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(54) **Detachable coupling device for motor and support, particularly for tubular motors for roll-up units and the like**

Lösbare Kupplungsvorrichtung für einen Motor und einer Halterung, insbesondere für Rohrmotoren von aufrollbaren Einrichtungen und dergleichen.

Dispositif de connection pour une connection détachable pour un moteur et un support, notamment pour moteur tubulaire de dispositfs enroulables et analogues.

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EP-A- 0 468 925

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EP 1 441 103 B1

Description

[0001] The present invention relates to a detachable coupling device for a motor and a support, particularly for tubular motors for roll-up units and the like.

[0002] As is known, tubular motors, which are used to actuate roll-up units in general, such as blinds, awnings and the like, are fixed at one of their ends to the support of the roll-up unit. The motors are provided with an electric stroke limiting system and once installed they must be adjusted by means of a system that is operated by a screwdriver; for this reason, the adjustment screws must be accessible and therefore it must be possible to install the motor with different angular positions.

[0003] Generally, the head of the tubular motor is fitted on a support that has the same contour as the head and is then fixed to such head, by way of various systems such as screws, split pins, spring clips and the like, in order to avoid the axial disengagement of the head.

[0004] This type of operation is delicate and in some cases laborious owing to the precarious conditions of installation and requires considerable attention and relatively long installation times.

[0005] In order to try to solve the problem, systems for automatically fixing the head of the tubular motor to the support of the roll-up unit have already been devised, accordingly facilitating assembly, which is safer and quicker.

[0006] Systems of this type use an intermediate plate, which is fixed to the head of the motor by means of screws and is contoured so as to allow coupling for automatic engagement to the motor support.

[0007] EP 0 468 925 discloses an automatic engagement system that is substantially constituted by three components, i.e., a head, a support and an elastic fixing ring.

[0008] Although this embodiment allows automatic engagement, it does not allow to disengage the head of the motor in a confined space, since it is necessary to extract in a radial direction the elastic ring that provides the coupling in an axial direction.

[0009] Furthermore, in order to extract the elastic ring it is necessary to use a tool that, by operating in very confined spaces, makes the operation even more difficult.

[0010] The aim of the present invention is to solve the problems described above, by providing a coupling device with automatic fixing that allows to engage and disengage the motor in a very small circular space and therefore can be applied also wherever the space available is particularly confined.

[0011] Within this aim, an object of the invention is to provide a coupling device that does not require intermediate components and that in any case does not have parts that can detach or be separated from the remaining components.

[0012] Another object of the present invention is to provide a coupling device that can be actuated manually without having to resort to the use of any kind of tool.

[0013] Another object of the present invention is to provide a detachable coupling device that thanks to its particular constructive characteristics is capable of giving the greatest assurances of reliability and safety in use and is also competitive from a merely economic standpoint.

[0014] This aim and these and other objects that will become better apparent hereinafter are achieved by a device for detachable coupling between a motor and a support, particularly for tubular motors for roll-up units and the like, according to the invention, comprising a coupling head that is formed at the axial end of a tubular motor and a support that can be connected to a fixed structure, axially open peripheral recesses being provided on said head for detachable engagement with corresponding pins formed by said support, characterized in that it comprises, on said support, automatic mating means that can be inserted in seats provided on the peripheral region of said head and can be disengaged by way of a manual radial divaricating action.

[0015] Further characteristics and advantages will become better apparent from the detailed description of a device for detachable coupling between a motor and a support, particularly for tubular motors for roll-up units and the like, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a schematic view of the coupling device according to the invention, applied to a tubular motor;
Figure 2 is a view of the coupling head separated from the support, before mating;
Figure 3 is a sectional view, taken along the line III-III of Figure 2;
Figure 4 is a partially sectional view of the mating between the coupling head and the support;
Figure 5 is a sectional view, taken along the line V-V of Figure 4;
Figure 6 is a partially sectional view of the step for uncoupling the head and the support;
Figure 7 is an exploded perspective view of the support and of the coupling head.

