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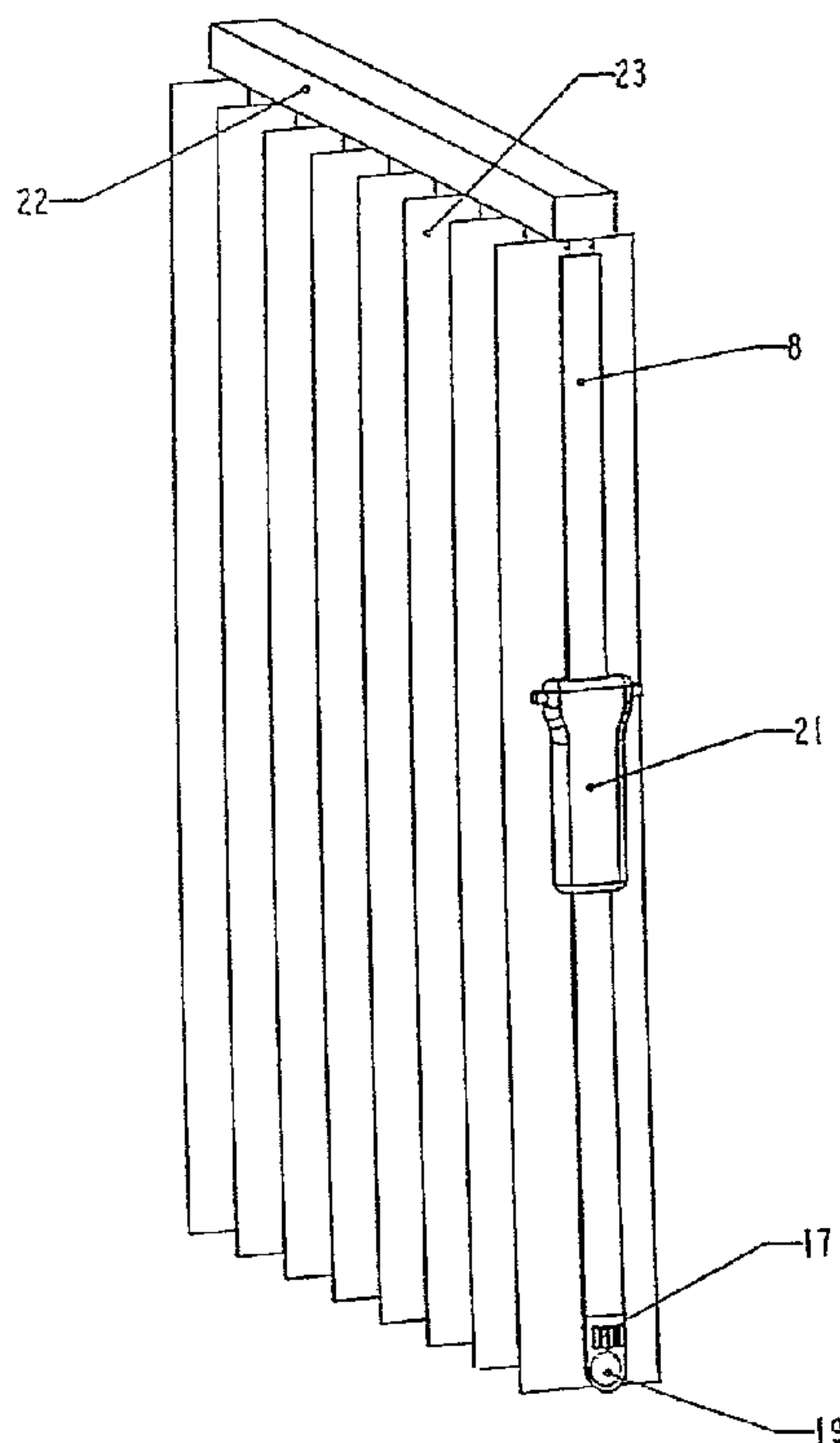
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(54) **DISPOSITIF POUR L'OPERATION MANUELLE D'UN STORE**

(54) **DEVICE FOR MANUALLY OPERATING A BLIND**

VERTICAL BLIND SYSTEM



(57) Dispositif permettant de commander manuellement des stores, préférablement des stores à lames verticales, au moyen d'un cordon de tirage qui est tiré comme une boucle comportant une extrémité d'avancement et une extrémité de retour grâce à un chariot de lames se déplaçant dans un guide, chacune des lames y étant fixée autour d'un axe longitudinal. Ce dispositif est constitué d'un corps qui peut être saisi, d'un passage pour l'extrémité d'avancement et d'un passage pour l'extrémité de retour du cordon de tirage, ainsi que d'un mécanisme de serrage dont le fonctionnement peut être inversé de l'extérieur pour permettre l'avancement du cordon de tirage, et d'un autre mécanisme de serrage dont le fonctionnement peut être inversé de l'extérieur pour permettre le retour du cordon de tirage.

(57) A device for the manual operation of a blind, preferably a vertical blind, by means of a pull cord, which is pulled as a loop with a leading end and a return end by a slat carriage movable in a guide with a slat each arranged on them around their longitudinal axis. The device has a grip body that can be grasped, with a passage for the leading end and a passage for the return end of the pull cord. A clamping device is provided that can be switched from the outside for the leading end. A clamping device is also provided that can be switched from the outside for the return end of the pull cord.

ABSTRACT OF THE DISCLOSURE

A device for the manual operation of a blind, preferably a vertical blind, by means of a pull cord, which is pulled as a loop with a leading end and a return end by a slat carriage movable in a guide with a slat each arranged on them around their longitudinal axis.

- 5 The device has a grip body that can be grasped, with a passage for the leading end and a passage for the return end of the pull cord. A clamping device is provided that can be switched from the outside for the leading end. A clamping device is also provided that can be switched from the outside for the return end of the pull cord.

DEVICE FOR MANUALLY OPERATING A BLIND

FIELD OF THE INVENTION

The present invention pertains to a device for operating a blind, preferably a vertical blind, by means of a pull cord, the cord being led in a manner of a loop with a leading
5 end and a return end and including a grip means on a section rail for providing access to the pull cord with respect to the section rail. The grip means is preferably formed by grip recesses defined by the rail. The grip recesses provide access to the pull cord by a hand of an operator while the remainder of the pull cord is covered by the rail.

BACKGROUND OF THE INVENTION

10 Such a device has been known from U.S. Patent No. 4,813,469.

In vertical blinds, the guide for traveling movement consists of a usually horizontally fastened support rail, so that the ends of the pull cord, which also extends horizontally in the support rail in the area to be covered by the blind, run over a deflecting means and hang down loosely, and the pull cord frequently also forms a loop in this part and
15 is thus designed as an endless pull cord. The hanging-down loop of the pull cord is frequently disturbing and represents a hazard, especially for small children. The blind can be opened and closed manually by means of a device of the class described in the introduction, while the slat carriages are either pushed together at a storage place or they are pulled apart, spread over the area to be covered by the blind. Large blinds and special designs have motor drives, preferably
20 electric motor drives, for the pull cord. Horizontal blinds, in which the slats are fastened directly to two or more pull cords, which are arranged in parallel to and at spaced locations from one another, are also designed correspondingly.

SUMMARY OF THE INVENTION

The primary object of the present invention is to avoid hazards especially for small children due to the pull cord and to improve the appearance of the hanging-down pull cord.

5 According to the invention, a device for the manual operation of a blind is provided, preferably vertical blinds but also horizontal blinds. A pull cord is provided which is disposed in the manner of a loop and includes a leading end portion and a return end portion. A section rail is provided accommodating the pull cord leading end portion and return end portion. The sectional rail has channels extending in a longitudinal direction defining passages
10 for the leading end portion and the return end portion of the pull cord.

 The sectional rail has channels extending in its longitudinal direction, through which the two ends of the pull cord, namely, the leading end and the turn end, are led. These channels of the sectional rails, which may be open on the longitudinal sides, thus accommodate the ends of the pull cords in them, so that no pull cord is visible on the outside, and this pull
15 cord also no longer represents a hazard of strangling for small children. A preferred embodiment of the sectional rail has an H-shaped cross-sectional profile with convex lateral surfaces. A deflecting means for a pull cord guided as an endless pull cord may be provided at the lower end of the sectional rail. However, a pull cord of finite length is also possible, so that the leading end and the return end move up and down in the corresponding channel of the
20 sectional rail during the operation of the blind.

 In accordance with the present invention the rail defines access openings to form

the grip means. The access openings provide access by an operator to grip portions of the pull cord that are exposed by the rail. The operator can then move the pull cord through the rail and control the blinds. The rest of the rail blocks access to the pull cord.

This invention likewise facilitates the manual operation of the blind and makes it more comfortable. Not only shall the appearance of the hanging-down pull cord be improved, but the safety of the device shall also be increased with respect to the possible accident hazard, especially for small children, compared with a pull cord that hangs down loosely (risk of strangulation).

