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(72) Inventor: **Fumagalli, Silvano**
20052 Monza (MI) (IT)

(74) Representative: **Mittler, Enrico**
c/o Mittler & C. s.r.l.,
Viale Lombardia, 20
20131 Milano (IT)

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(71) Applicant: **CANDY S.p.A.**
I-20052 Monza (Milano) (IT)

(54) **Food cooking device**

(57) A food cooking device (2) with cabinet (200) provided with a control panel (1) comprising at least one knob (3, 4) associated with means (19) for the operation of the cooking device (2) startable by means of rotation of the knob (3, 4) is described. The knob (3, 4) has a substantially rectangular shape and it is provided with a push-pull device (100) that allows its longitudinal movement from a first position (A) in which the knob (3, 4) is substantially lined up with the external front profile of the control panel (1) and inserted in a substantially rectangular opening (70) to a second position (B) in which the

knob (3, 4) projects about the external front profile of the control panel (1) and vice-versa. The knob (3, 4) is rotatable as regards a longitudinal axis of rotation (AS) passing through the geometric centre of the same in the second position (B) in such a way so as to determine the operation of the same cooking device (2). The rectangular opening (70) for the housing of the knob (3, 4) is provided with a projection (71) and the knob (3, 4) comprises a cavity (72) capable to line up with the external profile of the projection (71) so as to determine a single position for the insertion of the knob (3, 4) in the opening (70).

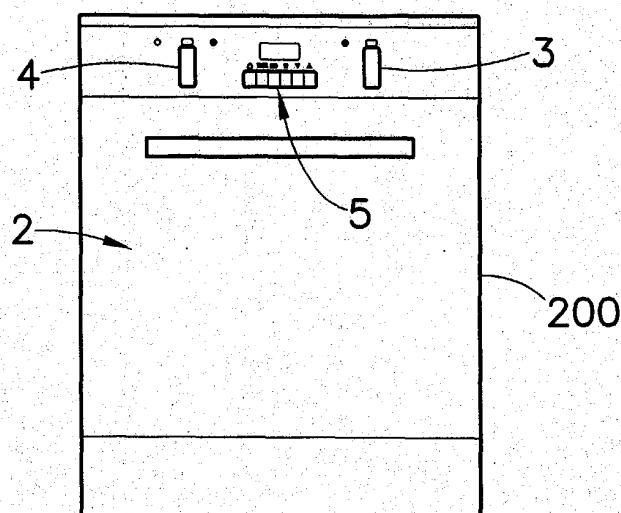


FIG. 1

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Description

[0001] The present invention refers to a food cooking device.

[0002] There are known food cooking devices, generally food ovens made up of one cabinet provided with a control panel located above a door for the opening of the oven; the control panel comprises knobs suitable to the operation of the same oven.

[0003] In some cases the food ovens are inserted within kitchens provided with a cooking hob with gas burners or electrical plates located on the top of the same; the food oven is situated under the cooking hob and is provided with a door for the opening on the front of the kitchen. Between the cooking hob and the door the control panel comprising knobs suitable to the operation of the same oven is generally located; it is possible that the same control panel also comprises knobs for the operation of the gas burners or of the electrical plates of the cooking hob in kitchens in which such knobs are not provided at a side of the cooking hob.

[0004] The knobs for the operation of the oven are generally two, one of which is assigned to the selection of the desired temperature and the other one to the type of operation of the same oven. Said knobs have a substantially round shape and project from the external profile of the control panel that is lined up with the external profile of the entire front panel of the cabinet or of the kitchen.

[0005] Besides the knobs, buttons that are suitable to the programming of the duration of the cooking in the food oven can also be provided.

[0006] In the Italian Patent application No. MI2000U000652 of 16 November 2000, a food oven with cabinet provided with at least one control panel comprising a knob associated with a device for the operation of the oven startable by means of turning of the knob is described. The knob is provided with a push-pull device that allows its longitudinal movement from one first position in which it is substantially lined up with the external front profile of the control panel, to a second position in which the knob projects from the external front profile of the control panel and vice-versa. Said knob is rotatable to the second position so as to cause the operation of the same oven.