[0016] With reference to the figures, the device for detachable coupling between a motor and a support, particularly for tubular motors for roll-up units and the like, according to the invention, comprises a coupling head, generally designated by the reference numeral 1, which is arranged at the axial end of a tubular motor 2 that drives a roll-up unit constituted by a blind, by an awning, or by any conceptually similar element.

[0017] The device further comprises a support 3 that can be connected to a fixed structure and can be mated with the head 1.

[0018] In greater detail, the head 1 is provided peripherally with peripheral recesses 10 that are open axially and are spaced by lobes or protrusions 11 evenly distributed along the circumference.

[0019] Correspondingly, the support 3 is provided with a base plate 20 that is substantially circular and from which pins 21 protrude along a direction that is parallel to the axial direction; said pins can be detachably inserted in the recesses 10, which are open axially.

[0020] A particular feature of the invention is constituted by the fact that there are automatic mating means are provided for coupling between the head 1 and the support 3, such means being constituted by teeth 30 formed by sectors 31 supported by elastic arms 32 that protrude from the base 20 of the support 3.

[0021] The teeth 30 can be inserted in seats 40 provided in the head 1.

[0022] The teeth 30 have a front bevel 30a that allows automatic insertion and have, on the opposite side, an abutment region 30b that in practice enters the seat 40 in order to achieve stable mating.

[0023] Advantageously, there are two sets of teeth, which are arranged diametrically opposite to each other and can be divaricated radially by using a single hand, the seats 40 being instead provided on all the lobes or protrusions 11, accordingly allowing to perform mutual angular adjustment through 90° thanks to the possibility of four different positions along a round angle.

[0024] With the arrangement described above, it is therefore possible to achieve automatic insertion in an axial direction and it is also possible to perform uncoupling simply by divaricating radially the sectors 31 supporting the teeth 30 that protrude from the seats 40, allowing to axially extract the head and accordingly the tubular motor coupled thereto.

[0025] From what has been described above it is therefore evident that the invention achieves the intended aim and objects, and in particular an inventive device is provided which is very compact as for its radial extension and further avoids separate elements; it is simply constituted by two components and is simply actuatable by hand.

[0026] In practice, the materials used, so long as they are compatible with the specific use, as well as the contingent shapes and dimensions, may be any according to requirements.

[0027] The disclosures in Italian Utility Model Application No. MI2003U000029 from which this application claims priority are incorporated herein by reference.

Claims

1. A device for detachable coupling between a motor and a support, particularly for tubular motors for roll-up units and the like, comprising a coupling head (1) that is arranged at the axial end of a tubular motor (2) and a support (3) that can be connected to a fixed structure, axially open peripheral recesses (10) being provided on said head (1) for detachable engagement with corresponding pins (21) formed at said support (3), **characterized in that** it comprises, on said support (3), automatic mating means (30,31,32) that can be inserted in seats (40) provided on the peripheral region of said head (1) and can be disengaged by way of a manual radial divaricating action.

2. The coupling device according to claim 1, **characterized in that** said peripheral recesses (10) are spaced by lobes or protrusions (11) formed by said head (1).

3. The coupling device according to the preceding claims, **characterized in that** said peripheral recesses (10) are evenly distributed along the circumference of the head (1).

4. The coupling device according to one or more of the preceding claims, **characterized in that** said support (3) comprises a base plate (20) that is substantially circular and from which said pins (21) protrude along a direction that is substantially parallel to the radial direction.

5. The coupling device according to one or more of the preceding claims, **characterized in that** said automatic mating means comprises at least one tooth (30) that protrudes from at least one sector (31) that is supported by an elastic arm (32) that protrudes from said base.

6. The coupling device according to claim 5, **characterized in that** it comprises a pair of mutually spaced teeth (30) for each one of said sectors (31).

7. The coupling device according to claims 5 or 6, **characterized in that** said teeth (30) have a front bevel (30a) for automatic insertion in said seats (40), said teeth (30) having, on the opposite side, an abutment region (30b) for stable mating in said seats (40).

8. The coupling device according to claims 5,6 or 7, **characterized in that** it comprises, on said support (3), two sets of teeth (30) that are arranged diametrically opposite.

9. The coupling device according to one or more of claims 2-8, **characterized in that** said seats (40) for the insertion of said teeth (30) are provided at all said lobes or protrusions (11) formed by said head (1).

