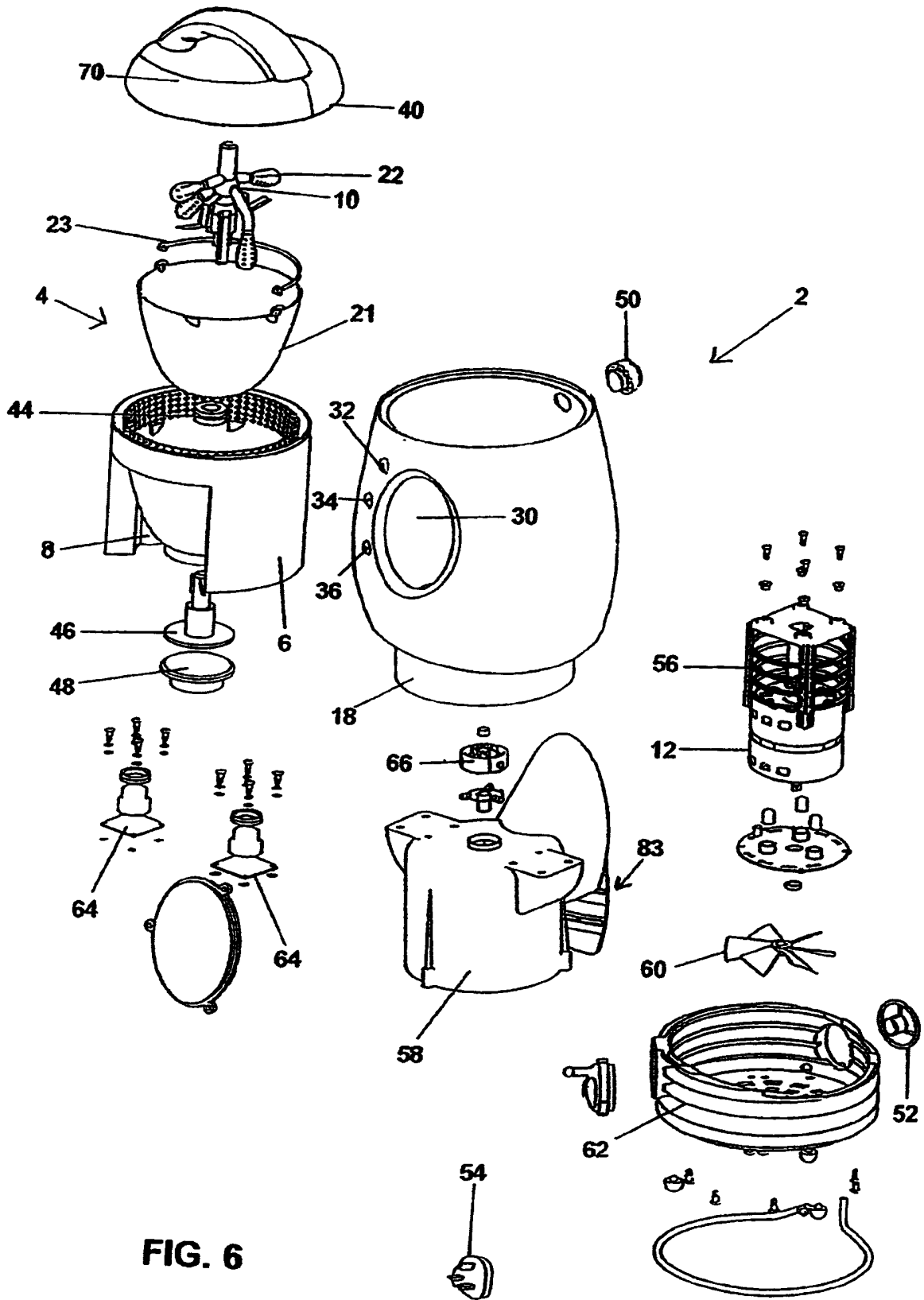


FIG. 6

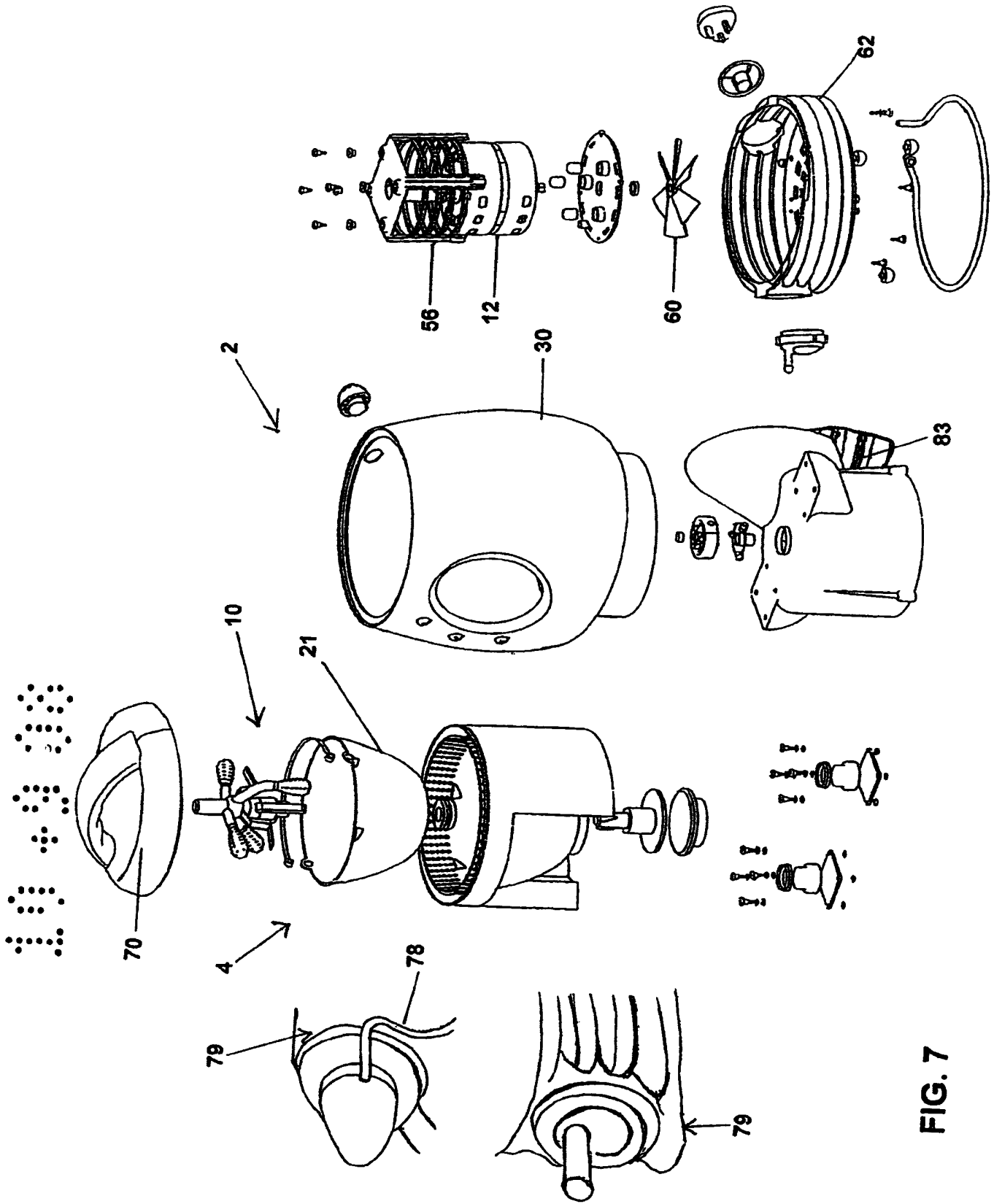


FIG. 7

The following terms are registered trademarks and should be read as such wherever they occur in this document:

Bluetooth

APPARATUS FOR COOKING AND MASHING

A STARCHY VEGETABLE FOOD

This invention relates to cooking apparatus and, more especially, this invention relates to apparatus for cooking and mashing a starchy vegetable food. The starchy vegetable food may be, for example, yams, potatoes, sweet potatoes, plantains, pumpkins, cassavas or beans.

Yams are starchy tuber-type vegetable food which are widely eaten in Africa, Asia, Latin America and Oceania. There are many different types of yam varieties. Yam tubers can grow up to 2.5 metres in length and they can weigh up to 70Kg. The yams have a rough skin which is difficult to peel, but which softens after heating. Yam skins vary in colour from dark brown to light pink. Underneath the skin, the yams are composed of a relatively soft substance which is known as the "meat" and which ranges in colour from white to bright orange in ripe yams. Yam tubers can be stored for four-six months without refrigeration, which makes them a valuable source of food in countries where food is not readily available at different seasonal periods.

