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S-211 22 Malmö(SE)(54) **Hose or cable reeling device.**

(57) A hose or cable reeling device has a support (1) with a rotatably mounted drum (7) onto which a hose (8) or cable is reelable or windable, whereby the drum (7) cooperates with a spring device (10) which is provided to rotate the drum (7) in a reeling or winding direction (B) for reeling or winding-up the hose (8) or cable thereon, whereby a locking device (21) on the drum (7) and a latch (22) on the support (1) cooperate with each other in such a way that said latch (22) can be moved from a neutral position (N) to a lock position (S), in which it prevents the drum (7) from rotating in the reeling direction (B) and whereby the latch (22) cooperates with a torsion

spring (37) in such a way that said latch (22), when the drum (7) moves it in direction (X) from the neutral position (N), is subjected to a spring force by the torsion spring (37) in a direction (Y) towards the neutral position (N). According to the invention, the torsion spring (37) is provided in preloaded condition on an axis of rotation (29) about which the latch (22) can be turned or pivoted such that said torsion spring (37) affects said latch (22) in the direction towards its neutral position (N) already at the beginning of the movement of said latch (22) in the direction (X) therefrom.

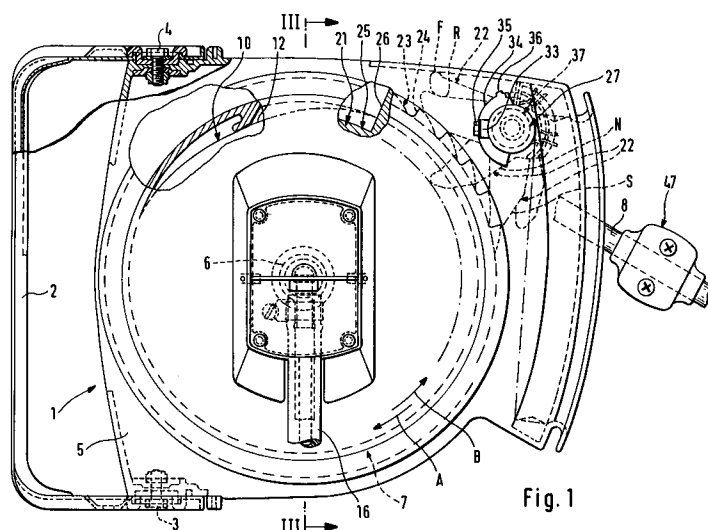


Fig. 1

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The present invention relates to a hose or cable reeling device having a support with a rotatably mounted drum onto which a hose or cable is reelable or windable whereby the drum cooperates with a spring device which is provided to rotate the drum in a reeling or winding direction for reeling or winding-up the hose or cable thereon whereby a locking device on the drum and a latch on the support cooperate with each other in such a way that said latch can be moved from a neutral position to a lock position, in which it prevents the drum from rotating in the reeling direction, and whereby the latch cooperates with a torsion spring in such a way that said latch, when the drum moves it in direction from the neutral position, is subjected to a spring force by the torsion spring in a direction towards the neutral position.

At hose or cable reeling devices of the above type, the latch often cooperates with a return torsion spring which is normally a tension spring. Using a tension spring in this connection means that the spring force is small at the beginning of the turning of the latch from its neutral position and the return spring force reaches its intended value first when the latch has been turned or pivoted far from its neutral position. Such a spring function is disadvantageous since it is required that the latch and spring must have a great length of stroke, which requires a large space in the construction and there is a risk of reduced endurance.

As is apparent from the JP publication 60-97177 there are in hose or cable reeling devices also return springs in the form of torsion springs, but these torsion springs are mounted beside the latch such that they, as said tension springs, generate a small return force at the beginning of the turning movement of the latch from its neutral position. Furthermore, the torsion spring of said JP publication requires a special bearing, extra space, it can be difficult to mount said spring and it does not permit setting of the latch in a free position if desired.

The object of the present invention is to eliminate the above and other drawbacks at the abovementioned type of hose or cable reeling device by simple means. This is arrived at according to the invention by means of the characterizing features of claim 1.

While the hose and cable reeling device have said characterizing features, the torsion spring operates such that the latch already at the beginning of its turning from the neutral position is subjected to a sufficiently large return force and this force does not need to increase substantially at further turning of the latch, which besides functional advantages results in a smaller construction which is more durable and easier to mount and which permits setting of the latch in free positions when

required.

The invention will be further described below with reference to the accompanying drawings, wherein

- 5 fig. 1 is a side view of a hose or cable reeling device according to the invention;
- fig. 2 is a plan view, partly in section, of the hose or cable reeling device of fig. 1;
- fig. 3 is a section through the hose or cable reeling device along the line III-III in fig. 1;
- 10 fig. 4 is a perspective view of a unit forming part of the hose or cable reeling device of fig. 1, with a latch in neutral position;
- fig. 5 is identical to fig. 4, but shows the latch in lock position;
- 15 fig. 6 is a plan view of a locking means forming part of the hose or cable reeling device of fig. 1;
- 20 fig. 7 is a section through the locking means along the line VII-VII in fig. 6; and
- fig. 8 is a schematic section through a stop means forming part of the hose or cable reeling device.

25 A hose reeling device is shown in the drawings, comprising a support 1, which through a yoke 2 is attachable to a wall (not shown) or another suitable place. The support 1 is pivotally mounted on the yoke 2 at a lower point 3 and an upper point 4 such that the support 1 can be swung about an imaginary vertical axis relative to the yoke 2.