Patentansprüche

1. Lösbare Kupplungsvorrichtung für einem Motor und einer Halterung, insbesondere für Rohrmotore von aufrollbaren Einrichtungen und dergleichen, umfassend einen an dem axialen Ende eines Rohrmotors (2) angeordneten Kupplungskopf (1) und eine Halterung (3), die an eine feststehende Struktur an-

schließbar ist, wobei axial offene Umfangseinbuchtungen (10) an dem Kopf (1) für lösbaren Eingriff mit entsprechenden an der Halterung (3) gebildeten Bolzen (21) vorgesehen sind, **dadurch gekennzeichnet, dass** sie an der Halterung (3) automatische Eingriffsmittel (30, 31, 32) umfasst, die in am Umfangsbereich des Kopfes (1) vorgesehene Sitze (40) einführbar und mittels einer manuellen radialen Trenneinwirkung entkuppelbar sind.

2. Kupplungsvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Umfangseinbuchtungen (10) durch am Kopf (1) gebildete Erhöhungen oder Vorsprünge (11) voneinander beabstandet sind.

3. Kupplungsvorrichtung nach den vorangehenden Ansprüchen, **dadurch gekennzeichnet, dass** die Umfangseinbuchtungen (10) gleichmäßig über den Umfang des Kopfes (1) verteilt sind.

4. Kupplungsvorrichtung nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Halterung (3) eine Grundplatte (20) umfasst, die im Wesentlichen kreisrund ist und von welcher die Bolzen (21) entlang einer Richtung vorspringen, die im Wesentlichen parallel zu der Radialrichtung ist.

5. Kupplungsvorrichtung nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die automatischen Eingriffsmittel mindestens einen Zahn (30) umfassen, der von mindestens einem Sektor (31) vorspringt, der durch einen elastischen Arm (32) abgestützt ist, der von der Grundplatte vorspringt.

6. Kupplungsvorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** sie ein Paar von gegenseitig beabstandeten Zähnen (30) für jeden der Sektoren (31) umfasst.

7. Kupplungsvorrichtung nach Anspruch 5 oder 6, **dadurch gekennzeichnet, dass** die Zähne (30) eine vordere Fase (30a) für die automatische Einführung in die Sitze (40) haben, wobei die Zähne (30) an der gegenüberstehenden Seite einen Anlagebereich (30b) für stabilen Eingriff in die Sitze (40) haben.

8. Kupplungsvorrichtung nach den Ansprüchen 5, 6 oder 7, **dadurch gekennzeichnet, dass** sie an der Halterung (3) zwei Sätze von Zähnen (30) umfasst, die diametral gegenüberliegend angeordnet sind.

9. Kupplungsvorrichtung nach einem oder mehreren der Ansprüche 2 bis 8, **dadurch gekennzeichnet, dass** die Sitze (40) für die Einführung der Zähne (30) an allen durch den Kopf (1) gebildeten Erhöhungen oder Vorsprüngen (11) vorgesehen sind.

Revendications

1. Dispositif pour accoupler de manière détachable un moteur et un support, en particulier pour des moteurs tubulaires pour des unités d'enroulement et similaire, comprenant une tête d'accouplement (1) qui est agencée à l'extrémité axiale d'un moteur (2) tubulaire et un support (3) qui peut être relié à une structure fixe, des évidements périphériques (10) ouverts axialement étant prévus sur ladite tête (1) pour une mise en prise détachable avec des broches (21) correspondantes formées au niveau dudit support (3), **caractérisé en ce qu'**il comprend, sur ledit support (3), des moyens d'accouplement automatique (30, 31, 32) qui peuvent être insérés dans des sièges (40) prévus dans la région périphérique de ladite tête (1) et qui peuvent être désengagés au moyen d'une action de séparation radiale manuelle.

2. Dispositif d'accouplement selon la revendication 1, **caractérisé en ce que** lesdits évidements périphériques (10) sont séparés par des lobes ou protubérances (11) formés par ladite tête (1).

3. Dispositif d'accouplement selon les revendications précédentes, **caractérisé en ce que** lesdits évidements périphériques (10) sont répartis uniformément le long de la circonférence de la tête (1).

