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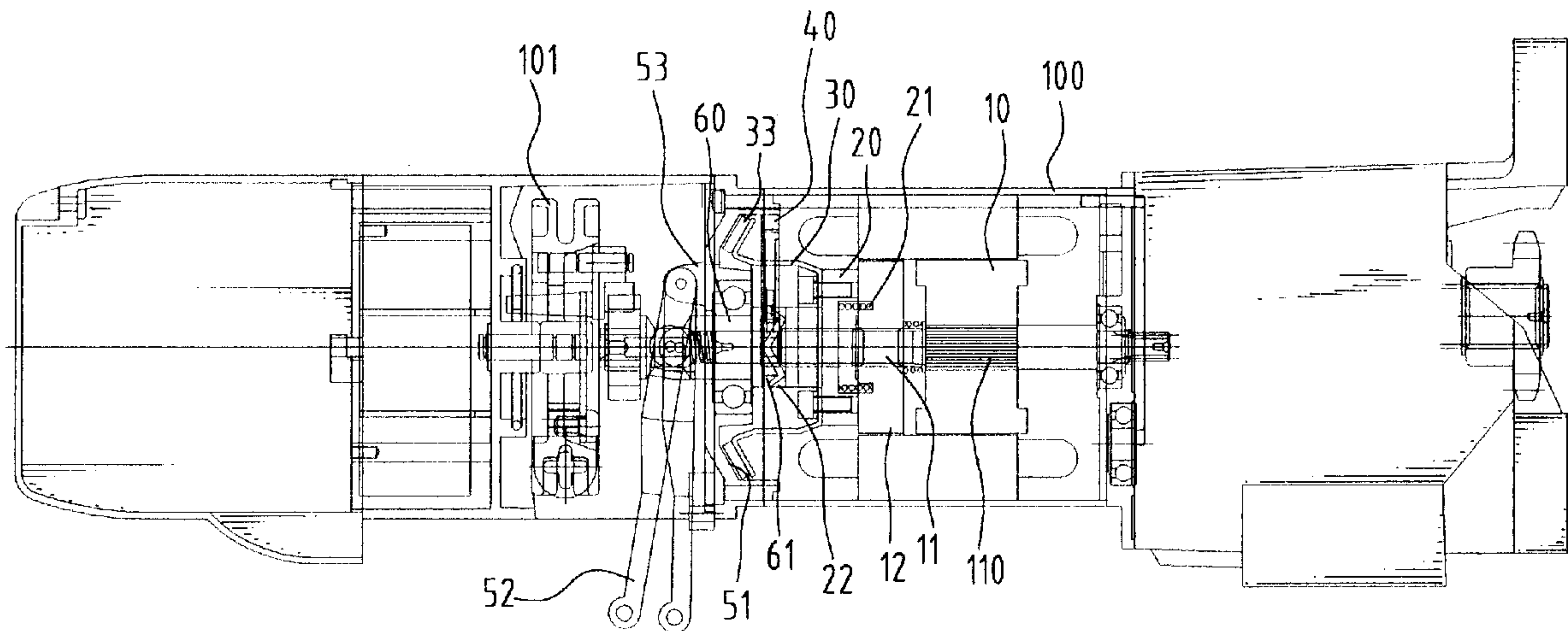
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(54) Titre : MECANISME D'ARRET AUTOMATIQUE POUR PORTE ENROULABLE

(54) Title: CONTROL MECHANISM FOR A ROLLING DOOR



(57) Abrégé/Abstract:

An automatic stop mechanism for a rolling door includes two brake members mounted to the stop member which is removably engaged with the fixture, the stop member having a flange disengagably contacting the inclined flange to normally stop the rolling door, a handle pivotally connected to the fixture and connected to the first member and the second member so as to shift the stop member along the shaft of the motor, the two brake members each having a brake pad and located within the motor casing, when the rolling door runs downwardly fast and the normal stop mechanism fails, the two brake members are expanded due to the eccentric force to stop the door by the two brake pads contacting the motor casing.

ABSTRACT OF THE DISCLOSURE

1
2 An automatic stop mechanism for a rolling door includes two brake
3 members mounted to the stop member which is removably engaged with the fixture,
4 the stop member having a flange disengagably contacting the inclined flange to
5 normally stop the rolling door, a handle pivotally connected to the fixture and
6 connected to the first member and the second member so as to shift the stop member
7 along the shaft of the motor, the two brake members each having a brake pad and
8 located within the motor casing, when the rolling door runs downwardly fast and the
9 normal stop mechanism fails, the two brake members are expanded due to the
10 eccentric force to stop the door by the two brake pads contacting the motor casing.