Yams of African varieties must be cooked in order to be eaten safely. This is because various natural substances in raw yams can cause illness. The cooking of the yams is a time-consuming process, involving pounding, leaching and boiling in order to remove the toxins. If the yams are to be served in the form of a mash, then the yams are boiled in water in order to

soften their skins, and then they are pounded in a large pestle and mortar until the desired consistency is reached. The entire process of cooking the yams, and also cooking similar products, is time consuming and tiring.

It is an aim of the present invention to reduce the above mentioned problem.

Accordingly, in one non-limiting embodiment of the present invention there is provided apparatus for cooking and mashing a starchy vegetable food, which apparatus comprises:

- (i) a first container which is for the food, and in which the food is cooked by steaming under pressure;
- (ii) a second container for containing water;
- (iii) an electrically-operated heating element for heating the water in the second container and generating steam for cooking the food in the first container;
- (iv) mashing means for mashing the food after it has been steamed;
- (v) an electrically operated motor for operating the masher means;
and
- (vi) control means for controlling the cooking of the food by the steaming under pressure, and the mashing of the food by the mashing means.

The apparatus of the present invention is advantageous in that starchy vegetable food such for example as yams can easily be cooked without the previous time-consuming and laborious manual efforts.

Preferably, the first container comprises perforations for enabling the steam to contact the food. The perforations may be in a base and/or sides of the first container.

The apparatus may include a mashing bowl which is located inside the first container and in which the food is mashed. The mashing bowl is advantageously designed with curved surfaces which facilitate good mashing of the food.

Preferably, the mashing means comprises a plurality of mashing arms which extend from a drive shaft and which rotate to cause the mashing of the food. Other types of mashing means may be employed if desired. The mashing may be effected with a pounding action such that the food is pounded.

The mashing arms may each have a shank portion which terminates in a head portion. The head portions of the mashing arms are advantageously positioned at different heights in the first container, thereby to ensure that the food is mashed at different levels in the first container.

The mashing arms may have protuberances for augmenting the mashing of the food. The protuberances may be of any suitable and appropriate shape and size. The protuberances are preferably positioned on the head portions of the mashing arms but the protuberances may be positioned elsewhere if desired.

The apparatus may have blade members for cutting food in pieces. The blade members may form part of the mashing means. The blade members may be separate blade members or they may form part of the mashing arms.

The control means may comprise a control panel having control settings for cooking different types of the food. Preferably, the control means comprises scroll means for providing the control settings as a list of control settings in scrollable form. The control means may be connected to a micro-processor which may provide for required different food processing programs.

The control means may include push buttons or touch buttons for operating the control means.

The apparatus of the present invention may include memory means for retaining recipes.

The memory means may include receiver means for receiving the recipes. The receiver means may be a Blue Tooth receiver, a USB port interface, or any other suitable and appropriate receiver means.

The apparatus of the present invention is preferably mains operated. The apparatus may however be battery operated if desired.

Usually, the apparatus will be constructed as a portable stand-alone unit for use on a kitchen work surface or other surface. Other constructions for the apparatus may however be employed. The apparatus may be constructed for domestic or commercial use.

The apparatus may be one in which the control means includes a micro-processor.

The apparatus may be one which includes an in-built memory system.

The apparatus of the present invention is preferably employed for cooking food in the form of yams. The apparatus may however be employed for cooking other food including, for example, yams, potatoes, sweet potatoes, plantains, pumpkins, cassavas or beans.

An embodiment of the invention will now be described solely by way of example and with reference to the accompanying drawings in which:

Figure 1 is a sectional side view of apparatus for cooking and mashing a starchy vegetable food;

Figure 2 is a perspective view of the apparatus shown in Figure 1 but without a lid which closes the apparatus shown in Figure 1;

Figure 3 is a sectional side view like Figure 1, taken on the same plane but at a different location and shows in more detail various parts of the apparatus;

Figure 4 is a side view of the apparatus shown in Figure 1;

Figure 5 is a top view of the apparatus shown in Figure 1;

Figure 6 is an exploded view showing the various parts of the apparatus shown in Figure 1; and

Figure 7 is an exploded view showing parts shown in Figure 6.

Referring to the drawings, there is shown apparatus 2 for cooking and mashing a starchy vegetable food. The apparatus 2 comprises a first

container 4 which is for the food, and in which the food is cooked by steaming under pressure.

The apparatus 2 comprises a second container 6 for containing water. An electrically-operated heating element 8 is provided for heating the water in the second container 6 and generating steam for cooking the food in the first container 4.

The apparatus 2 further comprises mashing means 10 for mashing the food after it has been steamed. An electrically-operated motor 12 operates the mashing means 10. The electrically-operated motor 12 is an induction motor.

