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(54) Improvements in the manufacturing and assembly of cooking appliances

(57) Improvements in the manufacturing and assembly of cooking appliances, being of the type of those incorporating a plate with electric calorific sources, in such a way that in the assembly are fitted the plate, the interconnection module and the set- control for the proper operation of the appliance, the set- control incorporating the connection case and, if applicable, the clock case, as well as the possible module of control lighting, and formed because to the interconnection module (15) are directly joined the cables of the plate circuit (1), and also the connection cables to the current collector case (11), while the optional lighting module (17) takes the current directly from the connection case (11), having foreseen that the interconnection module (15), as if it were a case, is formed by the joint of two bodies (18) and (19), lying the body (18), control support, joined to the set-control (7).

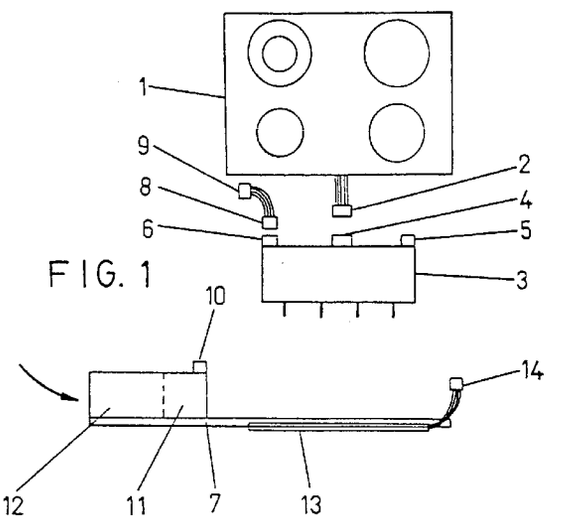

FIG. 1

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Description

OBJECT OF THE INVENTION

The following invention, as stated in the heading of this descriptive memory, refers to some improvements in the manufacturing and assembly of cooking appliances, through which it is possible not only provide the assembly of the appliance, but also the distance between controls of 56 mm. instead of the conventional 65 mm., as well as the access to the different internal elements.

The main objective of the improvements introduced is to get a system that may be adapted to different models, thus making its industrialization easier.

So, with regard to the electric components, there is a reduction of them, which means a lower cost, as well as making its assembly easier, and with regard to the set-control and the decorating appliance, its assembly in the frame of the cabinet itself is also easier.

BACKGROUND OF THE INVENTION

Conventionally, in the electric cooking plates, the electric cables are together in a connector that will be connected to the corrresponding connector of the interconnection module, in such a way that said interconnection module has the above joint connector to the the plate of the electric calorific sources, as well as a connector for the current collector and a third connector for the connection with the module of control lighting.

So, the connection case joined to the set-control disposes of the connector for the connection of the current collector towards the interconnection module and the lighting module disposes of the output of the cables with the corresponding connector to connect it, in the same way, to the interconnection module.

In this way, in the assembly of the appliance, the interconnection module is placed in the set-control and the connections from all the components are carried out, thus connecting the connector of the plate, the connector of the lighting module and the connector of the connection case to the current collector case with the corresponding connector of the interconnection module.

Considering the above described way, the problem is that, though the appliance is not provided with lighting for the controls, in the interconnection module the installation should be prepared and integrated as if the appliance had control lighting, which means an unnecessary waste of money when the interconnection module is fitted in a appliance with no control lighting but, in any case, it should always be carried out in the way described.

On the other hand, the set-control is joined through screws threaded to the conglomerate board of the working table, in a way that, if it were to be disassemblied, the disadvantage is that the fixing may later have some kind of looseness, since the screws are not threaded so tightly.

Besides, the front decorating appliance of the set-control is joined to it through two external joints by disposing of some spindles that are fitted in the corresponding spare parts located in the corresponding holes of the set-control. For that purpose, the set-control has some holes provided with some rips of a smaller diameter, in such a way that the spare part is introduced by the hole having the bigger diameter and moved to the rip of smaller diameter, having this way of joint the disadvantage that the spare parts may get easily lost.

DESCRIPTION OF THE INVENTION

In this memory is described a system of assembly for cooking appliances through which you may get a considerable economic saving, both for the lower cost of its components and its easy installation, thus offering a better reliability.

So, with regard to the components of the appliance, the joint between the calorific elements of the plate and the interconnection module is carried out in a direct way, avoiding the connectors, and the current collector cables are equally connected to the interconnection module, without needing the connectors generally used.