FIELD OF THE INVENTION

The present invention relates to a stop mechanism, and more particularly, to an automatic stop mechanism for an electrical rolling door, wherein the stop mechanism has two brake members mounted to a stop member and the two brake members will expand outwardly to contact the inside of the motor casing due to eccentric force to stop the rolling door when the motor fails.

BACKGROUND OF THE INVENTION

The rolling door is composed of a plurality of metal sheets which are heavy so that when the rolling door runs downward, a suitable stop mechanism is needed to keep the rolling door running down slowly and stably. Once the normal stop way is functionless, the heavy rolling door running fast could injure people below the door. Therefore, some conventional rolling doors are equipped with an automatic stop mechanism to stop the rolling door when the normal stop mechanism loses its function such as the motor fails. However, these conventional automatic stop mechanisms have a complicated structure and a high price. Furthermore, the conventional automatic stop mechanisms, although can achieve the desired purpose, they are not stable when in use and thus may cause additional problems of the structure of the rolling door such as breaking some parts of the mechanisms.

The present invention intends to provide an automatic stop mechanism which has a simple structure and utilizes the eccentric force when the rolling door runs downward to expand two brake members to stop the door. The structure of the stop mechanism can well mitigate the disadvantages of the conventional stop mechanisms described above.

SUMMARY OF THE INVENTION

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The present invention provides a control mechanism for a rolling door, comprising: a motor received in a motor casing and having a shaft extending therefrom; a first member mounted to rotate with said shaft and being axially movable by
5 a spring biased between said motor and said first member, said first member having a first serrated end; a stop member fixedly connected to said first member with said first serrated end of said first member extending centrally through said stop member, two slots defined through the periphery of the stop member, two
10 protrusions extending radially inwardly therefrom, and a flange extending radially outward therefrom; two arcuate brake members having respective first ends thereof connected by a spring and respective second ends thereof each having a curved plate, each of said brake members having a brake pad attached thereto, said
15 two brake members mounted to said stop member and said two curved plates engaged with said two protrusions via said two slots, said two brake pads located within said motor casing and being movable under centrifugal force to engage against said motor casing; a fixture having an inclined flange extending
20 from a first side thereof and a handle pivotally connected to a second side thereof, said flange of said stop member disengagably contacting said inclined flange of said fixture, said stop member being movable out of engagement with said inclined flange in response to energising of said motor thus
25 freeing said shaft to rotate under control of said motor; and a second member extending centrally through said fixture and having a second serrated end which is releasably engagable with said first serrated end of said first member, said handle being pivotally connected to said second member to effect shifting
30 thereof upon pivoting of said handle, such shifting effecting disengagement of said first and second serrated ends thus freeing said shaft for rotation freely without being driven by said motor handle.

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An object of the present invention is to provide an automatic stop mechanism for a rolling door, wherein the two brake members are expanded to contact the motor casing due to the centrifugal force when the rolling door runs downwardly, to
5 stop the door when the normal stop mechanism fails.

1 Further objects, advantages, and features of the present invention will
2 become apparent from the following detailed description with appropriate reference
3 to the accompanying drawings.

4 **BRIEF DESCRIPTION OF THE DRAWINGS**

5 Fig. 1 is a perspective view of the motor casing in which the auto stop
6 mechanism in accordance with the present invention is received;

7 Fig. 2 is an exploded view of the stop mechanism in accordance with the
8 present invention;

9 Fig. 3 is a side elevational view, partly in section, of the stop mechanism in
10 accordance with the present invention, when the handle is not yet pivoted;

11 Fig. 4 is a side elevational view, partly in section, of the stop mechanism in
12 accordance with the present invention, when the handle is not yet pivoted;

13 Fig. 5 is a side elevational view, partly in section and in an enlarged scale,
14 of the stop mechanism when the handle is pivoted;

15 Fig. 6 is an illustrative view to illustrate the engagement between the two
16 brake members and the stop member, and

17 Fig. 7 is a lateral view to show the engagement as shown in Fig. 6.

18 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

19 Referring to Figs. 1 to 3, the automatic stop mechanism for a rolling door
20 in accordance with the present invention comprises a motor 10 received in a motor
21 casing 100 which has a manual operation mechanism 101 received in one of two
22 ends thereof, the motor 10 has a shaft 11 extending therefrom which has the toothed
23 outer periphery 110. A first member 20 is movably mounted to the shaft 11 with a
24 spring 21 biased between a disk member 12 mounted to the shaft 11 and the first
25 member 20. The first member 20 has a flange 200 extending radially therefrom and a
26 neck with the first serrated end 22. The first member 20 has a toothed inner

1 periphery 23 so as to engage with the toothed outer periphery 110 of the shaft 11. A
2 stop member 30 is fixedly connected to the first member 20 by bolts extending
3 through the stop member 30 and fixedly engaged to the flange 200 of the first
4 member 20. The first serrated end 22 of the first member 20 extends centrally
5 through the stop member 30 which has two slots 31 defined through the periphery
6 thereof and two protrusions 32 extending radially inwardly therefrom. The stop
7 member 30 has a flange 33 extending radially outward therefrom which has a brake
8 lining attached thereto.