This invention provides reliable protection against strangulation by the design of the rail. The shape or profile of the rail is such that in all areas of the rail except for the access openings, the pull cord is not accessible. The shape is also such that large enough access openings can be defined which allow the hand or hands of an operator to reach the pull cord and provide a sufficient grip to move the pull cord through the rail and operate the blinds. The access openings are such that the pull cord can be easily grasped by hand due to the recessed grips and it can be slightly pulled out of the profiled rail. The operation is then performed by pulling the leading or trailing end by hand. Due to the tension of the pull cord, it is guaranteed that the pull cord can be pulled out of the profiled rail only to an extent that not even small children can put their heads between the pull cord and the profiled rail, so that the accident hazard is considerably reduced.

The rail can also have covers for covering the grooves holding the pull cord and preventing the cord from being excessively pulled out from the grooves. This offers the advantage that the pull cord or its leading and trailing ends are completely accommodated by

the covers over a large portion of its length. The pull cord can be pulled out of the profiled rail in a short area only. This area is advantageously selected to be such that the pull cord can be operated comfortably, on the one hand, but, on the other hand, the pull cord can be pulled out of the profiled rail to a very small extent only. The safety of the device is further improved as a result.

Generally speaking and in summary of the above, therefore, the present invention may be considered as providing a device for the operation of a blind, comprising: a pull cord including a leading end portion and a return end portion; a rail accommodating the pull cord, the pull cord being movably positioned in, and guided by, the rail, the rail hiding the pull cord in the rail; grip means connected to the rail for providing access to the pull cord with respect to the rail, the rail blocking access to the pull cord in areas other than the grip means; and the grip means being formed by a grip recess defined by the rail.

Additionally, the present invention may be considered as providing a device for operation of a blind, the device comprising: a pull cord including a leading end portion and a return end portion; and a rail accommodating the pull cord, the pull cord being movably positioned in, and guided by, the rail, the rail defining an access opening for providing access by an operator for gripping and moving the pull cord through the rail, the rail blocking access to the pull cord in areas other than the access opening, the rail including a first cover between a first end of the rail and the access opening, and the rail including a second cover between a second end of the rail and the access opening.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better

understanding of the invention, its operating advantages and specific objects attained by its uses,
reference is made to the accompanying drawings and descriptive matter in which

preferred embodiments of the invention are illustrated.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

- Figure 1 is a perspective view of a vertical blind;
- 5 Figure 2 is a perspective view of a horizontal blind;
- Figure 3 is a vertical sectional view through the grip body along line A-A in Figure 4 in a switching position A;
- Figure 4 is a sectional view corresponding to Figure 3 in a switching position B;
- Figure 5 is a cross sectional view through the grip body along line B-B in Figure 3;
- 10 Figure 6 is a sectional view corresponding to Figure 3, but with a modified clamping body;
- Figure 7 is a sectional view corresponding to Figure 4, but with the modified clamping body;
- Figure 8 is a sectional view along line B-B in Figure 6;
- 15 Figure 9 is a vertical sectional view through a grip body with a drive means for a spindle shaft in a switching position D;
- Figure 10 is a sectional view corresponding to Figure 9 in a switching position E; and
- Figure 11 is a vertical sectional view through a grip body with a drive for the spindle shaft, which drive is modified compared with Figures 9 and 10;
- 20 Figure 12 shows a perspective view of the device according to another embodiment;

Figure 13 shows the device according to Figure 12 with the leading or trailing end of a pull cord pulled out;

Figure 14 shows a side view of the device;

Figure 15 shows a horizontal section in plane XV-XV according to Figure 3;

5 Figure 16 shows another horizontal section of the rail.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The vertical blind according to the exemplary embodiment in Figure 1 has slats, which, hanging vertically next to each other, are arranged at spaced locations from one another, and whose top end is arranged, pivotable around the longitudinal axis of the slats
10 23, in a slat carriage, not recognizable from the drawing, wherein the slat carriages of all slats 23 are laterally displaceable in a support rail 22 that can be fastened horizontally. For this traveling movement, a pull cord, which runs over deflecting means at one end of the support rail 22 and is guided as an endless loop over a deflecting roller 19 at the lower end
15 of a sectional rail 8, is guided through the slat carriage in a support rail 22, so that the pull cord passes through the grip body 21 of an operating device with a leading end 6a or leading section and with a return end 6b or return section.

The horizontal blind according to the example in Figure 2 has horizontal slats 24, which are fastened hanging on a pull cord at spaced locations one on top of another. This
20 cord can be wound on a shaft, which is mounted in a horizontally fastened support rail 22, and exits at one end of the support rail 22. A drive wheel 28, via which the pull cord 6 is

laid in a vertically extending loop analogously to the example in Figure 1, is fastened to this end of the shaft, so that it is guided over a deflecting roller 19 at the lower end of a stationarily arranged sectional rail 8, on which a grip body 21 of an operating device can be moved up and down and be optionally coupled with the leading end or the return end of the pull cord 6 due to frictional engagement.

According to the representation in Figures 3, 4 and 5, the grip body 21 is comprised of two grip body parts 1 and 2, whose division is located approximately in the vertical central plane. The two grip body parts 1 and 2 surround a vertically extending and stationarily arranged sectional rail 8, which has an H-shaped cross-sectional profile corresponding to Figure 5. Thus, channels, into which the two pull cord ends 6a and 6b are placed, are formed on the two open sides of the H. The pull cord running over the deflecting roller 19 at the lower end of the sectional rail 8 is thus arranged hidden in the sectional rail 8, and it does not represent a hazard of strangling for small children.

In the exemplary embodiment according to Figures 3, 4 and 5, clamping bodies 4a and 4b made of clamp rollers placed loosely into the recesses are arranged in recesses of both grip body parts 1 and 2. They have a jacket surface that is corrugated or is made rough in another manner. The limiting walls of each of the two recesses cooperating with this jacket surface converge toward one another in the manner of a wedge, and one of these two limiting walls is arranged in an undercut, which is opposite the respective clamp roller 4a and 4b in relation to the pull cord 6 passing through the recess. In the case of a displacement of the grip body 21 in relation to the pull cord 6, firm coupling of the grip body 21 with the

pull cord 6 can be achieved by frictional engagement by means of one of the two clamp rollers 4a or 4b. A switching rod 9a or 9b, which is movably guided in the grip body 21 approximately in parallel to the pull cord 6 and cooperates with wedge surfaces 26 or 27 on a switching slide 3, is associated with each clamping body 4a and 4b. The end of each switching rod 9a or 9b facing the switching slide 3 is provided with corresponding counterwedge surfaces. The wedge surfaces 26 and 27 are arranged in recesses of the switching slide 3 with opposite direction of inclination, so that a displacement of the switching rod 9a or of the switching rod 9b can be alternatively achieved by a displacement of the switching slide 3 in the grip body 21. In the example, a displacement of the switching slide 3 to the right brings about an axial displacement of the switching rod 9b in the downward direction, and a displacement of the switching slide 3 to the left brings about an axial displacement of the switching rod 9a in the downward direction. This axial displacement of the switching rods 9a and 9b takes place against the action of a spring 10. In the direction of displacement of the switching slide 3, the recesses with the wedge surfaces 26 and 27 are located at a distance from each other that is greater than the distance between the counterwedge surfaces on the switching rods 9a and 9b. It is achieved as a result that the switching rods can be operated only alternatively, so that a clamping connection is also possible only with one of the two pull cord ends 6a or 6b. The recesses with the wedge surfaces 26 and 27 of the switching slide 3 preferably have a profile, which also acts as an end position locking means for the two switching positions. To achieve an initial friction between the circumference of the clamp rollers 4a or 4b and the corresponding pull cord end

6a or 6b, spring-loaded pressing pieces 5a and 5b are arranged under the clamp rollers 4a and 4b, preferably in the direction toward the clamp rollers, and these pressing pieces 5a and 5b move the corresponding clamp roller 4a or 4b when the switching rod 9a or 9b is axially displaced by one of the springs 10 into a recess of the switching slide 3, in order to bring about a clamping coupling of the grip body 21 with the corresponding pull cord end.

The exemplary embodiment shown in Figures 6 through 8 corresponds to the description given for Figures 3 through 5, with the exception that the above-described clamp rollers are replaced with respective clamping bodies 11a and 11b, which are arranged, pivotable around an axis extending at right angles to the pull cord, in the recess of the grip body 21. Further details become apparent from the graphic representation in Figures 6 and 7.

In the two exemplary embodiments according to Figures 3 through 5 as well as 6 through 8, a frictionally engaged coupling of the grip body 21 with one of the two pull cord ends 6a or 6b can be achieved by a horizontal movement of the switching slide 3 via the clamping means. The respective other pull cord end is released from its clamping coupling with the grip body 21 by an axial displacement of the switching rod 9a or 9b.