For that purpose, the interconnection module is formed by a parallelepipedic case provided with two halves, lying one of its bodies joined to the set-control and the other one working as a cover and having, related to the passage of the joint cables to the plate and current collector, a grooving with a couple of bent ribs which, by pressing on the cables, work as antitraction elements.

On the other hand, the module of control lighting takes the current directly from the connection case, so it is not necessary for that module to be connected to the interconnection module. And so the interconnection module may do without the required mechanism for lighting the controls, as it happens conventionally, being possible for the lighting module to be adapted to all kind of models of appliances incorporating control lighting, and just on these ones, withouth increasing costs.

As indicated previously, the interconnection module or case is formed by two halves, in such a way that one of them is fitted to the set-control and works as a control support, and the other one works as a control protection, producing an hermetic locking.

The body of the interconnection module is fitted to the set-control and works as a control support, has its major lateral sides open almost completely, which allows, once the cover has been removed, its direct access to the controls without any additional disasembling.

Also, the body of the interconnection module working as a locking appliance has, in the lateral central part of its front side, a grooving where there are two bent ribs opposite each other, they will working as antitraction elements of the connection cables located in relation to them, and the cited grooving extends in the lateral side in order to allow that to remove the cover, the cables can be moved to the cited lateral groove allowing to extract the cover with convenience. The joint of the cover form-

ing the interconexion module with the control support body is fullfilled with a lateral ribs in such a way that the ribs of a bigger lateral side lie in relation to some small projections that work as guides, and so the operator wishing to remove the cover in order to get access to the controls will just have to move his tool, such as screwdriver, among said projections working as guides so that, by pressing the ribs, the cover is released.

The fixing of the set-control to the cabinet will be carried out by means of some fixing hooks located in corresponding holes of the cover forming the set-control, and will be fixed through the corresponding screw, in such a way that, when threading that screw, one of its edges presses on the board of the working table, and so it will be possible to carry out its assembly and disassembling as many times as necessary without the fixing losing realiability.

With regard to the decorating appliances located on the set- control, it is provided with three connection points formed by some thick head studs that fit perfectly into the corresponding clips fitted to the set-control plate. Said clips to connect the decorating appliance are formed by some hooks far from each other and harpoon-shaped terminated, provided with a projection to which are fitted in the corresponding hole of the set-control, in such a way that those clips are not released accidentally.

In order to complete the description that follows and to help to a better understanding of its features, this descriptive memory comes together with a set of designs, whose figures, in an illustrative and not restricted way, show the most significant details of the invention, described in this memory.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1.- Shows an schematic view of the different components of a conventional cooking appliance, where you can see the way in which all its components are related each other, in its assembly.

Figure 2.- Shows an schematic view of the different components of a cooking appliance, where you can see the way in which they are related each other in its assembly, corresponding to the manufacturing and assembly way proposed in this memory.

Figure 3.- Shows a floor view of the cover of the case forming the interconnection module, noticing the lateral grooving terminated in a couple of bent ribs working as antitraction elements of the connection cables located in relation to them.

Figure 4.- Shows a sectioned view according to the axis I-I of the previous figure.

Figure 5.- Shows a sectioned view according to the axis II-II of figure 3, noticing the bent ribs working as antitraction elements of the connection cables located in relation to them, as well as the lateral rib defining the guiding lead for the passage of the disassembling tool, by pressing on the connecting clutch.

Figure 6.- Shows a lateral front elevation view of the body of the interconnection module fitted to the set-control, half of it sectioned, noticing how its lateral sides lie open almost completely.

Figure 7.- Shows a lateral front elevation view of the clip to fix the decorating appliance, noticing how it is fitted to the set-control into its corresponding location hole.

Figure 8.- Shows a front view of the clip to fix the decorating appliance, noticing the external hooks through which is fitted to the set-control.

Figure 9.- Shows a front view of a fixing hook of the set-control of the appliance, noticing the central hole threaded where the fixing screw is, as well as the edge projections terminated in order to press on the board of the working table.

Figure 10.- Shows a front elevation view of the way in which a fixing hook of the set-control works to fit it.

Figure 11.- Shows a front view of the decorating appliance that will be attached to the set-control externally, noticing the holes for the control axles to go through, as well as the three connection points represented with an dotted line.

Figure 12.- Shows a lateral front elevation view of the decorating appliance, noticing three thick head studs that make its fixing to the set-control possible.