9 Further referring to Figs. 6 and 7, two brake members 40 have two
10 respective first ends thereof connected by a spring 41 and two respective second
11 ends thereof each have a curved plate 42. Each of the brake members 40 has a brake
12 pad 44 attached thereto which are located within the motor casing 100. The two
13 brake members 40 are mounted to the stop member 30 and the two curved plates 42
14 engaged with the two protrusions 32 via the two slots 31. Each of the two curved
15 plates 42 has a guide plate 43 extending therefrom and the two guide plates 42 are
16 respectively received in the two slots 31 so as to ensure that the two brake members
17 40 are stably engaged with the stop member 30.

18 A fixture 50 has an inclined flange 51 extending from the first side thereof
19 so that the brake lining of the flange 33 of the stop member 30 disengagably contacts
20 the inclined flange 51 of the fixture 50, that is to say, the engagement between the
21 brake lining of the flange 33 and the inclined flange 51 is a normal stop mechanism
22 of the rolling door, the stop member 30 is normally pushed toward the fixture 50 by
23 the spring 21 and when the motor 10 is actuated, the stop member 30 will be shifted
24 to remove from the fixture by a magnet force to let the shaft 11 rotate freely. At least
25 two lugs 53 extending from the second end of the fixture 50 so as to pivotally
26 connected to the handle 52.

1 A tubular second member 60 extends centrally through the fixture 50 and
2 has a second serrated end 61 which is removably engaged with the first serrated end
3 22 of the first member 20. The second member 60 has an annular groove 62 defined
4 in the end opposite to the second serrated end 61 so as to receive the handle 52
5 therein such that when pivoting the handle 52, the second member 60 is shifted.

6 Further referring to Figs. 4 and 5, when the motor fails, that is to say, when
7 the rolling door runs downwardly, and the stop member 30 cannot be shifted to
8 engaged with the fixture to stop the rolling door, the user pivots the handle 52 to
9 push the second member 60 and compress the spring 21 to shift the first member 20
10 toward the motor 10. The first member 20 together with the stop member 30 are then
11 moved away from the fixture 50, and the rolling door runs freely downwardly. When
12 the speed of the door achieves a predetermined value, the two brake member 40
13 expand outwardly due to the eccentric force and the two brake pads 44 then contact
14 the inside of the motor casing 100 to stop the rotation of the stop member 30 and the
15 rolling door.

16 It is to be noted that the two brake members 40 are stably connected to the
17 stop member 30 so that they will not disengage from the stop member 30. The
18 eccentric force to expand the two brake members 40 will be produced as the rolling
19 door runs at a pre-determined speed so that the rolling door will stop automatically
20 without any additional electrical force.

21 The invention is not limited to the above embodiment but various
22 modification thereof may be made. It will be understood by those skilled in the art
23 that various changes in form and detail may made without departing from the scope
24 and spirit of the present invention.

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CLAIMS:

1. A control mechanism for a rolling door, comprising:

a motor received in a motor casing and having a shaft extending therefrom;

5 a first member mounted to rotate with said shaft and being axially movable by a spring biased between said motor and said first member, said first member having a first serrated end;

10 a stop member fixedly connected to said first member with said first serrated end of said first member extending centrally through said stop member, two slots defined through the periphery of the stop member, two protrusions extending radially inwardly therefrom, and a flange extending radially outward therefrom;

15 two arcuate brake members having respective first ends thereof connected by a spring and respective second ends thereof each having a curved plate, each of said brake members having a brake pad attached thereto, said two brake members mounted to said stop member and said two curved plates engaged
20 with said two protrusions via said two slots, said two brake pads located within said motor casing and being movable under centrifugal force to engage against said motor casing;

a fixture having an inclined flange extending from a first side thereof and a handle pivotally connected to a second
25 side thereof, said flange of said stop member disengagably contacting said inclined flange of said fixture, said stop member being movable out of engagement with said inclined flange in response to energising of said motor thus freeing said shaft to rotate under control of said motor; and

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a second member extending centrally through said fixture and having a second serrated end which is releasably engagable with said first serrated end of said first member, said handle being pivotally connected to said second member to
5 effect shifting thereof upon pivoting of said handle, such shifting effecting disengagement of said first and second serrated ends thus freeing said shaft for rotation freely without being driven by said motor.

