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(54) **Apparatus for creating a vacuum in containers for preserving vacuum-packed products**

(57) This invention concerns an apparatus to form a vacuum in containers for preserving vacuum-packed products, which is made up of body (11) having a housing (26) on the rear of its closing lever (13) designed to contain a rolled tubular element (27) for the formation of bags and closed by a cover (28), independent of said

lever (13) and turning on its own axis, and an electro-magnetic single phase safety transformer (19) to feed at least some electric parts the length size of which is greater than the height and width dimensions and is equipped with terminals to be electrically connected to other devices.

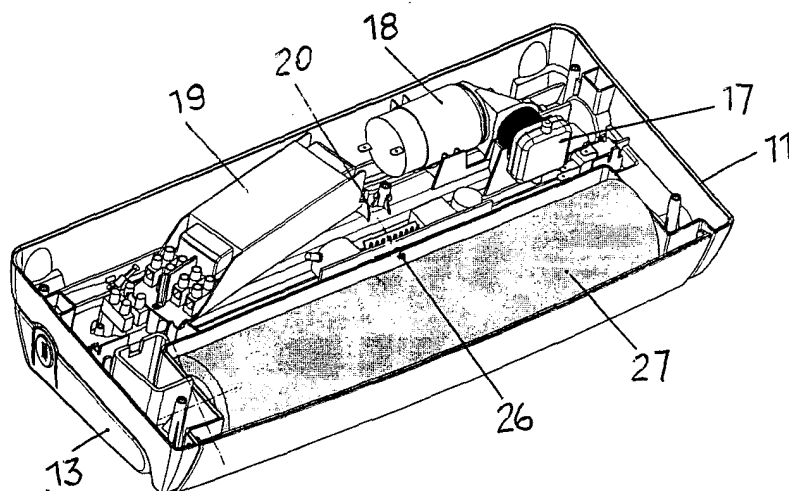


FIG. 14

Description

Field of the Invention

[0001] This invention concerns the innovations made on apparatus for creating a vacuum, both in flexible containers such as bags, and rigid containers such as tubs or canisters, for the preservation of vacuum-packed products and to seal the containers when they are flexible, that is bags.

State of the Art

[0002] An apparatus of the type taken into consideration here, basically includes:

a basic body,
a closing cover, also named and hereinafter called a lever, movable on and in relation to the basic body between an open position and a closed one in which it is locked to the body by means of a coupling,
a basin shaped chamber between the body and the lever to receive the mouth of a bag,
depressurization means associated with said chamber to draw the air out of the bag so as to form the vacuum when the lever is in the closed position, means for sealing the mouth of the bag by heat welding to maintain the vacuum.

[0003] Such an apparatus can be equipped, on a level with the closing lever or the body, with a pipe fitting in communication with the depressurization means, to be connected to a suction tube used to create the vacuum also in rigid containers such as tubs or canisters, fitted with an appropriate cover.

[0004] For the suction action directed at forming a vacuum in a container, a similar apparatus usually incorporates a depressurization device powered by a low tension motor electrically fed from the mains using a transformer. This transformer is the usual type, having a parallelepiped shape with height and width almost equal, and having a conspicuous overall size that has a negative influence on the volumes of the body of the device that has to house it. In addition, said transformer requires direct cabling which is not really rapid and easy, as it is without its own terminals.

[0005] Furthermore, an apparatus for forming the vacuum in containers can be equipped or not also with a space to contain a rolled up tubular element, from which from time to time to unwind, pull out and cut a length, using a linear cutter, to be used to form a bag of the required length. According to the state of the art, this space, when present, is part of the body and closed by the same lever of the apparatus, and the cutter is assembled and slides on said lever in line with an exit opening for the unrolled tubular element. This, however, involves, having to face some drawbacks.

[0006] In fact, it cannot be excluded that on pulling out

and cutting the tubular element with the cutter, the lever gets closed and pressed, unintentionally starting the apparatus. Furthermore, access and collocation of the tubular rolled up element in the roll holder space can be carried out only by opening the lever, not always easy if the apparatus is fixed to a wall as it sometimes happens with certain devices. Moreover, with the device on the wall, the roll can also fall out of the space allocated.

10 Objects of the Invention

[0007] Starting from the above suppositions, it is precisely one of the objects of this invention to provide an apparatus to form a vacuum in containers for the preservation of vacuum-packed products, that is smaller as regards to sizes and consequently less volume, at least in height, thanks to the use of a type of electric transformer never used in this field of application considered here.

[0008] To reach such an objective, the apparatus according to the invention is equipped with a current transformer having an elongated shape in one direction, that is to say with one dimension in length prevalent over the other dimensions, such as a single phase, electromagnetic safety transformer used in lighting engineering. This type of transformer, placed in a lying position in the body of the device, enables the height of the body to be reduced compared with what is possible to achieve with the usual transformers.