Figure 13.- Shows a lateral front elevation view of the decorating appliance.

DESCRIPTION OF A PREFERRED EMBODIMENT

Considering the above mentioned figures and following the numbering adopted, we can see how conventionally the cooking plate (1) provided with the corresponding calorific sources lies with its connection cables terminated in the connector (2), while the interconnection module (3) is provided with the connector (4) where the connector (2) will be placed.

Also, the interconnection module (3) that is fitted to the set- control (7) is equally provided with the connectors (5) and (6), in such a way that in the connector (5) the connector (14) will be placed, where are terminated the cables of the module (13) of control lighting, being integrated in the interconnection module (3) the electric device that allows the lighting of the controls, and so that interconnection module 3 should always be provided with such a mechanism though it was to be assemblied in a appliance without incorporating the controls with lighting.

On the other hand, the interconnection module (3) has the current collector by the connector (6), in such a way that said connector (6) will be related to the connector (10) of the connection case (11) by means of some small whips provided with the connectors (8) and (9), related respectively with the connector (6) of the module (3) and with the connector (10) of the connection case (11).

The mains current comes to the connection case (11) that, at its time, may include the clock (12).

Nevertheless, with the improvements introduced in the manufacturing of the different components of the cooking appliance, the cables coming fromt he plate (1) are directly connected to the interconnection module (15) and also the current collector cables are directly connected to the interconnection module (15), lying in its edge the connector (16) to be fitted to the connector (10) of the connection case (11), which may equally include the clock (12).

Besides, the lighting module (17) has the current collector directly from the connection case (11), incorporating that lighting module (17) the necessary elements for its proper operation, and being completely independent from the interconnection module.

In this way, the interconnection module (15) has no elements at all for operating the control lighting, and being the lighting module (17) an independent component, it may be adapted to those models of cooking appliances incorporating lighting in the controls and just on those ones, without increasing the costs.

It is very important the economic saving with regard to the components, since the interconnection module (15) is not provided with the necessary elements for lighting the controls, and the number of connectors has been reduced, from the usual eight, to just the two needed for this proposed performance.

In order to achieve all the above, the interconnection module (15), as a parallelepipedic case, is formed by the joint of two bodies (18) and (19) (see figures 3, 4, 5 and 6), lying the body (18) fitted to the set-control (7) and working as a control support, in such a way that its lateral sides lie open almost completely in order to allow, once the cover (19) has been removed, the access to the controls.

The body (19) forming the interconnection module (15) works as a cover to protect the controls and in its front side has, central and laterally, a grooving (20) in relation to which it has a couple of bent ribs (21) among which are the connection cables, working as antitraction elements and not being necessary the use of connectors.

The groove (20) of the front side of the cover (19) extends laterally and said cover is provided with a couple of clutches (23) and (24) in every lateral side to carry out the connection to the body (18). The couple of clutches (23) are located in some projections (22) working as guides throughout the whole height of the lateral side of the cover (19).

In this way, the cover (19) will be lying with its lateral side corresponding to the clutches (23) in the most internal side of the appliance, in such a way that, when an operator should operate the interconnection module (15), he may release the cover (19) simply by introducing among the guides (22) a tool, such a screwdriver, to easily have access to the clutches (23) and release them. Once the cover (19) has been released, the controls will be easily accessible.

The fixing of the interconnection module (15) to the set-control (7) is carried out through some connecting leads (39) that bend in its assembly and center the interconnection modules (15) with the controls of the set-control (7). If it were necessary, to disassemble the interconnection module (15) from the set-control (7), it will be enough to press on the connecting leads (39) and remove them from the set-control (7).

When releasing the cover (19), the cables placed in relation to the couples of ribs (21) will be moved to the open lateral side of the cover, this one being removed freely, once the ribs (23) and (24) have been also released.

The fixing of the set-control (7) to the cabinet is carried out by menas of some hooks (29) located in some holes of the set-control, to which is threaded the corresponding fixing screw (32), in the central hole (30), in such a way that, when pressing on the fixing screw (32), the edge projections (31) of the hook (29) touch the board (33) of the working table. This way of fixing allow the set-control can be assembly and disassembly without to lose fiability in the fixing, because the hooks (29) making the fixing when touch the board (33) without damaging any of the elements in contact.

The hooks (29) are guided for its movement in the assembly and disassembling of the set-control (7) by means of some connecting leads (40) registered in the set-control (7).