4. Dispositif d'accouplement selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** ledit support (3) comprend une plaque de base (20) qui est sensiblement circulaire et de laquelle lesdites broches (21) font saillie le long d'une direction qui est sensiblement parallèles la direction radiale.

5. Dispositif d'accouplement selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** lesdits moyens d'accouplement automatique comprennent au moins une dent (30) qui fait saillie d'au moins un secteur (31) qui est supportée par un bras (32) élastique qui fait saillie de ladite base.

6. Dispositif d'accouplement selon la revendication 5, **caractérisé en ce qu'**il comprend une paire de dents (30) mutuellement espacées pour chacun desdits secteurs (31).

7. Dispositif d'accouplement selon la revendication 5 ou 6, **caractérisé en ce que** lesdites dents (30) comportent un chanfrein avant (30a) pour une insertion automatique dans lesdits sièges (40), lesdites dents (30) comportant, du côté opposé, une région de butée (30b) pour un accouplement stable dans lesdits sièges (40).

8. Dispositif d'accouplement selon les revendications

5, 6 ou 7, **caractérisé en ce qu'**il comprend, sur ledit support (3), deux ensembles de dents (30) qui sont agencés diamétralement opposés.

9. Dispositif d'accouplement selon une ou plusieurs des revendications 2 à 8, **caractérisé en ce que** lesdits sièges (40) pour l'insertion desdites dents (30) sont prévus au niveau de tous lesdits lobes ou protubérances (11) formés par ladite tête (1).

