

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN OR RELATING TO APPARATUS FOR PREPARING FOOD

(71) I, PIERRE VERDUN, a citizen of the French Republic, residing: 4 bis, Avenue de La Belle Gabrielle, Fontenay-sous-Bois (Val de Marne)—France—do hereby declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:

10 The present invention relates to apparatus for preparing food, notably multi-purpose kitchen apparatus, such as blenders, of the kind comprising interchangeable tools such as knives, blades, cutting disks, 15 rasping disks, etc., for performing operations such as mixing, blending, grating, grinding, chopping, whipping, etc., adapted to be operatively connected to the rotary shaft of a driving motor disposed beneath the working vessel.

20 It is the object of this invention to bring about a number of improvements in such apparatus, notably with a view to increasing their efficiency and facilitating their use.

25 According to the present invention, apparatus of the kind referred to is characterized in that said vessel is detachably mounted on the top of the motor casing and comprises on its outer peripheral wall 30 a substantially vertical channel extending throughout the height of said vessel, a push member slidably mounted in said channel and adapted to engage with its lower end the control member of an ON-OFF switch 35 inserted in the energising circuit of said motor, said switch being carried by said motor casing, said vessel comprising a detachable lid provided with cam means adapted to press the upper end of said push 40 member when lid is assembled in the fully closed position with said vessel.

Means may be provided for locking the lid to the vessel so as to ensure that the lid is secured to the vessel after it has been 45 placed in position and rotated thereon, the

arrangement being such that the cam means on the lid then thrusts against the push-member which acts on the electrical ON-OFF switch when the lid is in its angular locked position on the vessel.

According to another feature the vessel comprises centrally of its bottom wall a hole through which the vertical output rotary shaft of the motor projects from the underlying casing, said hole being surrounded by 55 a vertical concentric socket of relatively great height leaving a clearance about said shaft to permit the insertion of the hub portion of a working tool.

Other features and advantages of the 60 apparatus of this invention will appear from the following description with reference to the accompanying drawing illustrating diagrammatically a typical form of embodiment thereof. In the drawing:

Figure 1 is a perspective view of the kitchen apparatus of this invention;

Figure 2 is a part-sectional, part-elevational view of the same apparatus, with the wall of the motor casing broken away; 70 and

Figures 3 and 4 are views similar to Figure 2 showing the apparatus equipped with different working tools.

The apparatus illustrated by way of 75 illustration, not of limitation, in the accompanying drawing comprises a power unit designated in general by the reference numeral 1; this power unit 1 constitutes a casing enclosing an electric motor 2. The 80 upper portion of this casing comprises a circular-sectioned peripheral projection 3 and an output shaft 4 of motor 2 projects concentrically and centrally of this projection 3, up to a relatively substantial distance 85 thereabove.

In combination with this power unit 1 the apparatus comprises a detachable working vessel or bowl 5 of substantially cylindrical configuration and having a diameter 90

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very slightly greater than that of said projection 3 of the motor unit casing, so that the lower edge of said vessel, constituting a cylindrical skirt 6, can fit around said projection 3. For this purpose, the bottom 7 of vessel 5 is somewhat spaced above said skirt 6.

Complementary means are provided on said vessel and said projection 3 of power unit 1 for detachably assembling these two bodies with each other. These means may consist inter alia of a pair of lateral tenons 8 carried by the outer peripheral surface of projection 3 and corresponding notches 9 formed in the aforesaid skirt 6 of the vessel. The arrangement is such that these means may constitute bayonet fasteners operating by rotating the vessel 5 after the latter has been properly lowered into position.

A central hole is formed through the vessel bottom 7 to permit the passage of the rotary driving shaft 4, and this hole is surrounded by an upstanding socket 10 formed integrally or rigid with the bottom 7. The height *H* of this socket 10 is relatively great i.e. of the same order of magnitude as the projecting portion of said shaft 4.