Also, for the fixing of the decorating appliance (35) on the set- control (7), this one disposes of some holes (26) where are fitted some clips (25), which are provided with some hooks (27) with some projections (28), in such a way that those hooks (27) will be introduced by pressure into the corresponding hole (26) of the set-control (7) till it lies in relation to the projections (28) of the hooks, thus obtaining a very reliable connection and avoiding the possible loss of the additional clips (25).

In order to carry out the connection between the decorating appliance (35) and the set-control (7), the decorating appliance (35) has, internally, some iron plates (37) terminated in some thick head studs (38), which will be introduced by pressure into the central axial hole (34) of the clips (25).

The decorating appliance (35) is provided with the corresponding holes (36) for the passage of the axles of the controls located in the interconnection module (15).

When manufacturing and assembling the cooking appliances in the way above described, the distance between the controls is 56 mm. instead of the conventional 65 mm., apart from getting an important saving, both due to the lower cost of the components and the little time wasted for its installation, which means a better reliability and an easier access to the components.

Claims

1. IMPROVEMENTS IN THE MANUFACTURING AND ASSEMBLY OF COOKING APPLIANCES,

being of the type of those incorporating a plate with electric calorific sources, in such a way that in the assembly are fitted the plate, the interconnection module and the set- control for the proper operation of the appliance, incorporating the set-control the conection case and, if applicable, the clock case, as well as the possible module of control lighting, mainly characterized because to the interconnection module (15) are directly joined the circuit cables of the plate (1), as well as the connection cables to the current collector case (11), while the optional lighting module (17) takes the current directly from the connection case (11), having foreseen that the interconnection module (15), as if it were a case, is formed by the joint of two bodies (18) and (19), being the body (18), control support, joined to the set-control (7), while the body (19) works as a cover and control protector and joins to the body (18) by means of two couples of clutches (23) and (24) located laterally as per their bigger sides, with the special feature that the set-control (7) is fitted to the appliance by means of some hooks (29) which attach it on the board of the working table (33), while the decorating appliance (35) is fitted to the set- control (7) by means of some clips (25) joined to the set-control together with their corresponding thick head studs (38) close to the internal side of the decorating appliance (35).

2. IMPROVEMENTS IN THE MANUFACTURING AND ASSEMBLY OF COOKING APPLIANCES, according to claim 1, characterized because the interconnection mnodule (15) is formed by the joint of two bodies (18) and (19) having the body-cover (19) lateral and centrally to its front side a grooving (20) which extends to its lower sides, in a way that in relation to said grooving (20) lies a couple of bent ribs (21) opposite each other in relation to which the connection cables are located, working as antitraction elements, having foreseeen that the joint of the body (19) to the body (18), control support, is carried out by means or two couples of clutches (23) and (24), each one located in each bigger side, in such a way that the clutches (23) corresponding to the internal side in its assembly are located among some small projections (22) working as guides for the corresponding disassembling tool.

3. IMPROVEMENTS IN THE MANUFACTURING AND ASSEMBLY OF COOKING APPLIANCES, according to claim 1, characterized because the joint of the set-control (7) to the cabinet is carried out by means of some hooks (29) provided with some ribs (31) internally, in such a way that by pressing on the corresponding screw (32), going through a hole (30) threaded of the hook (29) carries out the fixing by touching those ribs (31) against the board (33) of the working table where the plate is attached.

4. IMPROVEMENTS IN THE MANUFACTURING AND ASSEMBLY OF COOKING APPLIANCES, according to claim 1, characterized because the joint of the decorating appliance (35) to the set-control (7) is carried out by means of some clips (25) fitted to the set-control into the corresponding holes (26), those clips being formed (25) by some hooks (27) provided with a projection in relation to which lies the set-control, and also provided with an axial central hole (25) where the thick head studs (38) are attached, close to the decorating appliance.