In the exemplary embodiment according to Figures 9 and 10, the clamping means for the frictionally engaged coupling of the grip body 21 with the pull cord ends 6a and 6b are designed corresponding to the description given for the examples shown in Figures 3 through 5 or possibly also the description for Figures 6 through 8. In addition, a spindle shaft 16 passes through a channel of the grip body 21. A spindle nut segment 15, whose threads can

be pressed against the spindle thread by overcoming the force of a spring and can be engaged with same, is movably arranged in the grip body 21 radially to the longitudinal axis of the spindle shaft 16. A spring 18 is supported by the grip body 21, on the one hand, and by a collar edge of the spindle nut segment 15, on the other hand. A switching lever 14,
5 which is mounted pivotably in the grip body 21, can be pivoted by the force of a finger via a pushbutton 13 projecting outwards, so that the threads of the spindle nut segment 15 and of the spindle shaft 16 become engaged, and the spindle shaft can be rotated in one direction or the other by a movement of the grip body 21 in the upward or downward direction, in order to pivot, e.g., the slats of a vertical blind in one direction or the other. Figure 10
10 shows the engaged position of the threads of the spindle nut segment 15 and of the spindle shaft 16. Figure 9 shows the resting position stabilized by the spring 28. Instead of the operating device for a spindle shaft 16 passing through the grip body 21, which was explained in connection with Figures 9 and 10, only a small hand wheel 17, whose knurls are arranged laterally from openings of a sectional cover cap 20 at the lower end of the sectional rail 8,
15 is arranged for its operation according to the example in Figure 11. The deflecting roller 19 for the pull cord 6 is arranged under this small hand wheel 17. The example in Figure 10 clearly shows that the pull cord 6 and the sectional rail 8 do not have to be led up to the lower end of the blind in each case, but they may end at any height if it is accepted that the movement of the pull cord may take place in sections, possibly by grasping it again, using the
20 mechanism accommodated in the grip body 21.

The example according to Figure 11 also shows that the spring 7 loading the clamp

rollers 4a and 4b is accommodated in a blind hole of the respective pressing piece 5a and 5b.

In the embodiment shown in Figures 12-15, the pull cord 6 is movably guided in a vertically extending and stationarily arranged profiled rail 31. The profiled rail has an H-shaped cross section in this case, which can be recognized especially clearly in Figure 13. The rail 31 can also have an S-shape as shown in Figure 16. Two open channels 32 and 33 are formed due to the H-shaped cross section of the profiled rail 31. The pull cord 6 is thus enclosed on three sides.

The pull cord 6 is deflected at its lower end by a deflecting roller 19, which is rotatably mounted at the lower end of the profiled rail by means of a shaft 34. Alternatively the deflecting roller can also be any other suitable guide or deflecting structure.

To make it possible to grasp the pull cord or its leading and trailing ends, the profiled rail 31 is sized to have two grip means form as access openings or recessed grips 35 and 36. In this case, the leading end or side 6a can be grasped by the recessed grip 35, and the trailing end 6b can be grasped by the recessed grip 36. The recessed grips are arranged vertically offset in relation to one another. An excessive reduction in the cross section of the profiled rail due to the recessed grips 35, 36 is avoided as a result.

At its upper end and at its lower end, the profiled rail 31 also has a cover 37 and 38 each. The covers 37, 38 have a beaker-shaped design and are pulled over the top and lower ends of the profiled rail 37, respectively. The upper cover 37 comprises in this case a tube 42 with an upper cover sleeve 41 and a lower cover sleeve 43. This design offers the

advantage that the upper cover can always be adjusted to the actual length of the profiled
rail 31, because the tube 42 is cut off corresponding to the length of the profiled rail 31.
The upper and lower cover sleeves 41, 43 are used to cover cut edges on the tube 42. The
upper cover 41 has on its front side an opening 40, through which the pull cord 6 is led into
5 the interior of the cover 37. The pull cord 6 is completely enclosed by the covers 37 and 38.
As is shown in Figure 2, the pull cord can be pulled out of the respective channels 32 and
33 of the profiled rail 31 in the area between the covers 37, 38 only. As a result, there is
only a very small free loop 39, by which the pull cord 6 can be grasped by hand and be
operated by pulling in the downward direction. Due to the geometric conditions and the
10 tension in the pull cord 6, the loop 39 is just large enough for comfortable access to the pull
cord 6 to be guaranteed. On the other hand, the loop 39 is small enough so that not even
small children can put their heads into the loop 39. As a result, the strangulation of small
children by the pull cord 6 is ruled out. Thus, an accident hazard is reliably avoided with
very simple means. In addition, the pull cord 6 can be operated directly by hand, as usual.
15 There is no need to getting used to, or learning, the gripping elements of the prior art.

While specific embodiments of the invention have been shown and described in detail
to illustrate the application of the principles of the invention, it will be understood that the
invention may be embodied otherwise without departing from such principles.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A device for the operation of a blind, comprising:

a pull cord including a leading end portion and a return end portion;

5 a rail accommodating said pull cord, said pull cord being movably positioned in, and guided by, said rail, said rail hiding said pull cord in said rail;

grip means connected to said rail for providing access to said pull cord with respect to said rail, said rail blocking access to said pull cord in areas other than said grip means; and

10 said grip means being formed by a grip recess defined by said rail.

2. A device in accordance with claim 1, including:

a first cover between a first end of said rail and said grip recess, and a second cover between a second end of said rail and said grip recess.

3. A device in accordance with claim 1, wherein:

15 said rail encloses three sides of said pull cord in areas other than said grip recess.

4. A device in accordance with claim 1, wherein:

said rail has one of an S and H shaped design.

5. A device in accordance with claim 1, wherein:

said grip recess exposes three sides of said pull cord.

20 6. A device in accordance with claim 1, wherein:

said rail includes a first cover between a first end of said rail and said grip recess, said rail includes a second cover between a second end of said rail and said grip recess, and said covers cover said groove and block access to said groove and said pull cord.

7. A device in accordance with claim 1, wherein:

5 said rail defines another grip recess, said grip recess providing access to said leading end portion, and said another grip recess providing access to said return end portion.

8. A device in accordance with claim 1, wherein:

said rail blocks access to all portions of said pull cord except for said grip recess.

9. A device in accordance with claim 1, wherein:

10 said leading end portion and said return end portion form a loop.

10. A device in accordance with claim 1, further comprising:

a deflecting roller disposed at a lower end of said rail, said deflecting roller guiding said pull cord in the form of an endless loop.

11. A device in accordance with claim 1, wherein:

15 said rail has a longitudinal axis arranged vertically and parallel to said leading end portion and said return end portion of said pull cord.

12. A device for operation of a blind, the device comprising:

a pull cord including a leading end portion and a return end portion; and

a rail accommodating said pull cord, said pull cord being movably positioned in,

20 and guided by, said rail, said rail defining an access opening for providing access by an operator for gripping and moving said pull cord through said rail, said rail blocking access to said pull cord in areas other than said access opening, said rail including a first cover between

a first end of said rail and said access opening, and said rail including a second cover between a second end of said rail and said access opening.

13. A device in accordance with claim 12, wherein:

5 said rail encloses three sides of said pull cord in areas other than said access opening.

14. A device in accordance with claim 13, wherein:

said rail has one of an S and H shaped design.

15. A device in accordance with claim 12, wherein:

said rail defines a groove for receiving said pull cord.

10 16. A device in accordance with claim 12, wherein:

said access opening exposes three sides of said pull cord.

17. A device in accordance with claim 12 wherein:

15 said rail defines another access opening, said access opening providing access to said leading end portion, and said another access opening providing access to said return end portion.

18. A device in accordance with claim 12, wherein:

said rail blocks access to all portions of said pull cord except for said access opening.

19. A device in accordance with claim 12, wherein:

20 said leading end portion and said return end portion form a loop.

20. A device in accordance with claim 12, further comprising:

a deflecting roller disposed at a lower end of said rail, said deflecting roller guiding said pull cord in the form of an endless loop.

21. A device in accordance with claim 12, wherein:

5 said rail has a longitudinal axis arranged vertically and parallel to said leading end portion and said return end portion of said pull cord.

22. A device in accordance with claim 12, wherein:

said access opening is spaced from said first and second ends of said rail.

23. A device operation of a blind, the device comprising:

a pull cord including a leading end portion and a return end portion;

10 a rail accommodating said pull cord, said pull cord being movably positioned in, and guided by, said rail, said rail defining an access opening for providing access by an operator for gripping and moving said pull cord through said rail, said rail blocking access to said pull cord in areas other than said access opening, said rail defining a groove for receiving said pull cord, said rail including a first cover between a first end of said rail and said access
15 opening, and said rail including a second cover between a second end of said rail and said access opening, said covers covering said groove and blocking access to said groove and said pull cord.