This height is determined with a view to providing in the lower portion of the vessel 5 a volume sufficient for containing the prepared food, or possibly fruit juices or other liquids prepared in this apparatus. Moreover, it may be noted that the central socket 10 provides a free annular space about the shaft 4 to permit the insertion, between said socket and shaft, of the hub of a working tool adapted to be rotatably connected to shaft 4.

At its upper end, the vessel 5 comprises a detachable lid 11. This lid 11 is secured in its closed position by means of anchoring lugs 12a, 12b adapted to be inserted under retaining ledges 13 formed integrally with the upper edge of vessel 5, the lugs being also positioned under these ledges by rotating the lid 11.

The peripheral wall of vessel 5 comprises a substantially vertical, part-cylindrical boss 14 extending through nearly the entire height of the vessel and formed with an internal channel enclosing a vertical sliding rod 15 adapted to constitute a push member for actuating the control knob 16 of an electric ON-OFF switch 17. This switch 17 is mounted within the motor casing 1 and the end of its control knob 16 flush with the top surface of casing 1 is covered with a flexible fluid-tight membrane 18.

The relative angular positions of the means provided for assembling the vessel 5 and motor casing 1 are such that when these elements are properly assembled the push member 15 is vertically aligned with the push or control knob 16 of switch 17.

However, a spring 19 constantly urges the push member 15 to its uppermost position to prevent it from depressing the control knob 16 of switch 17 when inoperative.

The detachable lid 11 is provided with a lateral cam member 20 adapted to depress the top end of push member 15 and thus actuate the control knob 16 of switch 17 when said lid 11 is lowered and rotated to its final position. Thus, switch 17 cannot be actuated unless the lid is properly positioned. This switch 17 is inserted in the control circuit of the driving motor 2, so that this motor can be energized only after closing the lid 11 and also switch 17 through push member 15. This arrangement provides a positive safety feature preventing the operation of the apparatus as long as the lid is not set in its final position.

This apparatus is equipped with a number of interchangeable tools adapted to be coupled to the driving shaft 4, the type and characteristics of these tools being subordinate to the type of work to be performed.

Among these tools, a device comprising rotary blades is provided. This device comprises more particularly two blades 21 rigid with a hub designated in general by the reference numeral 22. However, this hub comprises two concentric cylindrical portions interconnected by an upper cap, i.e. an inner sleeve 23 and an outer sleeve 24. The outer sleeve 24 carries the pair of cutter blades 21, and the inner sleeve 23 is adapted to fit into the skirt or socket 10 projecting from the bottom of vessel 5 so as to be drivingly coupled with the motor shaft 4. For this purpose the shaft 4 is formed with a flat face 25 and the inner sleeve 23 of the tool hub comprises an inner projection mating with said flat face.

With this arrangement a perfect fluid-tightness is obtained in the vessel bottom. In fact, the juices and other liquids obtained during the preparation of certain foods cannot flow into the socket 10 and through the central hole into the motor casing.

After the removal of the vessel 5, the juice and other liquids contained in the base thereof will not escape through the hole provided in its base. The juice and other liquids are retained by the socket 10 forming a kind of chimney.

The arrangement of this working tool is such that in the operative position thereof one blade 21 is in close proximity to the bottom 7 of vessel 5 while the other blade 21 is spaced therefrom.

The presence of a rotary blade in close proximity to the bottom 7 is attended by various advantages, notably that of permitting the operation of the apparatus with very small amounts of food, a feature not encountered in apparatus not provided with

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this specific arrangement.

The rotary cutter mounting 21 may also be used for operation such as cutting or mincing meat. In this respect, it is to be noted that with this apparatus it is possible to cut and mince meat without bursting the cells thereof, in contrast with hitherto known apparatus operating essentially by crushing. The rotary cutter 21 may also be used for cutting vegetables of all kinds, notably seasonings (parsley, garlic, onions, etc.). This tool is also suitable for working and preparing doughs and pastry, for instance puff pastry. It can also be used for preparing a mayonnaise or any other similar emulsion.