[0009] Moreover and to its advantage, this transformer is also equipped with terminals so it contributes in making the electric connection to the apparatus easier.

[0010] Another object of the invention is to provide an apparatus to form a vacuum in containers for the preservation of vacuum-packed products, in which, when present, the roll-holder space provided in its body has no relation to or interference with the device closing lever.

[0011] To reach the other object a roll-holder space has been provided in the body of the apparatus closed by a cover which is independent of the closing lever and has a slot in which a cutter is allowed to slide. In this way and to its advantage, the roll-holder space can be accessed without having to use the lever; the cutter assembled and sliding in said cover never interferes with the lever; the collection and cutting of the tubular element cannot cause unintentional starting of the device; the roll cannot fall out of its housing even should the device be fixed to a wall; the roll-holder housing remains apart from the other operating components of the machine without there being the possibility of liquids or anything else entering which means the tubular rolled element remains clean.

[0012] The apparatus of the present invention,, which incorporates other innovative details, will be described in the continuation making reference to the enclosed indicative and not limiting drawings, in which;

Brief Description of the Drawings

[0013]

Figs. 1 and 2 show two views in perspective of a device with roll-holder housing and with lever in the respective closed and open positions;
 Figs. 3 and 4 show views in perspective of the device in Fig. 1 with roll-holder housing open, respectively empty and in the insertion of the roll phase;
 Figs. 5 and 6 show lateral views in perspective of the device with roll-holder housing open, respectively empty and complete with roll;
 Fig. 7 shows an overhead view of the device in Fig. 1;
 Fig. 8 shows a lateral view;
 Figs. 9 and 10 show respectively two cross-sections of the device according to arrows A-A and B-B, respectively, on Fig. 7;
 Figs. 11 and 12 show the device from below, respectively in a perspective view and flat;
 Figs. 13 and 14 show two views seen from inside the device to highlight an example of a depressurization group;
 Fig. 15 shows a blown-up detail of the heat disperser;
 Fig. 16 shows the assembled cutter, positioned on the cover of the roll-holder housing and seen according to arrows C - C on Fig. 18;
 Fig. 18 shows a longitudinal cross-section according to arrows D-D on Fig. 17;
 Fig. 19 shows a view in perspective of a device without roll-holder; and
 Figs. 20 and 21 show in that order, an internal view of a cross-section of the device in Fig. 19.

Detailed Description of the Invention

[0014] A shown the apparatus shown is made up of a basic body 11 closed by a bottom 12 and bearing at the top a lever 13 rotating on respective pins, between an open and closed position on the body. The body 11 and lever 13 together form a suction chamber 14 to receive the mouth of a bag and hold the operating elements to manage the formation of a vacuum in the bag and a welding element to heat seal the mouth of the latter when the lever is in the closed position. In this closed position, the lever 13 locks onto the body 11 by means of a lever coupling 15. In the open position, on the other hand, the lever rests against the stop shoulder 16 made up of the body 11 without loading the respective rotation pins. The body 11 also supports some filter holders 11' at the opposite ends of the suction chamber.

[0015] In one embodiment, the apparatus is equipped with a depressurization group 17 to form a vacuum powered by an electric motor 18 fed from the mains through an electromagnetic single phase safety transformer 19 with a length size greater than the height and width sizes

as shown in Figs. 13 and 14. The depressurization group 17 with the motor 18 and transformer 19 are in a housing formed by the body and closed at the back by the bottom 12. Where envisaged, an electronic control board 20 and a heat disperser 21, the latter blocked by a snap device with at least one stop catch 21'- Fig. 15, are also positioned in such a housing.

[0016] Of note is the fact that the same type of transformer 19 is usable to feed the welding element through the electronic board and/or other control devices. In other conformations, where the motor of the depressurization group is fed from the mains, the transformer 19 is however used to feed the welding element of the device.

[0017] Usually, on the top of the body 11, are assembled a pushbutton 22 for manual control of the device and luminous indicators 23 to signal some of the operating phases, whereas on the lever 13 a bleeder valve 24 and a coupling 25 can be assembled, the latter in communication with the suction chamber and, by means of this, with the depressurization group, and used to connect a tube - not shown - and prepared in the case of necessity, to form a vacuum in rigid containers such as tubs or canisters.

[0018] The above description is valid both in the case of an apparatus prepared to contain a rolled tubular element from which to make the individual bags as in Figs. 1-7, and in the case of a device without a roll holder such as in Figs. 19-21.