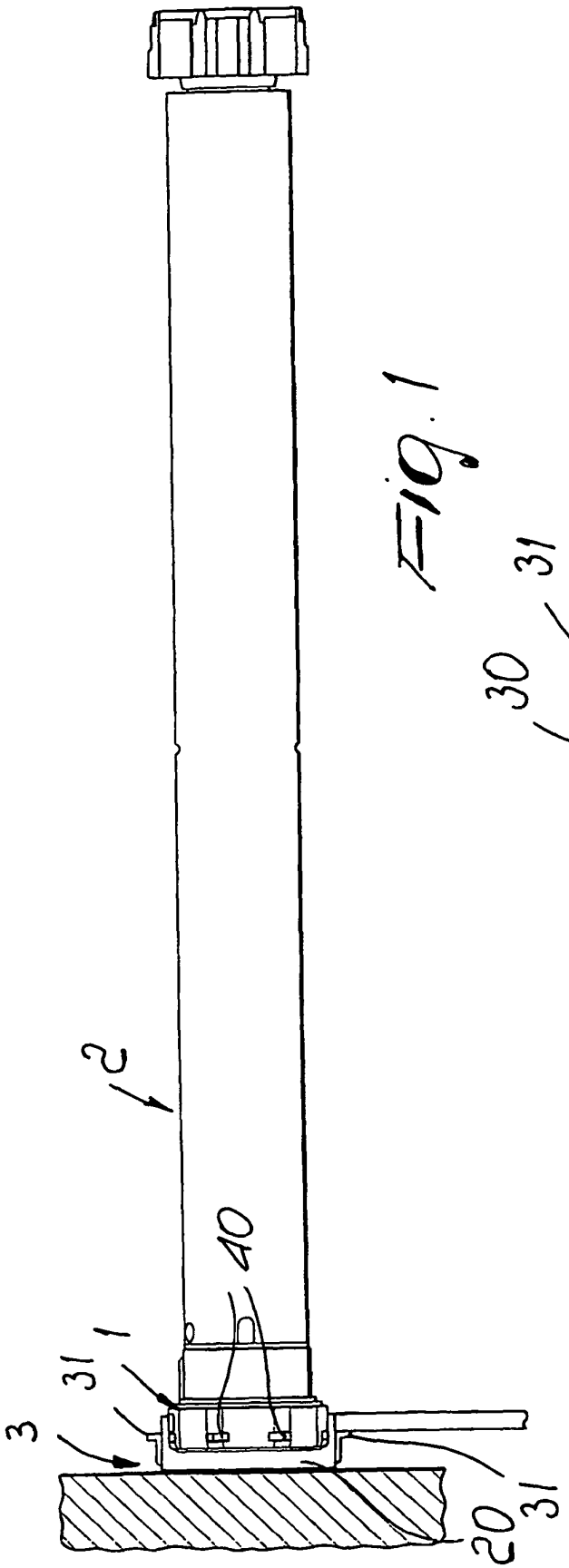


Fig. 1

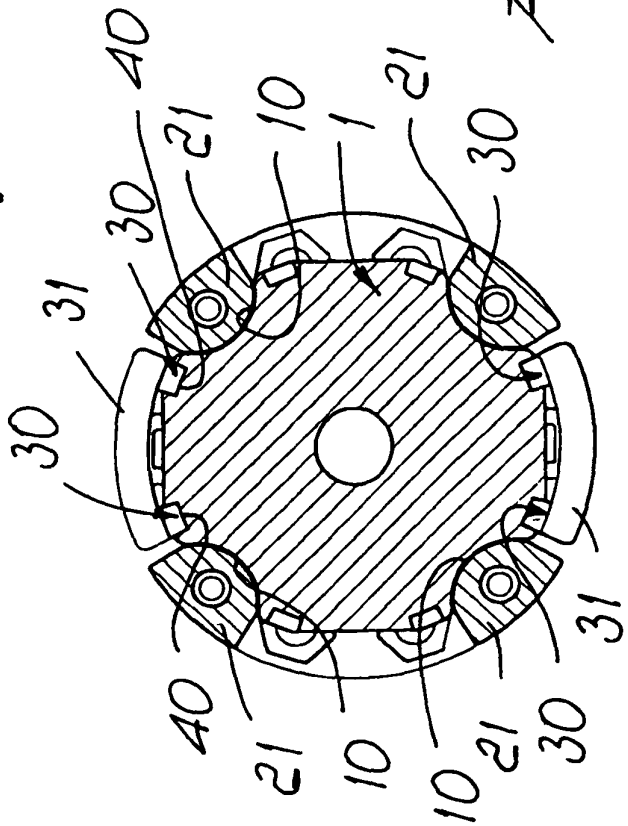


Fig. 5

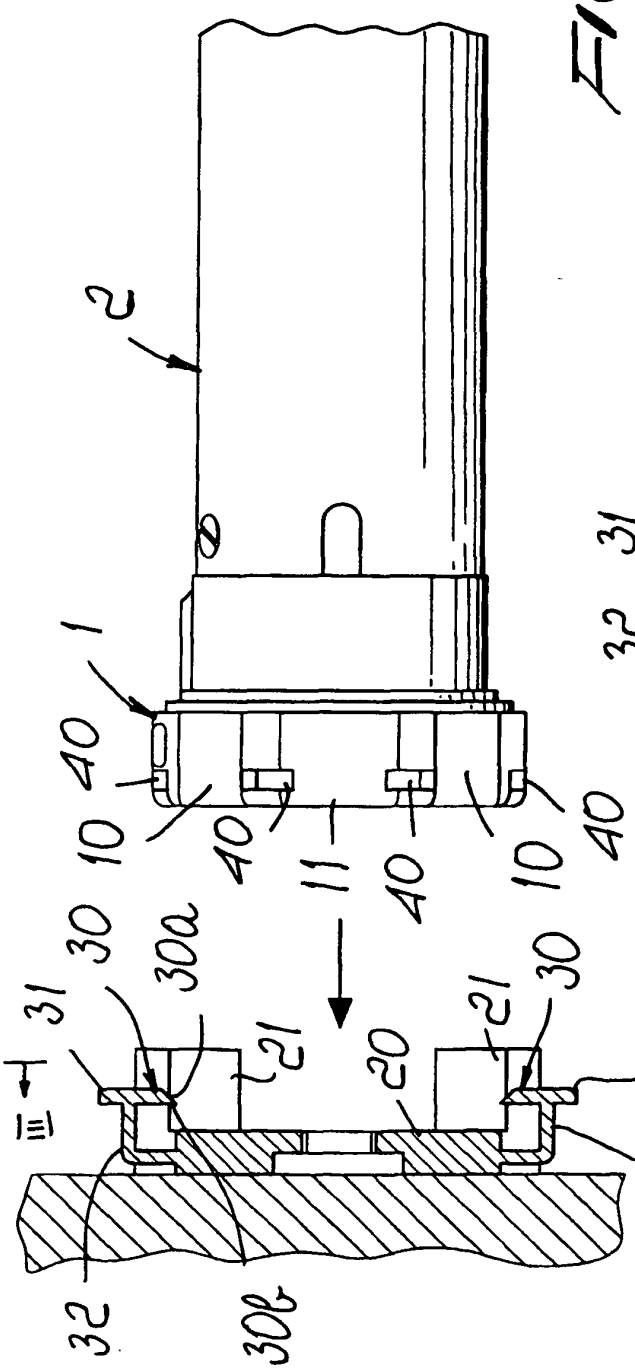

2
1
40
10
40
11
40
10
