



(22) Date de dépôt/Filing Date: 2005/04/29

(41) Mise à la disp. pub./Open to Public Insp.: 2005/10/30

(45) Date de délivrance/Issue Date: 2009/01/27

(30) Priorité/Priority: 2004/04/30 (DE10 2004 021 494.8)

(51) Cl.Int./Int.Cl. *B41F 27/06* (2006.01),
B41F 13/08 (2006.01), *B41F 30/00* (2006.01)

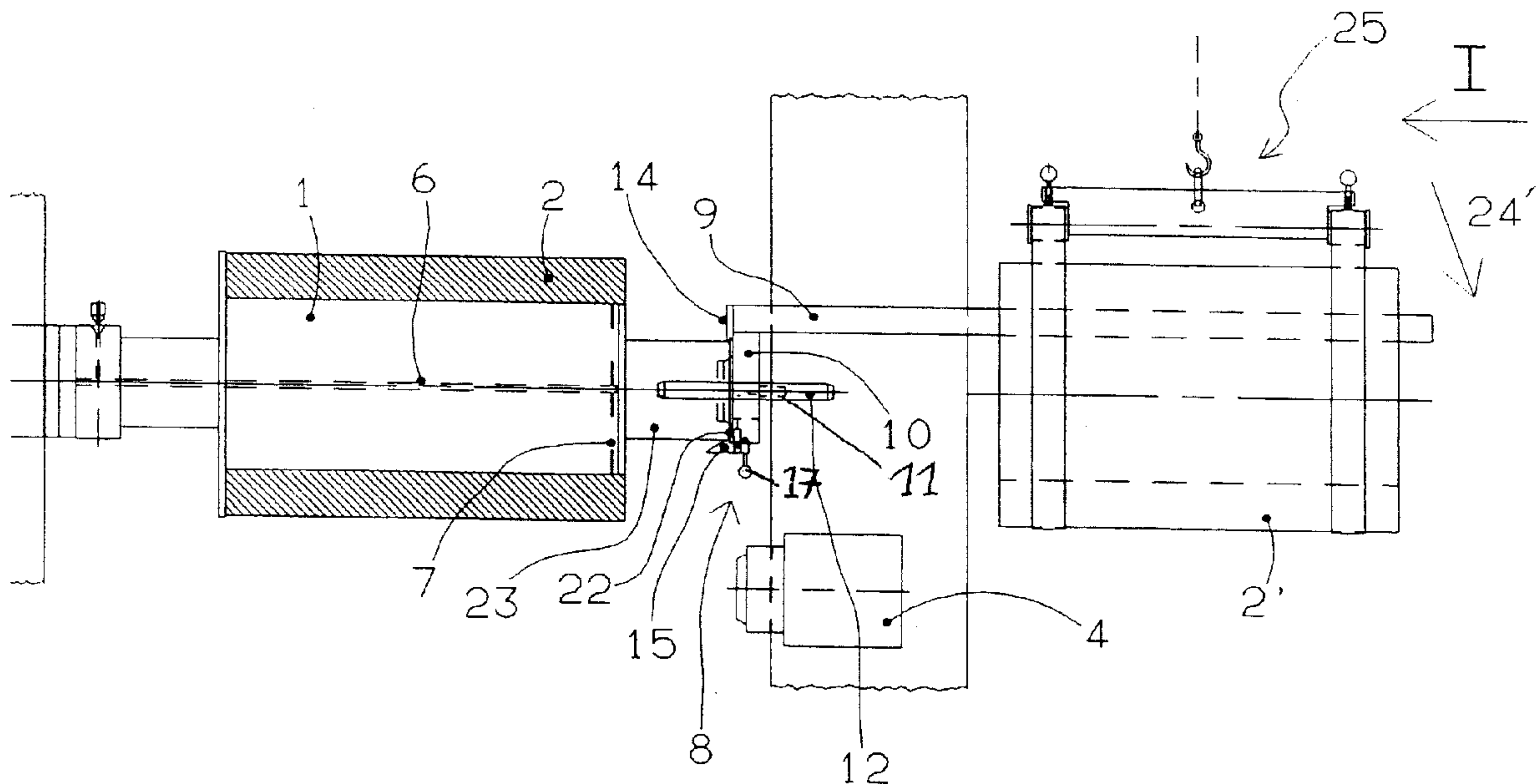
(72) Inventeurs/Inventors:
GOTTLING, JOSEF, DE;
HARTMANN, THOMAS, DE;
PETERSEN, GODBER, DE

(73) Propriétaire/Owner:
MANROLAND AG, DE

(74) Agent: OGILVY RENAULT LLP/S.E.N.C.R.L.,S.R.L.

(54) Titre : DISPOSITIF D'INSERTION-EXTRACTION DE MANCHON

(54) Title: APPARATUS FOR PULLING A SLEEVE ON AND OFF



(57) Abrégé/Abstract:

In order to make handling easier, an apparatus for pulling a sleeve onto and off a printing-press cylinder has a head piece (8) having positioning means (13) for defining the position of the head piece (8) with respect to the cylinder (1), connecting means (14, 15) for fixing the head piece (8) to the cylinder (1), and centering means (12) for defining the position of the sleeve (2) with respect to the head piece (8) and a deposition bar (9) for the sleeve (2), which deposition bar (9) is attached to the head piece (8).

