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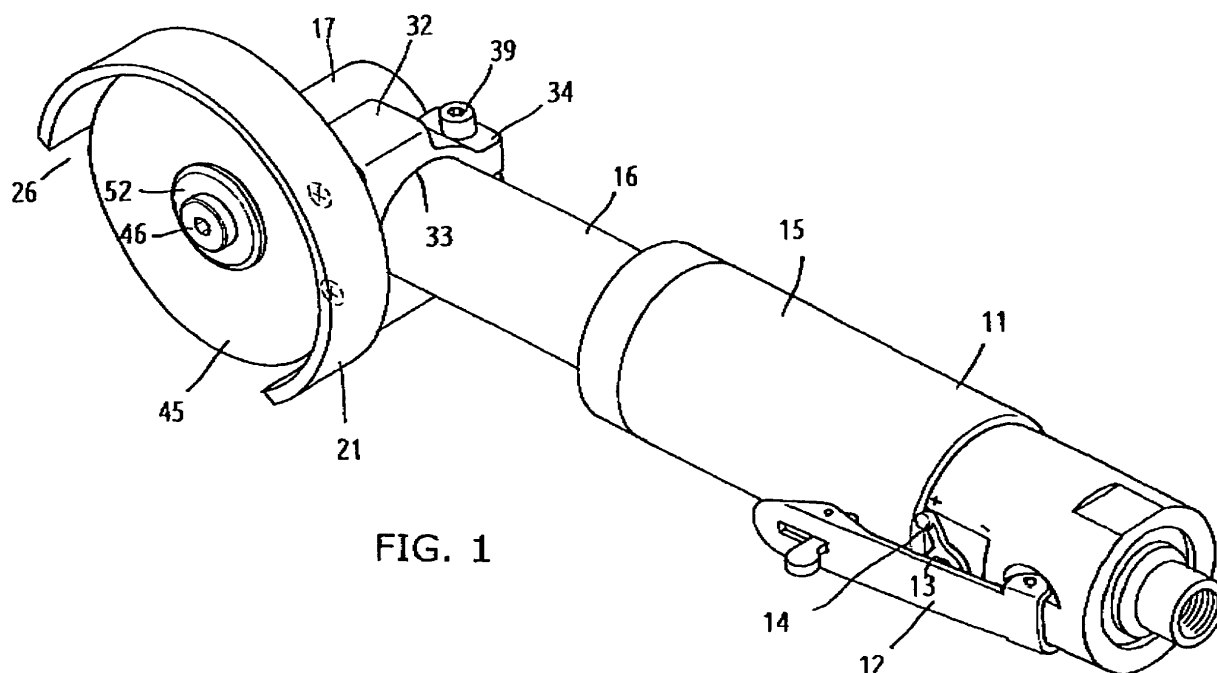
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(54) **Adjustment device of front guard of a grind wheel**

(57) An adjustment device of the front guard of a grinding wheel machine, which mainly comprises a grip and round rod; the round rod is mounted with a fastening base; one side of the fastening base is furnished with a flat surface to be attached to an inner surface of a guard plate on the front end of a transmission shaft; the flat

surface of the fastening base is furnished with symmetrical position beads and screw holes so as to have the guard plate positioned and screwed in place: after the guard plate is adjusted, the grinding wheel on the transmission shaft will simultaneously change its direction by changing the direction switch so as to have the grinding wheel turned to different direction as desired.



**FIG. 1**

## Description

### Background of the Invention:

#### 1. Field of the Invention:

**[0001]** This invention relates to a grinding wheel machine, and particularly to a grinding wheel machine with an adjustment device for the guard plate thereof.

#### 2. Description of the Prior Art:

**[0002]** The conventional grinding wheel machine usually has a grip, of which the front end is furnished with a round rod having a suitable length; the front end of the round rod is mounted with a direction-changing base, in which a bevel gear is mounted as a direction-changing gear so as to have the power shaft of the grip connected with a transmission shaft via the direction-changing gear; the outer end of the transmission shaft is fastened with a guard plate. A grinding wheel is mounted to the transmission shaft by means of a fastening plate and a nut. The power the grip of the grinding wheel machine is transmitted via the transmission shaft to the grinding wheel to turn at a high speed for grinding or cutting.

**[0003]** The guard plate mounted on the outer end of the transmission shaft of the aforesaid grinding wheel machine is a fixed type, i.e., the grinding or cutting direction thereof can not be changed.

#### Summary of the Invention:

**[0004]** The prime object of the present invention is to provide a grinding wheel machine, wherein the front end is furnished with a round rod and a fastening base; one side of the fastening base is furnished with a flat surface mounted with a guard plate on the outer end of transmission shaft by means of screws so as to have the opening of the guard plate faced a given direction.

**[0005]** Another object of the present invention is to provide a grinding wheel machine, wherein the front of transmission shaft is mounted with a guard plate; the inner surface of the vertical round plate of the guard plate is furnished with an arch-shaped slot, in which two symmetrical screws are mounted and screwed in two screw holes respectively on a flat surface of the fastening base; the positions of the two screws are designed as limit points, i.e., to limit the guard plate to turn at a given angle before being fastened in place.

**[0006]** Still another object of the present invention is to provide a grinding wheel machine, wherein the guard plate on the front end of the transmission shaft has a vertical round plate with a suitable diameter; one side of the vertical round plate is furnished with an opening; the guard plate is mounted on the front end of the transmission shaft with screws fastened in the screw-holes respectively in the fastening base; the guard plate provides the grinding wheel with a suitable width during working.

**[0007]** A further object of the present invention is to provide a grinding wheel machine, wherein the guard plate can be turned in different direction for cutting work by means of the arch-shaped slot and the screws therein on the inner surface of the vertical round plate upon setting in different positions; when the direction switch is set to "+", the opening of the guard plate will face the lower left direction.