30 The support 1 has only one gable or end side 5 with an integral axis 6 for the drum 7 onto which the hose 8 is reelable. Innermost on the axis 6, i.e. closest to the gable side 5, there is rotatably mounted a spring hub 9 and on the outside thereof a spring device 10 having a housing 11 which is not rotatable relative to the support 1, but unrotatably connected thereto. In the housing 11 there is provided a reeling spring 12, one end of which is fixedly connected to the housing while the other end is connected to the spring hub 9. The drum 7 is rotatably mounted on the axis 6 and it is unrotatably coupled to the spring hub 9 through clutch jaws 13.

45 When the hose 8 is unwound or unrolled, the drum 7 is rotated in the direction of arrow A, whereby the reeling spring 12 is stretched. With the stretched reeling spring 12, the drum can be rotated in the opposite direction B, whereby the hose 8 can be wound-up.

50 On the axis 6 there is mounted one or more sealing sleeves 14, which are adapted to provide a seal on both sides of apertures 15 in the axis 6, through which the interior of said axis 6 can communicate with the interior of the reelable or windable hose 8. Hereby, medium such as pressurized air or a liquid can flow from a hose 16 to the

interior of the hose 6 through a connector 17 and through the interior of said axis 6 to the interior of the reelable hose 8 or medium can flow in the opposite direction.

On the axis 6 there is also provided a bearing 18 and finally a lock washer 19, which is adapted to keep the other members threaded on said axis 6 in position. This lock washer 19 can be released by means of a releasing means 20, the structure and function of which will be described further below.

On the drum 7 there is provided a locking device 21 which cooperates with a latch 22 mounted on the support 1. The locking device 21 preferably includes a toothed segment 23, which extends about half a turn about the axis of the drum 7 and between the teeth 24 of which the latch 22 is adapted to mesh for preventing, in a lock position S, the rotation of the drum 7 in the reeling direction B. The rest of the turn about the axis of the drum 7, the locking device 21 comprises a recessed zone 25, in which the latch 22 can occupy a neutral position N. The teeth 24 are directed such that the latch 22 can not mesh therewith when the drum 7 is rotated in the unreeling or unwinding direction A. However, if the latch 22 is situated at the toothed segment 23 when the hose 8 is released after unwinding thereof, the latch 22 can mesh with the teeth 24 for attaining a lock position S and thereby prevent the spring device 10 from rotating the drum for winding-up the hose 8.

If one thereafter wish to wind-up the hose 8, the hose is drawn or pulled out a small distance for rotating the drum 7 and thereby the locking device 21 until the recessed zone 25 is located right opposite to the latch 22. Thereby, the latch 22 can turn or pivot to its neutral position N in the zone 25 and when you thereafter release the hose 8 and the drum 7 rotates in the reeling direction B, the edge 26 of the zone 25 will strike the latch 22, which is thus turned or displaced from its neutral position N to an inactive position R wherein it can not mesh with the teeth 24.

The latch 22 is provided on a bracket 27 and this bracket 27 can be mounted on the support 1 as a quick-connectable unit 28 (see fig. 4 and 5). The latch 22 is pivotable about an imaginary axis of rotation 29 and on one side of said latch 22, the bracket have anchoring portions 30 which preferably includes a pin 31. This pin 31 is insertable into a fastening portion 32 in the support 1, whereby said fastening portion 32 preferably is formed in one piece or integrally with the gable side 5 and has the shape of a bearing sleeve. The anchoring portions 30 also have a resilient locking tongue 33 provided on the same side of the latch 22 and insertable into an arcuate groove 34 in the gable side 5. This groove has two recesses 35, 36, into which the locking tongue 33 can be snapped for

retaining the bracket 27. One recess 35 is located such that the latch 22 is in an active or operative position when the bracket 27 is situated such that the locking tongue 33 snaps into said recess 35.

The other recess 36 is instead located such that the latch 22 is in a free, inactive position relative to the toothed segment 23 of the locking device 21 (see fig. 1, position F) when the bracket 27 is set such that the locking tongue 33 snaps into this recess 36. Hereby, the latch 22 can, when required, be set in an inactive position if it is not needed, while at the same time its position can be reset to an active, operative position or reverse simply by lifting the locking tongue 33 from one of the recesses 35 or 36 and turn or pivot the bracket 27 relative to the gable side 5 until said locking tongue 33 engages the other recess 36 or 35.

The latch 22 cooperates with a torsion spring 37 which is threaded onto the bracket 27 and which extends about the imaginary axis 29. This torsion spring 37 is preloaded in such a way that the latch 22, when the drum 7 or rather the toothed segment 23 of the locking device 21 moves said latch in direction X from the neutral position N, is subjected to a spring force by the preloaded torsion spring 37 in direction Y towards the neutral position N.

The torsion spring 37 is preferably preloaded while said spring with two opposite end portions 38, 39 protrudes into a space 40 between two shoulders 41, 42 on the latch 22, such that one end portion 38 engages the shoulder 41 and the other end portion 39 engages the shoulder 42.

The end portions 38, 39 of the torsion spring 37 also protrude into a space 43 between two shoulders 44, 45 on the bracket 27. The space 40 between the shoulders 41, 42 of the latch 22 and the space 43 between the shoulders 44, 45 of the bracket 27 are preferably substantially equal in size or is the space 40 between the shoulders 41, 42 of the latch preferably somewhat smaller than the space 43 between the shoulders 44, 45 of the bracket 27.

The latch 22 can preferably be set relative to the bracket 27 so that the space 40 between the shoulders 41, 42 of the latch 22 is situated just opposite or substantially opposite to the space 43 between the shoulders 44, 45 of the bracket 27, whereby said latch 22 can be set in a neutral position N when said spaces 40, 43 are in said positions (see fig. 4).

The torsion spring 37 can be stretched in relation to its preloaded or prestressed condition by turning the latch 22 relative to its neutral position N so that one shoulder 41 or 42 thereof is brought closer to one shoulder 44 or 45 of the bracket 27 and thus, the end portions 38, 39 of the torsion spring 37 are brought closer to each other (see fig.