[0019] In the first case, in the rear section, that is to say behind the lever 13, the body 11 of the apparatus forms a housing 26 to contain a rolled tubular element 27 from which to make the bags according to requirements. The housing 26 is closed at the front by its own cover 28 so that it is completely independent of the lever 13 and remains closed also should the device be fixed to a wall.

[0020] The cover 28 of said housing 26 turns on a respective axis between a closed and open position and, in combination with a part 11" of the body it overlaps, forms an opening 29 for pulling out the tubular element 27 to cut a length to form a bag. In the cover 28, parallel to the opening 29 there is a guide slot 28' in which a cutter 30 is assembled and slides to cut the tubular element when it is pulled out. The cover 28 can also be transparent to be able to inspect the presence of the roll and the quantity of tubular element still available, even when it is closed. The cutter 30 is advantageously the anti-accident type, made up - Figs. 16-18 of two facing blades 31 positioned and held between a supporting element 32 and a gripping element 33 fixed to the supporting element. The supporting element 32 is driven along the guide slot 28'; the gripper element 33 remains on the outside above the cover 28 to be accessed; together, the supporting element 32 and the gripper element 33 protect the blades 31, leaving only their cutting edges exposed. In addition, the supporting element 32 has a sliding block section 34 which is at the bottom ends of the blades 31, extruding laterally from the latter

and forming a rest for the contiguous limbs of the tubular element when it is cut by the cutter.

[0021] Finally and worthy of note is that the rear wall 12 of the body 11 has an external indent 35 in the centre of which is a multi-function ring-shaped relief 36. This relief, in fact, has some slots 37 for fixing the apparatus to a wall, if required, and forms an external cable winder and internally forms a housing 38 intended to contain either a wound electric cable or a suction tube for use with the apparatus.

Claims

1. An apparatus for forming a vacuum in containers for preserving vacuum-packed products, made up of a basic body, a closing cover or lever movable on and in respect of said basic body between an open and closed position, a basin shaped chamber between the body and the lever to receive the mouth of the bag, means of depressurizing associated with said chamber to suck the air from the bag so as to create a vacuum when the lever is in the closed position, a welding element to heat seal the bag to maintain the vacuum, and a possible coupling on said cover, in communication with the depressurization group, to connect a suction tube to so as to be able to form a vacuum also in rigid containers, **characterised by** the fact that the rear of the basic body (11), on the rear of the lever (13), forms a housing (26) designed to contain a rolled tubular element (27) for forming the bags and closed by a cover (28) which is independent from said lever (13), and by the fact that the cover (28) turns on its respective axis between a closed and open position of said housing (26), forming with said basic body an opening (29) to extract the tubular element and has a slot (28') parallel to said opening and shaping a guide means for a cutter (30) for cutting the tubular element.
2. An apparatus for forming a vacuum in containers for preserving vacuum-packed products, made up of a basic body, a closing cover or lever movable on and in respect of said basic body between an open and closed position, a basin shaped chamber between the body and the lever to receive the mouth of the bag, means of depressurizing associated with said chamber to suck the air from the bag so as to create a vacuum when the lever is in the closed position, a welding element to heat seal the bag to maintain the vacuum, and a possible coupling on said cover, in communication with the depressurization group, to connect a suction tube to so as to be able to form a vacuum also in rigid containers, and where a current transformer is inserted in the electric feed circuit of the welding element and possibly of the depressurizing group (17), **character-**

ised by the fact that said transformer is a single phase safety electromagnetic transformer (19) the length size of which is greater than the height and width dimensions and is equipped to be electrically connected to other devices.

3. An apparatus for forming a vacuum in containers for preserving vacuum-packed products, made up of a basic body, a closing cover or lever movable on and in respect of said basic body between an open and closed position, a basin shaped chamber between the body and the lever to receive the mouth of the bag, means of depressurizing associated with said chamber to suck the air from the bag so as to create a vacuum when the lever is in the closed position, a welding element to heat seal the bag to maintain the vacuum, and a possible coupling on said cover, in communication with the depressurization group, to connect a suction tube to so as to be able to form a vacuum also in rigid containers, and where a current transformer is inserted in the electric feed circuit of the welding element and possibly of the depressurizing group (17), **characterised by** the fact that the rear of the basic body (11), on the rear of the lever (13), forms a housing (26) designed to contain a rolled tubular element (27) for forming the bags and closed by a cover (28) which is independent from said lever (13), and by the fact that the cover (28) turns on its respective axis between a closed and open position of said housing (26), forming with said basic body an opening (29) to extract the tubular element and has a slot (28') parallel to said opening and shaping a guide means for a cutter (30) for cutting the tubular element, and in the fact that said transformer is a single phase safety electromagnetic transformer (19) the length size of which is greater than the height and width dimensions and is equipped with terminals to be electrically connected to other devices.
4. An apparatus according to any of the previous claims, wherein said cutter (30) is made up of two facing blades (31) held between a supporting element (32) and a gripper element (33) fixed to the supporting element, where the supporting element (32) is made to move along the guide slot (28') of the cover (28) of the roll-holder housing, the gripper element (33) is above the cover (28) to be accessed, the supporting element (32) presents a sliding block (34) at the bottom ends of the blades (31) and acting as a rest for the contiguous limbs of the tubular element when it is cut to be pulled out.
5. An apparatus according to any of the previous claims, where said lever (13) when in the open position, rests on stop shoulders formed by said body.
6. An apparatus according to any of the previous