[0007] However in said oven there is not provided a single position for the insertion of the knob in the control panel corresponding to a non-operating condition of the oven; this can cause problems in the case in which the knob gets inserted in a wrong position and with food oven operating.

[0008] In view of the state of the art described, scope of the present invention is to provide a food cooking device that overcomes the aforesaid disadvantage.

[0009] According to the present invention, such scope is attained by means of a food cooking device with cabinet provided with control panel comprising at least one knob with substantially rectangular shape associated

with means for the operation of the cooking device that are startable by means of rotation of the knob, said knob being provided with a push-pull device that allows its longitudinal movement from a first position in which the knob is substantially lined up with the front of the control panel and inserted within the external profile in a substantially rectangular opening to a second position in which said knob projects from the external front profile of the control panel and vice-versa, said knob being rotatable about a longitudinal axis of rotation into said second position in such a way so as to determine the operation of the same cooking device, characterised in that said axis of rotation of the knob passes through the geometric centre of the same and in that said rectangular opening for the housing of the knob is provided with a projection and said knob comprises a cavity capable to line up with the external profile of said projection so as to determine a single position for the insertion of the knob in said opening.

[0010] Such food cooking device is suitable to be inserted in a kitchen provided with a cooking hob with gas burners and/or electrical plates.

[0011] The characteristics and the advantages of the present invention will become evident from the following detailed description of an embodiment thereof, that is illustrated as a non limiting example in the enclosed drawings, in which:

Figure 1 is a front view of a food cooking device provided with a cabinet according to an embodiment of the present invention;

Figure 2 is a magnified view of the control panel of the cabinet in Figure 1;

Figure 3 is a sectioned view according to a vertical plane of one of the knobs of the control panel in Figure 1 with relative push-pull device in normal position;

Figure 4 is a view sectioned according to a vertical plane of the knob in Figure 3 in partially extracted position and of the relative push-pull device;

Figure 5 is a top view of a part of the push-pull device in Figure 4;

Figure 6 is a front view of an insert of the knob with push-pull device in Figure 2;

Figure 7 is a view sectioned according to the line VII-VII of the plastic insert relative to the push-button panel in Figure 1;

Figure 8 is a view sectioned according to the line VIII-VIII of the plastic insert of the push-button panel in Figure 1;

Figure 9 is a view sectioned according to the line IX-IX of the plastic insert relative to a knob in Figure 1;

Figure 10 is a view sectioned according to the line X-X of the plastic insert relative to a knob in Figure 1; Figure 11 is a front view of the single control panel of the cabinet of the oven according to a variation of the embodiment of the present invention.

[0012] With reference to Figure 1 a food cooking device is shown, for instance an oven 2 with a cabinet 200 provided with a control panel 1 containing means for the operation of the oven 2. Said means, better visible in Figure 2, comprise a first knob 3 for the selection of the different types of operation of the oven, a knob 4 to select the operating temperature of the oven and a push-button panel 5 comprising various buttons for the programming of the duration of the operation of the oven, for instance the length of cooking of a food in the oven, and other functions.

[0013] The knobs 3 and 4 are substantially rectangular and they are each provided with a push-pull device 100 that allows their longitudinal movement from a first position in which they are substantially lined up with the external front profile of the control panel 1, visible in Figure 3, to a second position in which they project from the external front profile of the control panel 1, visible in Figure 4, and vice-versa. The single knob 3 with relative push-pull device 100 will be described hereinafter.

[0014] The knob 3, shown in greater detail in Figures 3 and 4, is integral with an element 6 provided with projecting ends 7 and with a body 8 that is part of push-pull device 100. Said body 8 is provided with a concave part 9 that is pierced on one end 10; inside of it an element 11 slidably inserted and a spring 12 is also inserted that are located between the element 11 and the other closed end 13 of the concave part 9. The element 11 is provided on its top with a heart-shaped slot 14 in which the bottom end 15 of a pin 16 can slide; the top end 17 of the pin 16 can slide in a rectilinear guide 18 obtained on a top surface of the concave part 9 of the body 8 and transversal to the same. The element 11 is integral with means 19, known per se, that allow, by means of the rotation of the knob 3, the selection of the type of operation of the oven 2 desired by an operator. There is also present a circular insert 20, visible in Figure 6, provided with symbols engraved on its peripheral round rim in such a way so as to indicate the type of operation of the oven 2 selected according to the rotation of the knob 3.