5). Hereby, when the latch 22 is turned or pivoted from the neutral position N, it is directly subjected to the prestressing or preloading force of the torsion spring 37, striving for returning said latch towards the neutral position N.

The torsion spring 37 preferably consists of a helical metal spring and said spring as well as the latch 22 are preferably kept in position on the bracket 27 by means of a washer 46.

The lock washer 19, which is adapted to prevent the members threaded onto the axis 6 from axial displacement and the releasing means 20 are combined to a unit (see fig. 6 and 7). The lock washer 19 preferably has two lock shoulders 19a, 19b which are directed so that said lock washer 19 can be threaded onto the axis 6 but not removed therefrom. However, the lock washer 19 can be removed from the axis 6 when required, by means of the releasing means 20. In order to enable this, the releasing means 20 is pivotally mounted on the lock washer 19 and it includes two lift shoulders 20a, 20b provided with inclined surfaces and inserted in under the lock shoulders 19a, 19b when pivoting said releasing means 20 relative to said lock washer 19. When the lift shoulders 20a, 20b are moved in under the lock shoulders 19a, 19b, the inclined surfaces of said lift shoulders lift said lock shoulders 19a, 19b to a free position L (shown with dashed and dotted lines in fig. 7) so that the lock washer 19 can be removed or withdrawn from the axis 6. While the lock washer 19 consists of or includes resilient material, the lock shoulders 19a, 19b return to their lock positions when the lift shoulders 20a, 20b no longer lift said lock shoulders. In order to facilitate turning or pivotal movement of the releasing means 20, said means may include two axial, outwardly directed pins 20c, 20d to be engaged by a tool or by hand.

On the hose 8 there is provided a stop means 47, which is adapted to strike the edge of an opening in the support 1 for preventing further retraction of the hose 8 through said opening. The stop means 47 includes two jaws 47a, 47b which are clampable onto the hose 8 by being tightened towards each other, preferably by means of screws 47c, 47d. The aperture 47e for the hose 8 is defined by planar clamping surfaces or substantially planar surfaces 47f, 47g on one jaw 47a and these surfaces extend perpendicular to each other or substantially perpendicular to each other. The aperture 47e is also defined by planar clamping surfaces or substantially planar surfaces 47h, 47k on the other jaw 47b and these clamping surfaces also extend perpendicular or substantially perpendicular to each other. Hereby, the jaws define a four sided aperture 47e and said aperture remains four sided or square irrespective of whether it is small, when the stop means 47 is clamped onto a

hose 8 with a small diameter, or it is substantially larger, when said stop means is clamped onto a hose having a substantially larger diameter.

The planar clamping surfaces 47f, 47g can be defined by the end edges of a number of bars 47af, 47ag located after each other in one jaw 47a. The planar clamping surfaces of the other jaw 47b may also consist of end edges of a number of bars 47bh, 47bk on said jaw 47b located after each other. When the jaws 47a, 47b are brought together, the bars 47af, 47ag of the jaw 47a can extend and grip into spaces between the bars 47bh, 47bk of the jaw 47b and the bars 47bh, 47bk of the jaw 47b extend and grip into spaces between the bars 47af, 47ag of the jaw 47a. The respective bars extend into the respective spaces when the jaws define the smallest possible aperture 47e and they maintain their grip when said aperture is expanded. When the aperture 47e is expanded beyond a certain limit, the respective bars may eventually leave their respective spaces, but the jaws 47a, 47b continue to be guided relative to each other by pins 47i in one jaw 47b which extend into recesses 47m in the other jaw 47a.

Substantial advantages with the stop means 47 are that the jaws 47a, 47b can be mounted quickly such that they fit a hose or cable with a certain diameter. This can be done by screwing the jaws 47a, 47b together as far as possible, e.g. until the pins 47i engage the bottoms of the recesses 47m. Furthermore, when required, the stop means 47 can be adapted to hoses or cables with a larger diameter by not screwing the jaws 47a, 47b together until the pins engage the bottoms of the recesses 47m. It is also possible, when required, to adapt the stop means 47 to hoses or cables with a smaller diameter than normally and this can be done by reducing the height of the pins 47i, e.g. by grinding.

The invention described above may vary within the scope of the following claims regarding the construction and function of the various members. As alternatives, it should be mentioned that the support 1 can be mounted in other ways than shown; the support may include more than one gable side; the gable side 5 may be designed in one piece or integrally with a housing for the spring device 10; said gable side 5 and a member with an aperture for the hose 8 may be formed in one piece; the locking device 21 need not be mounted on the drum 7, but can be arranged in other ways but connected to the drum 7; the latch 22 can be positioned or positionable on the support in other ways than through a bracket 27; the reeling device can be designed for reeling or winding-up cables instead of hoses.