**[0008]** A still further object of the present invention is to provide a grinding wheel machine, wherein the guard plate can be turned in different direction for cutting work by means of the arch-shaped slot and the screws therein upon setting in different position; when the direction switch is set to "-", the opening of the guard plate will face the lower right direction.

**[0009]** Yet another object of the present invention is to provide a grinding wheel machine, wherein the arch-shaped slot in the vertical round plate of the guard plate is limited by means of screws as limit shaft so as to have the guard plate turned to one end as a stop point, i.e., by means of each stop point, the grinding wheel can be turned to left or right for grinding or cutting work.

**[0010]** Yet still another object of the present invention is to provide a grinding wheel machine, wherein the screws mounted in the arch-shaped slot of the guard plate are designed as a limit shaft so as to facilitate the guard plate to turn easily and quickly.

#### Brief Description of the Drawings:

##### [0011]

Fig. 1 is a perspective view of the present invention. Fig. 2 is a disassembled view of the present invention.

Fig. 3 is a plan view of the present invention, showing the opening of the guard plate facing the lower left direction.

Fig. 4 is a fragmental sectional view of the present invention.

Fig. 5 is a plan view of the present invention, showing the guard plate being turned to a position.

Fig. 6 is a plan view of the present invention, showing the opening of the guard plate facing the lower right direction.

Fig. 7 is a perspective view of the present invention, showing the grinding wheel facing the lower right direction.

Fig. 8 is a perspective view of the present invention, looking at another angle.

#### Detailed Description of the Preferred Embodiment:

**[0012]** This invention relates to a direction adjustment device of front guard of a grinding wheel machine; as shown in Figs. 1 to 4, a trigger 12 and an intake valve arm 13 are furnished on one side of the grip 11 of the grinding wheel; the intake valve arm 13 has a direction

switch 14 on one side thereof. The inside of the direction switch 14 has an intake switching device, of which one end is in communication with a pneumatic motor 15 so as to enable the pneumatic motor 15 to turn in two opposite directions. The outer end of shaft of the pneumatic motor 15 extends through the inner hole of round rod 16 into a direction-changing base 17; then, by means of a direction-changing device, the power of the shaft can be transmitted to a transmission shaft 18 is the direction-changing base 17. The transmission shaft 18 is mounted with a grinding wheel 45; upon the pneumatic motor 15 turning at a high speed, the grinding wheel 45 on the transmission shaft 18 will rotate to grind or to cut.

**[0013]** The inside of the direction-changing base 17 is mounted with a transmission shaft 18, of which the center has a screw hole 20; the outer end of the transmission shaft 18 is mounted with a ring base 19 for mounting a guard plate 21. The guard plate 21 has a vertical round plate 25; the center of the guard plate is furnished with a round hole 23, of which the outer end has a recess ring 49 with a larger diameter. The round hole 23 of the guard body 22 is mounted on the ring base 19 of the direction-changing base 17; the transmission shaft 18 is mounted through the inside of the guard body 22; then, the end of the transmission shaft 18 is mounted with a positioning ring 50, a grinding wheel 45 and a positioning ring 51 a fastening screw 30 is mounted on the outer end thereof. The grinding wheel 45 is then fastened on the front end of the transmission shaft 18. The grinding wheel 45 is covered with a guard plate 21 to prevent particles ground from flying away. The guard plate 21 on the direction-changing base 17 is fastened on the flat surface beside the transmission shaft 18 by means of two screws and two screw holes (i.e., a conventional means).

**[0014]** The guard plate 21 on the transmission shaft 18 has a guard body 22 with a recess ring 49 on the outer edge thereof; the recess ring is mounted on a ring base 19 so as to have one end of the transmission shaft 18 passed through the outer portion of the guard body 22. An arch-shaped slot 24 is furnished along the vertical round plate 25; two screws 29 pass through the arch-shaped slot 24 and then fasten on the flat surface 40 of the fastening base 32 so as to have the guard plate 21 fixed in place.

**[0015]** The fastening base 32 has a round hole 33 to connect with the round rod 16 before the grip 11 being assembled with the round rod 16.

**[0016]** One end of the fastening base 32 is furnished with two symmetrical clamp plates 34 and 35 nearing the round hole 33; a gap 36 is left between the two clamp plates 34 and 35; the corresponding centers of the two clamp plates 34 and 35 are furnished with two holes 37 for mounting a screw bolt 39 therein. After the screw bolt 39 is fastened in the screw hole 38 of the clamp plate 35; the fastening base 32 will be fixed at a given position on the round rod 16.

**[0017]** The fastening base 32 and the outer end of the transmission shaft 18 have a flat surface 40 on the same

level to facilitate the recess ring 49 of the guard plate 21 to attach to a flat surface 52 upon the recess ring 49 being mounted on the ring base 19 of the direction-changing base 17; both sides of the flat surface 40 are furnished with symmetrical screw holes 41; after the flat surface 52 of the guard plate 21 is attached to the flat surface 40 of the fastening base, the arch-shaped slot 24 of the guard base 22 will be opposite to the two symmetrical screw holes 41; then, two screws 29 will pass through the arch-shaped slot 24 to fasten into the two screw holes 41 respectively so as to have the guard plate 21 fastened on the outer end of the transmission shaft 18.