ABSTRACT

In order to make handling easier, an apparatus for pulling a sleeve onto and off a printing-press cylinder has a head piece (8) having positioning means (13) for defining the position of the head piece (8) with respect to the cylinder (1), connecting means (14, 15) for fixing the head piece (8) to the cylinder (1), and centering means (12) for defining the position of the sleeve (2) with respect to the head piece (8) and a deposition bar (9) for the sleeve (2), which deposition bar (9) is attached to the head piece (8).

- 1 -

APPARATUS FOR PULLING A SLEEVE ON AND OFF

FIELD OF THE INVENTION

The invention relates to an apparatus for pulling a sleeve onto and off a printing-press cylinder.

5 BACKGROUND OF THE INVENTION

As a result of the influences of printing operation, it occurs that a sleeve is fixed on the cylinder and can no longer be pulled off from the cylinder merely by the known introduction of compressed air. Sleeves of this type have to be released from the cylinder by force, partly by cutting them off or using rough hammer blows. As a rule,
10 a sleeve of this type is damaged to such an extent that it cannot be used again.

SUMMARY OF THE INVENTION

The invention is based on the object of providing an apparatus of the generic type mentioned in the introduction, which apparatus makes it easier to pull the sleeve on or off.

15 According to the invention, this is achieved by a head piece having positioning means for defining the position of the head piece with respect to the cylinder, connecting means for fixing the head piece to the cylinder, and centering means for setting the position of the sleeve with respect to the head piece and a deposition bar for the sleeve, which deposition bar is attached to the head piece.

20 An apparatus of this type affords the advantage that it is automatically positioned precisely on the cylinder after connection. A sleeve can thus be pulled on or off without the risk of damage to the said sleeve.

According to one preferred refinement of the invention, the head piece has a vertical strut and a transverse strut, with, in order to form the positioning means on the
25 transverse strut, pressure pins being provided which can be brought into engagement with depressions in an end of the cylinder, and in order to form the connecting means, a fixed angled-away stop being arranged at one end of the vertical strut and a pivotable bolt being arranged at the other end of the vertical strut, in each case in

- 2 -

order to engage behind a flange of the cylinder, and in order to form the centering means, in each case one roll-shaped centering strip which extends in the axial direction of the cylinder being arranged at both ends of the transverse strut. A construction of this type can be realized with a low weight.

- 5 According to one refinement of the invention which makes handling even easier, a gripper which can be moved in the axial direction of the cylinder with respect to the deposition bar is provided for the sleeve, which gripper can be moved between a position for gripping a sleeve which is situated on the cylinder and an outer position which releases the sleeve.

10 BRIEF DESCRIPTION OF THE DRAWINGS

Further features and advantages emerge from the remaining subclaims and a description of two exemplary embodiments using the drawing, in which:

- Figure 1 shows a side view of a printing unit,
Figure 2 shows a side view of a first embodiment,
15 Figure 3 shows a view of a second embodiment,
Figure 4 shows a view in the direction of the arrow I in Figure 2, with the lifting apparatus removed,
Figure 5 shows a view in the direction of the arrow II in Figure 3, likewise with the lifting apparatus removed, and
20 Figure 6 shows a section through a pressure pin.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

- Figure 1 shows a printing unit for recto and verso printing, having a plurality of cylinders 1, of a web-fed rotary offset press. A sleeve 2 which bears either the printing medium or a rubber blanket is pulled onto every cylinder 1. The cylinders 1
25 are mounted fixedly on a side wall of the printing press in a manner which is known per se and not shown. They are held on bearing blocks 3, 4 on the other side. The bearing blocks 3, 4 are held displaceably on the edge of a side-wall opening 5. In

- 3 -

Figure 1, the bearing block 4 is displaced to such an extent that the uppermost cylinder 1 having the sleeve 2 is freely accessible through the side-wall opening 5.

Figure 2 diagrammatically shows a cylinder 1 having a sleeve 2 which is shown cut open and is to be removed. In order to prepare for this, compressed air is introduced
5 between the cylinders 1 and the sleeve 2 in a manner known per se via air ducts 6 and 7 which are connected to a compressed air generator.

The apparatus for pulling the sleeve 2 on and off has a head piece which is denoted overall by 8. A deposition bar 9 is attached fixedly to the head piece. As Figure 4 shows, the head piece 8 has a vertical strut 10 and a transverse strut 11. In each case
10 one roll-shaped centering strip 12 which extends parallel to the deposition bar 9 is attached fixedly at both ends of the transverse strut 11 as centering means. The mutual spacing of the centering strips corresponds to the internal diameter of the sleeve 2. The centering strips 12 thus centre the sleeve 2 which is suspended on the deposition bar, with respect to the head piece 8. Furthermore, the transverse strut 11 bears
15 pressure pins 13 as positioning means. As Figure 6 shows, the pressure pins 13 comprise a cup-shaped basic body 18 in which a spring 19 is arranged which holds a ball 20 in contact with a flanged-over edge 21 of the basic body 18. The vertical strut 10 is provided with a fixed angled-away stop 14 at one end. At the other end, it bears a bolt 15 which can be pivoted about an axis 16. A spring which attempts to hold the
20 bolt in the locking position is arranged between the bolt 15 and the strut 10. The bolt can be transferred into the open position by means of a handle 17. The parts 14 and 15 form connecting means for fixing the head piece 8 on the cylinder 1.