VERTICAL BLIND SYSTEM

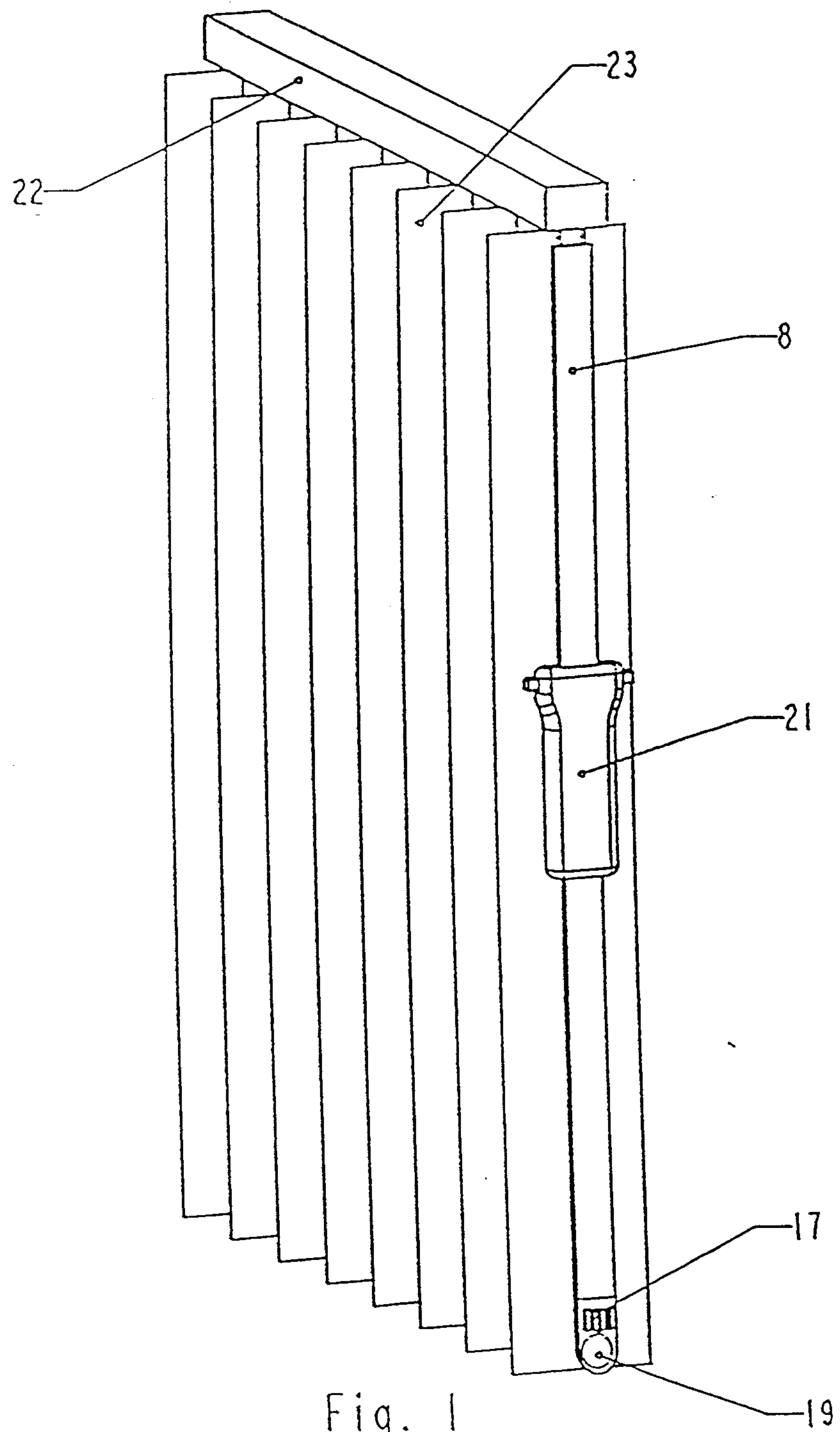


Fig. 1

HORIZONTAL BLIND SYSTEM

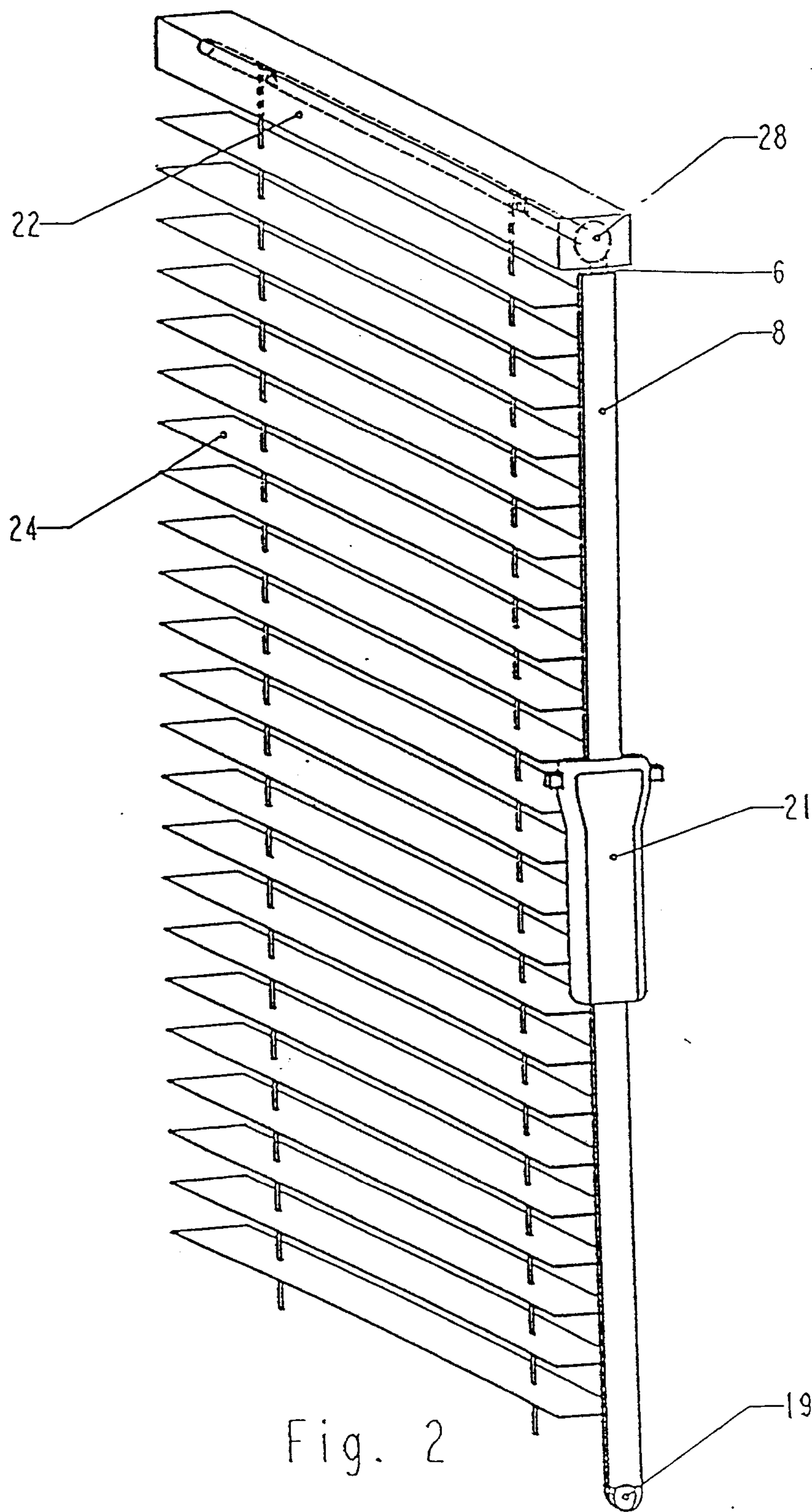