claims, wherein said body is closed at the base by a bottom, and in said bottom is a ring-shaped relief (36) which has slots (37) for fixing the device to a wall, forming externally a cable winder and internally a housing (38) intended to contain either a wound electric cable or a suction tube. 5

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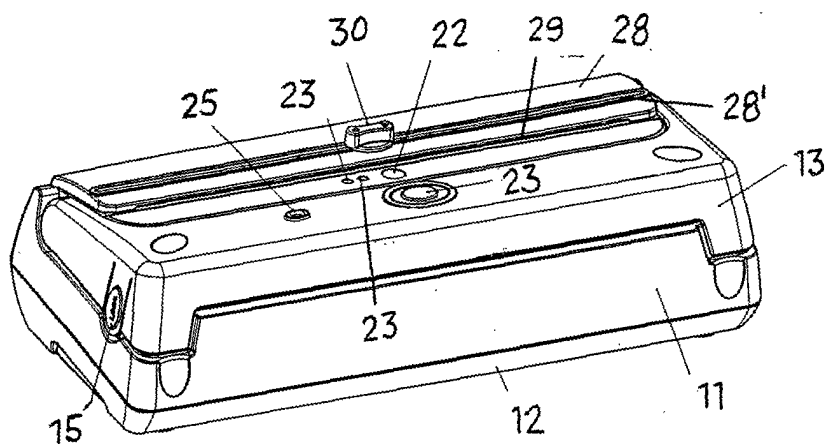