The cylinder 1 has a flange 22 of relatively large diameter on its axle journal 23. Furthermore, depressions 24 which each serve to accommodate a part of the ball 20 of
25 a pressure pin 13 are made in the end of the flange 22. The depressions 24 are expediently of conical configuration, in order to position the head piece 8 precisely with respect to the axle journal 23 of the cylinder 1. A pyramidal, round or cylindrical design is also conceivable.

In order to pull off the sleeve 2, the head piece 8 with the deposition bar 9 is attached
30 slightly obliquely in such a way that the angled-away stop 14 reaches over the flange 22 of the axle journal 23 of the cylinder 1. Subsequently, the balls 20 of the two

- 4 -

pressure pins 13 are brought into engagement with the depressions 24 in the axle journal 23, partially under stressing of the spring 19, by means of a slight pivoting movement in the direction of the arrow 24'. At the same time, the bolt 15 latches behind the flange 22 under spring action, in order to fix the head piece 8 to the
5 cylinder 1.

In a further step, the sleeve 2 is pushed onto the deposition bar 9 until it lies in position 2' under a lifting apparatus 25, on which it is suspended and removed. After the bolt 15 is released by means of the handle 17, the head piece 8 with the deposition bar 9 can be pulled out through the sleeve lying in position 2', until the sleeve 2' is
10 free to be transported away by means of the lifting apparatus 25. Here, the spring 19 assists the release of the head piece 8 from the flange 22.

The movement processes run in the reverse order when a sleeve 2 is being pulled onto the cylinder 1. Initially, the sleeve 2 is moved into the position 2' shown in Figure 2 by means of the lifting apparatus 25. Subsequently, the head piece 8 is attached with
15 the angled-away stop 14 behind the flange 22, and is moved by pivoting in the direction of the arrow 24' to such an extent that the balls 20 of the pressure pins 13 engage partially into the depressions 24 and the bolt 15 latches behind the flange 22. Then, after the lifting apparatus 25 has been removed, the sleeve 2 is displaced along the deposition bar 9 in the direction towards the cylinder 1. Here, the centering strips
20 12 ensure that the sleeve 2 assumes the correct position with regard to the head piece 8 and thus with regard to the cylinder 1.

The exemplary embodiment according to Figures 3 and 5 has a head piece 8 and a deposition bar 9 which are configured in the same way as in the first exemplary embodiment and are therefore not described again. In addition, a gripper is provided
25 which is denoted overall by 26 and has a gripper housing 27. The gripper housing 27 is in engagement with a threaded spindle 28 which is held on the deposition bar 9 in a manner not shown and such that it can be rotated by means of a handwheel 29. The gripper housing 27 with the gripper 26 can be moved in or counter to the direction of the arrow 40 by actuation of the handwheel 29.

30 The gripper 26 has four gripper arms 30 which are each connected fixedly to a rack 31. Every rack 31 is in engagement with a pinion 32. All of the pinions 32 engage into

- 5 -

a spur gear 33. In order to rotate the spur gear 33, one of the pinions 32 is placed on a spindle 34 which can be actuated by means of a handwheel 35. Here, the gripper housing 27 has a groove 36, with which it is guided on the deposition bar 9 such that it cannot rotate. The gripper arms 30 each bear a suction head 37. Every suction head
5 is connected to supply lines (not shown) in order to generate the vacuum.

As an alternative, instead of the four gripper arms 30, it is also possible to use one gripper which has a ring of U-shaped cross section and which is connected to the end of the sleeve by suction. Another alternative can consist in that a ring element is arranged on the sleeve, which ring element has radial round or elongate cut-outs into
10 which the appropriately configured gripper arms engage in order to produce a form-fitting connection.

In the position of the parts which is shown on the left in Figure 3 and in Figure 5, the suction heads 37 of the gripper arms 30 have gripped a sleeve 2 which is seated on a cylinder. The gripper housing 27 with the gripper arms 30 is moved in the direction of
15 the arrow 41 by actuation of the handwheel 29, until the sleeve 2 has arrived under the lifting means 25. The compressed air is then turned off and the gripper arms 30 are raised slightly from the sleeve 2 by rotation of the handwheel 35. Subsequently, the gripper housing is transferred into the position 27' by further rotation of the handwheel 29 and, after the head piece 8 has been released from the axle journal 23,
20 the entire apparatus is pulled out of the sleeve 2' which is suspended on the lifting apparatus 25.

If a new sleeve 2 is to be pulled onto the cylinder, the entire apparatus is initially pushed through the sleeve 2' which is suspended on the lifting apparatus 25, and then, in the same way as described in the first exemplary embodiment, is fastened with the
25 head piece 8 to the axle journal 23 of the cylinder 1. Subsequently, the gripper arms 30 are transferred by rotation of the handwheel 35 into a position in which they grip the sleeve in position 2'. After the suction heads 37 have been activated, the gripper arms 30 which are fixed to the sleeve 2 are moved further in the direction of the arrow 40 by rotation of the handwheel 29, until the sleeve 2 has been pushed onto the
30 cylinder 1. After the gripper arms 30 and the bolt 15 have been released, the entire apparatus can be removed again, with the result that, after the bearing block 4 has been displaced, the printing unit is ready for operation again.