Fig. 2

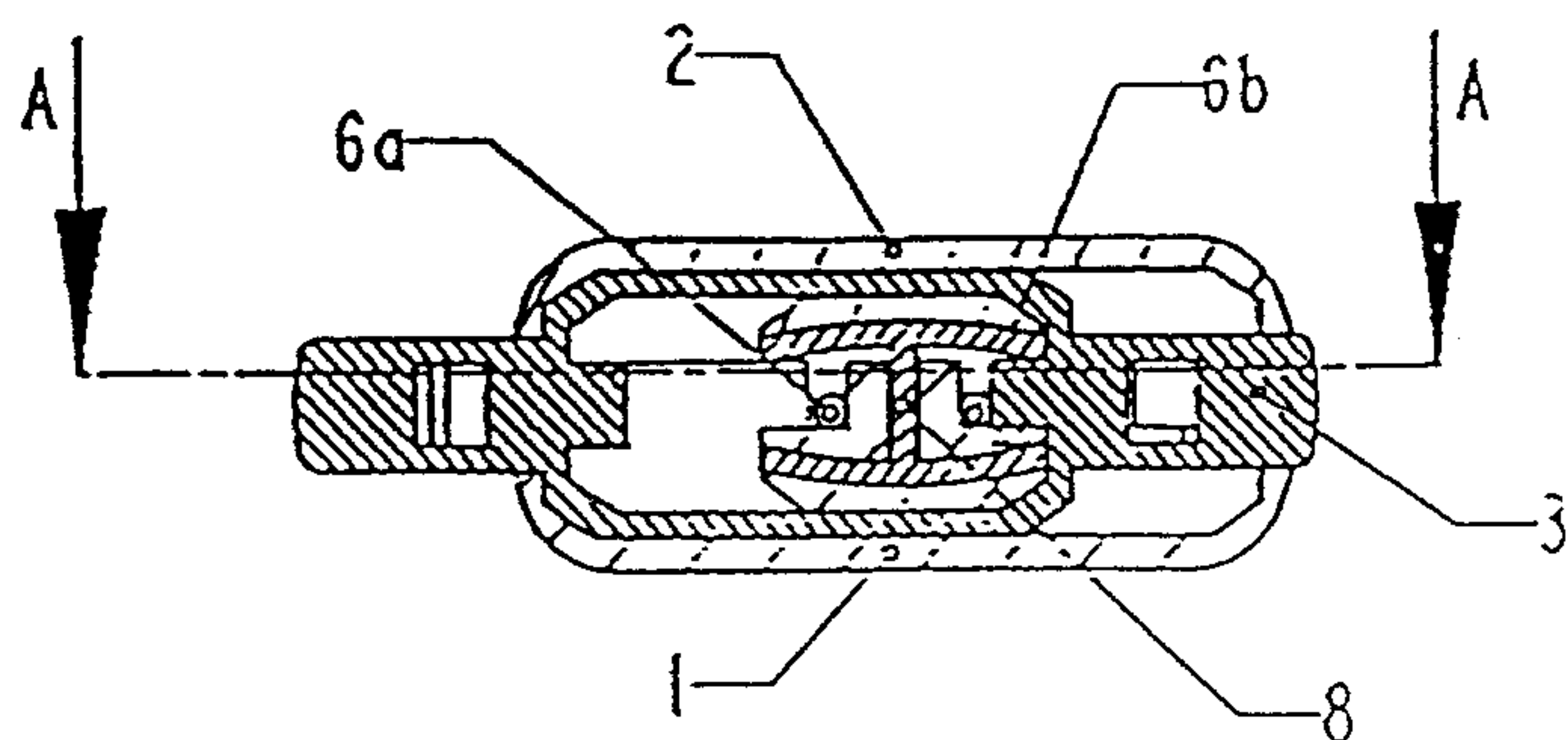


Fig. 5

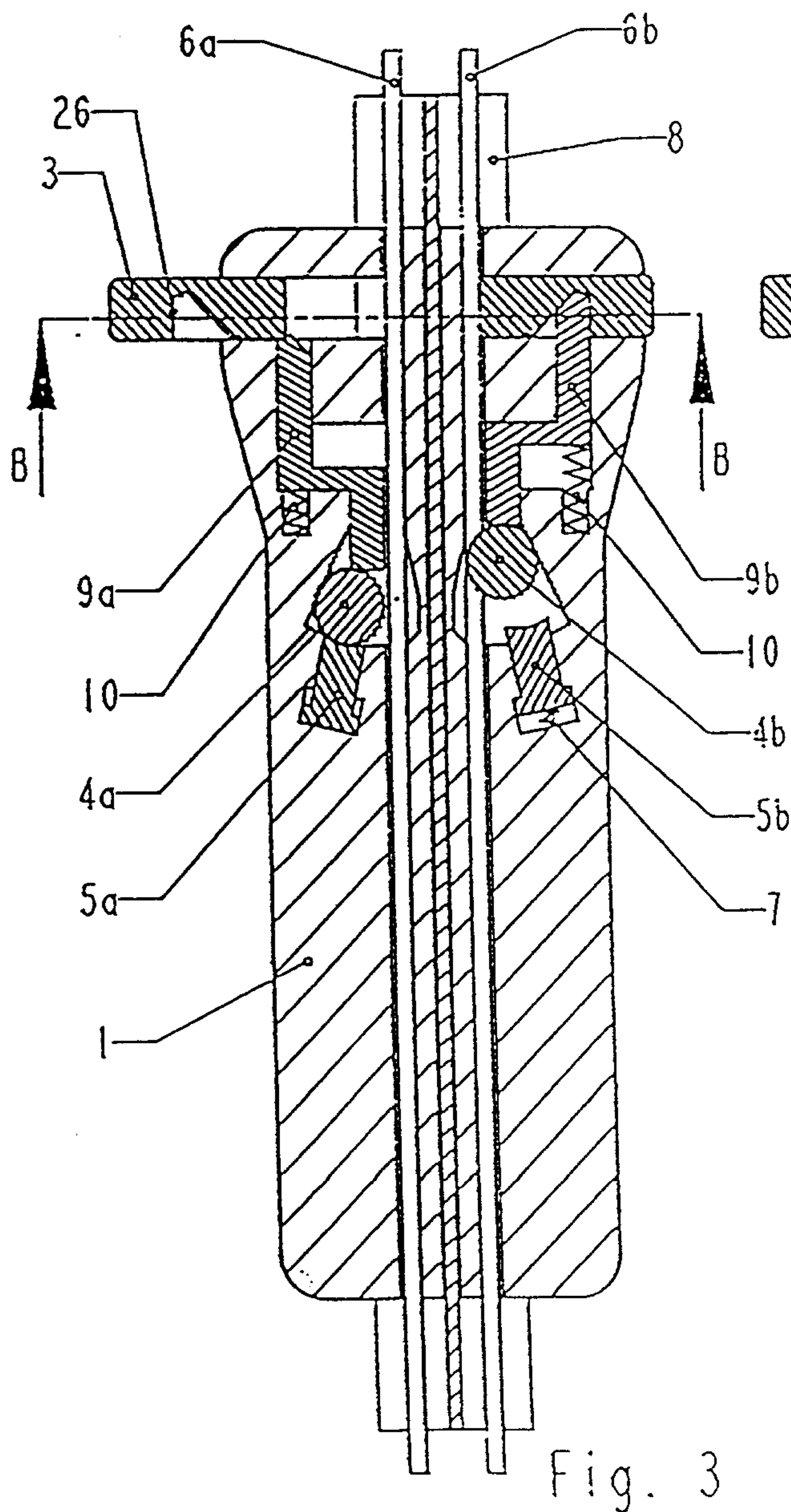


Fig. 3

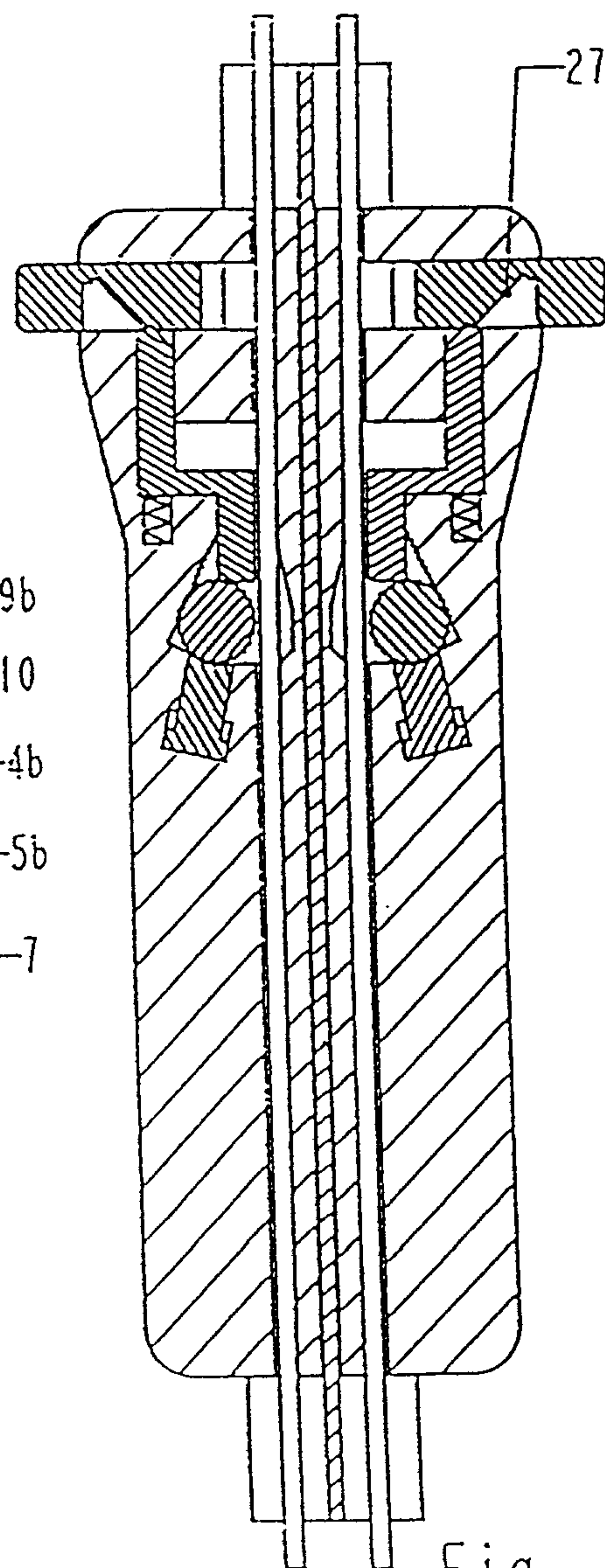