[0015] The knob 3 is inserted within a rectangular opening 70 of the control panel 1 that is provided with a projection 71, preferably on a smaller side 73 (that is on one of the two sides with minor length) of the rectangular opening 70; in addition, said projection 71 is preferably arranged on the bottom in the rectangular opening 70. The rectangular knob 3 has a cavity 72 on a smaller side of the rectangle that is suitable to line up with the external profile of the projection 71. In this way the knob 3, once it is out of the opening 70, can enter again only in the position in which the cavity 72 is lined up with the external profile of the projection 71 so as to determine a single position for the insertion of the knob 3 in the opening 70. There is preferably provided a covering element 300 for the knob 3 having the same size of the opening 70 in order not to make visible from the outside, both the cavity 72 of the knob 3 and the projection 71 of the opening 70.

[0016] In Figure 3 the knob 3 is shown in normal position almost lined up with the external profile of the control panel 1. The spring 12 is compressed and the bottom end 15 of the pin 16 is arranged in a position A inside the heart-shaped slot 14 of the element 11, that is in proximity of an end of the heart-shaped slot 14.

[0017] By operating on the knob 3 the pin 16 gets minimally moved toward the right looking at Figure 3; in this way the bottom end 15 of the pin 16 gets unlocked from the position A and it can freely slide in the heart-shaped slot 14. The action of extension of the spring 12 that thrusts toward the left the body 8 allows the top end 17 of the pin 16 to slide into the guide 18 and the bottom end 15 of the same pin 16 to slide into the heart-shaped slot 14; at the end of stroke the pin 16 is in a position B, opposite to position A, in proximity of one end of the heart-shaped slot 14, as visible in Figures 4 and 5. The movement of the body 8 causes the movement of the knob 3 to an extracted position, therefore projecting from the external profile of the control panel 1 as visible in Figure 4. In such position the knob 3 is free to rotate and thus to select through means 19 the desired type of operation of the oven. The element 6 like a plug closes the housing of the knob owing to its projections 7 that engage with the inside wall of the control panel 1 where an insert 50 is located; in this way the inlet of dust or other material in the housing of the push-pull device 100 is prevented.

[0018] The rotation of the knob 3 causes a rotation of the round insert 20 in such a way that, through a transparent window 21 obtained on the control panel above the knob 3, the type of operation of the oven that was selected according to the rotation of the same knob is visible. The rotation of the knob 3 takes place according to a longitudinal axis AS passing through the geometric centre G of the knob 3.

[0019] In order to take the knob 3 back to its normal position in Figure 3, that is inside the opening 70, it is necessary to rotate the same knob 3 so as to bring it back to its initial condition, that is with the cavity 72 lined up with the external profile of the projection 71, and to operate on the same so as to compress the spring 12 and to make the bottom end 15 of the pin 16 slide on the heart-shaped slot 14 in order to bring it back to the locking position A in Figure 3. With the contouring of the knobs 3 and 4 non-round, that cannot be activated in seat, the accidental activation of the oven due to casual movements of the operator is thus prevented.

[0020] In Figures 7-10 the sections of the plastic inserts 50 and 60 in Figure 1 respectively relative to the knobs 3 and 4 and the push-button panel 5 are shown. Said inserts 50, 60 allow an easy insert and axial sliding of the knobs 3 and 4 and of the push-button panel 5 in the respective housings provided in the control panel 1; in this way the problems concerning the greater precision in making the housings of the control panel 1 provided for the means 3, 4, 5 due to the non-round contouring and therefore with greater size engagement are

prevented. The projections 71 are obtained in said plastic inserts 50 and 60.