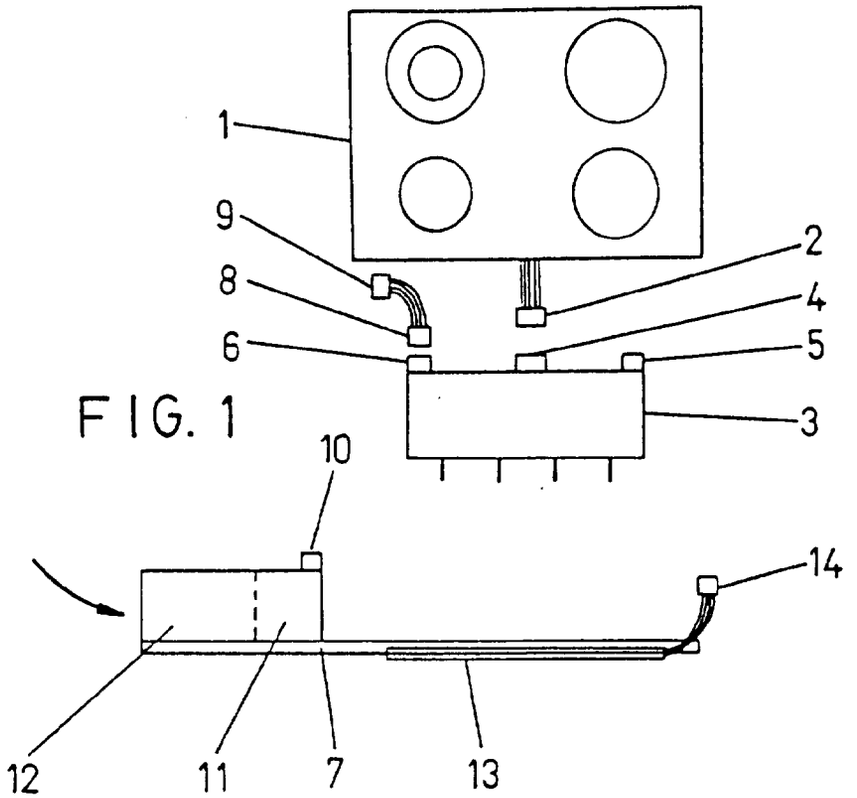

FIG. 1

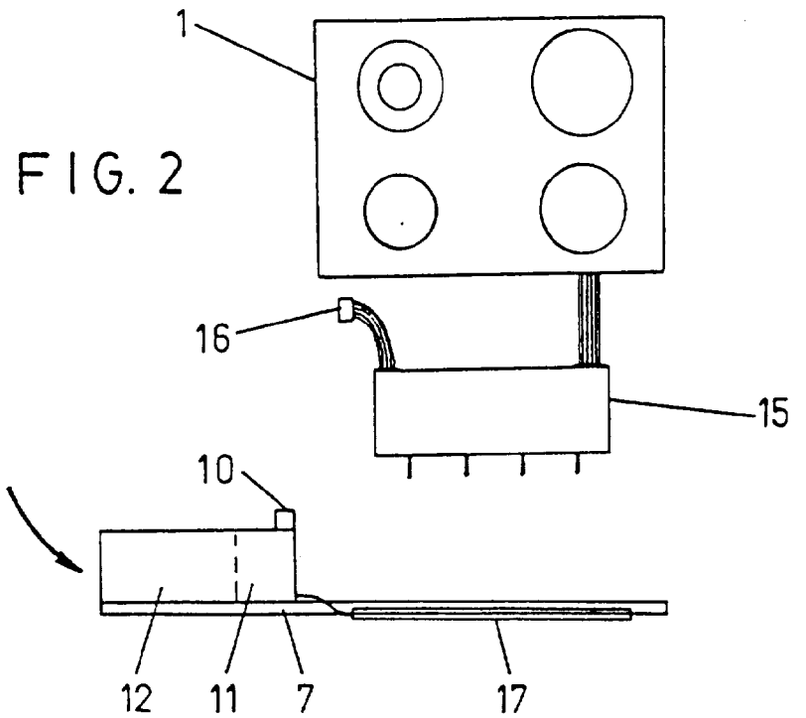

FIG. 2

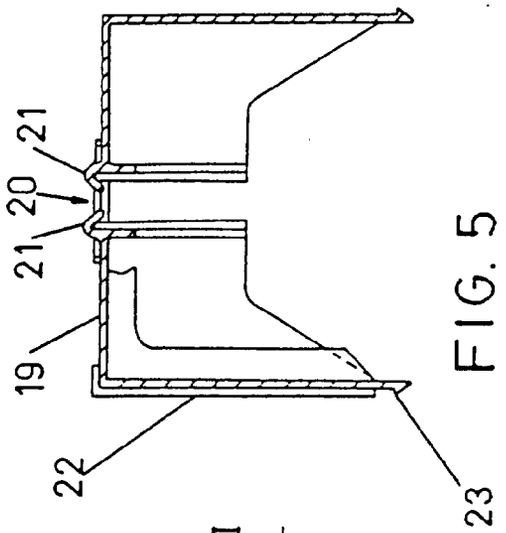

FIG. 5