40
30
30a
31
21
20
21
30
31
III
III
32
30b

Fig. 2

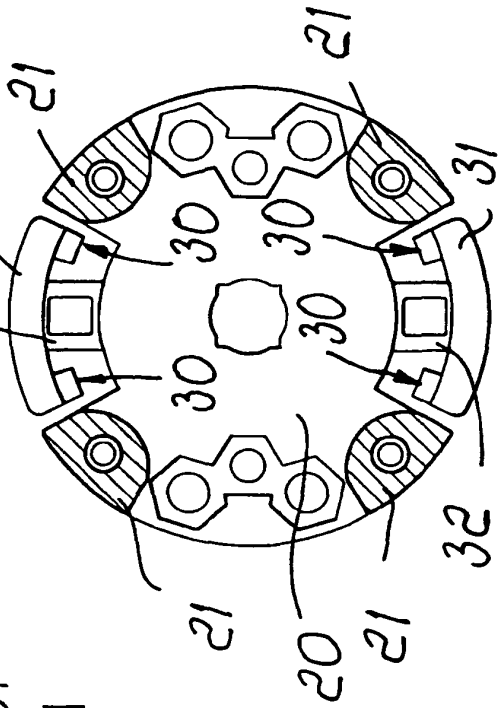

21
21
31
31
32
30
30
30
30
21
20
21
32

Fig. 3

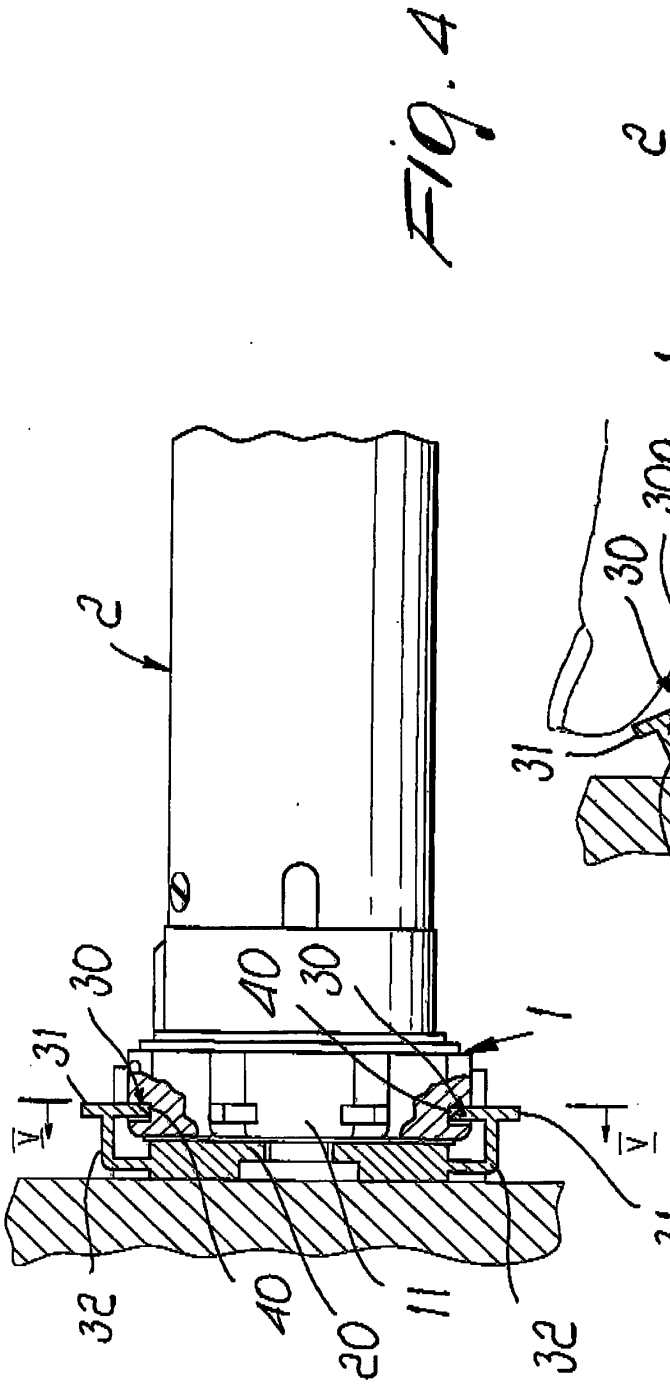