2. The control mechanism as claimed in claim 1, wherein
10 said second member has an annular groove defined therein so as to receive said handle therein such that when pivoting said handle, said second member is shifted.

3. The control mechanism as claimed in claim 1 or claim 2, wherein each of said two curved plates has a guide plate
15 extending therefrom and said two guide plates are respectively received in said two slots.

4. The control mechanism as claimed in claim 1, 2 or 3, wherein said first member has a toothed inner periphery and said shaft of said motor has a toothed outer periphery so as to
20 slidably engage with said toothed inner periphery of said first member.

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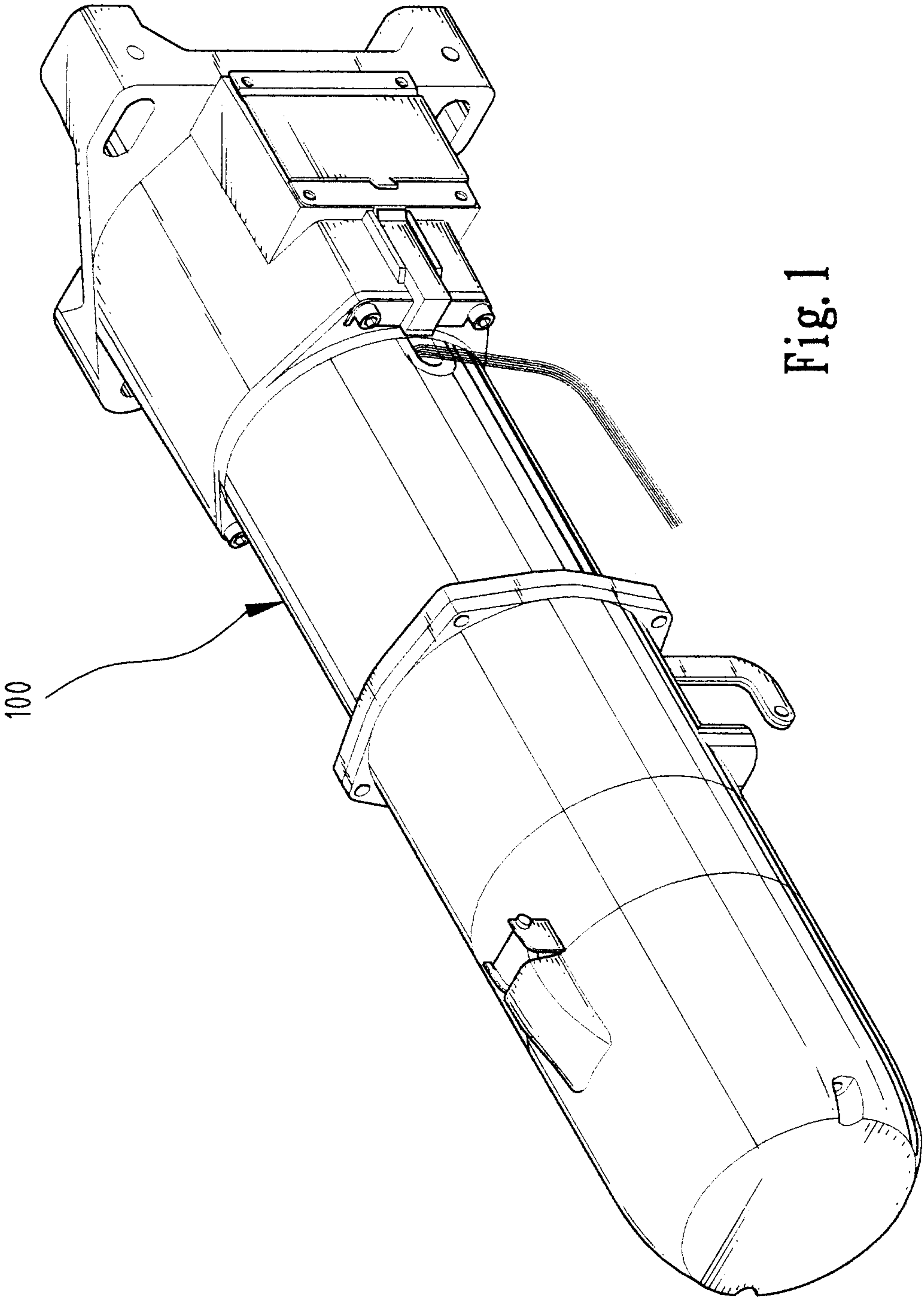