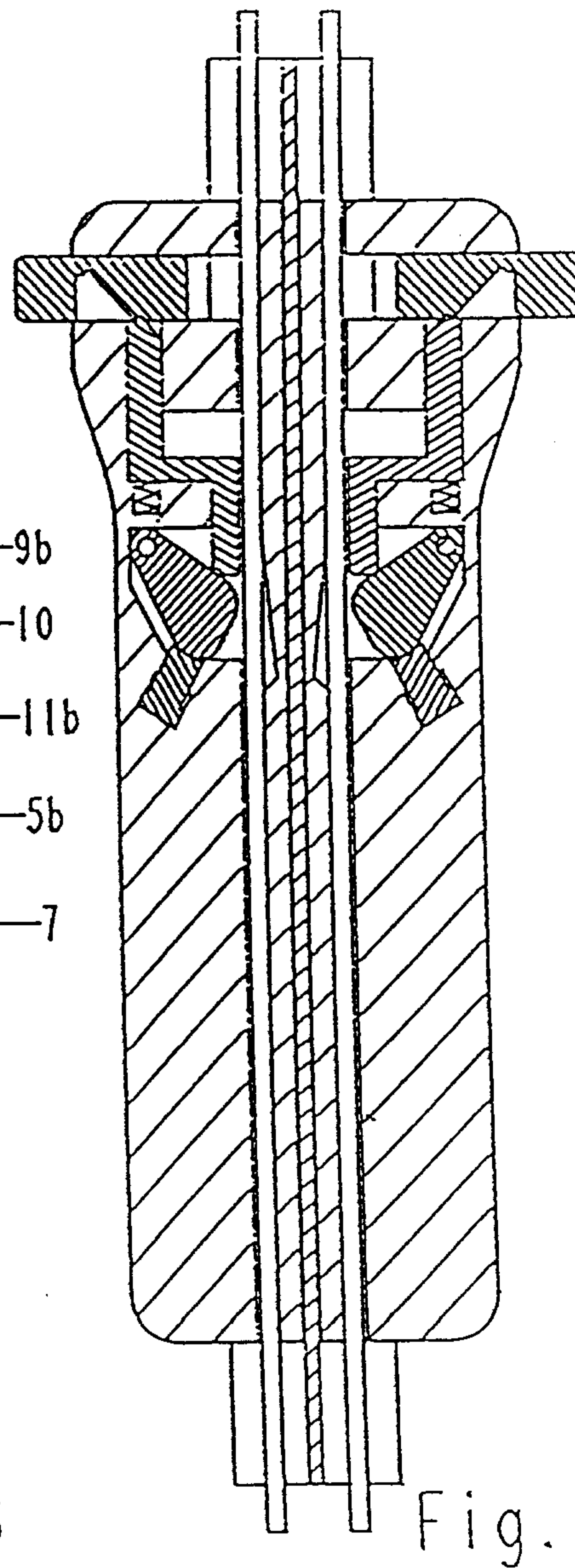
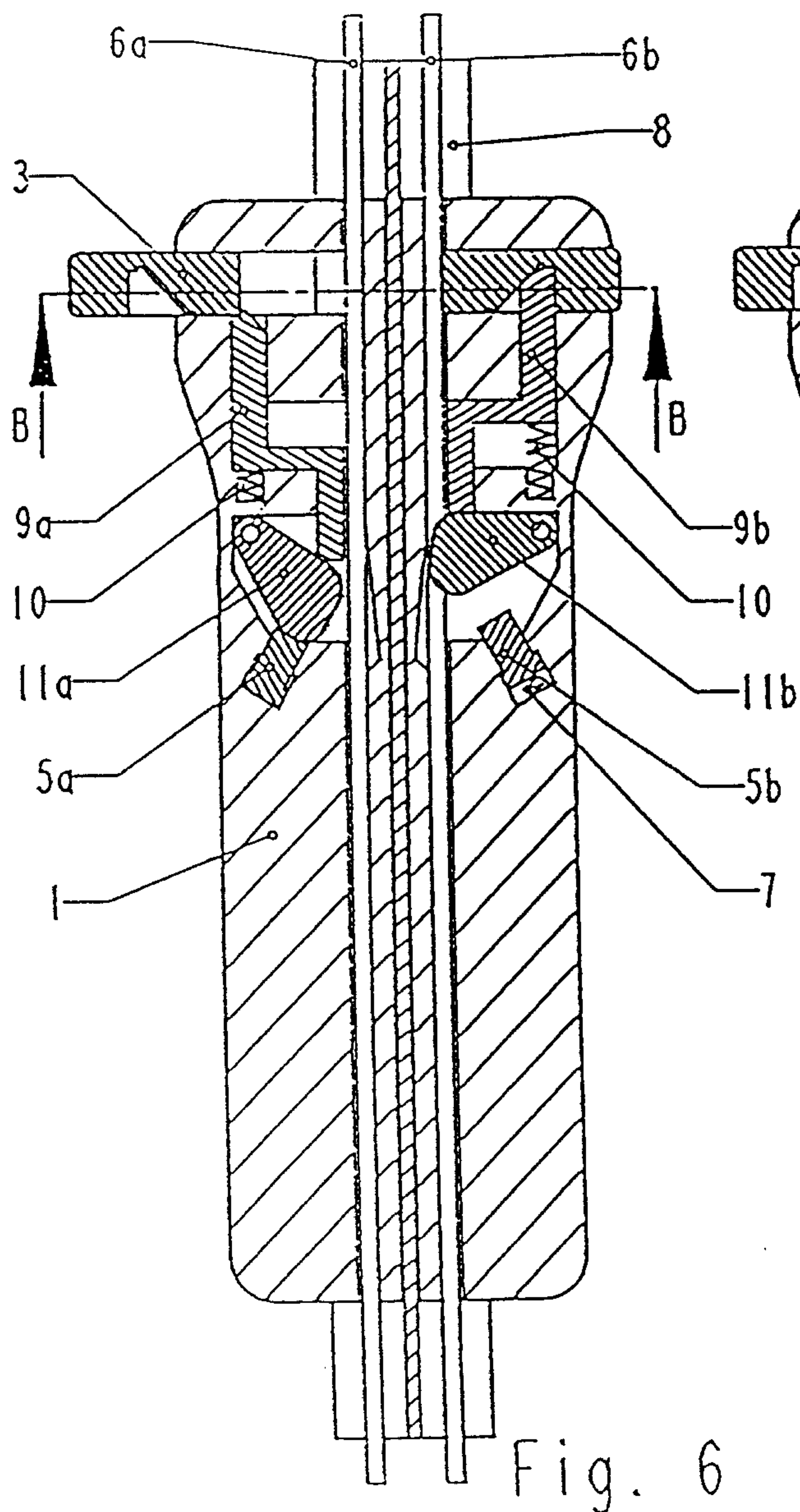
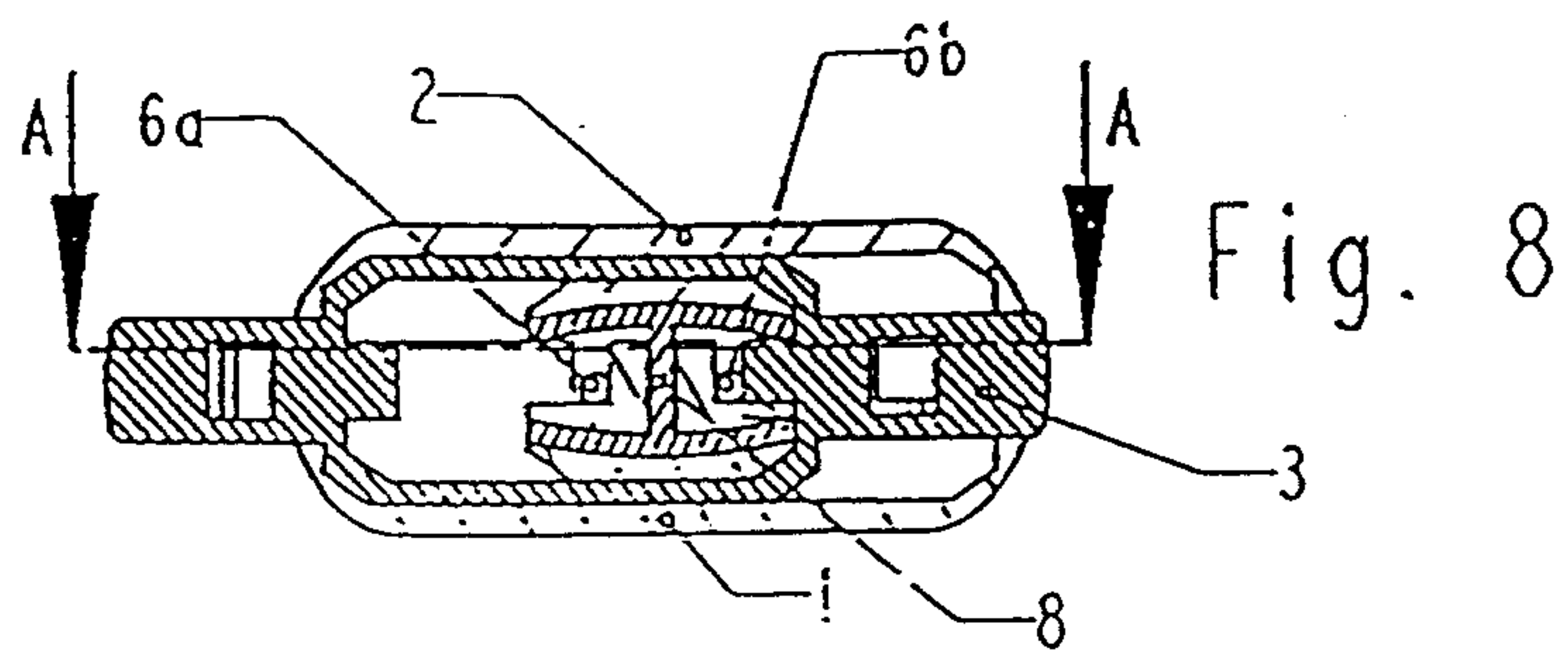