- 6 -

The additional advantage of the apparatus according to Figures 3 and 5 is to be seen in the fact that the sleeve no longer has to be pulled by hand from the cylinder 1 onto the deposition bar 9 and pushed from the deposition bar 9 onto the cylinder 1.

PATENT CLAIMS

1. Apparatus for pulling a sleeve onto and off a printing-press cylinder, characterized by a head piece (8) having positioning means (13) for defining the position of the head piece (8) with respect to the cylinder (1), connecting means (14, 15) for fixing the head piece (8) to the cylinder (1), and centering means (12) for defining the position of the sleeve (2) with respect to the head piece (8) and a deposition bar (9) for the sleeve (2), which deposition bar (9) is attached to the head piece (8), wherein the head piece (8) has a vertical strut (10) and a transverse strut (11), wherein, in order to form the positioning means on the transverse strut, pressure pins (13) are provided which can be brought into engagement with depressions (24) in an end of the cylinder (1), wherein, in order to form the connecting means, a fixed angled-away stop (14) is arranged at one end of the vertical strut (10) and a pivotable bolt (15) is arranged at the other end of the vertical strut (10), in each case in order to engage behind a flange (22) of the cylinder (1), and wherein, in order to form the centering means, in each case one roll-shaped centering strip (12) which extends in the axial direction of the cylinder (1) is arranged at both ends of the transverse strut (11).
2. Apparatus according to Claim 1, characterized in that every pressure pin (13) has a hollow basic body (18) in which a spring (19) is arranged which presses a ball (20) against the flanged-over edge (21) of the basic body.
3. Apparatus according to any one of Claims 1 to 2, characterized in that a gripper (26) which can be moved in the axial direction of the cylinder (1) with respect to the deposition bar (9) is provided for the sleeve (2), which gripper (26) can be moved between a position for gripping a sleeve (2) which is situated on the cylinder (1) and an outer position which releases the sleeve.
4. Apparatus according to Claim 3, characterized in that the gripper (26) is formed by a plurality of gripper arms (30) which are mounted on a gripper

housing (27) and can be moved perpendicularly with respect to the cylinder axis.

5. Apparatus according to Claim 4, characterized in that the gripper housing (27) can be displaced by means of a threaded spindle (28).
6. Apparatus according to Claim 4 or 5, characterized in that the threaded spindle (28) is held on the deposition bar (9).
7. Apparatus according to any one of Claims 4 to 6, characterized in that the threaded spindle (28) can be rotated by means of a handwheel (29).
8. Apparatus according to any one of Claims 3 to 7, characterized in that a plurality of racks (31) which each carry a gripper arm (30) are mounted in the gripper housing (27), which racks (31) can be displaced by means of a gear mechanism (32, 33) in order to open and close the gripper.
9. Apparatus according to Claim 8, characterized in that the gear mechanism has in each case one pinion (32) which engages into a rack (31), and the pinions (32) are drive-connected to a spur gear (33) which can be rotated by means of a handwheel (35).
10. Apparatus according to Claim 9, characterized in that one of the pinions (32) is seated on a spindle (34) which can be rotated by means of a handwheel (35).
11. Apparatus according to any one of Claims 4 to 10, characterized in that every gripper arm (30) bears a suction head (37).
12. Printing-unit cylinder for attaching an apparatus according to any one of Claims 1 to 11, characterized by a flange (22) for fixing the connecting means (14, 15) and depressions (24) for engaging the balls (20) of the pressure pins (13).
13. Printing-unit cylinder according to Claim 12, characterized in that the depressions (24) are of conical configuration.