Claims

1. Hose or cable reeling device having a support (1) with a rotatably mounted drum (7) onto which a hose (8) or cable is reelable or windable, whereby the drum (7) cooperates with a spring device (10) which is provided to rotate the drum (7) in a reeling or winding direction (B) for reeling or winding-up the hose (8) or cable thereon, whereby a locking device (21) on the drum (7) and a latch (22) on the support (1) cooperate with each other in such a way that said latch (22) can be moved from a neutral position (N) to a lock position (S), in which it prevents the drum (7) from rotating in the reeling direction (B) and whereby the latch (22) cooperates with a torsion spring (37) in such a way that said latch (22), when the drum (7) moves it in direction (X) from the neutral position (N), is subjected to a spring force by the torsion spring (37) in a direction (Y) towards the neutral position (N), **characterized in** that the torsion spring (37) is provided in preloaded condition on an axis of rotation (29) about which the latch (22) can be turned or pivoted such that said torsion spring (37) affects said latch (22) in the direction towards its neutral position (N) already at the beginning of the movement of said latch (22) in the direction (X) therefrom.
2. Hose or cable reeling device according to claim 1, **characterized in** that the torsion spring (37) in preloaded condition protrudes with two end portions (38, 39) into a space (40) between two shoulders (41, 42) provided on the latch (22) such that one end portion (38) engages one shoulder (41) and the other end portion (39) engages the other shoulder (42), that the end portions (38, 39) of the torsion spring (37) also protrude into a space (43) between two shoulders (44, 45) on the support (1) or on a bracket (27) mounted on said support (1) for said latch (22), that the space (40) between the shoulders (41, 42) of the latch (22) and the space (43) between the shoulders (44, 45) of the support (1) or bracket (27) are equal or substantially equal in size or is the space (40) between the shoulders (41, 42) of the latch (22) preferably somewhat smaller than the space (43) between the shoulders (44, 45) of the support (1) or bracket (27), that the latch (22) can be set relative to the support (1) or bracket (27) so that the space (40) between the shoulders (41, 42) of the latch (22) is situated just opposite to the space (43) between the shoulders (44, 45) of the support (1) or bracket (27), whereby said latch (22) can be set in a neutral position (N) when said spaces (40, 43) are in said positions, and that the torsion spring (37) can be stretched in relation to its preloaded condition by turning the latch (22) relative to its neutral position (N) so that one shoulder (41 or 42) thereof is brought closer to one shoulder (44 or 45) of the support (1) or bracket (27) and thus, the end portions (38, 39) of the torsion spring (37) are brought closer to each other.
3. Hose or cable reeling device having a support (1) with a rotatably mounted drum (7) onto which a hose (8) or cable is reelable or windable, whereby the drum (7) cooperates with a spring device (10) which is provided to rotate the drum (7) in a reeling or winding direction (B) for reeling or winding-up the hose (8) or cable thereon, whereby a locking device (21) on the drum (7) and a latch (22) on the support (1) cooperate with each other in such a way that said latch (22) can be moved from a neutral position (N) to a lock position (S), in which it prevents the drum (7) from rotating in the reeling direction (B), **characterized in** that the latch (22) can be mounted on the support (1) either in a position in which it is operable from its neutral position (N) by means of the locking device (21) of the drum (7) or in another position (F) in which it is completely released from said locking device (21) of the drum (7).
4. Hose or cable reeling device having a support (1) with a rotatably mounted drum (7) onto which a hose (8) or cable is reelable or windable, whereby the drum (7) cooperates with a spring device (10) which is provided to rotate the drum (7) in a reeling or winding direction (B) for reeling or winding-up the hose (8) or cable thereon, whereby a locking device (21) on the drum (7) and a latch (22) on the support (1) cooperate with each other in such a way that said latch (22) can be moved from a neutral position (N) to a lock position (S), in which it prevents the drum (7) from rotating in the reeling direction (B), **characterized in** that the latch (22) is pivotally mounted on a bracket (27) in relation to its neutral position (N), whereby the bracket (27) comprises anchoring portions (30) for securing thereof including the latch (22) on the support (1).
5. Hose or cable reeling device according to claim 4, **characterized in** that the anchoring portions (30) of the bracket (27) are insertable into a fastening portion (32) in the shape of a bearing sleeve on the support (1) and com-

prises a resilient locking tongue (33), which can be snapped onto the support (1) for preventing the bracket (27) from turning or pivoting relative to said support (1).

6. Hose or cable reeling device according to claim 5, **characterized in** that the resilient locking tongue (33) can be snapped onto the support (1) in a position wherein the latch (22) is operable by the locking device (21) on the drum (7) from its neutral position (N) or in another position (F) wherein said latch (22) is released from said locking device (21).
7. Hose or cable reeling device having a support (1) with a rotatably mounted drum (7) onto which a hose (8) or cable is reelable or windable, whereby the drum (7) cooperates with a spring device (10) which is provided to rotate the drum (7) in a reeling or winding direction (B) for reeling or winding-up the hose (8) or cable thereon, whereby a locking device (21) on the drum (7) and a latch (22) on the support (1) cooperate with each other in such a way that said latch (22) can be moved from a neutral position (N) to a lock position (S), in which it prevents the drum (7) from rotating in the reeling direction (B), **characterized in** that the support (1) has only one gable side (5) including an axis (6) for the drum (7) formed in one piece or integrally with said gable side, as well as a fastening portion (32) for a bracket (27) for the latch (22), said fastening portion also being formed in one piece or integrally with said gable side (5).
8. Hose or cable reeling device according to claim 7, **characterized in** that the fastening portion (32) for the bracket (27) for the latch (22) includes a sleeve-like member, into which a pin (30) on the bracket (27) is insertable.
9. Hose or cable reeling device having a support (1) with a rotatably mounted drum (7) onto which a hose (8) or cable is reelable or windable, whereby the drum (7) cooperates with a spring device (10) which is provided to rotate the drum (7) in a reeling or winding direction (B) for reeling or winding-up the hose (8) or cable thereon, whereby a locking device (21) on the drum (7) and a latch (22) on the support (1) cooperate with each other in such a way that said latch (22) can be moved from a neutral position (N) to a lock position (S), in which it prevents the drum (7) from rotating in the reeling direction (B), whereby the support (1) includes an axis (6) onto which the drum (7) and eventual other members of the hose or

cable reeling device are threaded, **characterized in** that the drum (7) and eventual other members threaded onto the axis (6) can be locked against axial displacement on the axis (6) by means of a lock washer (19) including at least one lock shoulder (19a and/or 19b) which is directed such that the lock washer (19) can be threaded onto the axis (6) but not removed therefrom, whereby the lock shoulder (19a and/or 19b) can be lifted from its lock position to a free position (L) relative to the axis (6) by inserting at least one lift shoulder (20a and/or 20b) on the releasing means (20) is inserted in under the lock shoulder (19a and/or 19b) and lifts said lock shoulder by turning or pivoting said releasing means (20) relative to the axis (6), whereby the lock washer (19) can be released from said axis (6).