**[0018]** The guard body 22 of the guard plate 21 is furnished with an arch-shaped slot 24, in which two screws 29 are mounted so as to fasten the guard plate 21 firmly on the flat surface 40 of the fastening base 32. The arch-shaped slot 24 enables the guard plate 21 to move in a direction as required. As shown in Fig. 3, the opening 26 of the guard plate 21 is turned to a lower left direction; in that case, the turning angle of the grinding wheel 45 is marked as "+"; after the opening 26 of the guard plate 21 is adjusted as shown in Fig. 6, the opening 26 is turned to a lower right direction, and it is marked as "-"; after the position of the guard plate 21 is adjusted, the working direction of the grinding wheel is also changed by changing the position of a direction switch 14 on one side of the grip 11 so as to set the grinding wheel 45 at a correct position.

**[0019]** The opening 26 of the guard plate 21 can be adjusted as required at a working angle; in order to facilitate position adjustment, the flat surface 40 of the fastening base 32 is furnished with two symmetrical positioning beads 42 and springs 44 respectively mounted in two cylindrical holes 43. After the guard plate 21 is mounted fixedly on the flat surface 40 of the positioning base 32, the positioning beads can indicate a correct position as desired.

**[0020]** Both ends of the arch-shaped slot 24 are furnished with two positioning holes 53 and 54. After the flat surface 40 of the fastening base 32 is in close contact with the flat surface 52 of the guard plate 21, and the guard plate 21 is turned, one of the two positioning holes 53 and 54 would indicate that the guard plate 21 has been turned to a position as desired; in that case, a screw 29, may be turned to fasten the guard plate 21 in place on the flat surface 40 of the fastening base 32, and then the grinding wheel 45 is ready for work.

**[0021]** As a whole, the grip 11 of the grinding wheel, as shown in Figs. 1 to 4, uses a pressure air or electricity as a power. The grip 11 is furnished with a direction switch 14 to enable the grinding wheel 45 to change direction; the fastening base 32 has a round hole 33 to connect with the round rod 16; the fastening base 32 has a flat surface 40 to facilitate the flat surface 52 of the guard plate 21 to attach together with the flat surface 40; two nuts 31 pass through the arch-shaped slot 24 of the guard body 22 of the guard plate 21, and are fastened in the screw hole 41 of the flat surface 40 on the fastening base

31. The opening 26 of the guard plate 21 faces in lower left direction as shown in Fig. 3 to meet the requirement of work. The grinding wheel 45 fastened to the transmission shaft 18 turns clockwise. As shown in Fig. 1, the grinding wheel 45 is set in lower left direction; if a conventional grinding wheel 45 is set in lower right direction, it would be unable to adjust a grinding direction.

**[0022]** Before adjusting the work direction of the grinding wheel, the grinding wheel 45 must be removed first as shown in Figs. 3 to 5; then, use a screwdriver to have the screw 29 in the arch-shaped slot 24 released; then, the guard plate 21 can be adjusted to a position as desired, i.e., to turn the guard plate 21 to the position as shown in FIG. 5 instead of a position shown in Fig. 3; then, use a screwdriver to fasten the screw 29 firmly in place, and the direction adjustment of the guard plate 21 is done.

**[0023]** If the guard plate 21 should be turned to the lower right direction as shown in Fig. 6, the direction switch 14 of the grip 11 must be set from position "+" to position "-".

**[0024]** As shown in Figs. 7 to 8, the grinding wheel 45 on the transmission shaft 18 is protected with the guard plate 21, which faces to the lower right direction to facilitate the grinding wheel 45 to cut or to grind.

**[0025]** The grinding machine of the present invention has a round rod 16 mounted with a fastening base 32, which is furnished with a flat surface 40 at one side thereof; the flat surface 52 of the guard plate 21 is attached to the flat surface 40 closely. The guard plate 21 can be fastened to the front end of the transmission shaft 18 by means of screws 29 to pass through the arch-shaped slot 24 in the guard body 22; in other words, after the screw 29 is released, the opening 26 of the guard plate 21 can easily be adjusted by changing the working direction of the transmission shaft 18 so as to adjust the grinding wheel 45 to a lower left direction or a lower right direction and to perform cutting or grinding work.

**[0026]** Through the aforesaid detailed description, the features and structure of the present invention have been disclosed completely; it is apparent that the present invention has made an evident improvement to the kind of grinding machine; the aforesaid features and structure have never been anticipated by anyone in the field, and the structure of the present invention is deemed unique.

**[0027]** While the invention has been described with reference to specific embodiments it must be understood that those embodiments are susceptible to many changes, substitutions, and modifications that will be readily apparent to those having ordinary skill in the art without departing from the scope and spirit of the invention.