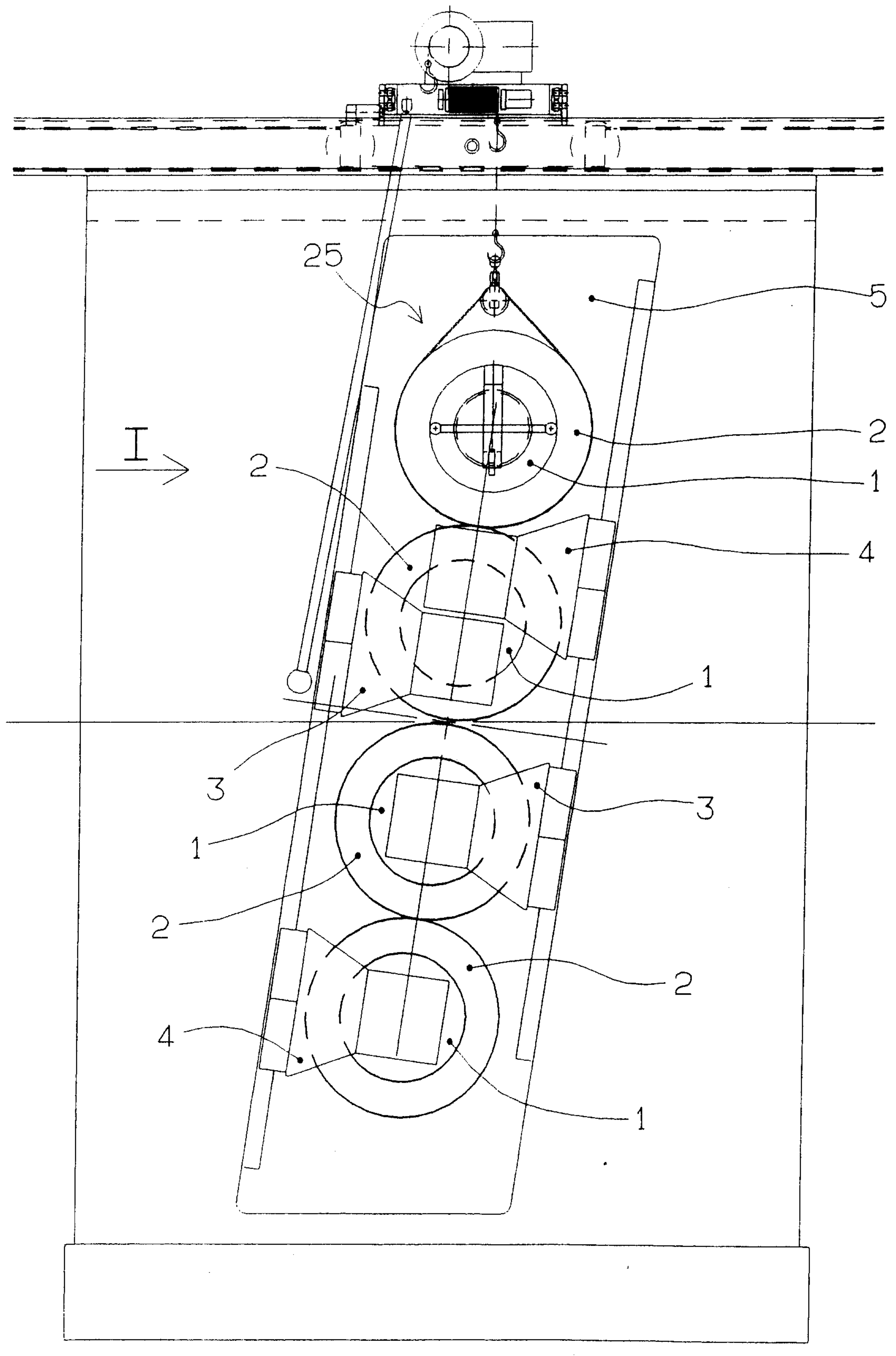


FIG. 1

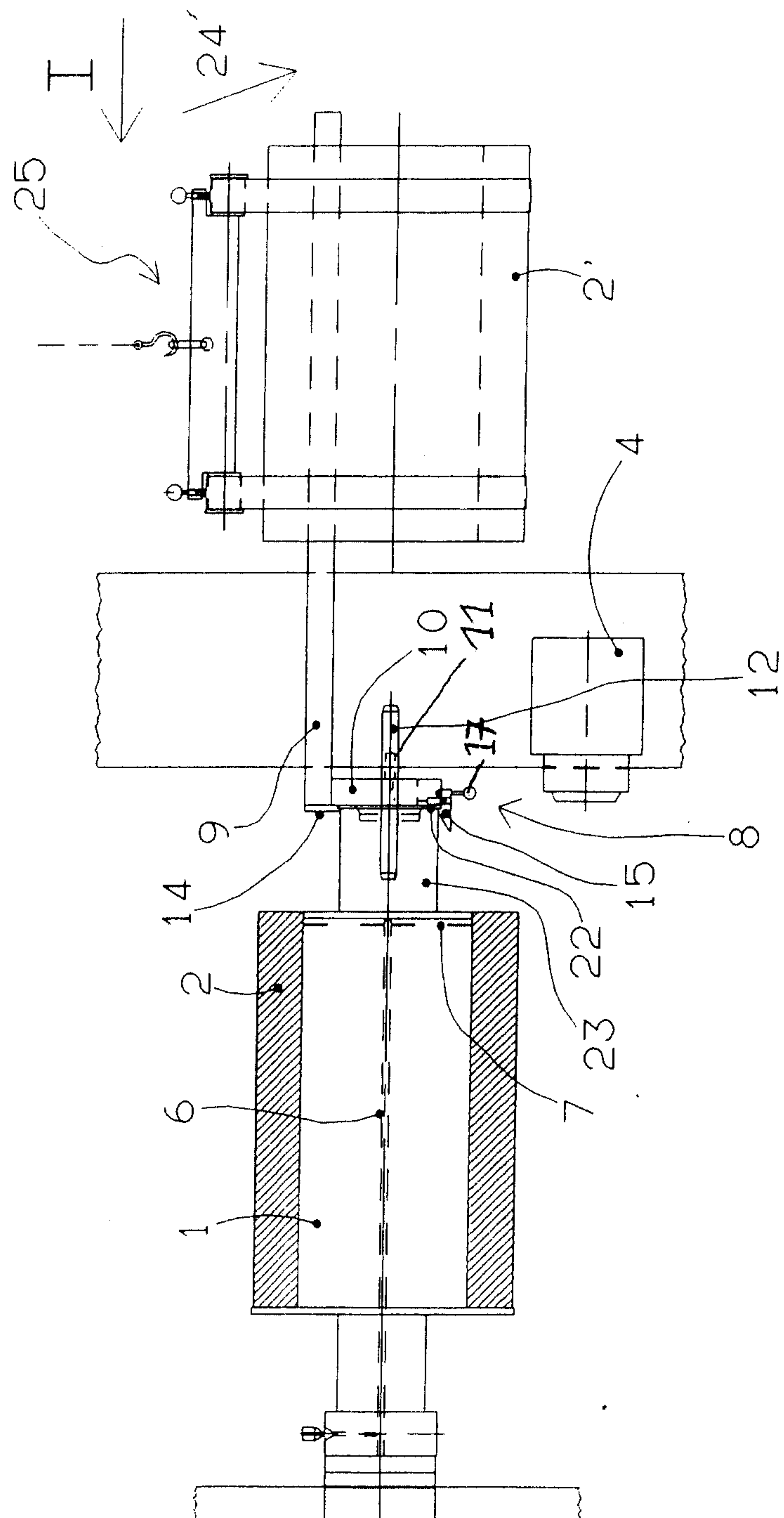