10. Hose or cable reeling device having a support (1) with a rotatably mounted drum (7) onto which a hose (8) or cable is reelable or windable, whereby the drum (7) cooperates with a spring device (10) which is provided to rotate the drum (7) in a reeling or winding direction (B) for reeling or winding-up the hose (8) or cable thereon, whereby a locking device (21) on the drum (7) and a latch (22) on the support (1) cooperate with each other in such a way that said latch (22) can be moved from a neutral position (N) to a lock position (S), in which it prevents the drum (7) from rotating in the reeling direction (B), whereby a stop means (47) is provided on the hose (8) or cable, which stop means (47) is adapted to strike a portion of the hose or cable reeling device when the hose (8) or cable is wound-up for preventing further reeling or winding of the hose (8) or cable and whereby the stop means (47) comprises two jaws (47a, 47b) which can be clamped onto the hose (8) or cable by being tightened towards each other, **characterized in** that the jaws (47a, 47b) have planar or substantially planar clamping surfaces (47f, 47g, 47h, 47k) which together define a four sided or square aperture (47e) which maintains its four sided shape either it is small when the jaws (47a, 47b) engage or grip a hose (8) or cable with a small diameter or it is large when engaging or gripping a hose (8) or cable with a large diameter, and that the clamping surfaces (47f, 47g, 47h, 47k) preferably are formed by end surfaces on bars (47af, 47ag, 47bh, 47bk) on the jaws (47a, 47b), which bars (47af, 47ag or 47bh, 47bk) on one jaw (47a or 47b) extend and grip into spaces between bars (47bh, 47bk or 47af, 47ag) in the other jaw (47b or 47a).