## Claims

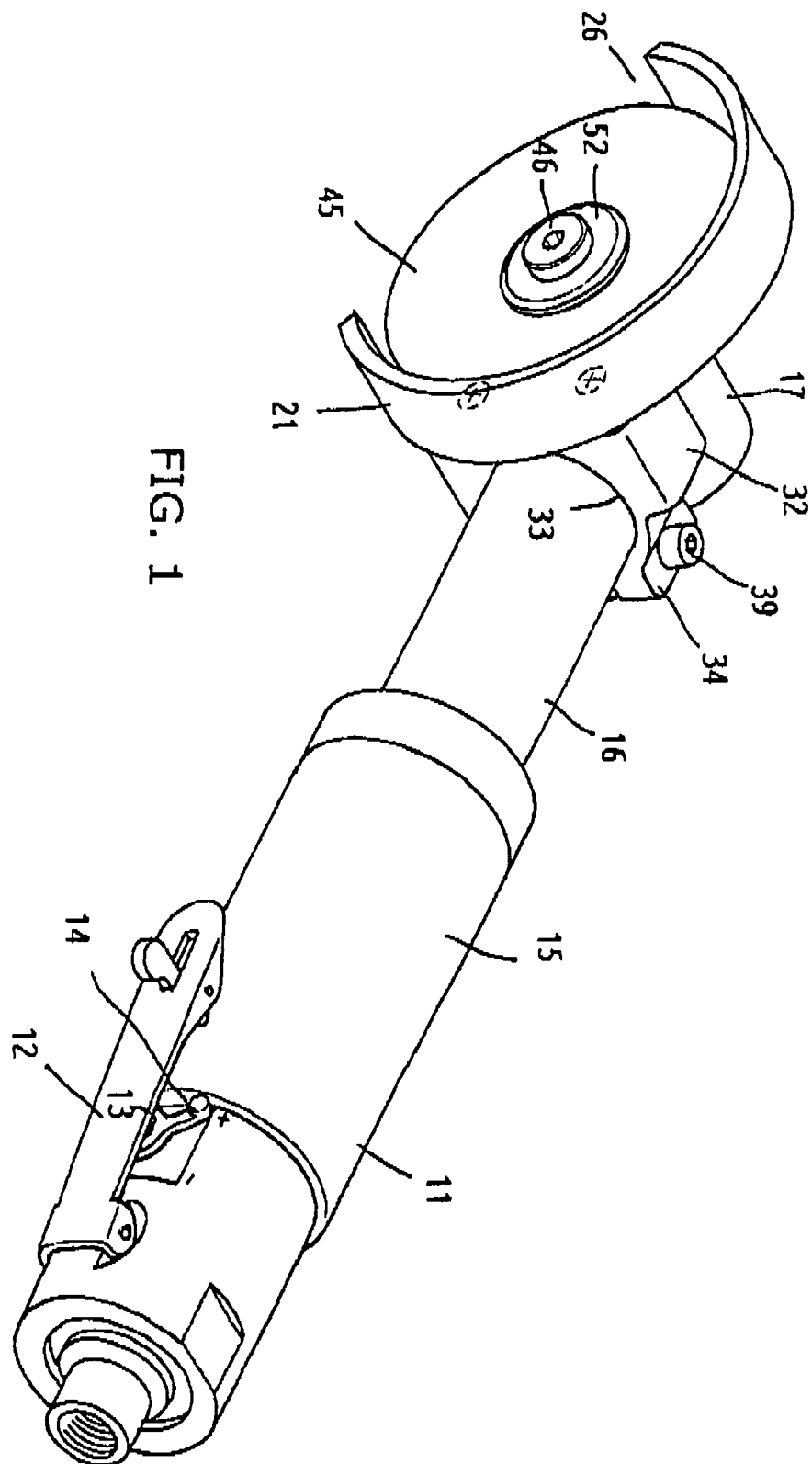
1. A grind wheel machine comprising an adjustment device for a guard plate, a round rod and a direction-changing base; said direction-changing base furnished with a transmission shaft therein; a ring base on said transmission shaft mounted with a guard plate to form into a direction-changing device which including.

a guard plate, of which the center furnished with a through round hole to be mounted on a ring base positioned on said direction-changing base; outer surface thereof being attached to a flat surface of a fastening base; outer edge of said guard body furnished with a vertical round plate and with an opening having a suitable width; said vertical round plate furnished with a through arch-shaped slot;

a fastening base, of which a guard body is furnished with a round hole to be connected with front end of a round rod; one side of said round hole furnished with two symmetrical clamp plates, and a gap being left between said two clamp plates; a screw bolt being mounted in said gap; one side of said round hole furnished with a flat surface to attach closely with a flat surface of said guard plate; said flat surface of said fastening base furnished with two symmetrical screw holes opposite to said arch-shaped slot of said guard plate;

two screw holes, which are mounted through said arch-shaped slot, and then are fastened in two screw-holes on a flat surface of said fastening base respectively.

2. A grind wheel machine as claimed in claim 1, of which the front guard plate has a direction-changing device including a fastening base with two symmetrical screw holes on a flat surface thereof, and with two cylindrical holes beside said two screw holes; each of said two cylindrical holes loaded with a spring and a positioning bead; said flat surface of said guard plate being attached closed to said flat surface of said fastening base; outside but nearing both ends of said arch-shaped slot being furnished with two positioning holes respectively for holding said positioning beads respectively.