FIG. 2

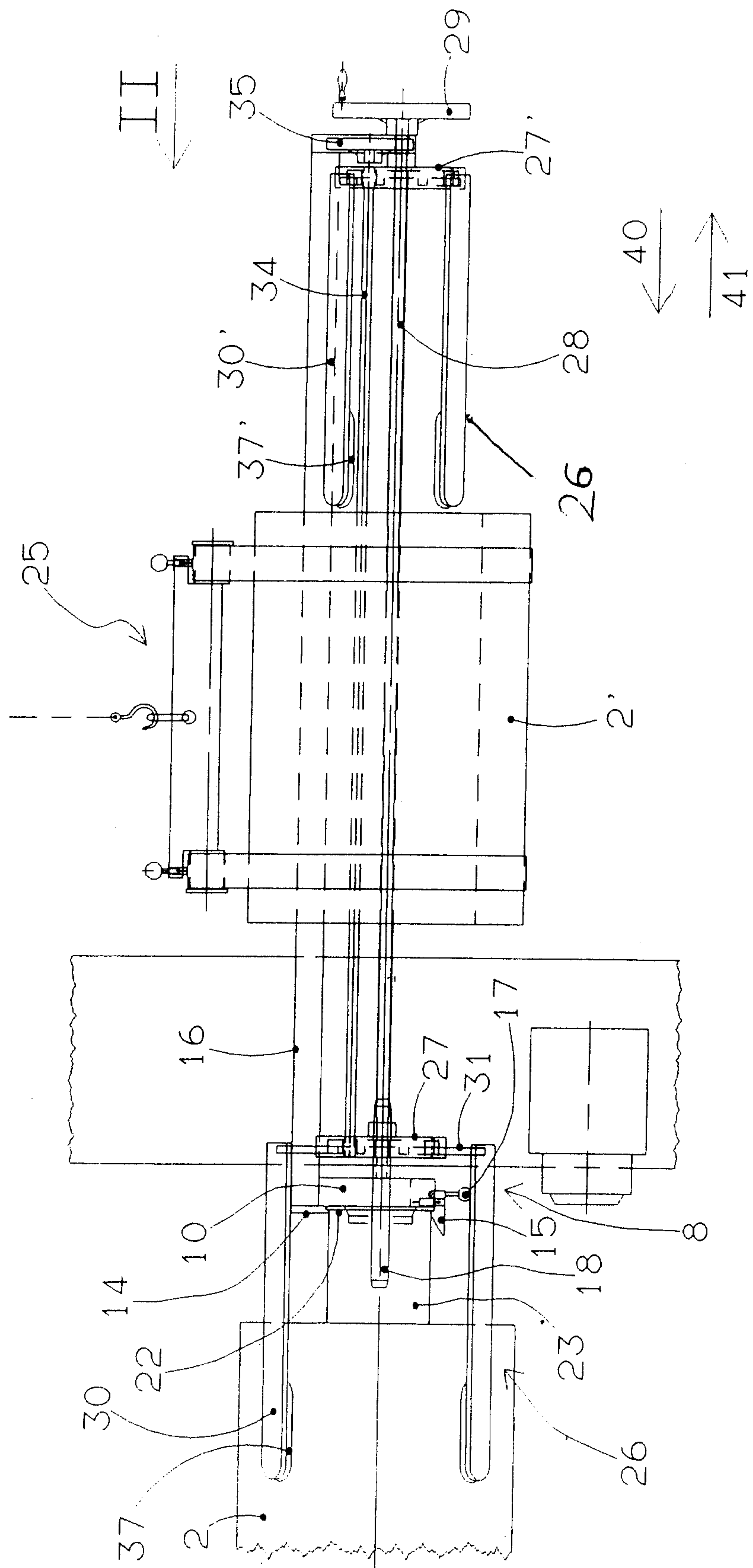


FIG. 3