Fig. 1

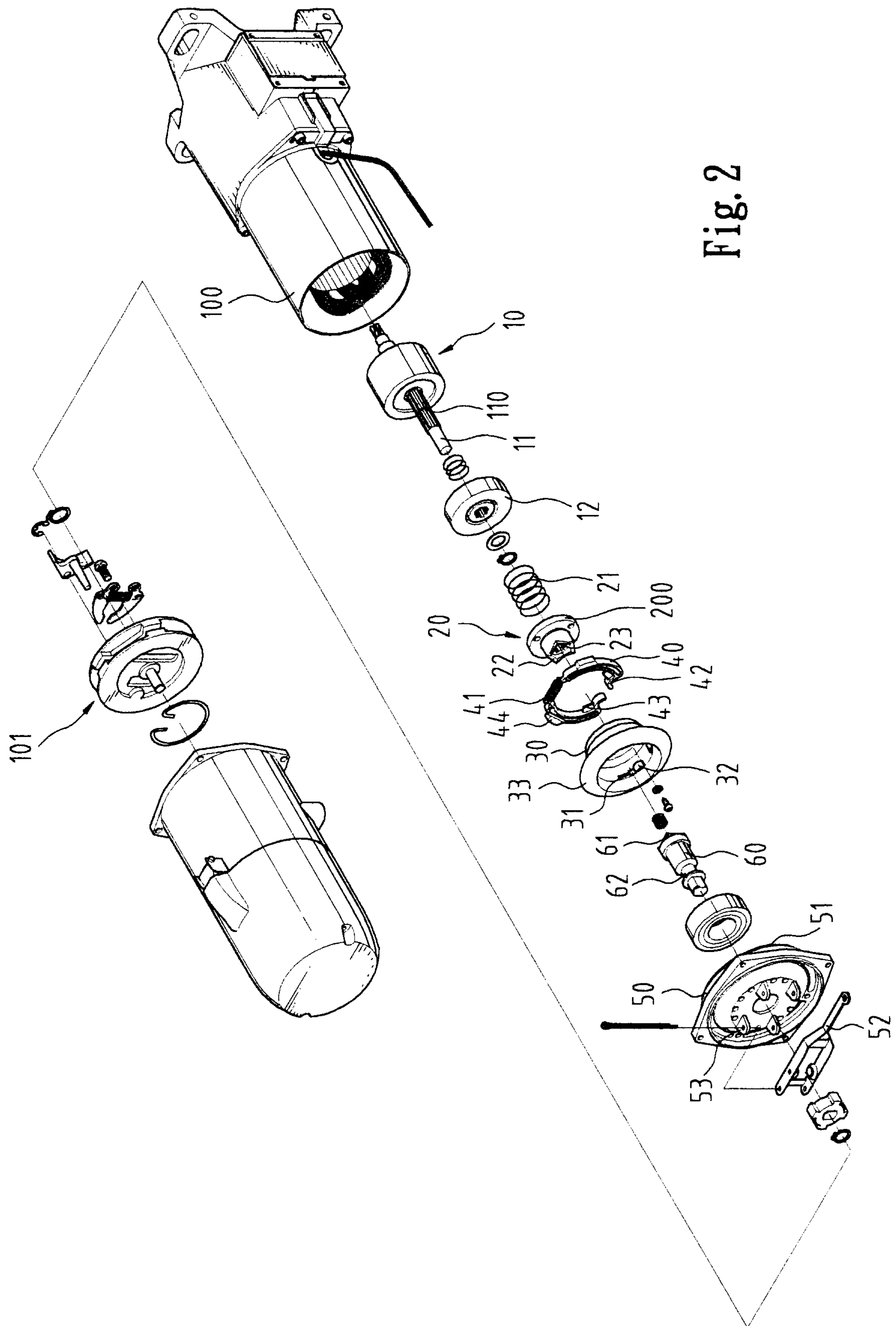


Fig. 2