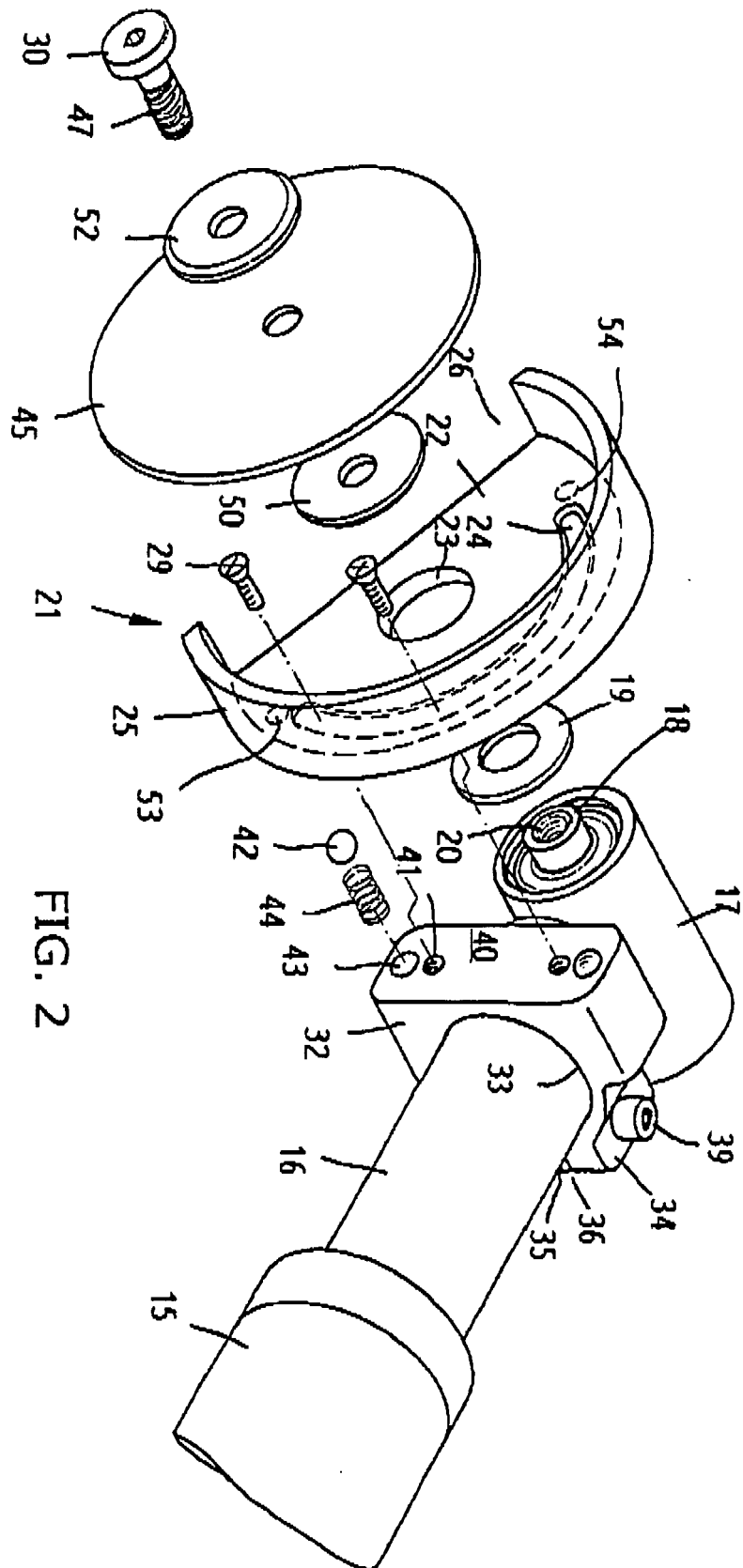


FIG. 2

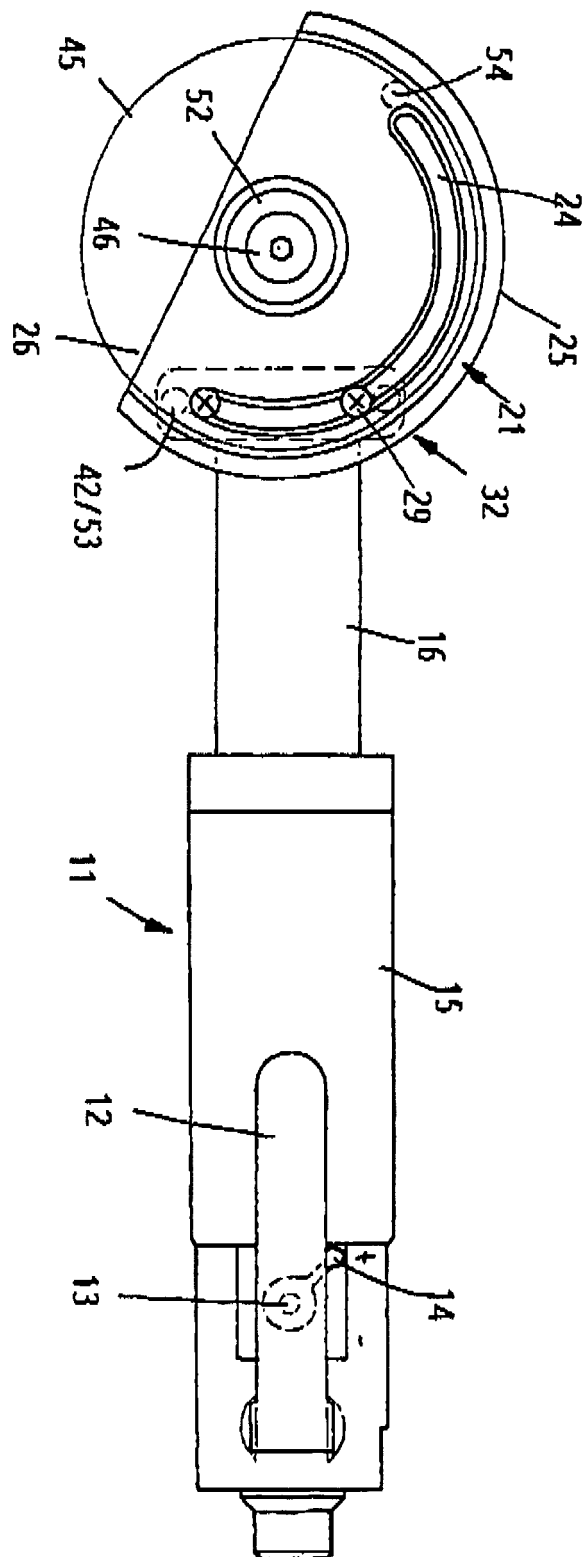


FIG. 3

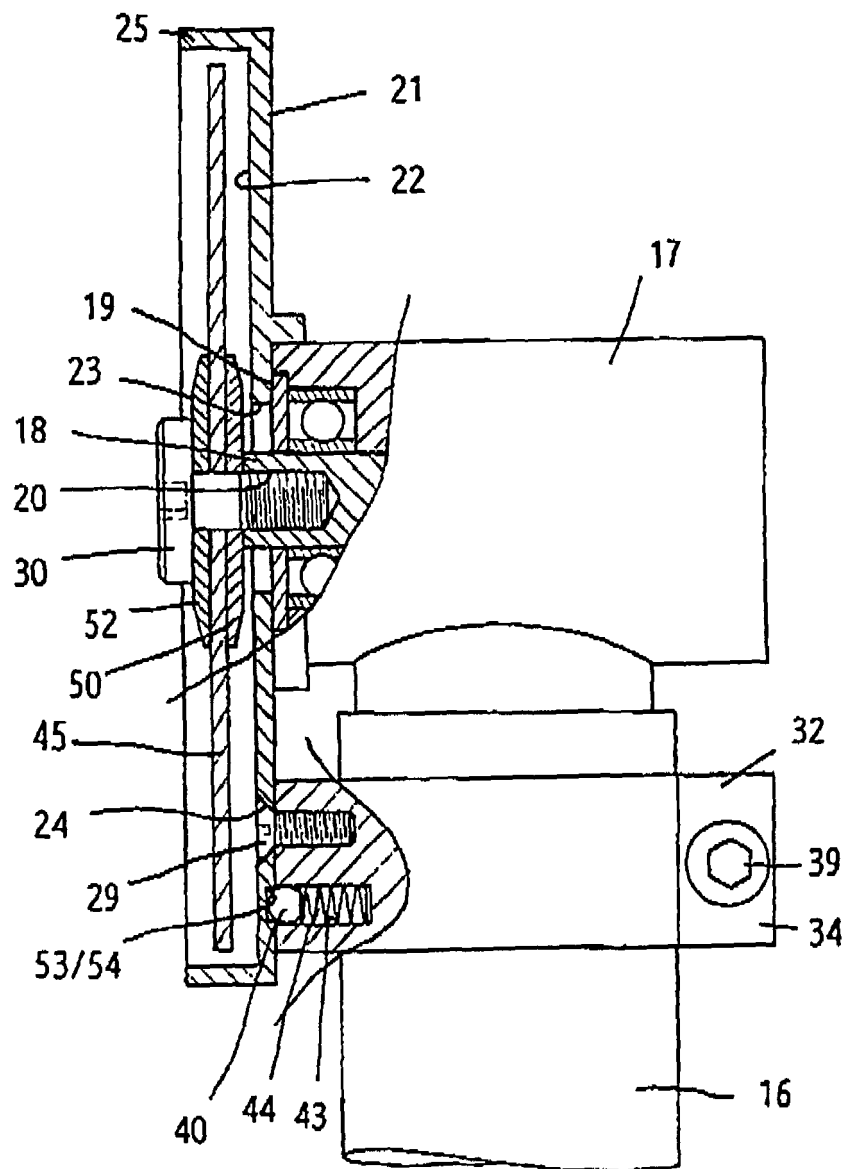


FIG. 4



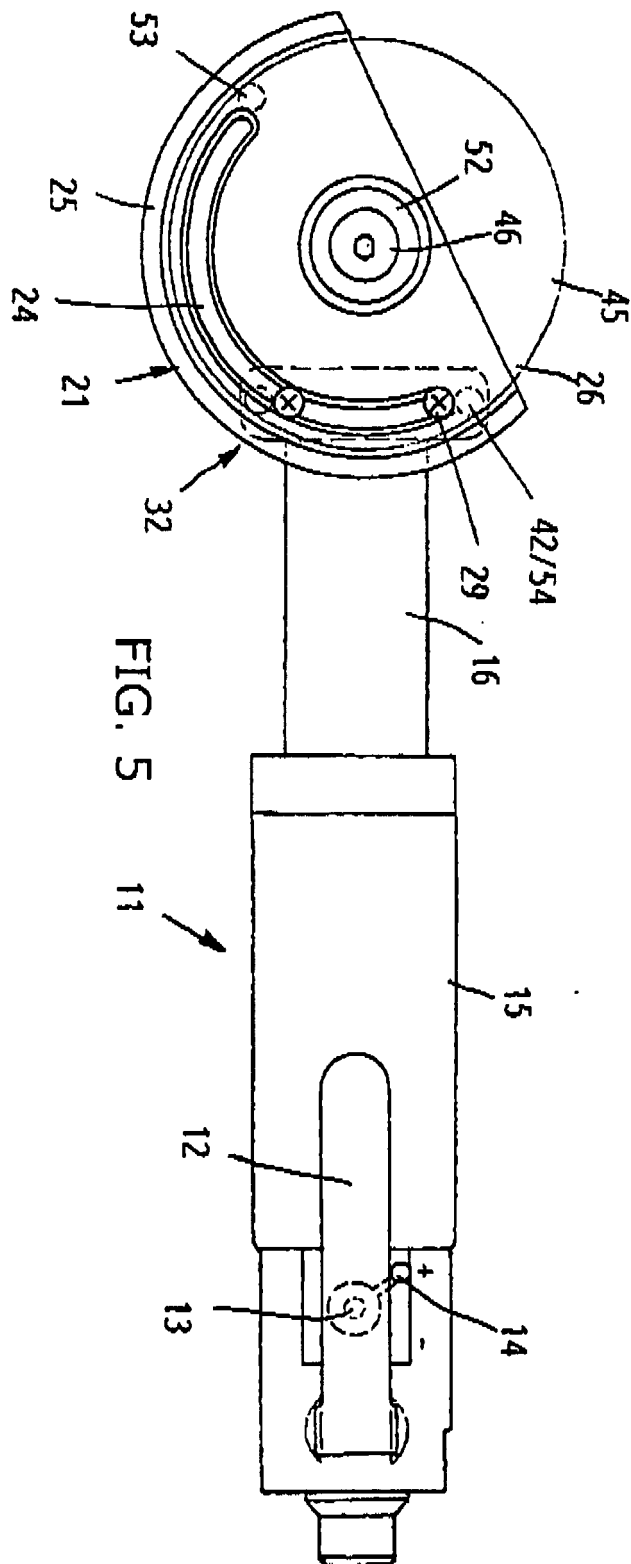
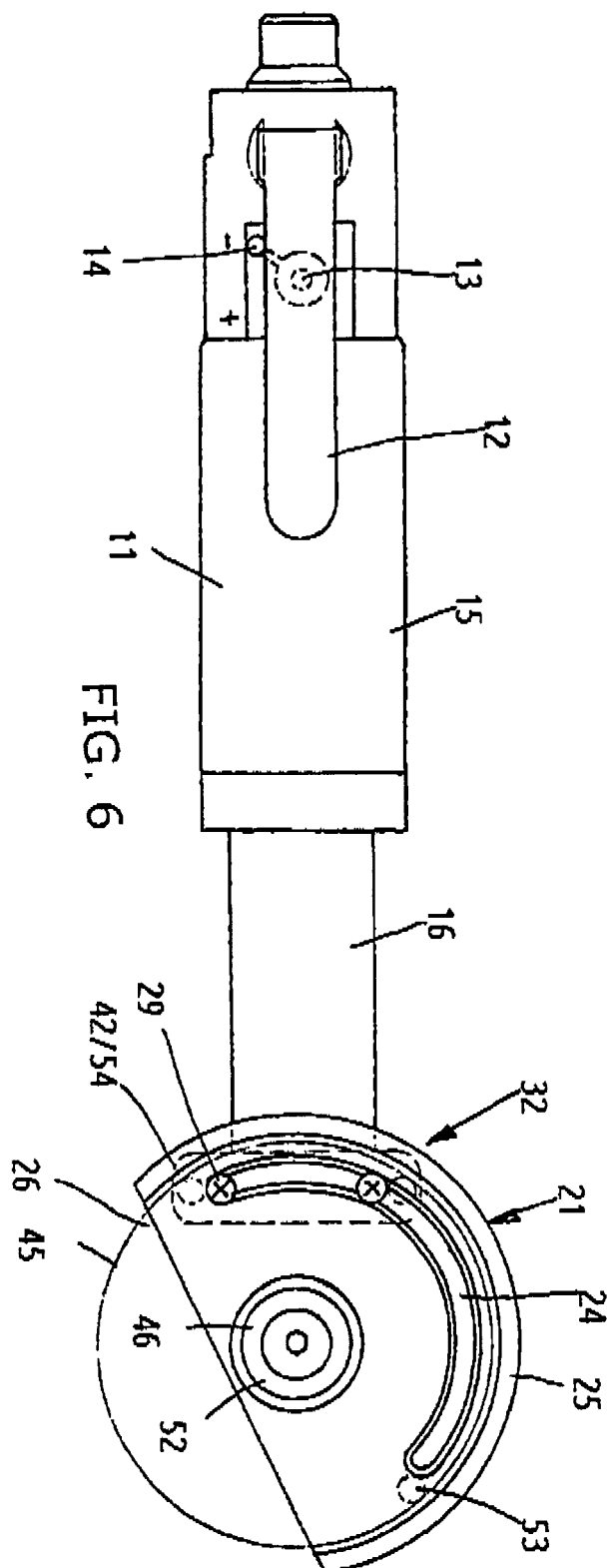