[0021] Above the push-button panel 5 and on the side of the knobs 3 and 4 symbols indicating the functions carried out by such operation means of the oven are provided, as visible in Figure 1. The control panel 1 is generally of glass with a painted bottom and such symbols are made on the glass by means of serigraphy. As an alternative to the serigraphy on glass, as a variation of the embodiment of the present invention, it is possible to make plastic inserts 51 and 61 respectively relating to the knobs 3 and 4 and the push-button panel 5 that as compared with the inserts 50 and 60 are provided with a plastic part where the aforesaid symbols are engraved, as visible in Figure 11.

[0022] The oven above described can be of the independent type or inserted in a kitchen with gas or electrical cooking hob.

Claims

1. Food cooking device (2) with cabinet (200) provided with a control panel (1) comprising at least one knob (3, 4) with substantially rectangular shape associated with means (19) for the operation of the cooking device (2) startable by means of rotation of the knob (3, 4), said knob (3, 4) being provided with a push-pull device (100) that allows its longitudinal movement from a first position (A) in which the knob (3, 4) is substantially lined up with the external front profile of the control panel (1) and inserted in a substantially rectangular opening (70) to a second position (B) in which said knob (3, 4) projects from the external front profile of the control panel (1) and vice-versa, said knob (3, 4) being rotatable about a longitudinal axis of rotation (AS) in said second position (B) so as to determine the operation of the same cooking device (2), **characterised in that** said axis of rotation (AS) of the knob (3, 4) passes through the geometric centre of the same and **in that** said rectangular opening (70) for the housing of the knob (3, 4) is provided with a projection (71) and said knob (3, 4) comprises a cavity (72) capable to line up with the external profile of said projection (71) in such a way so as to determine a single position for the insertion of the knob (3, 4) in said opening (70).

2. Device according to claim 1, **characterised in that** said projection (71) is located on a shorter side (73) of the rectangular opening (70).

3. Device according to claim 1, **characterised in that** said projection (71) is located on the bottom part of the rectangular opening (70).

4. Device according to claim 1, **characterised in that**

it comprises a covering element (300) of the knob (3, the 4) having the same size as the opening (70).

5. Device according to claim 1, **characterised in that** said push-pull device (100) comprises a longitudinally mobile part (8, 9, 18) associated with the knob (3, 4), a longitudinally fixed part (11, 14) associated with said means (19) for the operation of the cooking device (2) and a pin (16), said mobile part (8, 9, 18) comprising a guide (18) in which one end (17) of said pin (16) can slide and said fixed part (11, 14) comprising a heart-shaped slot (14) in which the other end (15) of said pin (16) can slide said heart-shaped slot (14) being in locking engagement with said pin (16) in said first (A) and said second (B) position, said mobile part (8) being connected with said fixed part (11) by means of elastic means (12) that by extending determine said second position (B) of the knob (3, 4).

6. Device according to claim 5, **characterised in that** it comprises a first (4) and a second knob (3) each one provided with said push-pull device (100), said first knob (4) being suitable to select the desired cooking temperature of the device (2) and said second knob (3) being suitable to select the type of operation of the same oven.

7. Device according to claim 1, **characterised in that** said control panel (1) is on the front of the cabinet (200) and it comprises plastic inserts (50, 51) interposed between said opening (70) and said knobs (3, 4) for the location of the latter, said inserts (50, 51) comprising said projection (71).

8. Device according to any one of the previous claims, **characterised in that** said food cooking device is a food oven and it is inserted within a kitchen provided with cooking hob on the top.

9. Device according to claim 8, **characterised in that** said cooking hob is a gas hob.

10. Device according to claim 8, **characterised in that** said cooking hob is electrical.

11. Device according to claim 1, **characterised in that** said projection (71) is inserted on the top part of the rectangular opening (70).