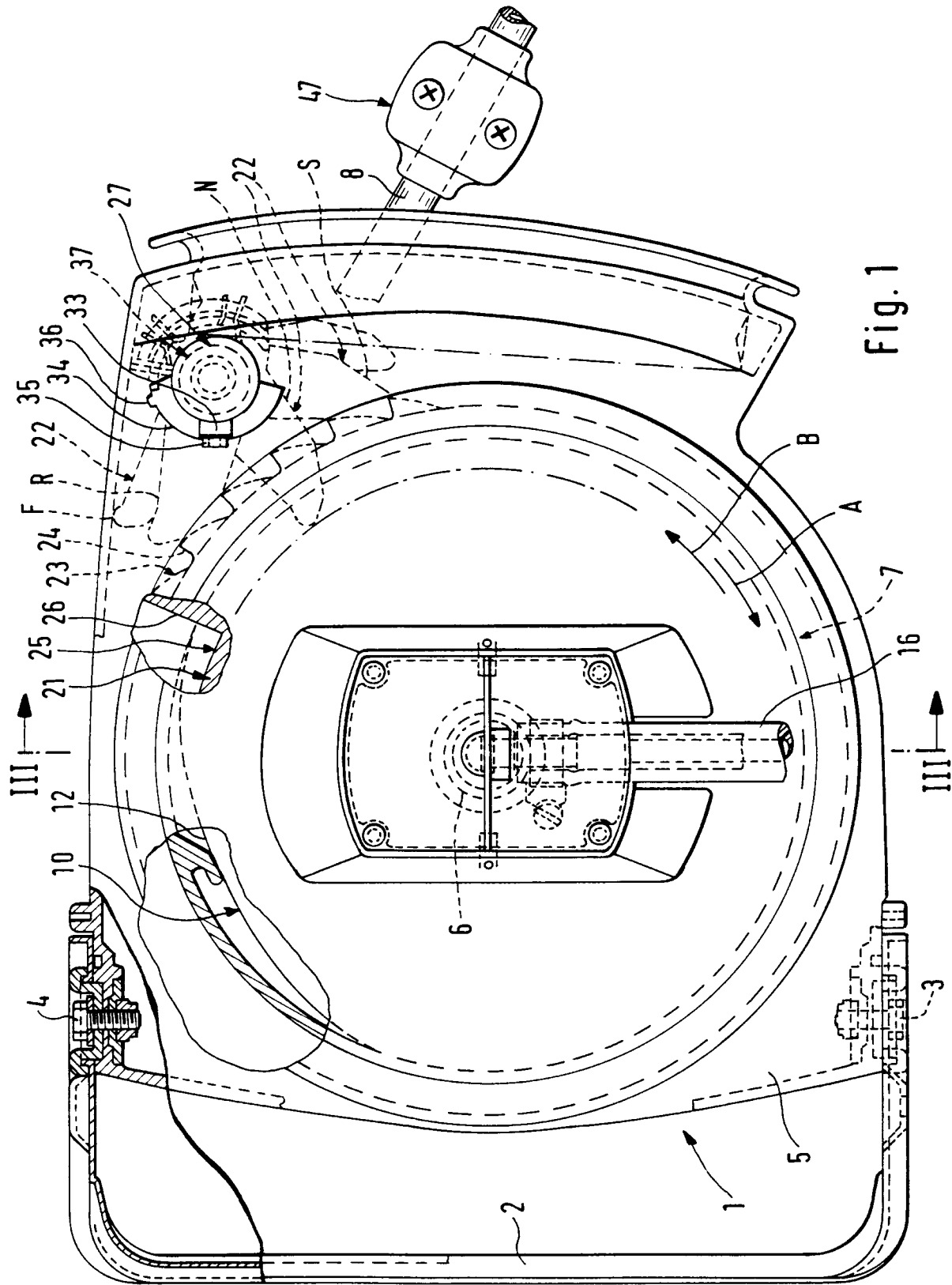


Fig. 1

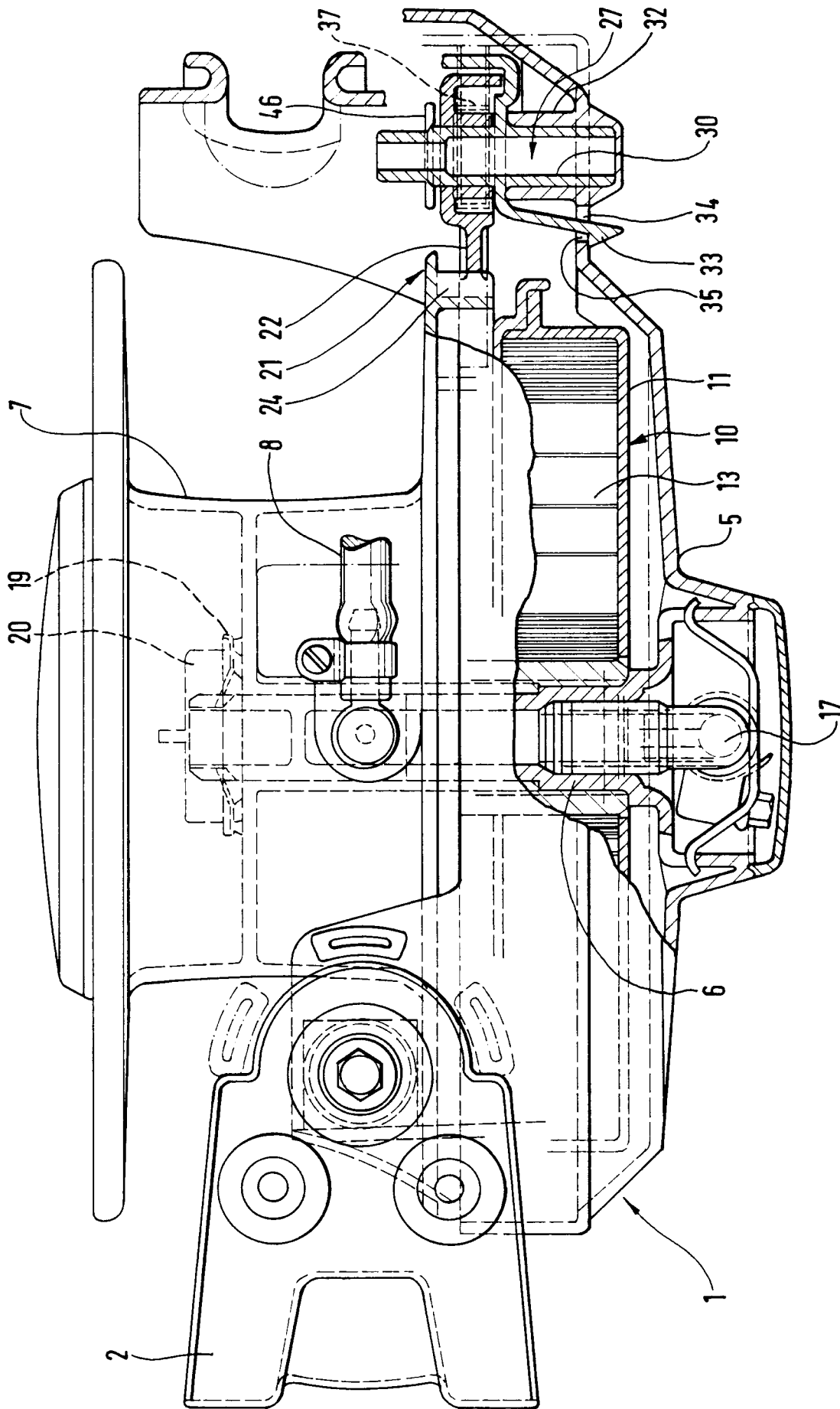
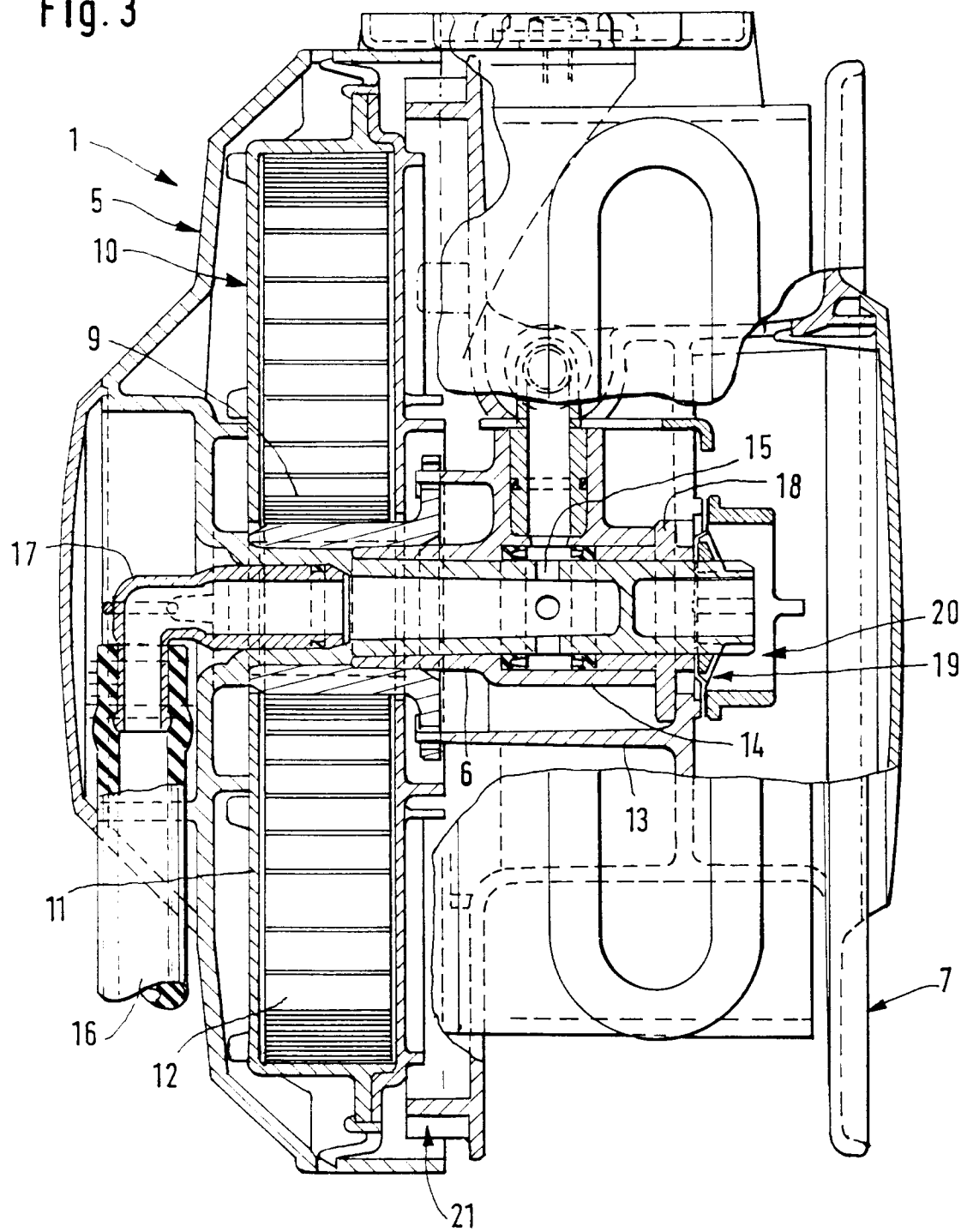