The apparatus 2 further comprises control means 14 for controlling the cooking of the food by the steaming under pressure, and the mashing of the food by the mashing means 10. As shown in Figure 4, the control means 14 is positioned in the side of a housing 16. The housing 16 is provided with a base part 18.

The first container 4 comprises perforations 20 for enabling the steam to contact the food. The perforations 20 are in an upper part of sides of the first container 4. The perforations 20 may be positioned elsewhere if desired so that, for example, perforations 20 may alternatively or additionally be provided in a base of the first container 4.

The first container 4 contains a pounding bowl 21. The pounding bowl 21 has a handle 23 as shown in Figure 6. The pounding bowl enables the food to be pounded and mashed by the mashing means 10. The food is thus contained in the pounding bowl 21 which is itself is contained in the first

container 4. Thus the first container contains the food, but within the pounding bowl 21. The pounding bowl 21 is of a shape designed to facilitate the pounding of the food. The curvature of the sides of the pounding bowl 21 facilitates the pounding. If desired, a pounding bowl with perforations at the top can be formed as a single unit to constitute the first container.

The mashing means 10 comprises a plurality of mashing arms 22. The mashing arms 22 extend from a drive shaft 24. The mashing arms 22 are caused by the drive shaft 24 to rotate in order to mash the food. The mashing arms 22 each have a shank portion 26 which terminates in a head portion 28. As shown in Figure 2, the head portions 28 of the mashing arms 22 are positioned at different heights in the first container 4, thereby to ensure that the food is mashed at different levels in the first container 4. Thus the mashing means 10 ensures that the food is uniformly mashed in the first container 4.

If desired, the mashing arms 10 may optionally be provided with protuberances (not shown) for augmenting the mashing of the food. The protuberances are preferably positioned on the head portions 28. Also, as shown in Figure 2, the apparatus 2 is provided with blade members 29 for cutting the food into pieces. The blade members 29 are separate arms but they may be of different shapes and designs if desired. The blade members may also be positioned elsewhere, for example on the head portions 28.

As shown in Figure 4, the control means 14 comprises a control panel 30. The control panel 30 is able to display a list of control settings for cooking different types of food. The control means 14 includes scroll means for

providing the list of control settings in scrollable form. The control means 14 also includes push buttons 32, 34, 36 for causing operation of various parts of the apparatus 2. The push buttons 32, 34, 36 may alternatively be touch buttons. The control means 14 also includes a micro-processor, for example for providing information input into it and/or for processing data on the food and/or for processing information on cooking conditions and/or for enabling a cooling cycle.

The apparatus 2 is mains operated. The apparatus 2 is a portable stand-alone unit for use on a kitchen work surface or other suitable surface.

The apparatus 2 is such that the first and the second containers 4, 6 are provided in a body part 38 of the housing 16. The housing 16 also comprises a lid part 40. The lid part 40 has seals 42 for enabling the lid part 40 to remain in a sealing manner on the body part 38 during the steaming process.

As can be seen from the drawings, the apparatus 2 further comprises a moisture seal 44, a shaft coupling 46 and a coupling boss 48. The apparatus 2 has a pressure valve 50 with seals.

The apparatus 2 comprises a cable tidy 52 for a cable attached to a mains plug 54.

The electrically-operated motor 12 is provided in a motor frame 56. The motor frame 56 is itself attached to a waterproof chassis 58. A cooling fan 60 is provided for cooling the electrically-operated motor 12. The base part 18 of the housing 16 forms a handle grip portion by which the body part

38 of the housing 16 can be lifted like a bowl for tipping the food out of the first container 4.

The apparatus 2 includes a base plate 62. The apparatus 2 further includes anti-vibration pads 64 for minimising vibration during mashing by the mashing means 10. The micro-processor in apparatus 2 may enable the processing of variable settings required for different textures of food.

The apparatus 2 further comprises a base plate spigot 66 and an on off switch 68.

The lid part 40 is formed with a handle 70 having finger grip formations 72.

Figure 2 shows how the apparatus 2 is such that the body part 38 has legs 74 enabling the apparatus 2 to be a stand-alone item. As can be seen from Figure 1, the electrically-operated heating element 8 is in the form of a ring. The electrically-operated motor 12 has a drive shaft 76. Also as shown in Figure 1, the apparatus 2 has an electrical power cable lead 78 recessed into a cable tidy system 79. The cable lead 78 may wrap around a groove or recess 81 and connect to a dummy plug at the back of the apparatus as shown in Figure 7.