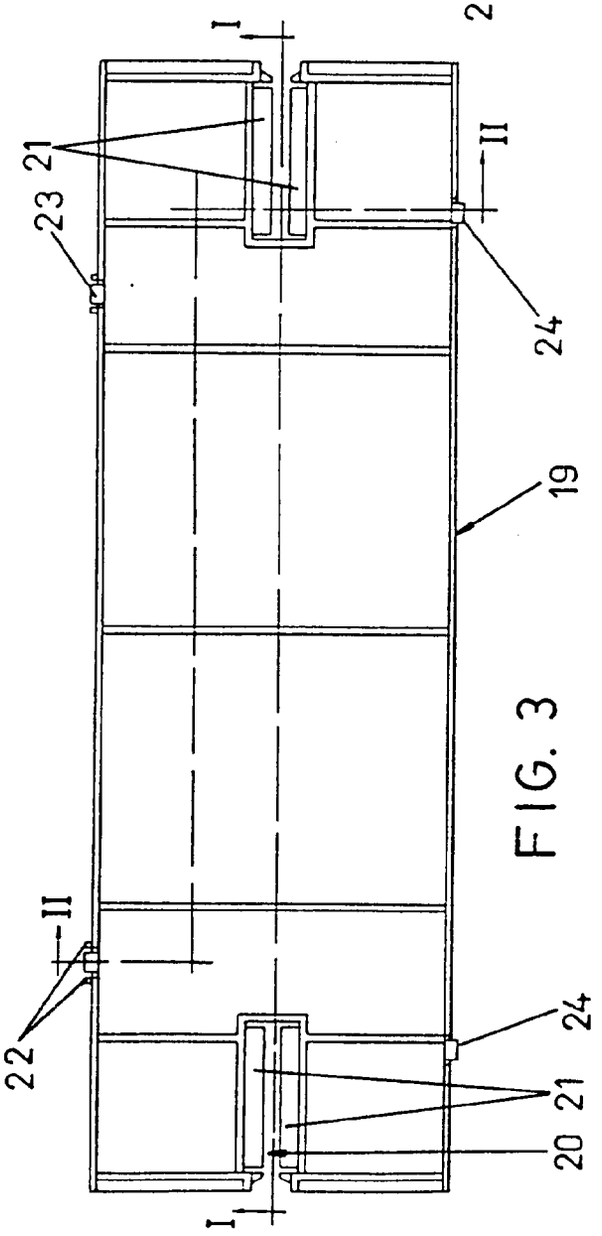

FIG. 3

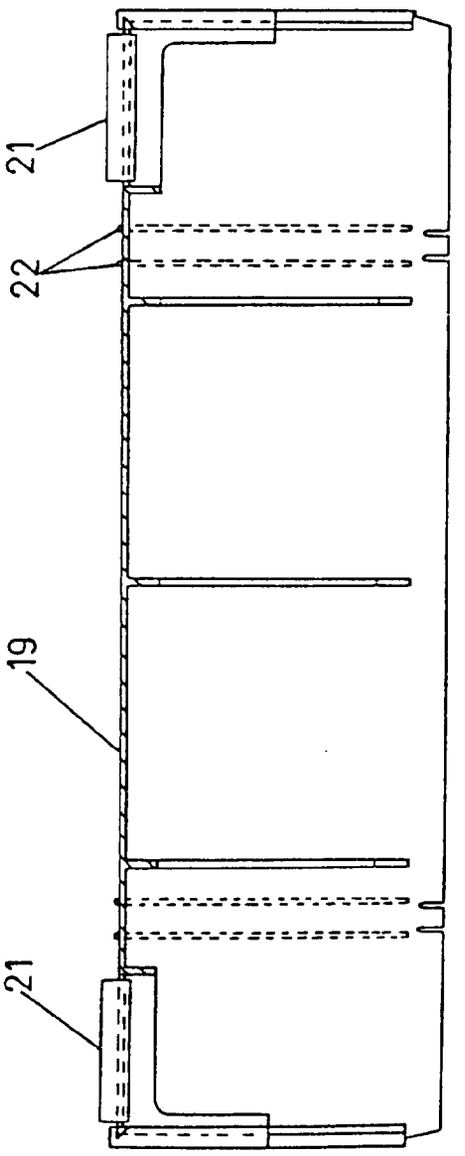

FIG. 4

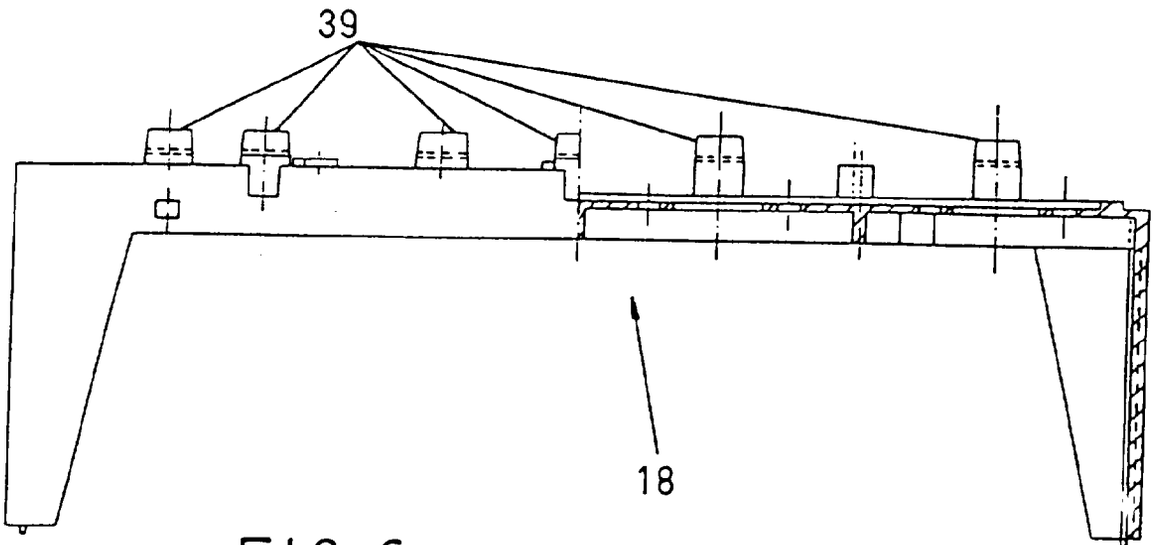

FIG. 6

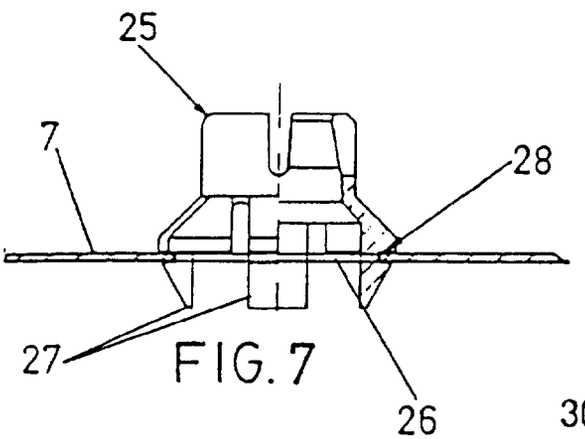