Fig. 4

SWITCHING POSITION A

SWITCHING POSITION B



SWITCHING POSITION A

SWITCHING POSITION B

VARIANT 1 FOR PIVOTING THE SLATS

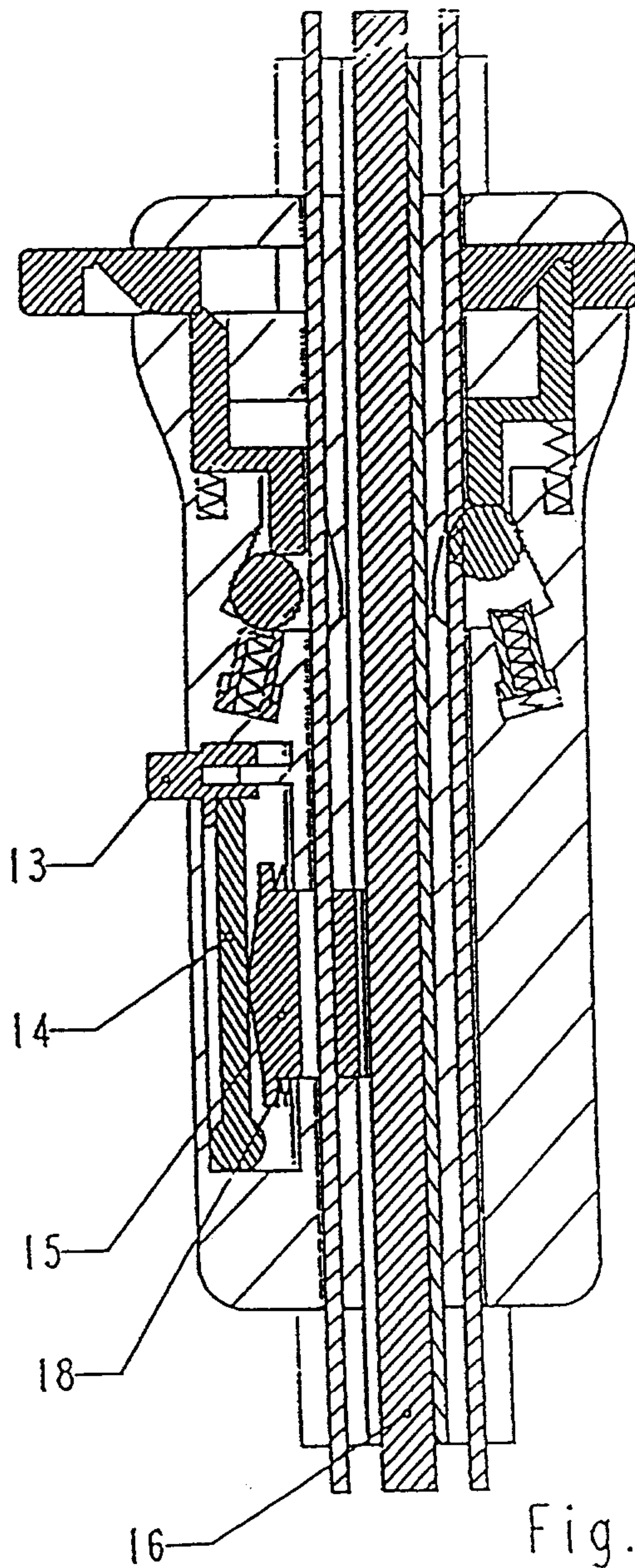


Fig. 9

SWITCHING POSITION D

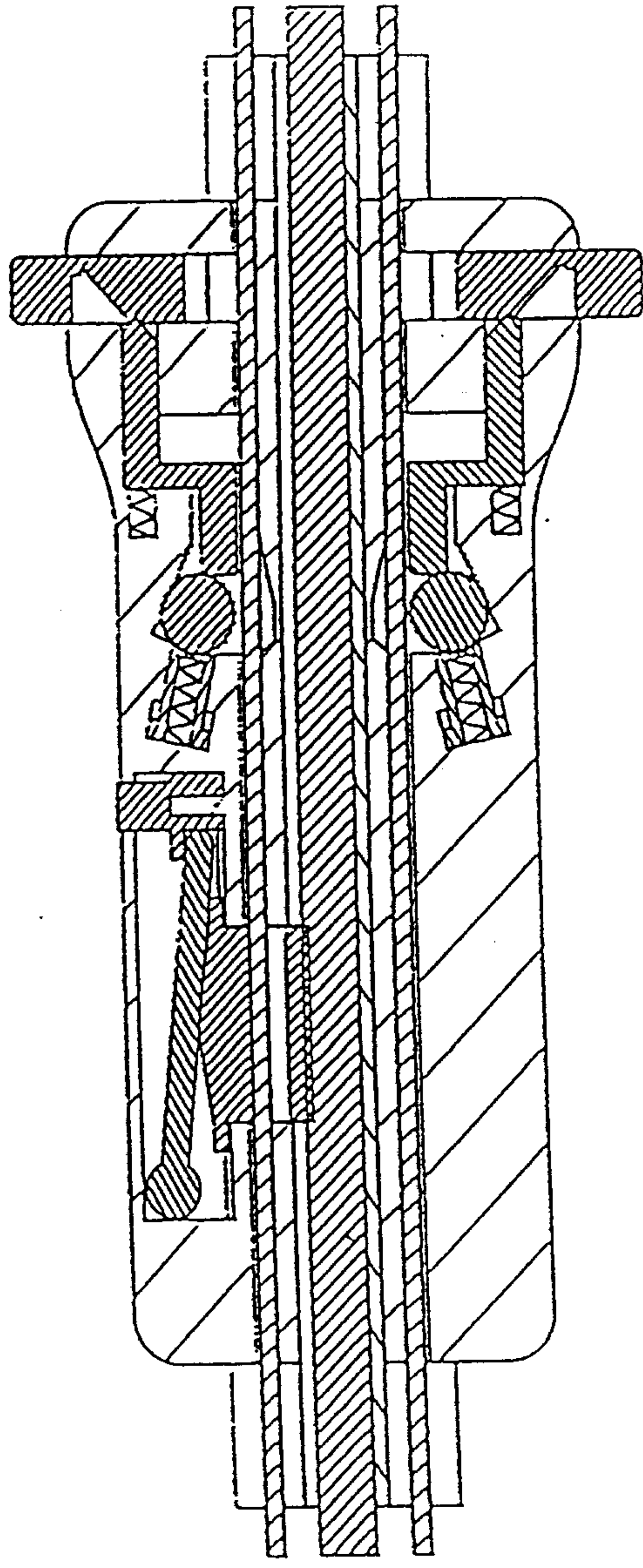


Fig. 10

SWITCHING POSITION E

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VARIANT 2 FOR PIVOTING THE SLATS