FIG. 1

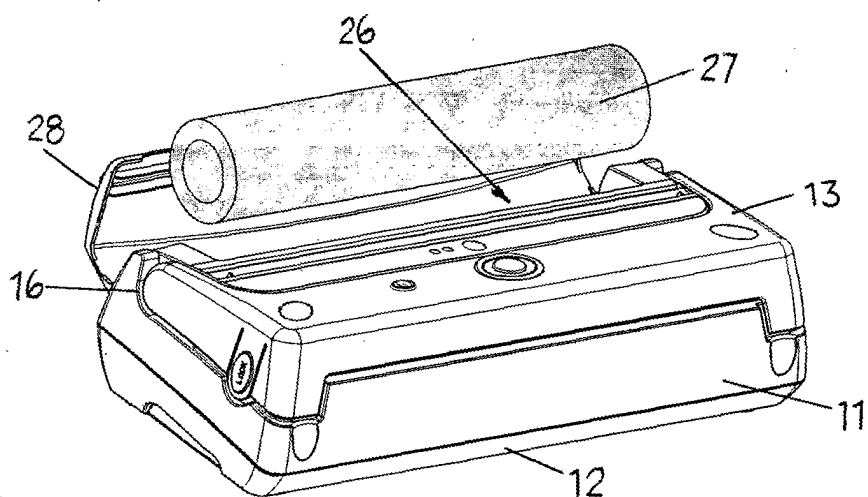


FIG. 4

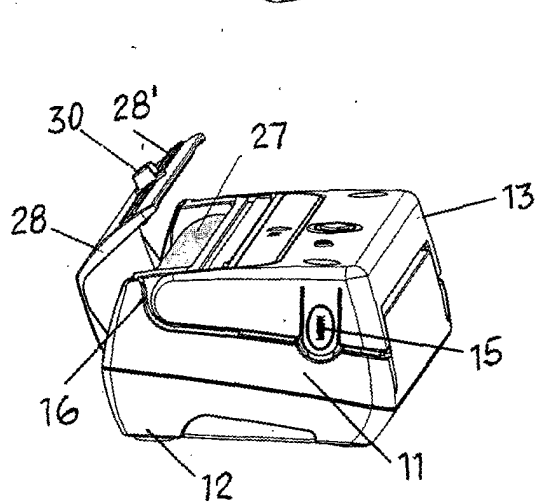


FIG. 6

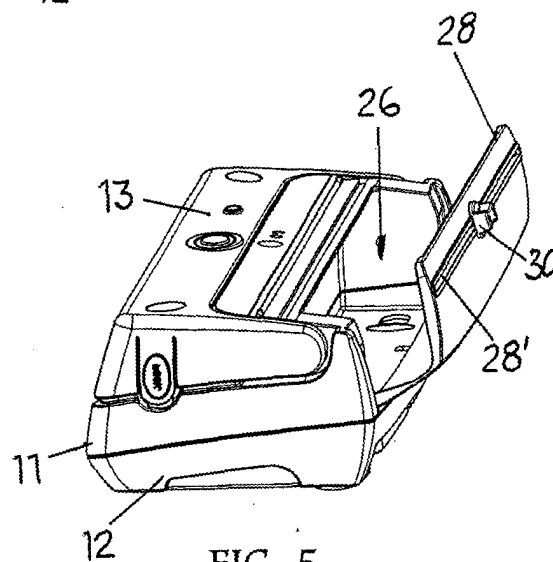


FIG. 5

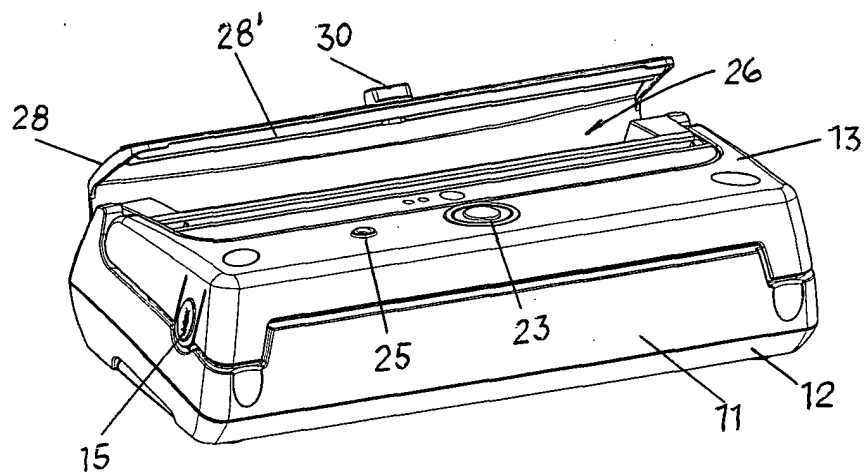


FIG. 3

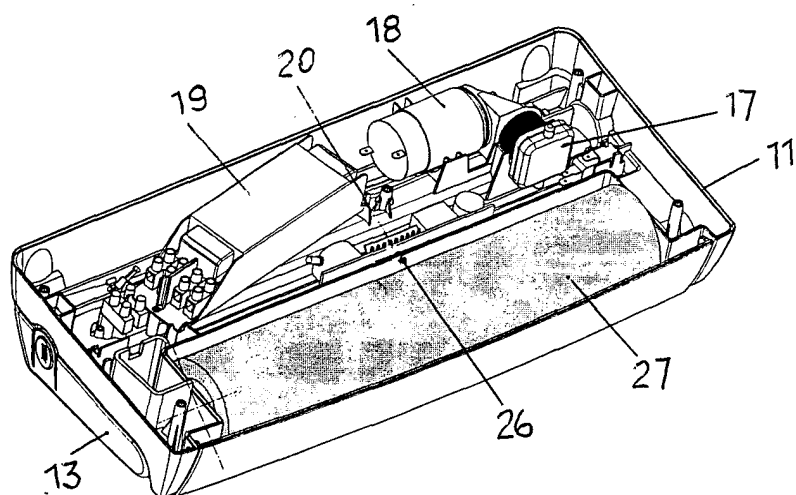