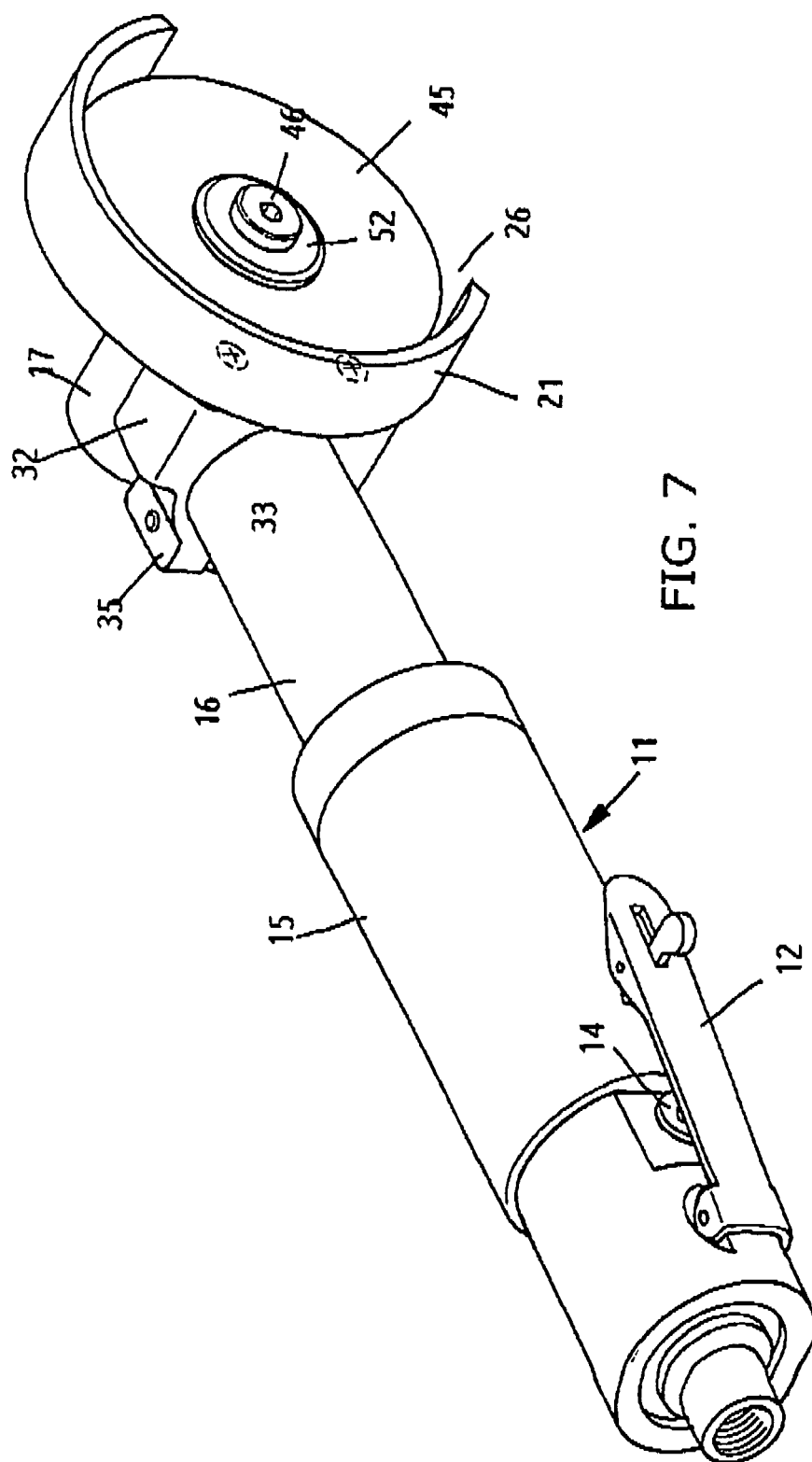
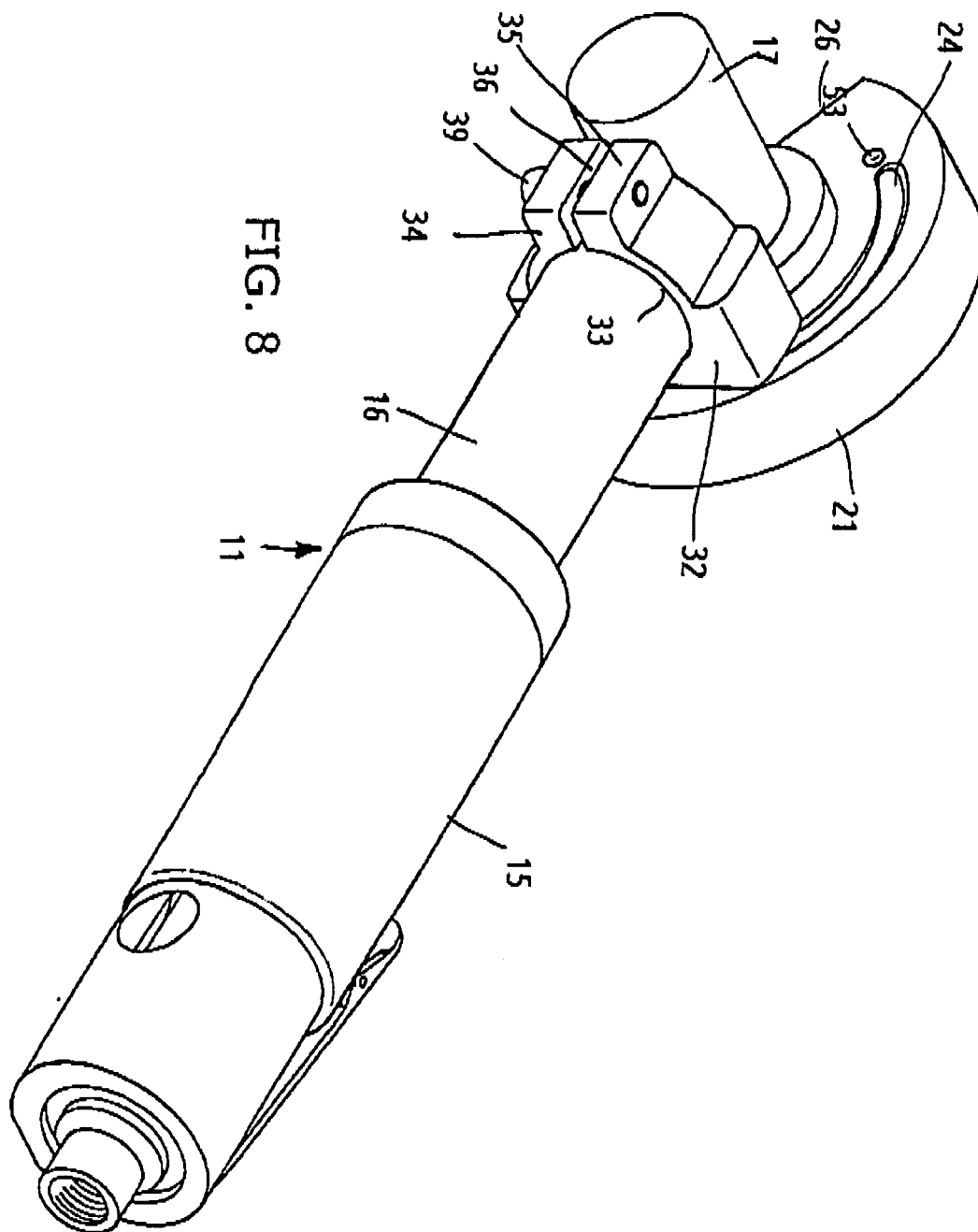


FIG. 5









European Patent  
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## EUROPEAN SEARCH REPORT

Application Number  
EP 08 00 1896

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Place of search		Date of completion of the search	Examiner
Munich		14 April 2008	Koller, Stefan
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EPO FORM 1503 03 82 (P04/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 08 00 1896

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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