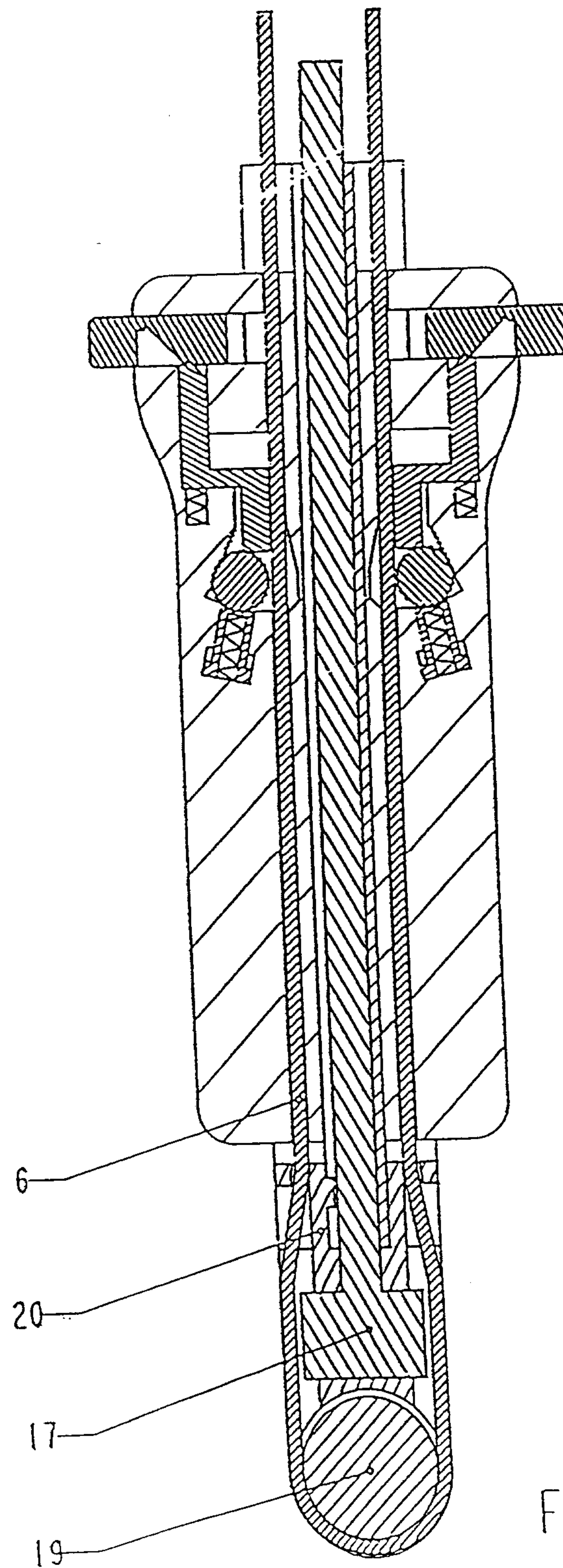
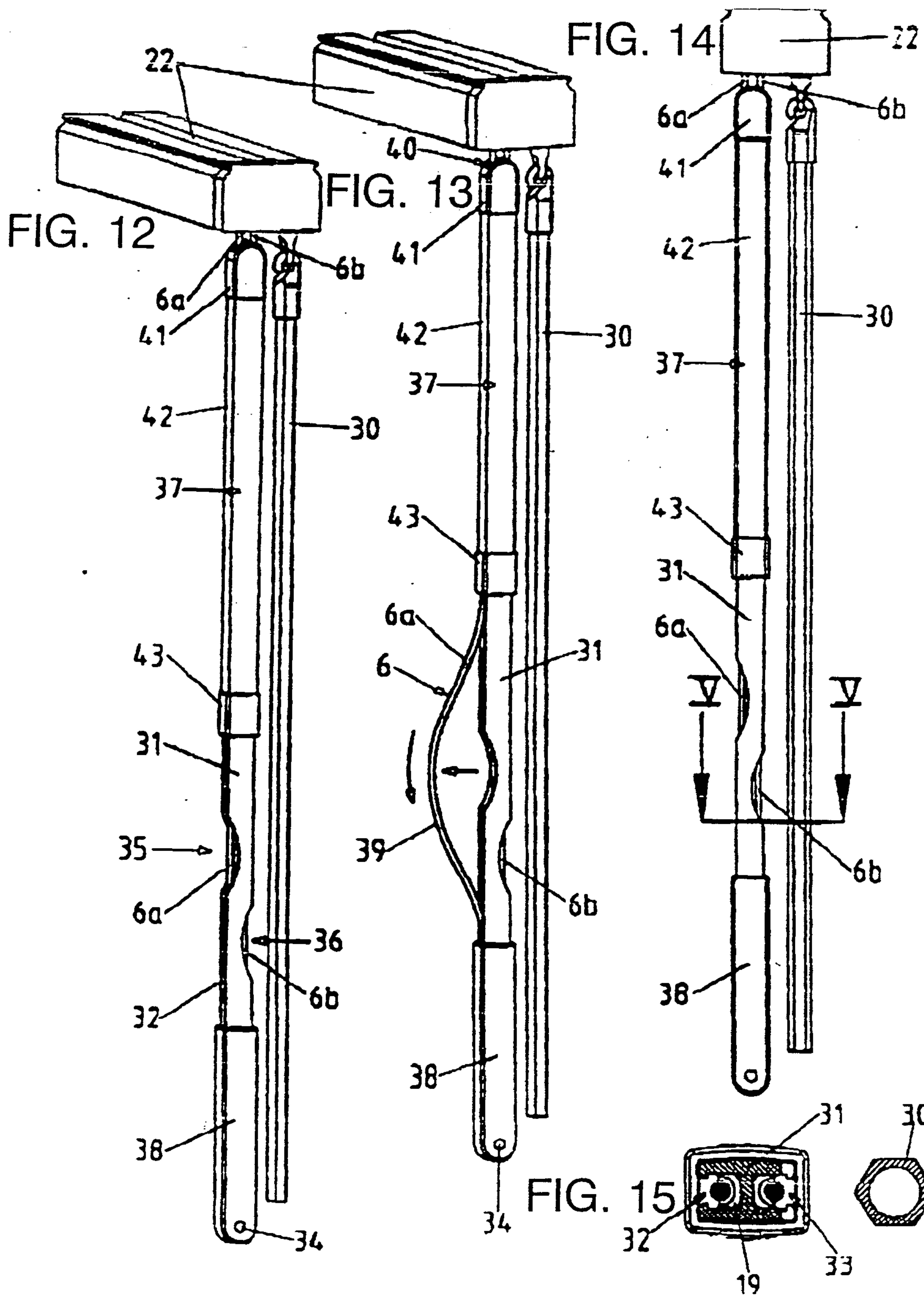


Fig. 11



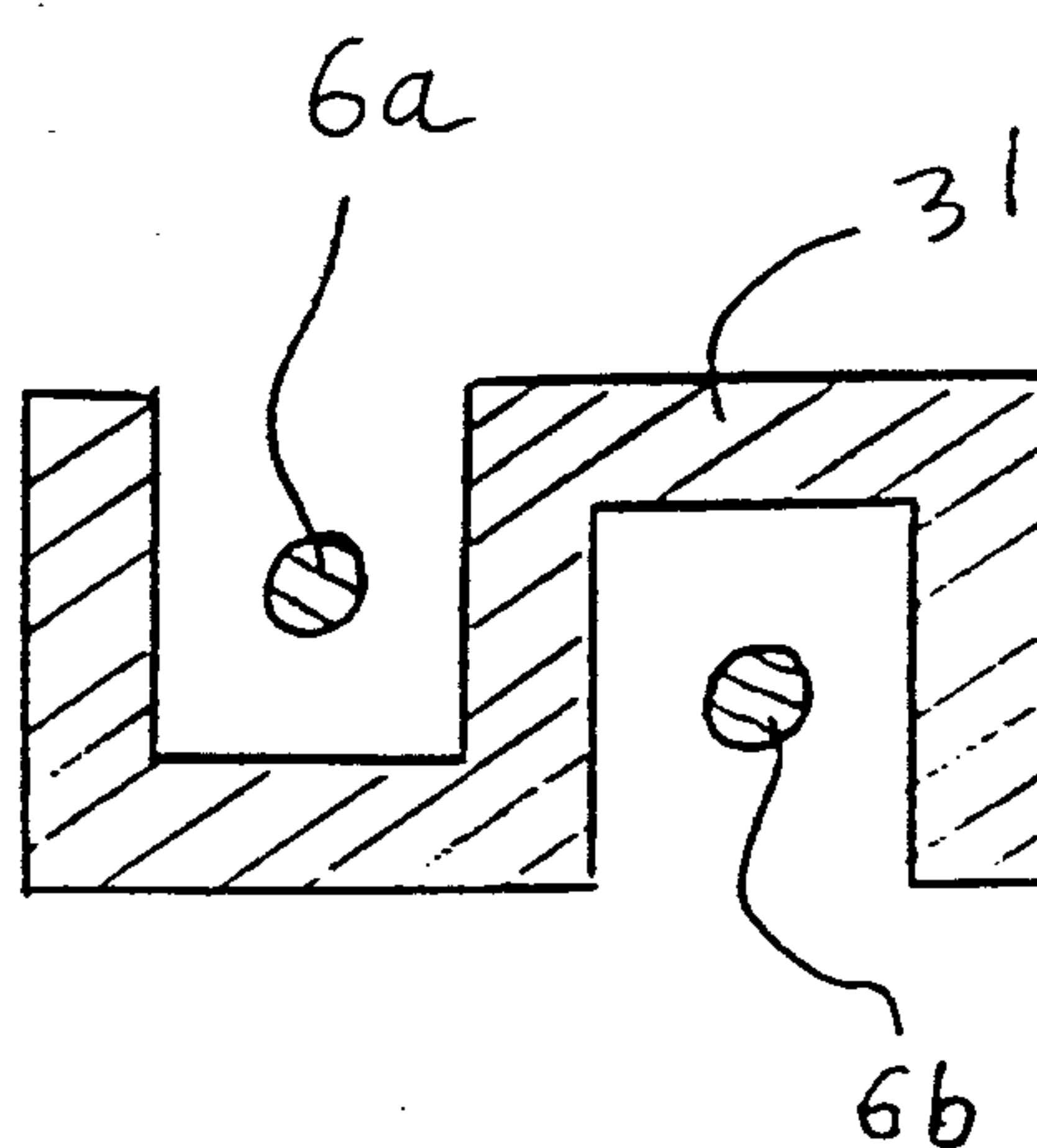


FIG. 16

VERTICAL BLIND SYSTEM