2
30
31
40
30
1
V
V
31
32
40
20
11
32

Fig. 4

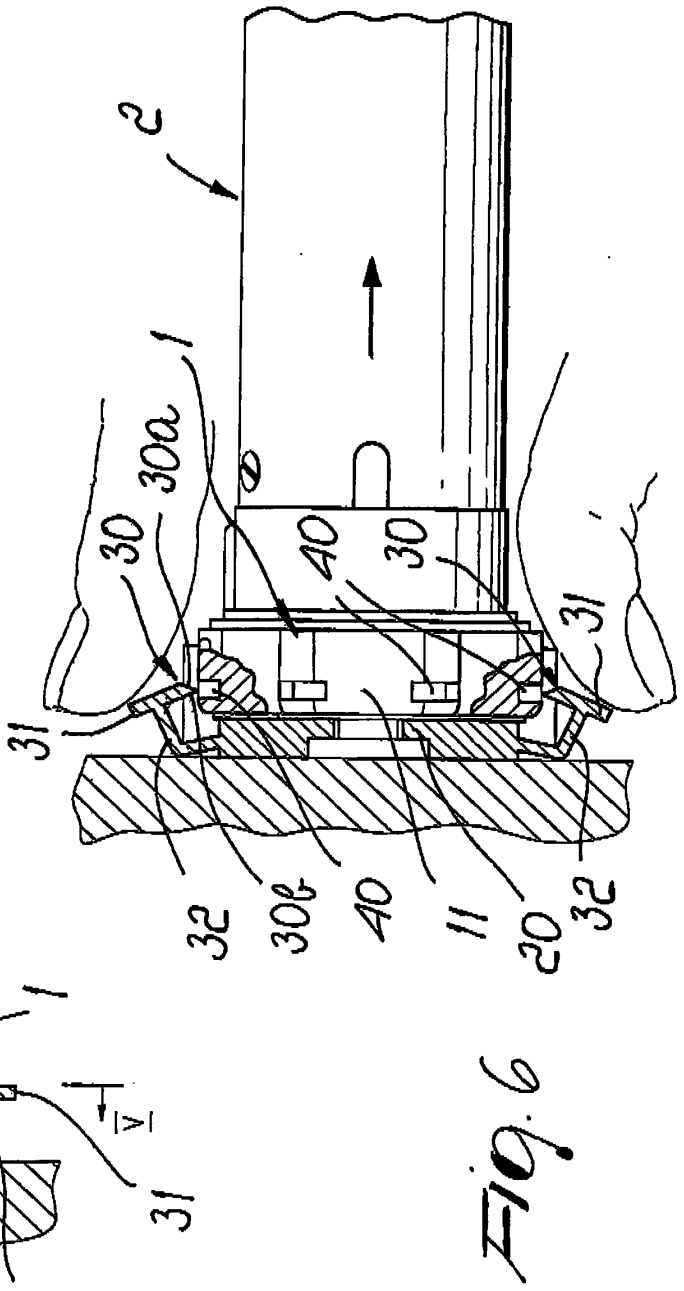

2
1
30a
30
40
30
31
31
32
30b
40
11
20
32

Fig. 6