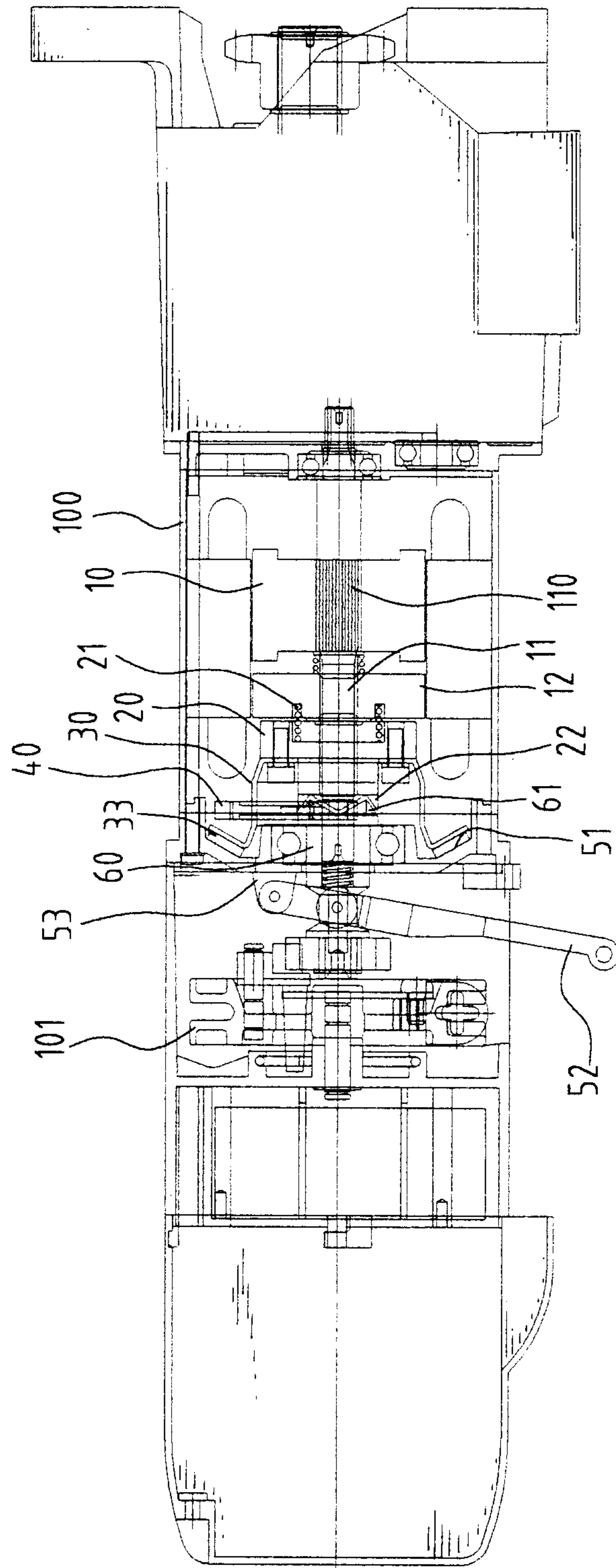


Fig. 3

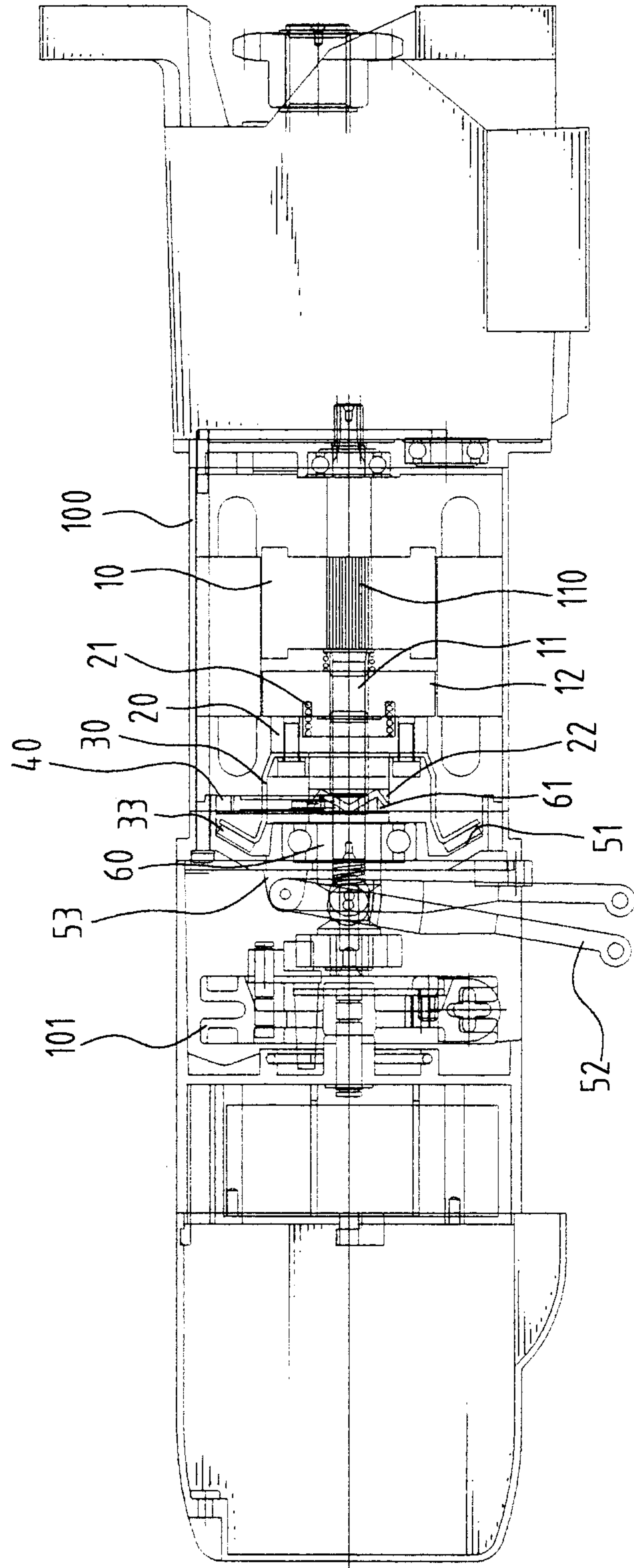