FIG. 14

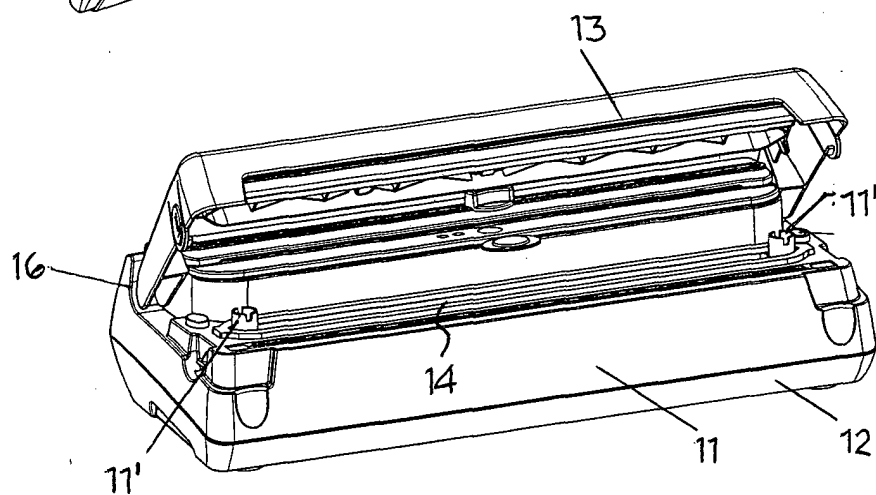


FIG. 2

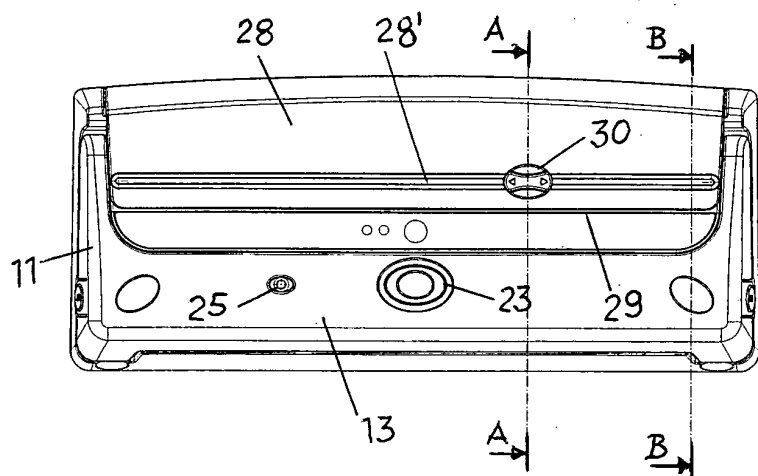


FIG. 7

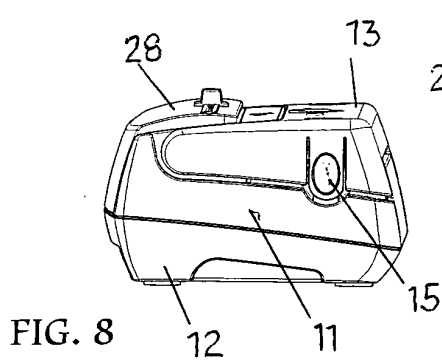


FIG. 8

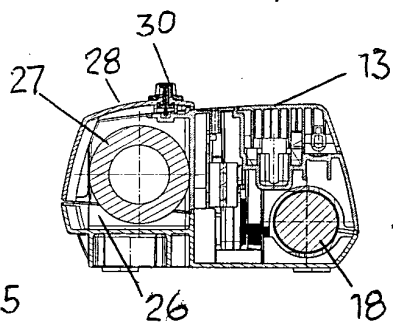


FIG. 9