This apparatus comprises other tools, notably one or more rotary disks such as rasping disks 26 of which a typical example is illustrated in Figure 3.

This disk is carried by diametral arms 27 rigid with a relatively long hollow hub 28 of which the lower end is adapted to be fitted into the socket 10 in the bottom of vessel 5 so as to surround the driving shaft 4 and be coupled therewith.

This hub 28 is nearly as high as the vessel itself so that the disk 26 is very close to the lid 11 in its operative position.

This sheet metal disk (preferably of stainless steel) has a great number of small claws formed by punching therein and adapted to be ground and sharpened. Thus, these claws are adapted to rasp the lower surface of a piece of food, for instance cheese, denoted at P, inserted into a hopper or well 29 rigid with the lid 11, a movable pusher 30 being provided therein for pressing the piece of food against the top surface of said rasp 26.

However, another disk may be substituted for this disk 26 for cutting the food into small lamellae. In this case the disk is a sheet metal member, also preferably of stainless steel, comprising a slot and a sharpened cutting edge.

As in the case of disk 26, this cutting disk is carried by diametral arms 27 rigid with a hub 28 of a height sufficient to position this disk in close proximity to the under face of lid 11.

As illustrated in Figure 4, this apparatus may also be provided with a perforated centrifuging basket 31 for preparing fruit juices. For this purpose the bottom of this perforated basket 31 carries a rasping disk 32. This basket 31 is rigid with a hub 32 adapted to fit into the socket 10 and thus be coupled to the driving shaft 4.

When this tool is used the lid 11 described hereinabove is replaced with another lid 34 provided with a hopper or well 35 for introducing the fruits to be pressed.

This hopper or well consists of a depending skirt extending to within a short distance

of the rasping disk 32, a movable pusher 36 being provided for pressing each fruit or batch of fruits thereagainst.

The lid 34 is secured to the vessel or bowl 5 in the same fashion as lid 11. However, these two members are separated by an intermediate ring-shaped member 37 comprising a lateral aperture or spout 38 for delivering the pulps and residues.

During the operation of the apparatus the fruits are rasped by the disk 32 and the resulting juices are ejected through the perforations provided along the outer marginal or peripheral portion of basket 31, so that they flow down to the bottom of vessel 5. However, the pulps and other residues remain in the form of a solid layer adhering against the inner vertical wall of basket 31.

To remove these solid residues the apparatus comprises a scraper blade 39 carried by a control arm 40 of which the upper end is slidably mounted through the lid 34 and provided above this lid with a control knob 41.

Thus, by moving the scraper blade 39 towards the inner vertical wall of basket 31 it is possible to remove the pulp and residues, from which the juice has already been expressed, by rotating the basket. Thus, the residues are thrown upwards and subsequently discharged by centrifugal force through said lateral opening 38. The provision of this scraper blade 39 is therefore advantageous in that it prevents an undesired clogging of the centrifugal basket after the pressing of two or more fruits, thus further enhancing the efficiency of the apparatus.

As already mentioned in the foregoing, the fruit juices obtained during this operation are collected in the bottom of vessel 5, and can therefore easily be recovered therefrom by previous removal of the centrifugal basket 31.

It is also possible to provide in the vessel or bowl 5 itself some discharge means such as a tap, cock or any other suitable control device.

Obviously, this apparatus may be completed with many other tools for performing different operations in the preparation of food, pastry, etc., as will readily occur to those conversant with the art, without departing from the scope of the invention as defined by the appended claims.

WHAT I CLAIM IS:—

1. Apparatus for preparing foods, of the kind comprising interchangeable tools adapted to be operatively connected to the rotary shaft of a driving motor disposed beneath the working vessel, characterized in that said vessel is detachably mounted on top of the motor casing and comprises on its outer peripheral wall a substantially vertical channel extending throughout the

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this specific arrangement.