Fig. 4

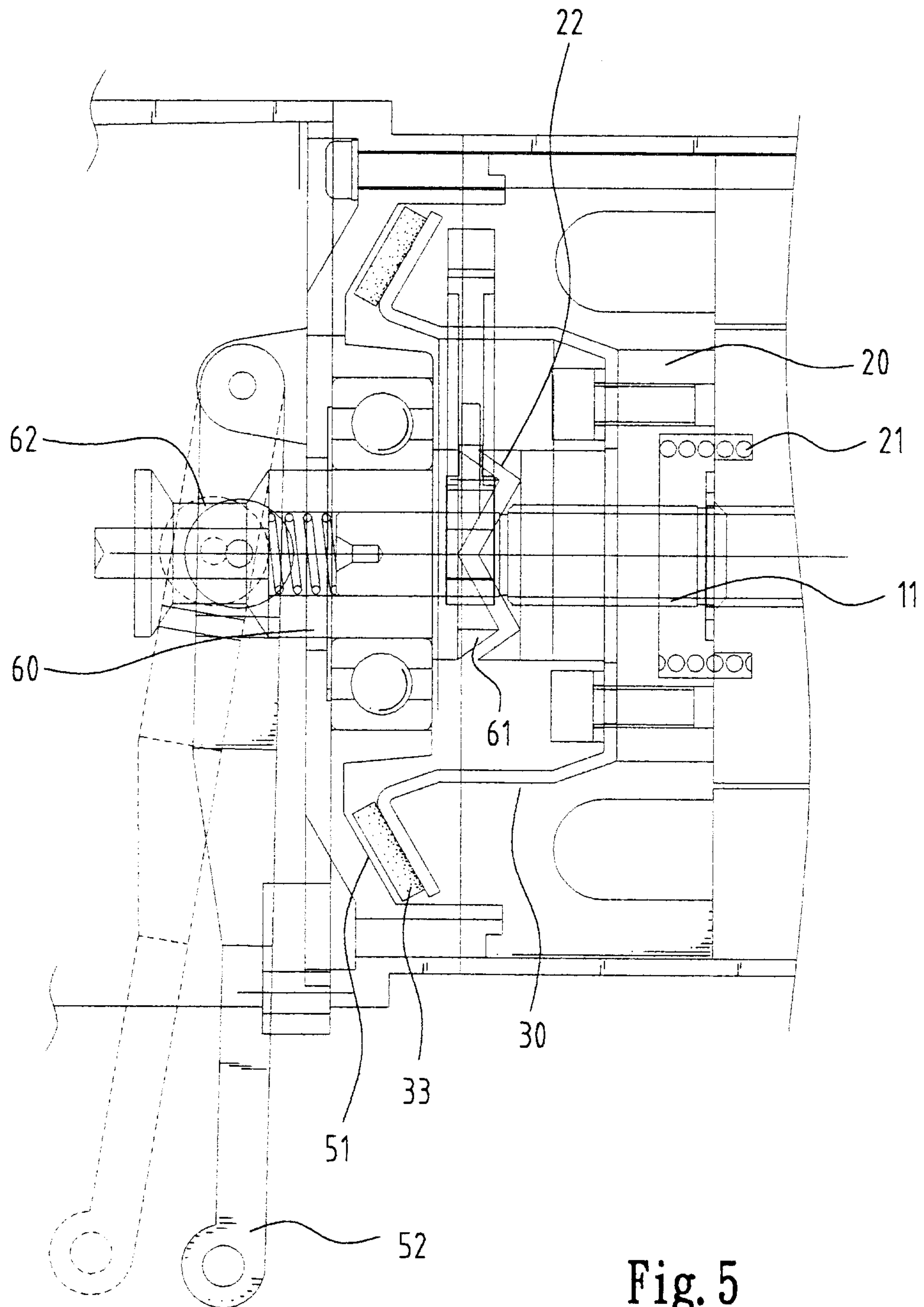