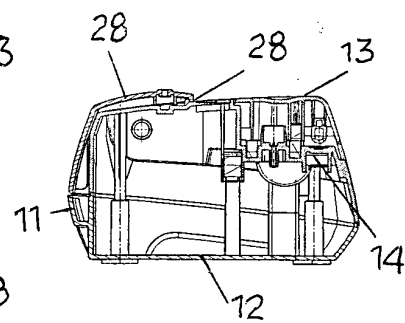


FIG. 10

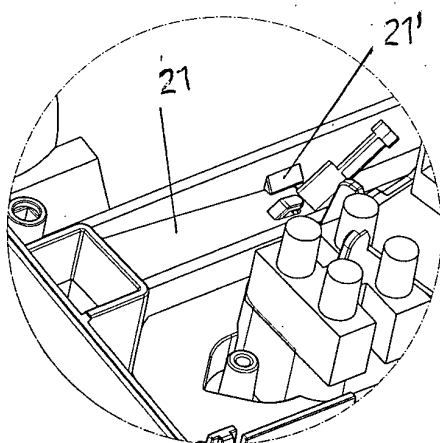


FIG. 15

FIG. 13

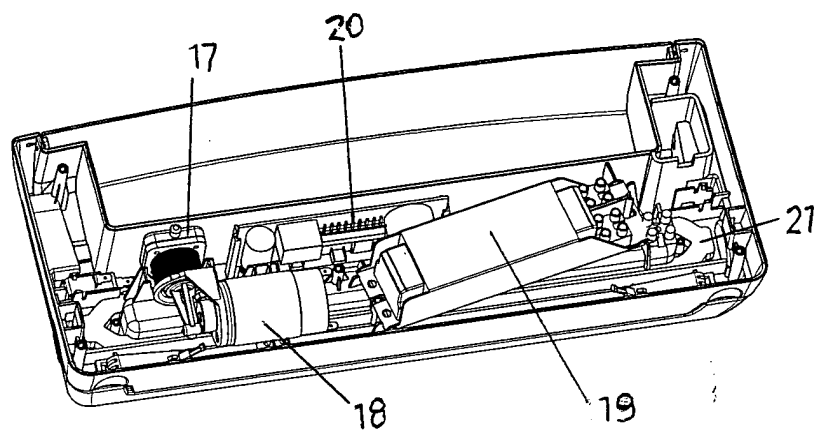


FIG. 11

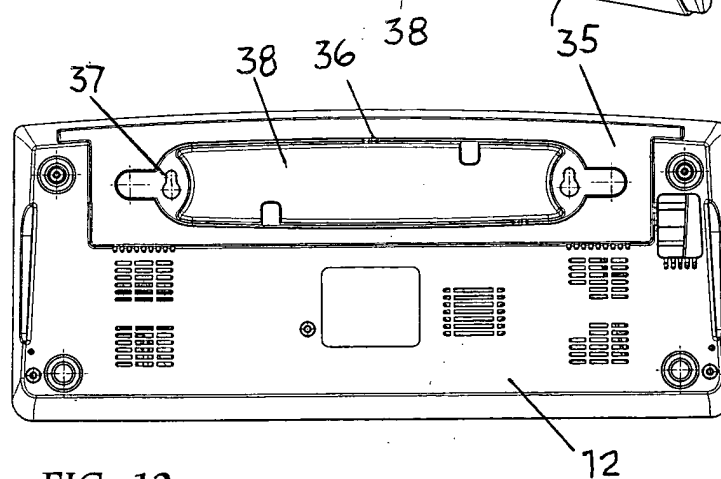
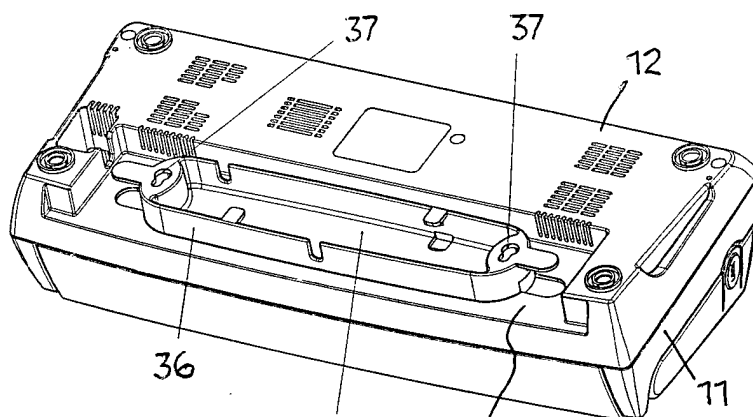