Fig. 2

Fig. 3



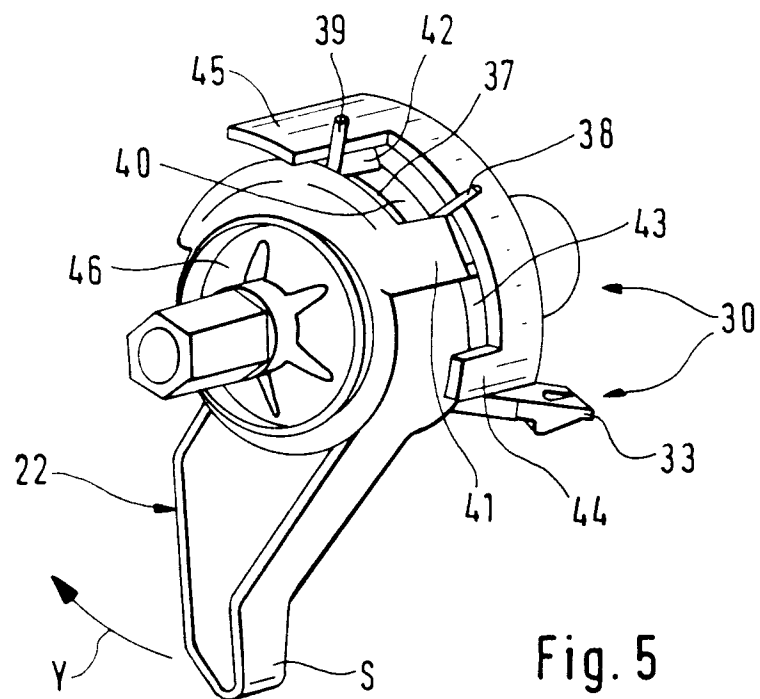
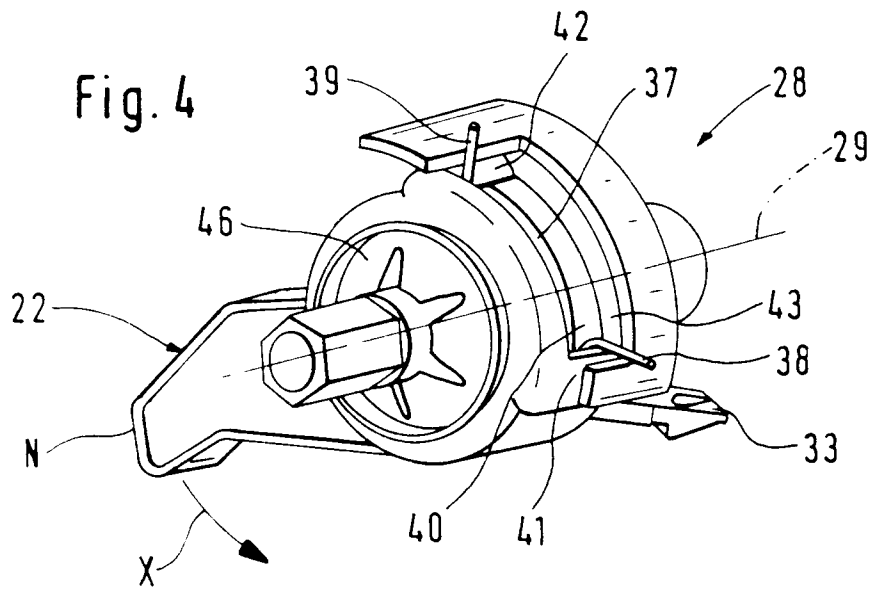