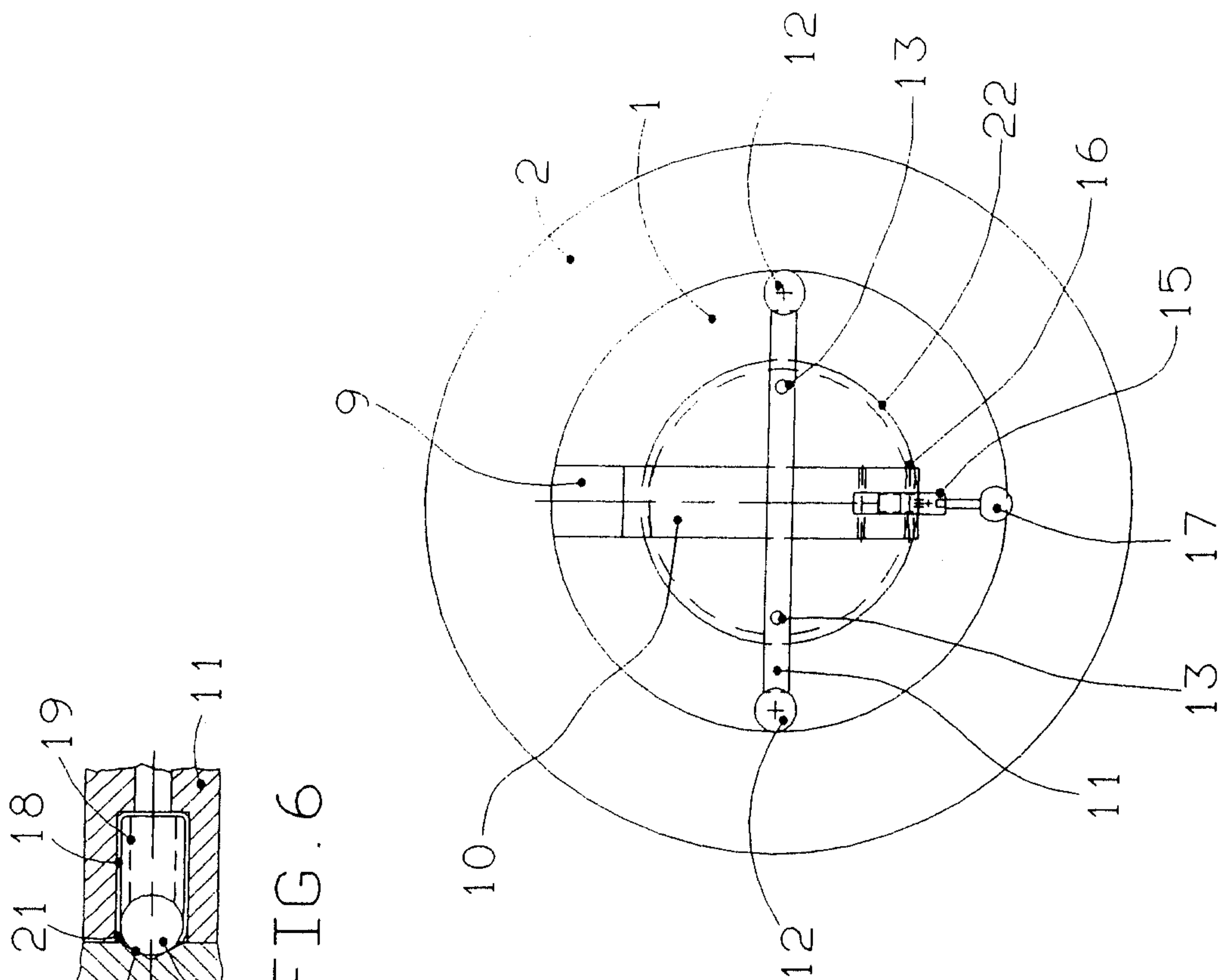


FIG. 4

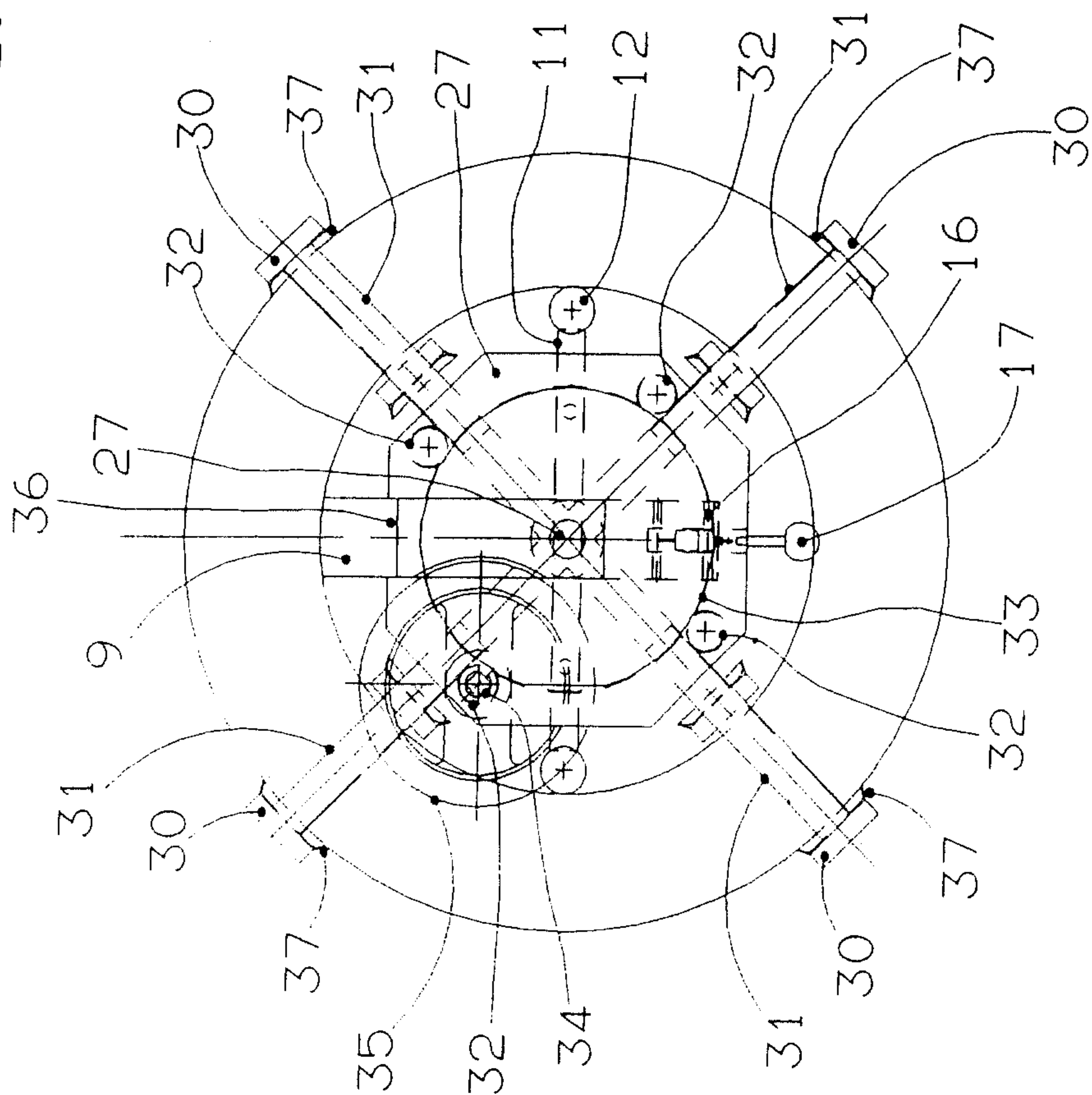