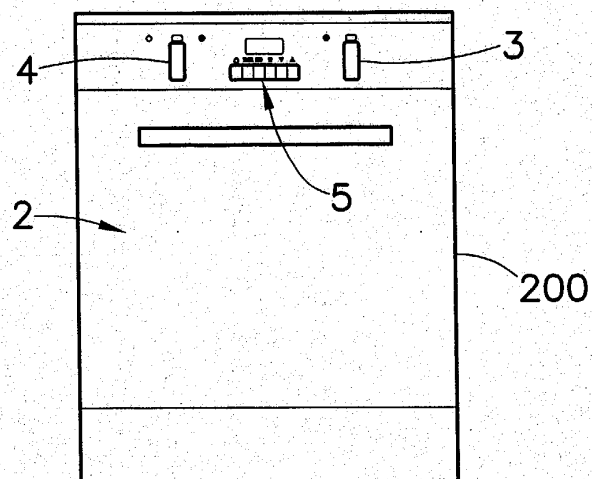


FIG. 1

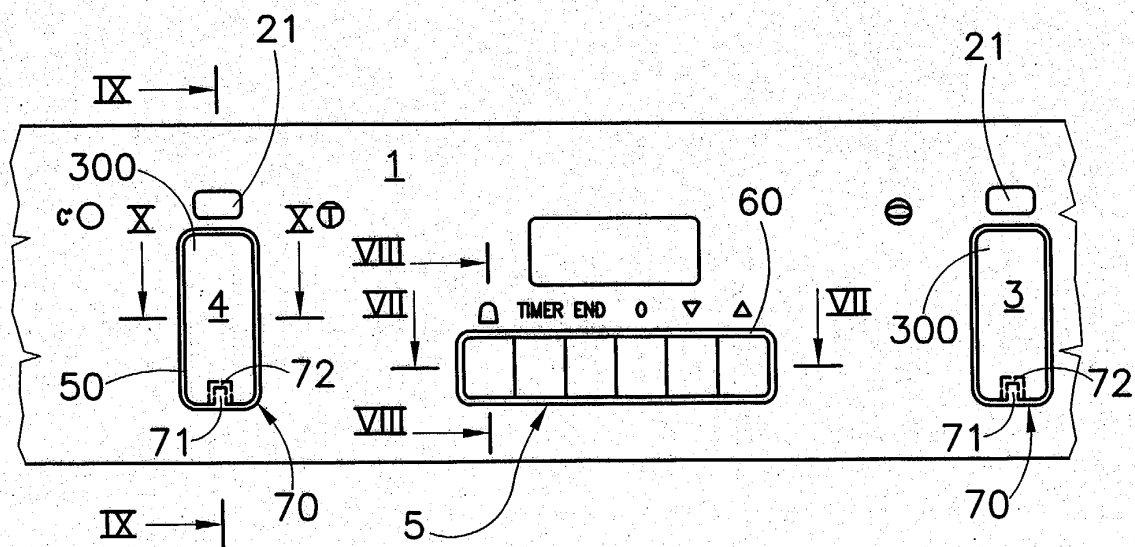


FIG. 2

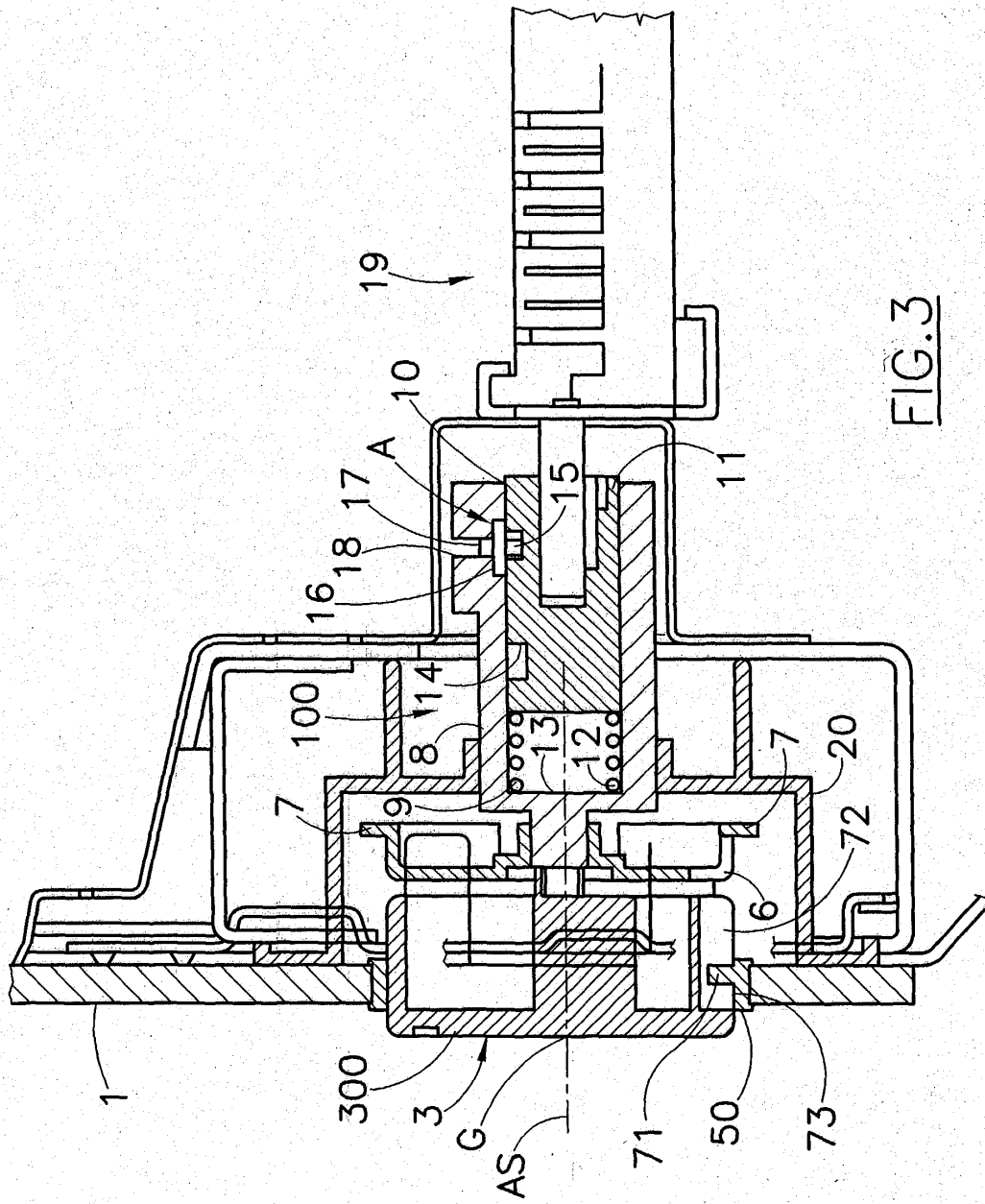


FIG. 3

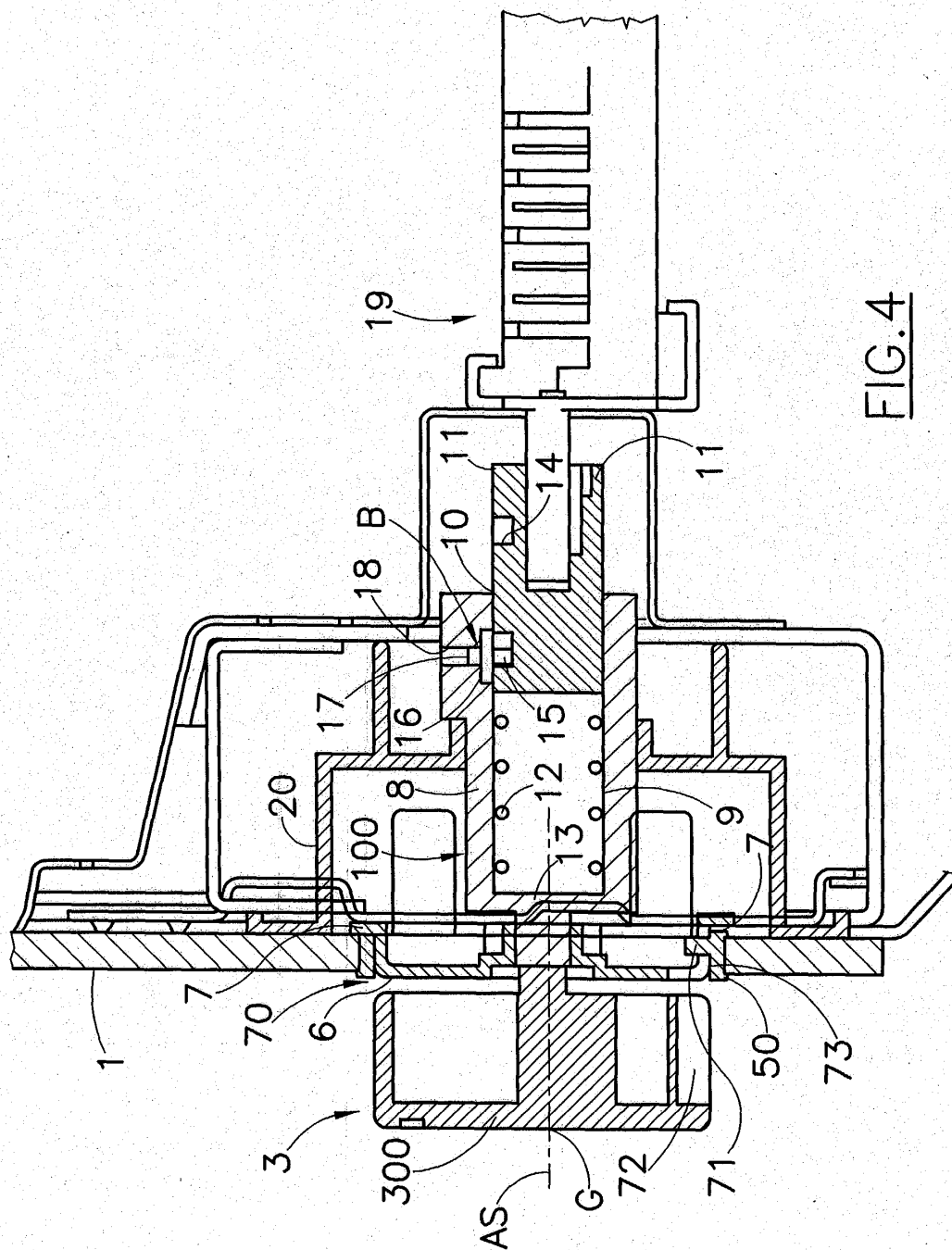


FIG. 4

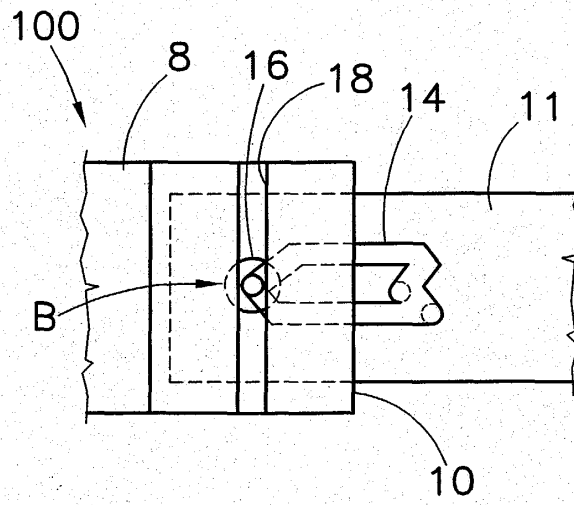


FIG. 5

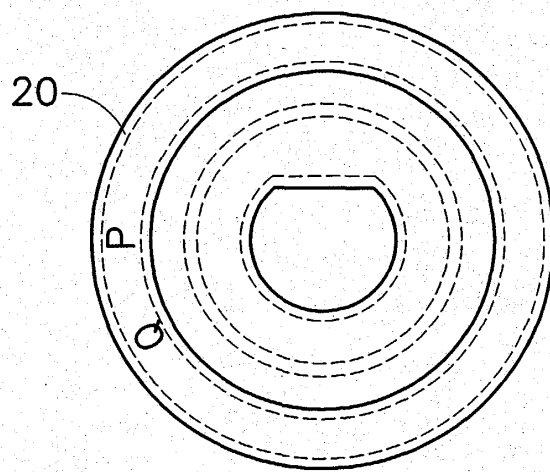


FIG. 6

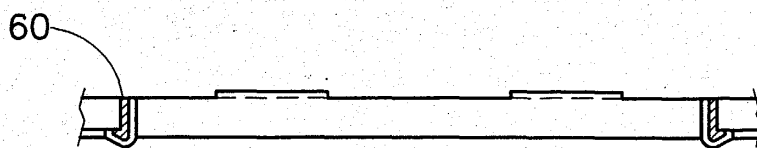


FIG. 7

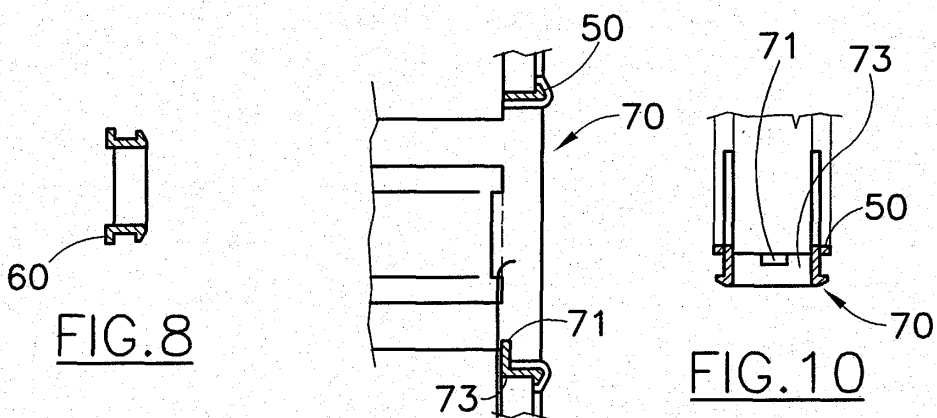


FIG. 9

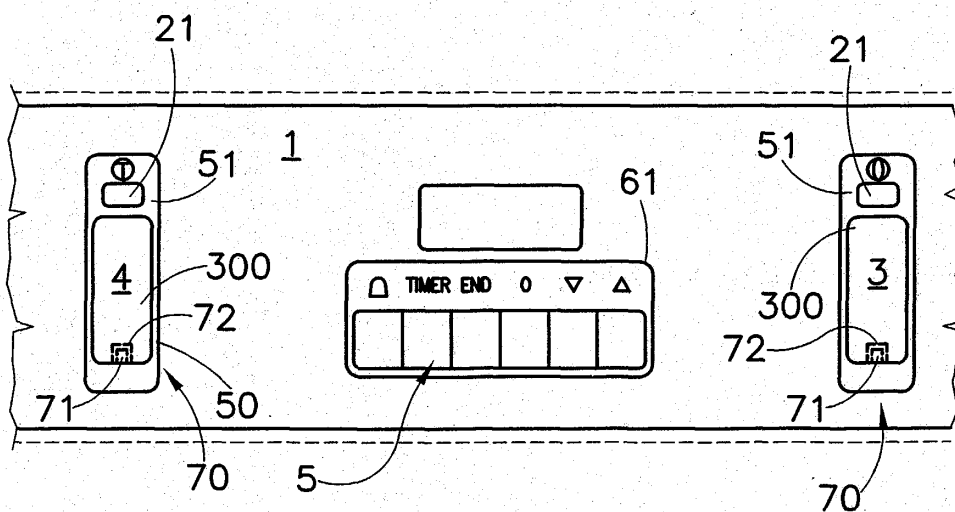


FIG. 11