FIG. 7

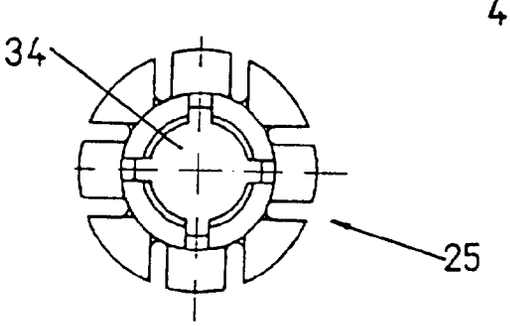

FIG. 8

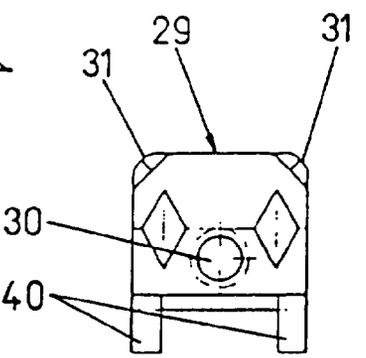

FIG. 9

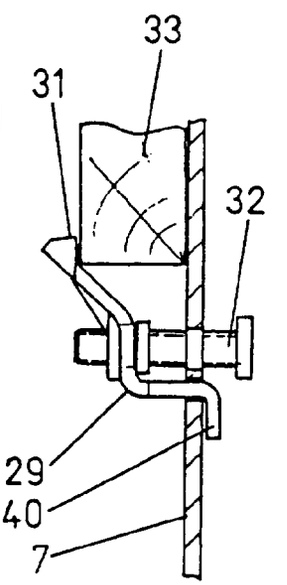