FIG. 5

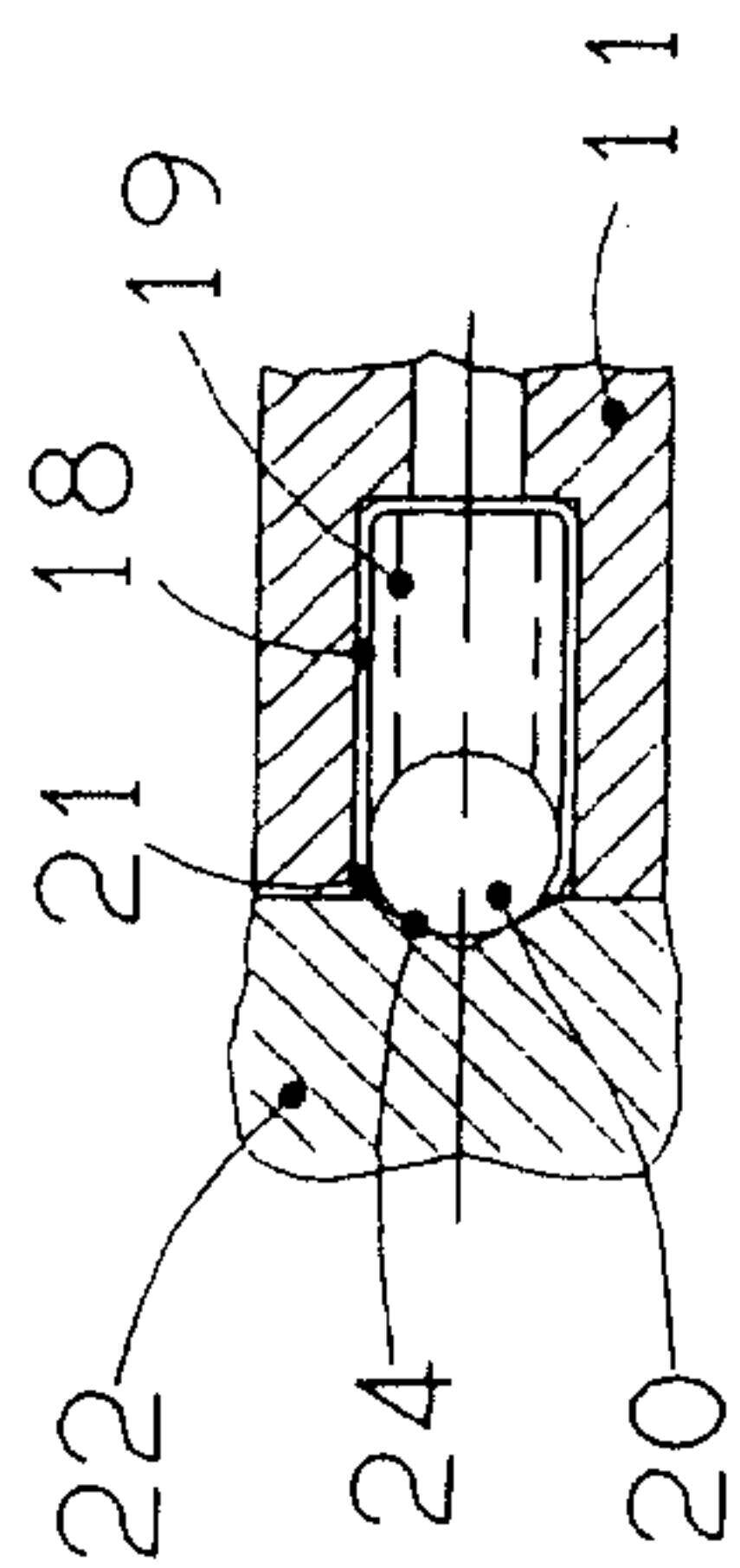


FIG. 6