Fig. 5

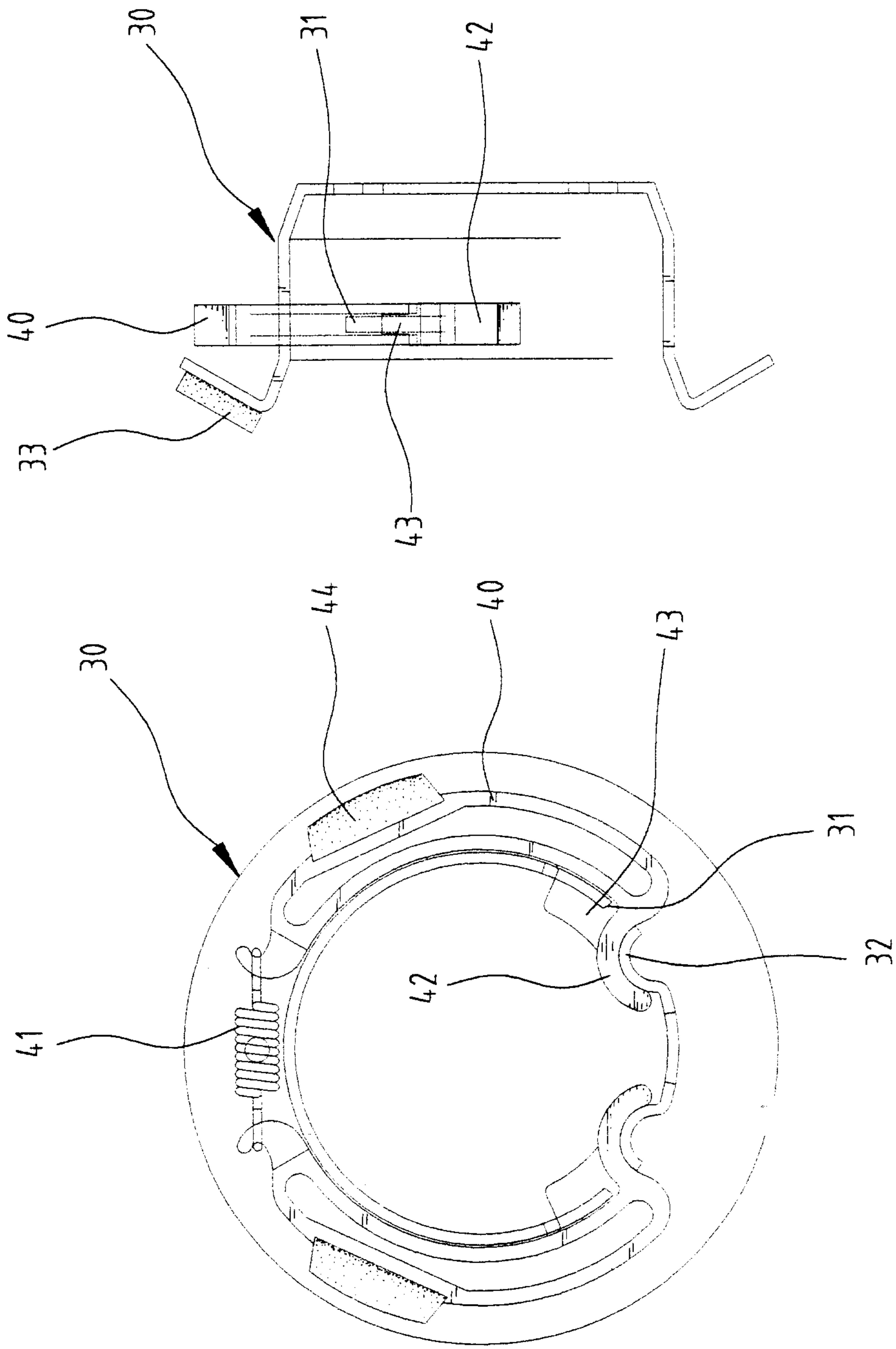


Fig. 6

Fig. 7