FIG. 12

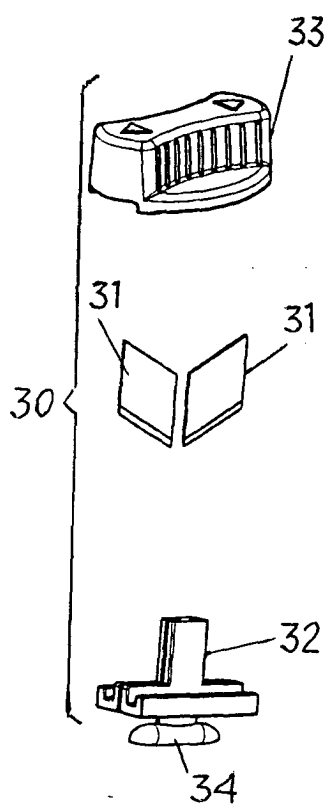


FIG. 16

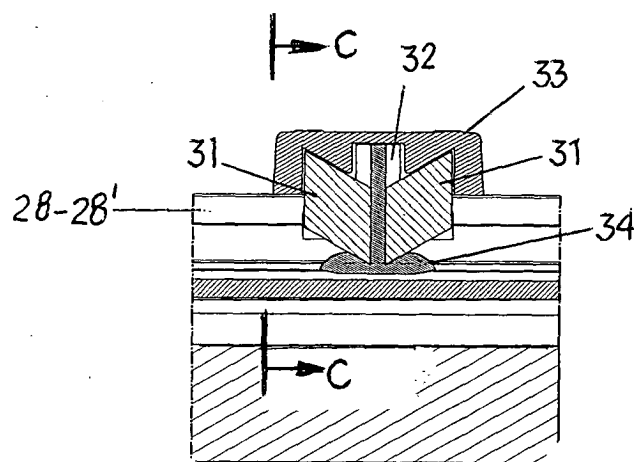


FIG. 18

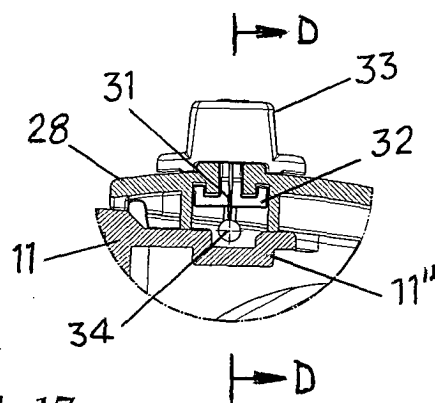


FIG. 17

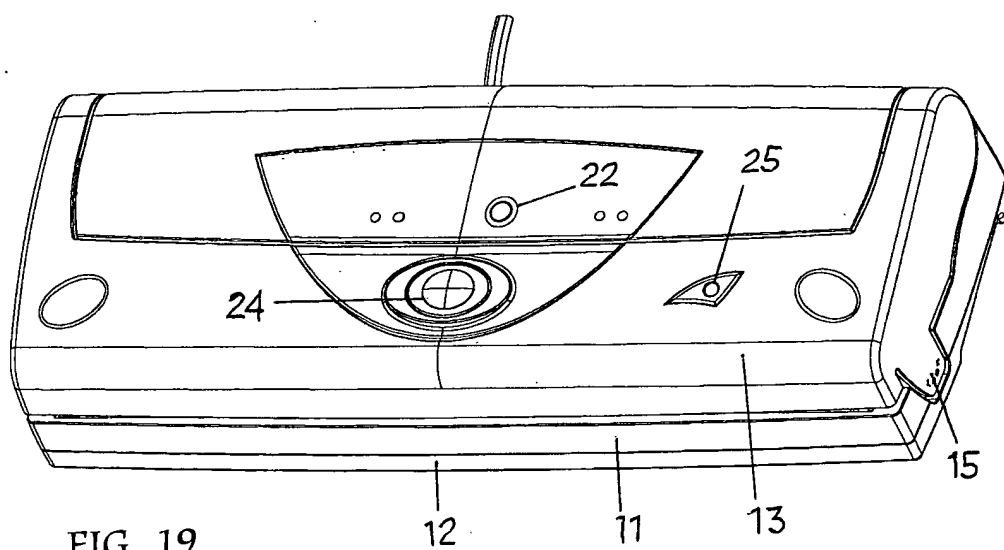


FIG. 19

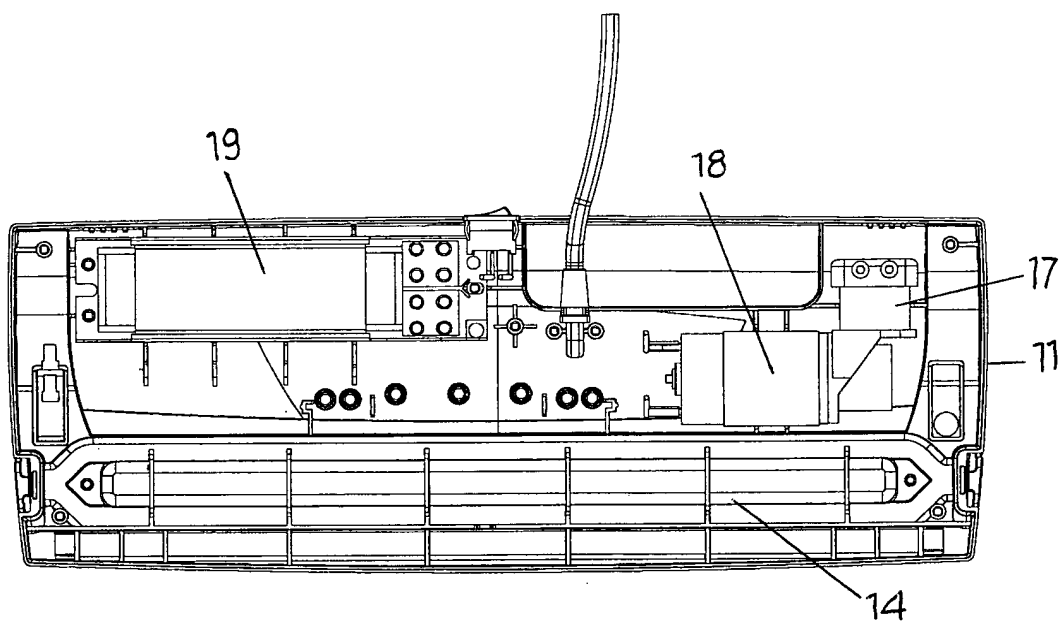


FIG. 20

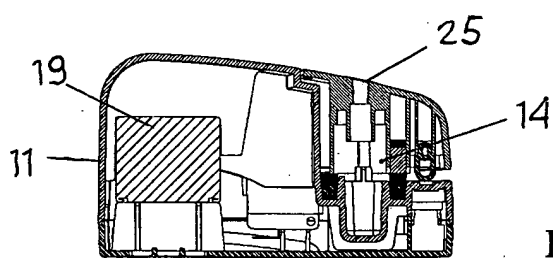


FIG. 21