Fig. 7

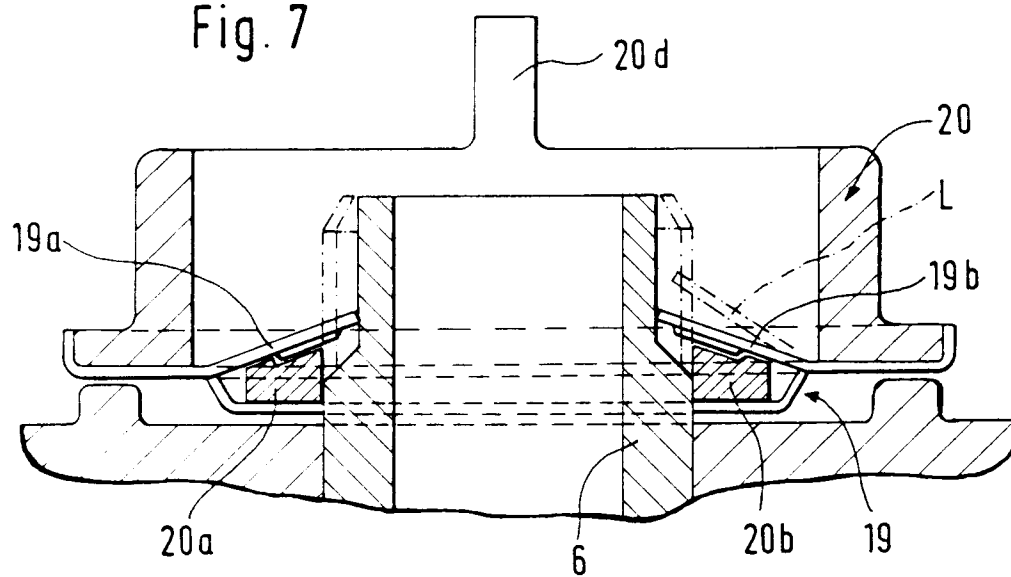


Fig. 6

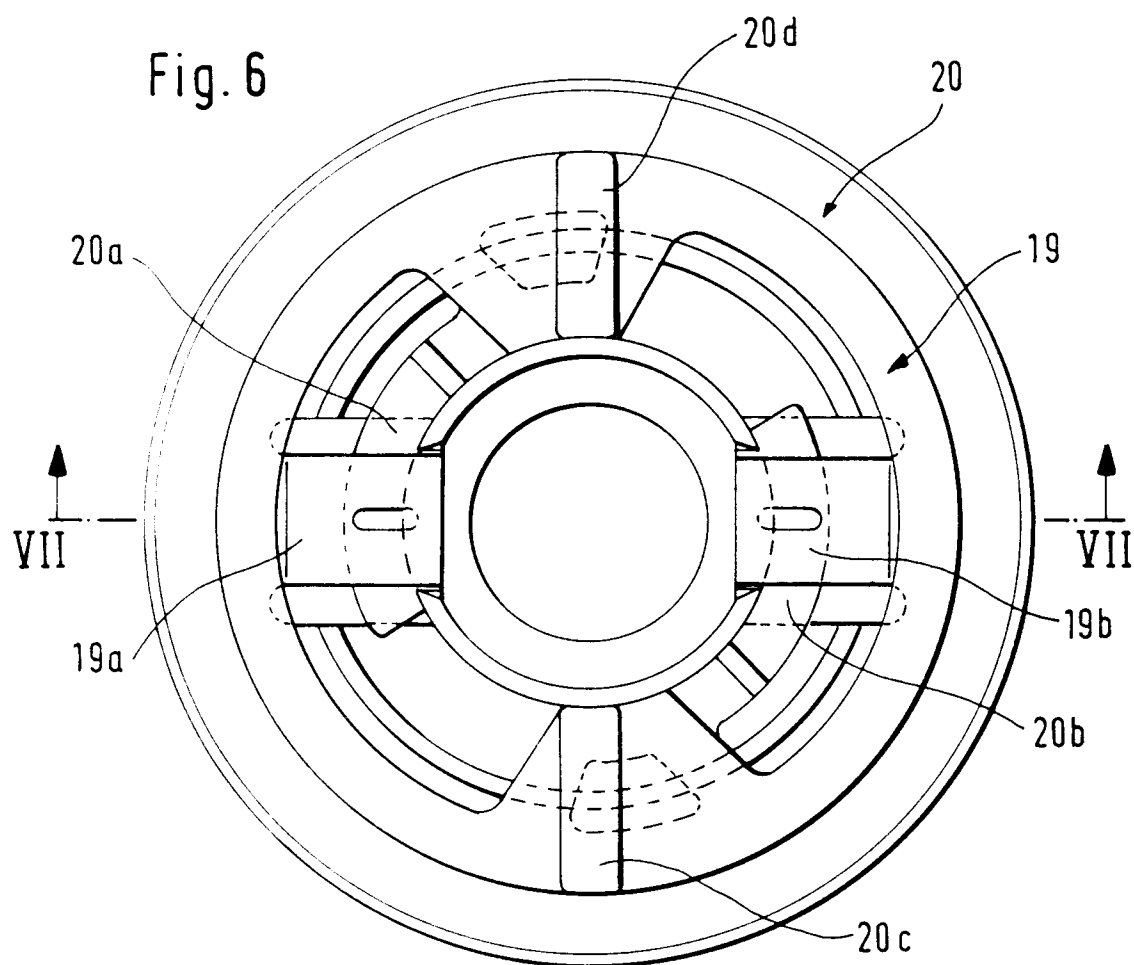


Fig. 8