The rotary cutter mounting 21 may also be used for operation such as cutting or mincing meat. In this respect, it is to be noted that with this apparatus it is possible to cut and mince meat without bursting the cells thereof, in contrast with hitherto known apparatus operating essentially by crushing. The rotary cutter 21 may also be used for cutting vegetables of all kinds, notably seasonings (parsley, garlic, onions, etc.). This tool is also suitable for working and preparing doughs and pastry, for instance puff pastry. It can also be used for preparing a mayonnaise or any other similar emulsion.

This apparatus comprises other tools, notably one or more rotary disks such as rasping disks 26 of which a typical example is illustrated in Figure 3.

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As already mentioned in the foregoing, the fruit juices obtained during this operation are collected in the bottom of vessel 5, and can therefore easily be recovered therefrom by previous removal of the centrifugal basket 31.

It is also possible to provide in the vessel or bowl 5 itself some discharge means such as a tap, cock or any other suitable control device.

Obviously, this apparatus may be completed with many other tools for performing different operations in the preparation of food, pastry, etc., as will readily occur to those conversant with the art, without departing from the scope of the invention as defined by the appended claims.

WHAT I CLAIM IS:—

1. Apparatus for preparing foods, of the kind comprising interchangeable tools adapted to be operatively connected to the rotary shaft of a driving motor disposed beneath the working vessel, characterized in that said vessel is detachably mounted on top of the motor casing and comprises on its outer peripheral wall a substantially vertical channel extending throughout the



height of said vessel, a push member slidably mounted in said channel and adapted to engage with its lower end the control member of an ON-OFF switch 5 inserted in the energising circuit of said motor, said switch being carried by said motor casing, said vessel comprising a detachable lid provided with cam means adapted to depress the upper end of said 10 push member when said lid is assembled in the fully closed position with said vessel.

2. Apparatus according to claim 1, provided with means for locking the lid to the vessel so as to ensure that the lid is secured 15 to the vessel after it has been placed in position and rotated thereon, the arrangement being such that the cam means on the lid then thrusts against the push member which acts on the electrical ON-OFF 20 switch when the lid is in its angular locked position on the vessel.

3. Apparatus according to either of claims 1 and 2, wherein said vessel comprises centrally of its bottom wall a hole 25 through which the vertical output rotary shaft of said motor projects from the underlying casing, said hole being surrounded by a vertical concentric socket of relatively great height leaving a clearance about said 30 shaft to permit the insertion of the hub portion of a working tool.

4. Apparatus according to claim 3, wherein one of its working tools comprises a pair of cutting blades carried by a central 35 hub having two concentric cylindrical portions and an upper cap member, namely an inner cylindrical portion adapted to be inserted into the socket of the bottom of said vessel for establishing the driving connection with the motor shaft and an external 35 cylindrical portion adapted to surround said socket, the working blades being carried by said external cylindrical portion.

5. Apparatus according to any one of the preceding claims, wherein working tools associated with said apparatus comprise cutting and/or rasping disks carried by a hub adapted to be drivingly connected to said rotary shaft, said hub having a height 45 slightly lower than that of said vessel whereby, in the operative position of the tool, the disk extends across the vessel in the upper portion thereof, said detachable lid comprising a hopper or well and presser member for introducing and pressing the 50 products to be cut or rasped.

6. Apparatus according to any one of claims 1 to 3 comprising a basket adapted to be rotatably connected with said rotary shaft, said basket comprising in its bottom 55 a rasping surface adapted to rasp fruits introduced through a hopper or well provided to this end in a lid fitted on top of said basket, the lateral wall of said basket being perforated to permit the ejection of 60 the fruit juices squeezed out so that they can be collected in the bottom of said vessel.

7. Apparatus according to claim 6, wherein said lid fitted on top of said rotary 65 basket comprises a movable scraper blade adapted to be moved towards the inner vertical wall of said basket, and wherein said lid further comprising an orifice for expelling the residues thus detached from 70 said basket by said scraper blade.

8. Apparatus substantially as described hereinabove with reference to the accompanying drawing.

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