As shown in Figure 3, the first container 4 is driven by the motor 12 via a tooth arrangement 84 which enables the pounding bowl 21 easily to be removed when desired. Other releasable drive arrangements may be employed.

As shown in Figures 6 and 7, the apparatus 2 includes a ventilation grill 83. The ventilation grill 83 is on the left hand side of the chassis 58.

The apparatus 2 is able to cook and mash a wide variety of starchy vegetable foods in a simple and efficient manner.

It is to be appreciated that the embodiment of the invention described above with reference to the accompanying drawings has been given by way of example only and that modifications may be effected. Thus, for example, the outside shape of the apparatus may vary from that shown in the drawings.

CLAIMS

1. Apparatus for cooking and mashing a starchy vegetable food, which apparatus comprises:
 - (i) a first container which is for the food, and in which the food is cooked by steaming under pressure;
 - (ii) a second container for containing water;
 - (iii) an electrically-operated heating element for heating the water in the second container and generating steam for cooking the food in the first container;
 - (iv) mashing means for mashing the food after it has been steamed;
 - (v) an electrically operated motor for operating the masher means;
and
 - (vi) control means for controlling the cooking of the food by the steaming under pressure, and the mashing of the food by the mashing means.

2. Apparatus according to claim 1 in which the first container comprises perforations for enabling the steam to contact the food.

3. Apparatus according to claim 2 in which the perforations are in a base and/or sides of the first container.
4. Apparatus according to any one of the preceding claims and including a mashing bowl which is located inside the first container and in which the food is mashed.
5. Apparatus according to any one of the preceding claims in which the mashing means comprises a plurality of mashing arms which extend from a drive shaft and which rotate to cause the mashing of the food.
6. Apparatus according to claim 5 in which the mashing arms each have a shank portion which terminates in a head portion.
7. Apparatus according to claim 6 in which the head portions of the mashing arms are positioned at different heights in the first container, thereby to ensure that the food is mashed at different levels in the first container.
8. Apparatus according to claim 6 or claim 7 in which the mashing arms have protuberances for augmenting the mashing of the food.
9. Apparatus according to claim 8 in which the protuberances are positioned on the head portions.

10. Apparatus according to any one of the preceding claims and including blade members for cutting the food into pieces.
11. Apparatus according to claim 10 in which the blade members are separate blade members.
12. Apparatus according to any one of the preceding claims in which the control means comprises a control panel having control settings for cooking different types of food.
13. Apparatus according to claim 12 in which the control means comprises scroll means for providing the control settings as a list of control settings in scrollable form.
14. Apparatus according to any one of the preceding claims in which the control means includes push buttons or touch buttons for operating the control means.
15. Apparatus according to any one of the preceding claims and including memory means for retaining recipes.
16. Apparatus according to claim 15 in which the memory means includes receiver means for receiving the recipes.

17. Apparatus according to claim 16 in which the receiver means is a Blue Tooth receiver or a USB port interface.
18. Apparatus according to any one of the preceding claims in which the control means includes a micro-processor.
19. Apparatus according to any one of the preceding claims and including an in-built memory system.
20. Apparatus according to any one of the preceding claims and which is mains operated.
21. Apparatus according to any one of the preceding claims in which the apparatus is a portable stand-alone unit.
22. Apparatus for cooking and mashing a starchy vegetable food, substantially as herein described with reference to the accompanying drawings.

15.

Application No: GB0710731.1

Examiner: Robert Price

Claims searched: 1-22

Date of search: 5 September 2008

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1, 2, 5, 10-12, 15-16, & 18-21	WO01/74174 A1 (KENNEDY) See page 3 line 1-page 4 line 8, page 14 line 1-17 and figures 1 & 2
X	1-3, 5, 10, 11, 20, 21	GB2390985 A (CHIAPHUA) See page 3 line 3-page 4 line 16 and figure 1
X	1-5, 14, 20 & 21	WO2005/094648 A1 (TERRAILLON) See page 2 line 10-page 3 line 12 and figures 1 & 2
X	1, 4, 14, 20 & 21	US7172335 B1 (O'CONNOR) See col 2 lines 50-52, col 6 lines 9-34 and figures 2 & 4
X	1-3	GB1261416 A (FYNS KONSUM) See page 2 line 116-page 3 line 46
A	-	US6089143 A (FIGUEROA) See abstract and figure 1

Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category	P Document published on or after the declared priority date but before the filing date of this invention
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

Worldwide search of patent documents classified in the following areas of the IPC

A23L; A47J

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI