



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**12.09.2007 Bulletin 2007/37**

(51) Int Cl.:  
**B02C 18/30 (2006.01)**

(21) Application number: **07004557.0**

(22) Date of filing: **06.03.2007**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA HR MK YU**

(72) Inventor: **Salati Chiodini, Andrea**  
**40138 Bologna (IT)**

(74) Representative: **Negrini, Elena**  
**Agazzani & Associati S.r.l.**  
**Studio Ing. Giampaolo Agazzani**  
**Via dell'Angelo Custode 11/6**  
**40141 Bologna (IT)**

(30) Priority: **07.03.2006 IT bo20060164**

(71) Applicant: **LA MINERVA DI CHIODINI MARIO S.R.L.**  
**40138 Bologna (IT)**

(54) **Safety device for meat grinder and similar**

(57) A safety device for meat grinder comprises at least a body base (2) containing an actuating motor for an auger means (3) housed in a cavity (4) having an external end having at least an operating member (5) blocked by a removable ring (6).

The device (1) comprises a detector means (7) mobile between two end conditions of activation (A) and deactivation (D) in which it places an excitation means (8) respective inwardly and outwardly the detecting beam

of a respective sensor (9) fit to activate the operation of the motor in the activation condition in which it finds the excitation means and vice versa.

Such detector means (7) is placed in the activation condition by activation means (50) when the operating member (5) is locked by the metal ring (6) and is positioned in the deactivation condition by elastic means (10) in absence or deficiency of at least one between the operating member (5) and the clamping of the metal ring (6).

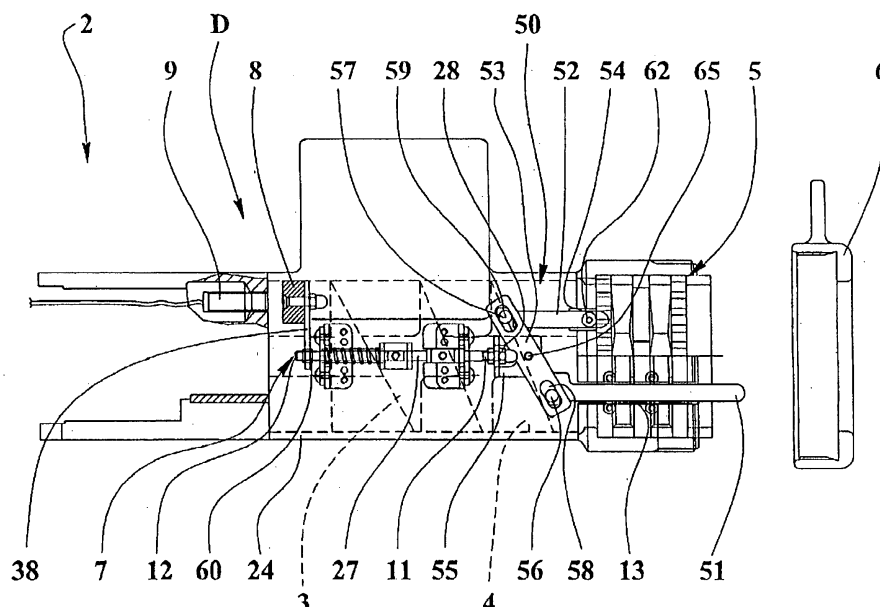


**FIG.1**

## Description

**[0001]** The present invention refers to equipments for preparing food and kitchen particularly refers to a safety device for meat grinder and similar apparatuses.

**[0002]** There are known meat grinder devices having an auger, whose external end has a rotary knife, actuated by a motor and housed in the cavity of a tubular body closed by an extruder or by an operating member which, in the assembly condition, faces the knife and fixes the auger in its own cavity.

**[0003]** The auger, rotating, pushes the meat introduced in the tubular body through its hopper, towards the knife and through the disc holes so becoming grinded.

**[0004]** The disc, the knife and the auger are bound to the tubular body by means of a fixing metal ring.

**[0005]** A disadvantage of such known meat grinder consists in that, if they are actuated without clamping of the fixing metal ring, causes the fall of the disc, the knife and/or the auger exposing the operator to damages and injuries.

**[0006]** Some known meat grinder, are provided with a magnetic sensor allowing the operation only when the presence of a fixed magnet to the removable tubular body is found.

**[0007]** Also this last type of the known meat grinder provides risks of falls and damages and injuries to operators when the clamping of the metal ring is omitted.

**[0008]** An object of the present invention is to propose a safety device for meat grinder and similar device fit to prevent its operation when the operating member is not fixed to the meat grinder by means of the metal ring.

**[0009]** A further object is to propose a device fit to use an eventual sensor already present, for other objects, in the known meat grinder.

**[0010]** A further object is to propose a device preventing the motor operation also in absence of the tubular body of the meat grinder.

**[0011]** The characteristics of the invention are evidenced in the following with particular reference to the annexed drawings in which:

- figures from 1 to 4 illustrate, seen from the bottom of the safety device for meat grinder or similar, object of the present invention, associated to a meat grinder partially represented and respectively at separation condition of a fixing metal ring, at separation condition of an operating member, at complete connection condition and separation condition of a tubular body from the remaining part of the meat grinder;
- figure 5 illustrates a lateral partially sectioned view of the tubular body and in which some parts of the device, have been removed;
- figure 6 illustrates a section view according to the plan VI - VI of figure 5;
- figure 7 illustrates a lateral and partial view of the device of figure 1;
- figures 8 and 9 illustrate partially sectioned views

from corresponding radial plans of an end portion of the meat grinder associated to corresponding tracer point members of the device of figure 1.

**[0012]** With reference to the figures from 1 to 9, 1 indicates the safety device for a meat grinder and similar, object of the present invention.

**[0013]** The meat grinder comprises a base body 2 containing an actuating motor for an auger means 3 housed in the cavity 4 delimited by a wall 24 of a removable tubular body.

**[0014]** The tubular body has a removably connected inner end to the base body 2.

**[0015]** Alternatively, the invention provides that the cavity 4 can be obtained in the body base 2 whose portion constitutes the wall 24.

**[0016]** The external end of the cavity 4 has an operating member 5 comprising one or two pierced disc draw-plates and one or two rotary blade knives. The operating member 5 is blocked in the cavity by means of a removably fixable metal ring 6 to the external end of wall the 24.

**[0017]** The metal ring and the end of the wall can be shaped as screw, bayonet, grafts or similar for the mutual connection and the blocking of the operating member.

**[0018]** The device 1 comprises a detector means 7 mobile between two end conditions of activation A and deactivation D at which it places an excitation means 8 respectively inside and outside of the detection beam of a respective sensor 9 fixed to the body base 2 and fit to activate the motor operation at the activation condition in which it finds the excitation means and viceversa.

**[0019]** The excitation means 8 consist in a permanent magnet and sensor 9 comprises a Reed contact or a Hall effect transistor.

**[0020]** The invention, in alternative, provides the excitation means 8 comprising a push device or inductive means and that the sensor 9 can comprise an electro-mechanical contact or an inductive detector or similar.

**[0021]** The detector means 7 is placed in the activation condition by activation means 50 when the operating member 5 is mounted and locked by the metal ring 6 and is placed in the deactivation condition by the elastic means 10 in absence or deficiency of the operating member 5 and/or of the clamping of metal ring 6.

**[0022]** The activation means 50 comprise mainly a balance means 53 and two tracer point members 51, 52.

**[0023]** The detector means 7 comprises a rod means 27, as an example, consisting in a round metallic bar having threaded end portions external 11 and internal 12.

**[0024]** The external end portion 11 is connected to a connection 55 made of sheet approximately "L" shaped and the inner end 12 is fixed to a support 38, consisting of shaped sheet plate, for excitation means 8.

**[0025]** A protruding portion, parallel to the rod 27, of the connection 55 has a rotation pin 65 rotatably freely connected to the central portion of the balance means 53 having lengthened shaped plate. The opposite end of the balance means 53 has respective lengthened slots

58, 59 longitudinally oriented with respect to the same balance means 53.

[0026] Each slot 58, 59 slidably houses a pin 56, 57 of one of tracer point members 51, 52. Each tracer point member has a lengthened shape, i.e. shaped as a rod or a list, and is freely translating, along its longitudinal axis, between two end positions.

[0027] The tracer point members means 51, 52 are slidably housed in respective longitudinal seats 13, 54 of the external portion of the wall 24 and disposed almost mutually parallel.

[0028] The tracer point members means 51, 52 are bound in respective longitudinal seats 13, 54 by respective plate shaped sliding means 30, 61, for example of antifriction material, and each of them being fixed to the wall 4 by screws.

[0029] The rod 27, the tracer point members 51, 52 and the longitudinal seats 13, 54 are almost parallel between them and to the geometric axis of the cavity 4.

[0030] The external end of the first tracer point member 51 is fit to find the metal ring 6 when this latter is locked to the external end of the tubular wall 24.

[0031] The external portion of the second tracer point member 52 is provided with stop means 62, for example consisting of a screw head screwed to such tracer point member 52, protruding and fit to find the operating member 5 in an assembly and clamping condition of this latter by means of the metal ring 6.

[0032] The end threaded portions external 11 and inner 12 of the rod means 27 are fixed to connection 55 and to the support 38 of the excitation means 8 by means of relative adjustable screw means 28, 60, consisting for example of self-locking nuts, or couple of nuts and lock nuts.

[0033] The connection 55 and the support 38 are blocked in adjustable way between the nut couples of adjustable screw means 28, 60.

[0034] The rod means 27 of the detector means 7 comprises a median part 16 around which elastic means 10 are wrapped consisting in a fixed compressed coil spring between fixed 17 and mobile 18 stops.

[0035] The fixed stop 17 is rigidly fixed to wall 24 of the cavity 4 and it is slidably fixed to the rod means; the mobile stop 18, positioned externally to the fixed stop, is rigidly fixed to the rod means of detector means 7.

[0036] In such a way, said stops transmit to rod means the elastic force of the spring by pushing the detector means 7 towards the outside.

[0037] The device comprises a further fixed stop 37 for the sliding of the rod means 27, spaced from that matching the elastic means and fixed to the wall 24 too.

[0038] The device 1 is also equipped of a protection frame 40 fixed to the wall 24 of the cavity 4 for at least protecting a portion of the mobile detector means 7.

[0039] The fixing of the frame 40 to the wall 24 is made by screws engaged with fixed stops 17, 37.

[0040] The operation of the device provides that, when the tubular wall 24 is connected to the body and the op-

erating member 5 and the metal ring 6 are detached from such wall 24, the elastic means push, without contrast, the rod means 27 and the tracer point members 51, 52 towards the outside. In such condition the balance means can be perpendicular to the rod or tilted and excitation means 8 is at the maximum distance from the respective sensor 9 which does not enable the motor.

[0041] When the operating member 5 is positioned in its seat obtained in the external end of the cavity 4, such operating member acts on the second tracer point member 52 causing the translation towards the inside of the said tracer point member 52, the inclination of the balance means 53 and a corresponding movement of the first tracer point member 51 outwardly, without movements of the rod means 27 and the excitation means 8. Therefore, also in this condition, the sensor 9 does not enable the operation of the motor.

[0042] When, starting from the previous condition, the metal ring 6 is clamped in order to block the discs and the knives of the operating member 5, such metal ring acts on the first tracer point member 51 causing a rotation inwardly of the balance means 53 around the hinge 57 of the second tracer point member, a compression of the spring and the translation of rod means 27 and the excitation means 8 towards the inside, carrying this latter to the minimal distance from the corresponding sensor 9 or within the detection beam of such sensor so enabling the motor operation allowing the use of the meat grinder.

[0043] If, for error or distraction, the metal ring is locked in absence of the operating member 5 or one of its elements, the first tracer point member 51 translate inwardly, by tilting the balance means 53 by moving in a corresponding way the second tracer point member 52 outwardly, without movements of the rod means 27 and the excitation means 8. Therefore, also in this condition, the sensor 9 does not enable the operation of the motor.

[0044] Obviously when the entire tubular wall 24 is detached from body 2, the excitation means 8 is removed from the sensor 9 which therefore does not enable the motor.

[0045] An advantage of the present invention, is to supply a safety device for meat grinder and similar fit to prevent the operation when lacking the blocking of the operating member by clamping the metal ring to the same meat grinder.

[0046] Another advantage is to propose a device, fit to inhibit and enable the operation, depending on clamping and not clamping of the metal ring, taking advantage of an eventual sensor already fit, for other objects, in the known meat grinders.

[0047] A further advantage is to supply a device fit to prevent the operation of the motor also when lacking the tubular body of the meat grinder.

## Claims

1. Safety device for meat grinder or similar comprising

- at least a body base (2) containing an actuating motor for an auger means (3) housed in a cavity (4) having an external end having at least an operating member (5) blocked by a removable ring (6); said device (1) is **characterized by** comprising a detector means (7) mobile between two end conditions of activation (A) and deactivation (D) in which it places an excitation means (8) respective inwardly and outwardly the detecting beam of a respective sensor (9) fit to activate the operation of the motor in the activation condition in which it finds the excitation means and vice versa, such detector means (7) being placed in the activation condition by activation means (50) when the operating member (5) is locked by the metal ring (6) and being positioned in the deactivation condition by elastic means (10) in absence or deficiency of at least one between the operating member (5) and the clamping of the metal ring (6).
2. Device according to claim 1 **characterized by the fact** that the sensor (9) is fixed to the body base (2).
  3. Device according to claim 1 **characterized by the fact** that the cavity (4) is delimited by a tubular wall (24).
  4. Device according to claim 1 **characterized by the fact** that the detector means (7) comprises a rod means (27) having an external end portion (11) connected to the activation means (50) which, in the activation condition (A), activate in translation the detector means (7) contrasting the elastic force applied to this latter by the elastic means (10); the inner end (12) of the rod means (27) being fixed to a support (38) for excitation means (8).
  5. Device according to claim 1 **characterized by the fact** that the activation means (50) comprise a first tracer point member (51) mobile and fit to find the clamped metal ring (6) and a second mobile tracer point member (52) and fit to meet the operating member (5) blocked by the metal ring (6) in the external end of the cavity (4), such tracer point members being connected by a balance means (53).
  6. Device according to claim 5 **characterized in that** the second tracer point member (52) has a stop means (62) protruding and fit to find an operating member (5).
  7. Device according to claims 3 and 5 **characterized by the fact** that the pins means (51, 52) are slidably housed in respective longitudinal seats (13, 54) of the external portion of the wall (24) and positioned almost mutually parallels.
  8. Device according to claims 4 and 5 **characterized by the fact** that the end of tracer point member means (51, 52), opposite to those matching the metal ring (6) and the operating member (5), are connected to the opposite end of the balance means (53) centrally hinged to a connection (55) to the external end portion (11) of the rod means (27).
  9. Device according to claim 7 **characterized by the fact** that the tracer point members (51, 52) are fixed in the respective longitudinal seats (13, 54) by respective plate shaped sliding means (30, 61) and each of them fixed to the wall (4) by screws.
  10. Device according to claim 5 **characterized by the fact** that the end of tracer point members (51, 52) are connected through corresponding pins (56, 57) to respective slots (58, 59) of the balance means (53).
  11. Device according to claim 8 **characterized by the fact** that the connection (55) is made of shaped sheet approximately "L" shaped, the support (38) is of shaped sheet plaque and the rod means (27) is made of metallic round bar.
  12. Device according to claims 4 and 8 **characterized by the fact** that the end portions external (11) and internal (12) of rod means (27) are fixed respective to the connection (55) and to the support (38) of the excitation means (8) by means of corresponding adjustable screw means (28, 60).
  13. Device according to claim 12 **characterized by the fact** that the adjustable screw means (28, 60) comprises threads obtained in the external end (11) and inner end (12) of rod means (27) and each of them being engaged by a couple of nuts between which the connection (55) or support (38) are adjustably fixed.
  14. Device according to any of the previous claims **characterized by the fact** that the rod (27) and the tracer point members (51, 52) are almost parallels to the axis of cavity (4).
  15. Device according to claim 4 **characterized by the fact** that the rod means (27) of the detector means (7) comprises a median feature (16) around which elastic means (10) are wrapped consisting in a compressed helicoidal spring between stops, fixed (17) and mobile (18), respectively fixed to the wall (24) of the cavity (4) and to rod means of the detector means (7) and engaging the rod means in slidably and rigid way, in order to transmit to such rod the elastic outwardly force.
  16. Device according to claim 15 **characterized by the fact** to at least comprise a further fixed stop (37) for the sliding of the rod (27), spaced from the stop find-

ing the elastic means and fixed to wall too (24).

17. Device according to claim 1 **characterized by the fact** of comprising a protection frame (40) fixed to the wall (24) of the cavity (4) to protect at least a portion of the mobile detector means (7). 5
18. Device according to claims 16 and 17 **characterized by the fact** that the frame (40) is fixed to the fixed stops (17, 37). 10
19. Device according to any of the previous claims **characterized by the fact** that the excitation means (8) consists in a permanent magnet and the sensor (9) comprises a Reed contact or a transistor Hall effect. 15
20. Device according to any of the claims from 1 to 18 **characterized from the fact** that the excitation means (8) comprises a push device or inductive means and the sensor (9) comprises an electromechanical contact or an inductive detector. 20
21. Device according to any of the previous claims **characterized by the fact** that the cavity (4) and the respective wall (24) are obtained in the body base (2) or in a removable tubular body of the meat grinder. 25
22. Device according to any of the previous claims **characterized by the fact** that the operating member (5) comprises at least a pierced disc and at least a rotary blade knife. 30

35

40

45

50

55

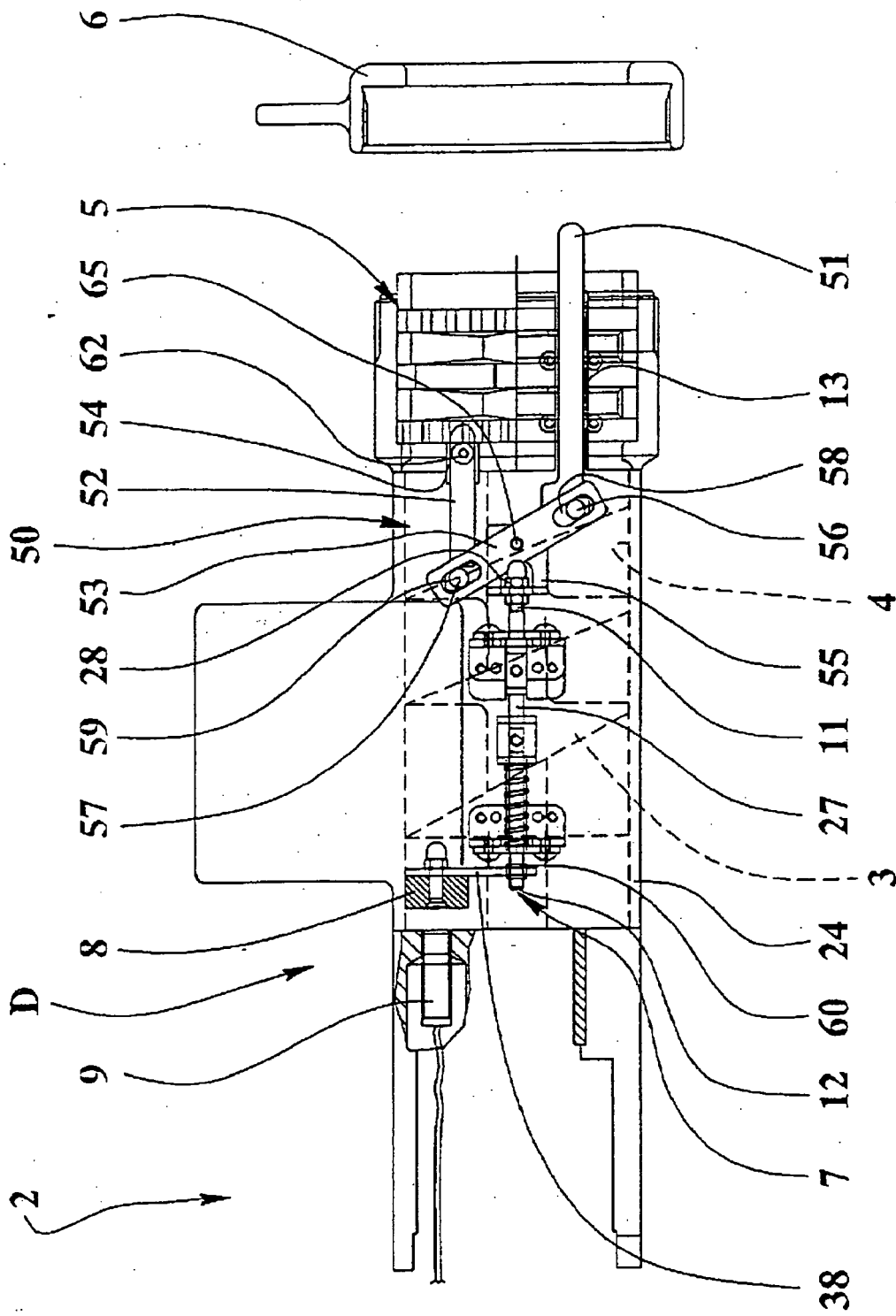


**FIG. 1**

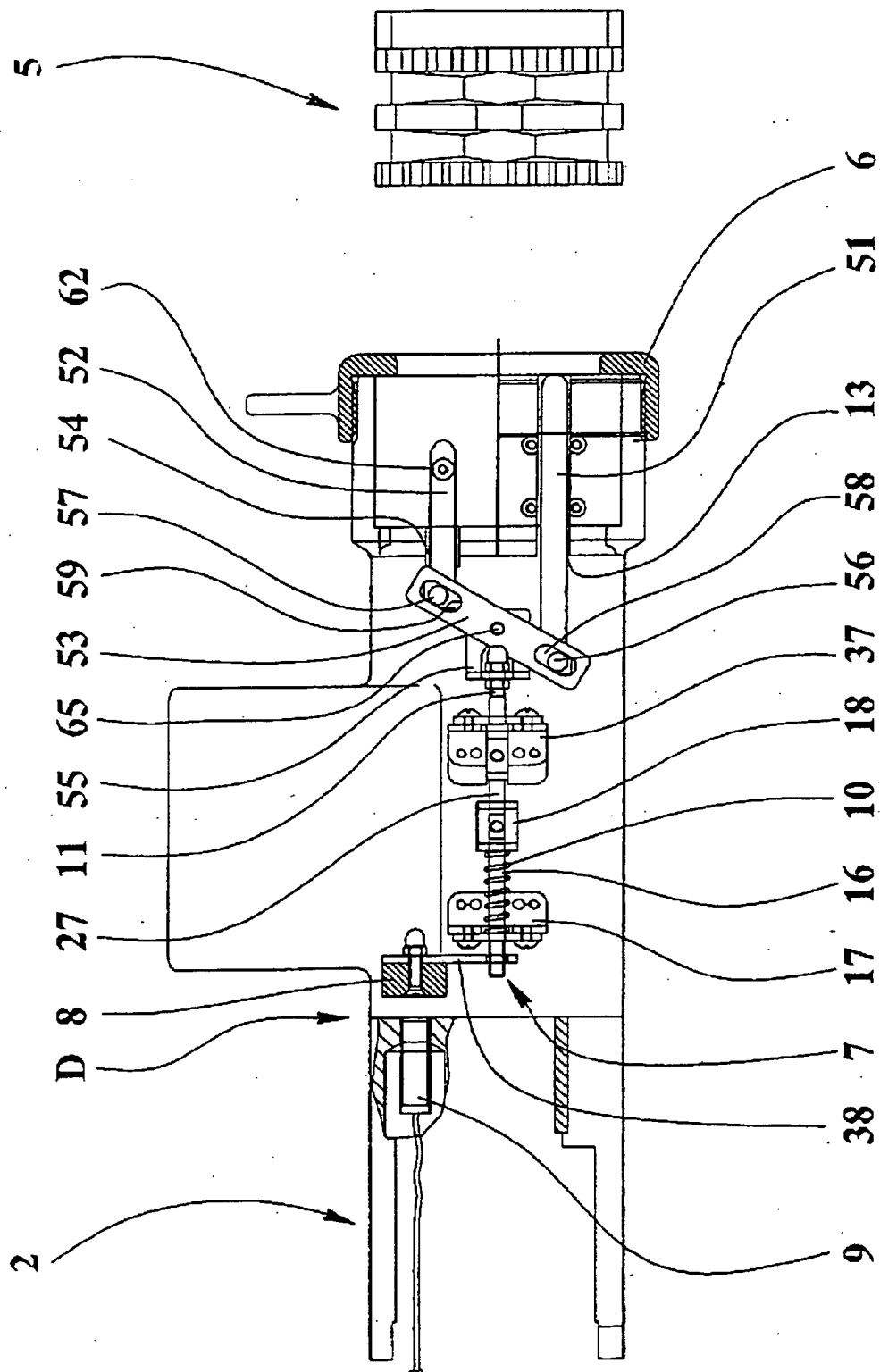


**FIG. 2**

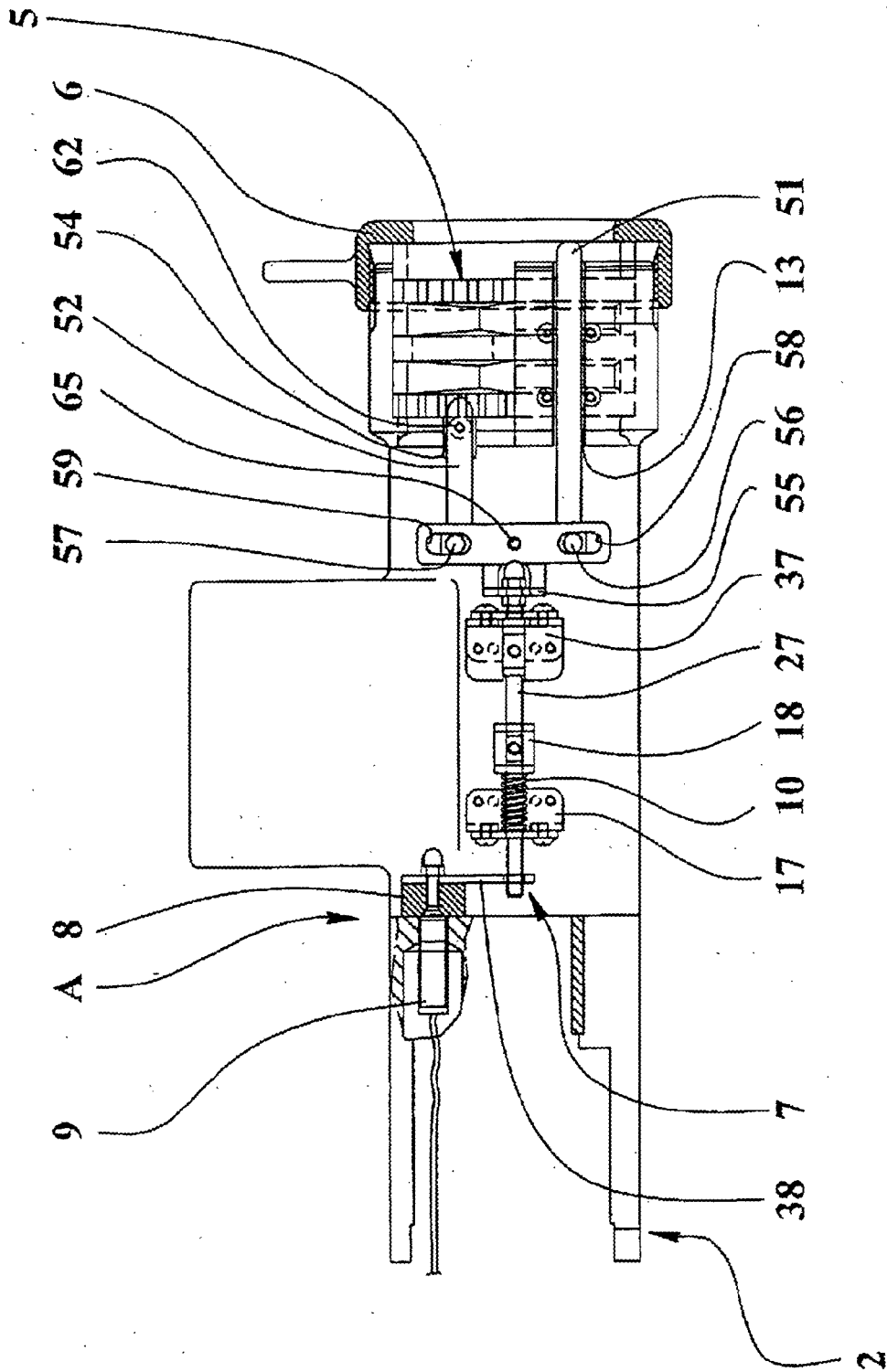


**FIG.3**

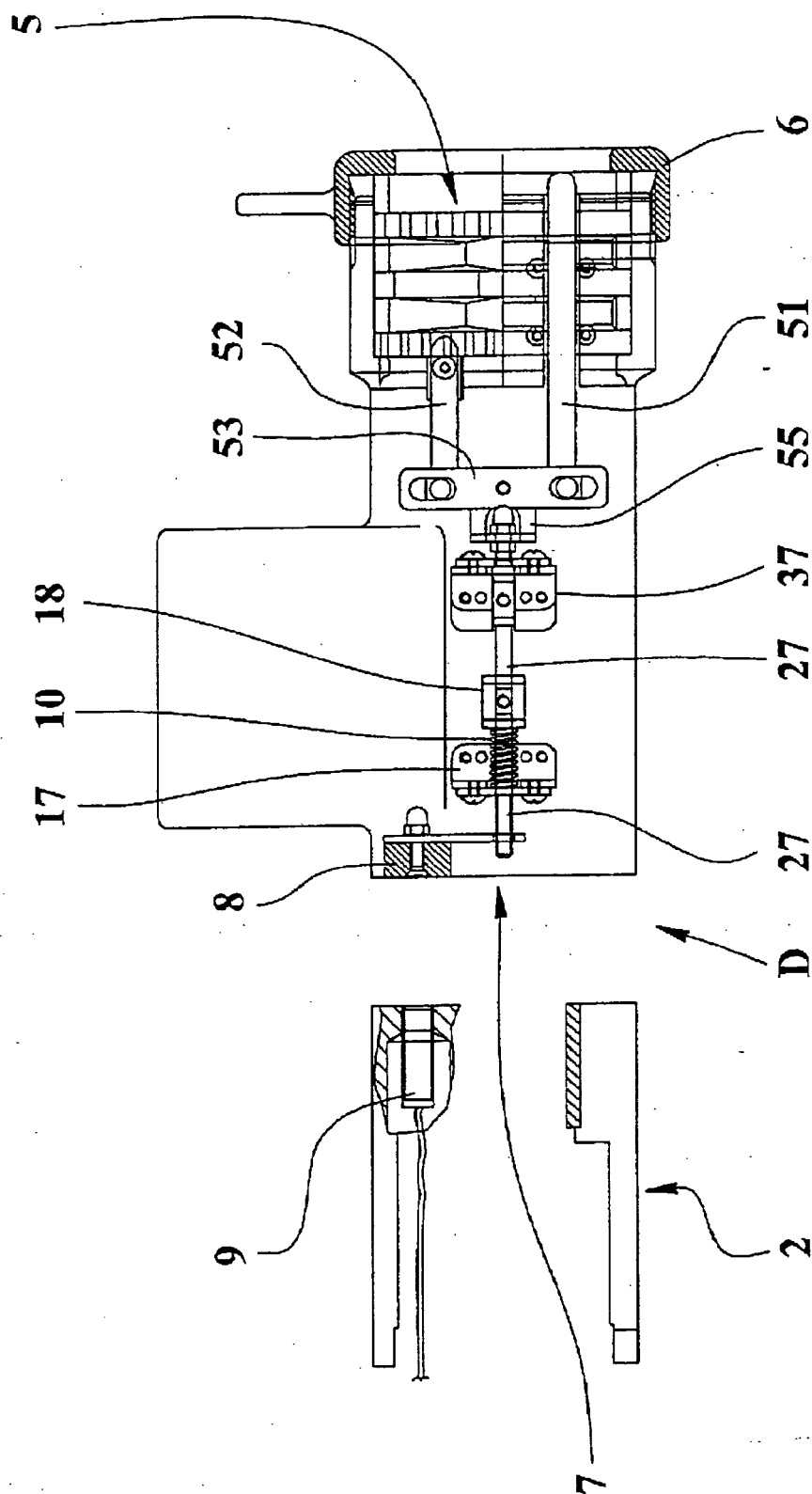


**FIG.4**

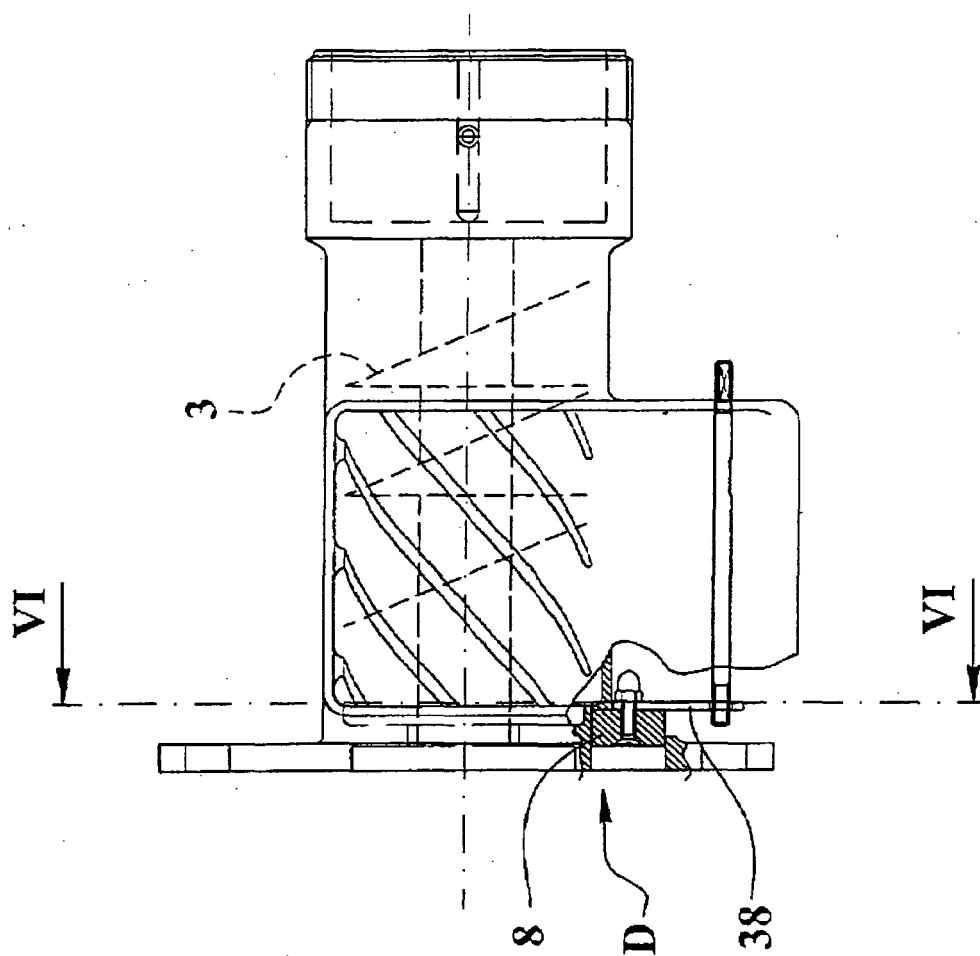


**FIG. 5**

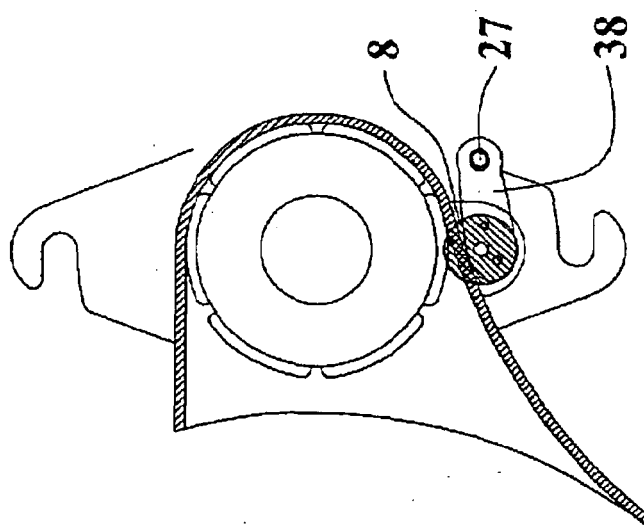


**FIG. 6**

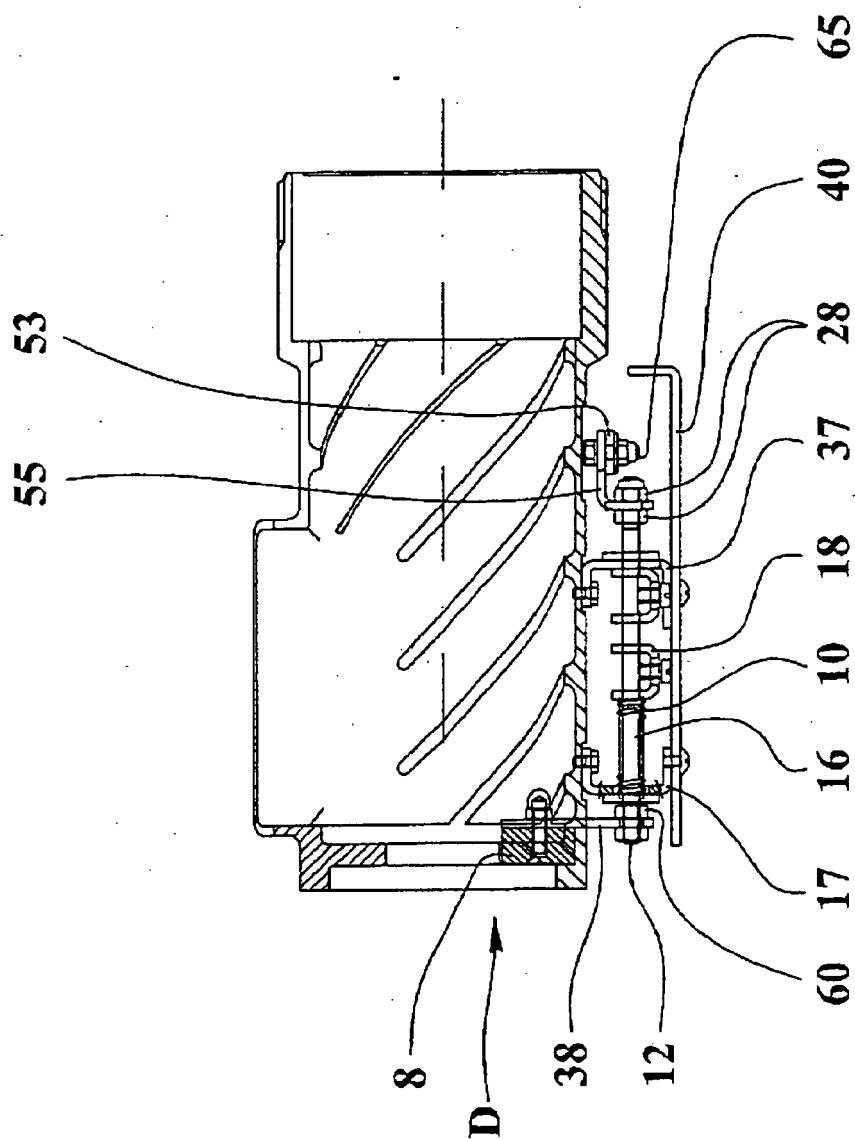


**FIG. 7**

**FIG.8**

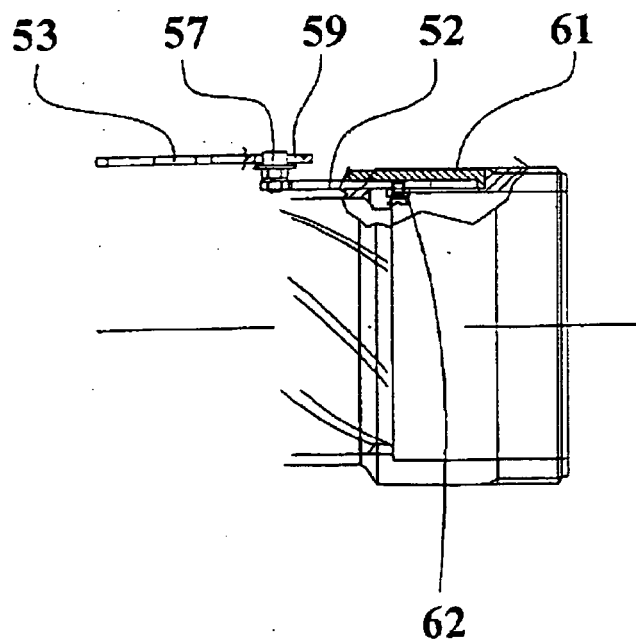
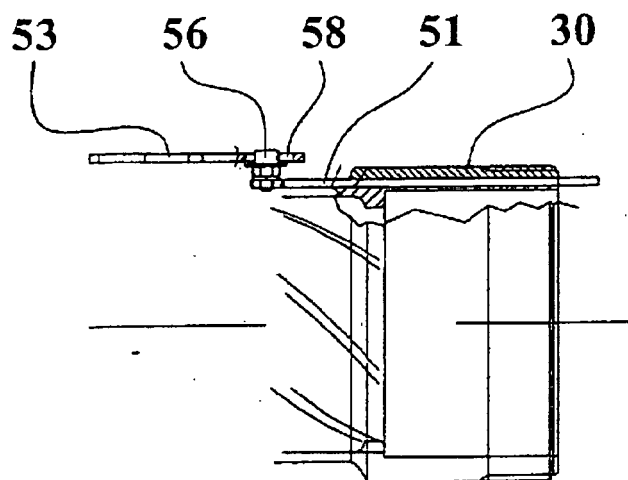


**FIG.9**