FIG. 10

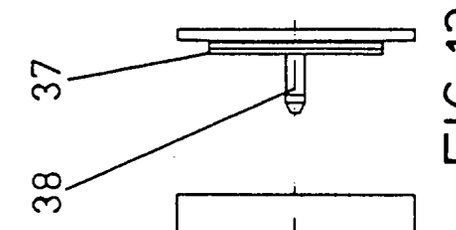

FIG. 13

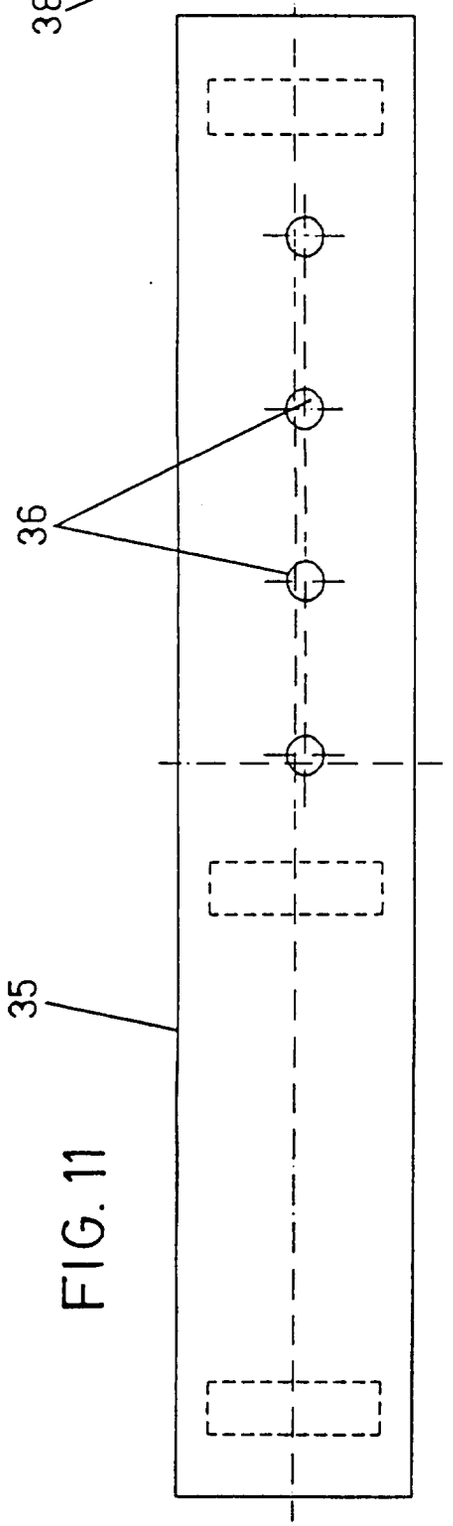

FIG. 11

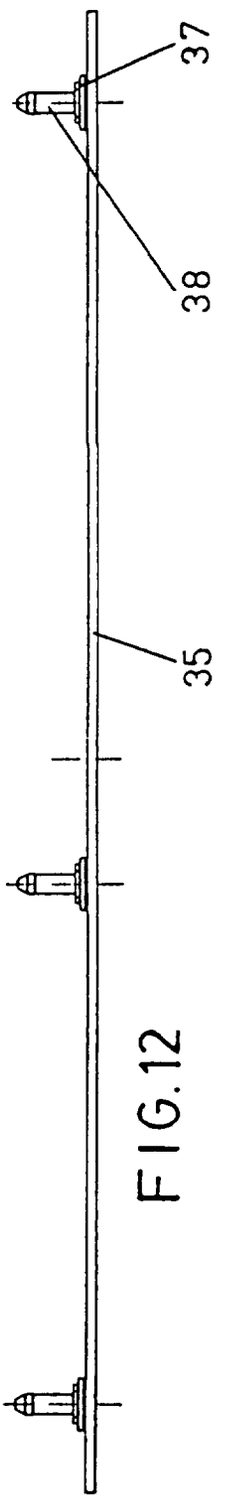

FIG. 12