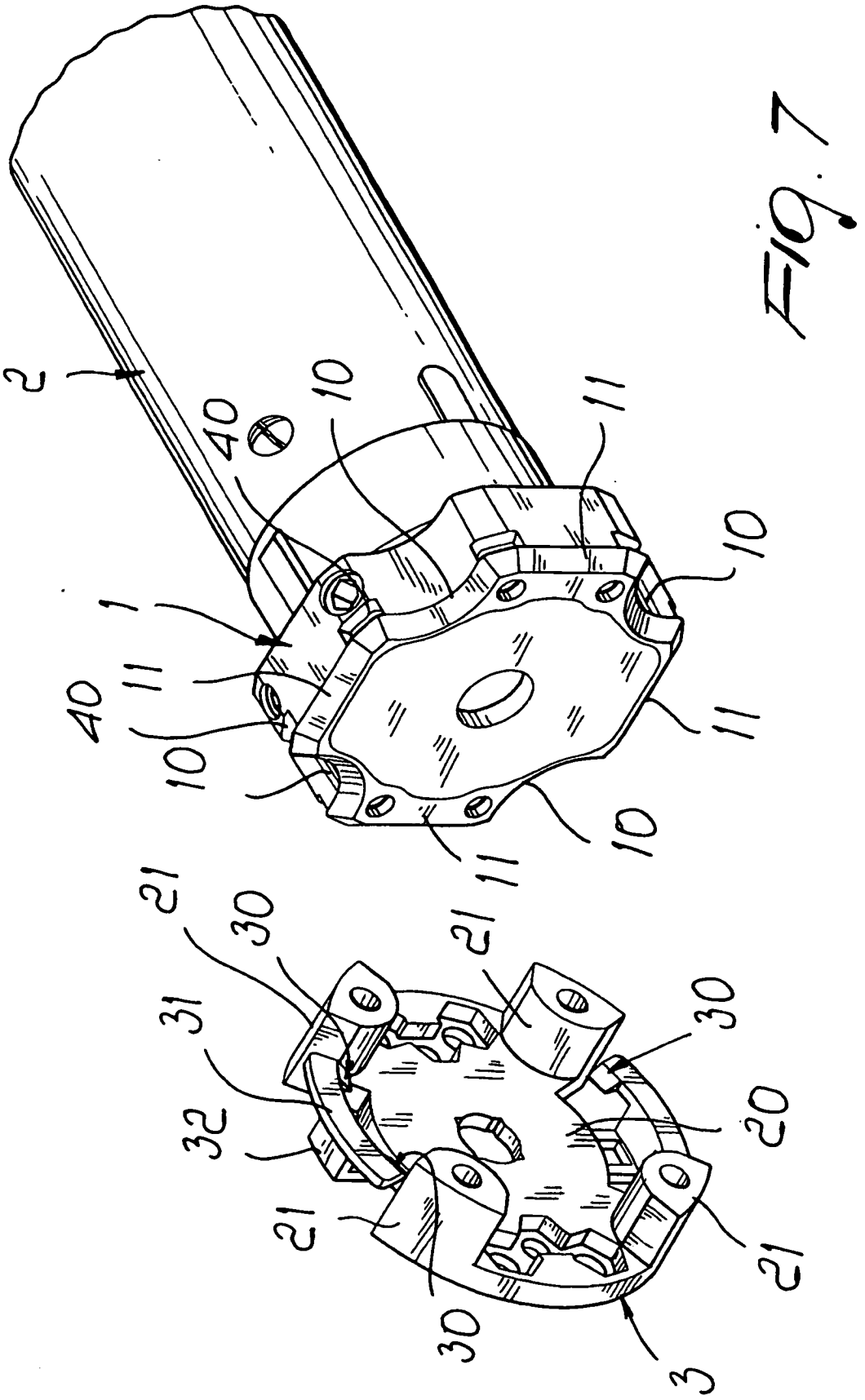


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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- IT MI20030029 U **[0027]**