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(54) **Adjusting member for adjusting a work- or desktop at predetermined heights**

Vorrichtung zur Höheneinstellung einer Arbeitsplatte oder einer Büroplatte in voreingestellten Ebenen

Pièce de réglage en hauteur d'un plan de travail ou de bureau à des niveaux prédéterminés

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Description

[0001] The invention relates to an adjusting member for adjusting a leg of a work- or desktop for bringing this at predetermined heights as described in the preamble of the main claim.

[0002] Such an adjusting member is known by US-A-2 614012. In case of this known member said one part, which can be rotated by means of said operating arm, is provided with no more than two cams (7,8) arranged in longitudinal direction, while said other part is provided with a large number of slots for being able to accomodate said cams at a great number of heights.

[0003] This means that only a stable position of the parts can be obtained when the play between the cams and slots is very small. So manufacturing of said parts will be expensive in particular concerning the part in the inner wall of which said slots have to be provided.

[0004] Further the lower part will have to be prevented from rotating when the upper part is rotated for moving the cams out of said slots. In view of this at least two legs will have to be present the lower parts of which have to be connected to prevent the rotation of said lower parts of said legs. By this the shape of this known adjusting member is very limited as appears e. g. from fig. 2, 3 and 4 of said publication.

[0005] Now the object of the invention is to provide an adjusting member by which said disadvantages are removed.

[0006] According to the invention this is obtained by the features as described in the characterizing portion of claim 1.

[0007] By this only a limited portion of the related part has to be provided with inner slots and no connection between the lower parts of said legs is necessary. By this the production costs can be lowered and the legs can be shaped according to the wishes of the designer.

[0008] According to a preferred embodiment said shaft comprises a first shaft part provided with at least one row of cams and a second shaft part to which said operating arm is affixed, which parts can be coupled by a snap connection.

[0009] Further said shaft can be provided with a resilient lip mounted to the lower extremity of it for forming a stop. On insertion of the one part into the other part the resilient lip is compressed and the shaft can move through the passage in the other part while in the opposite direction the lip remains in the original position and the stop hits the fixedly mounted other part of said adjusting member.

[0010] According to a second embodiment, it is provided for, that the one part having at least one row of cams, is fixedly mounted in the lower tube portion of the leg and the other part is rotatably mounted in the upper tube portion of said leg. Here, the second part substantially comprises a receiving member fixedly mounted in the upper tube portion and a sleeve is rotatably received in said receiving member, the slots for receiving said

cams on the one part being provided at the inside of the sleeve.

[0011] In this embodiment, the upper tube portion of the leg slides into the lower tube portion of the leg since the receiving member is preferably mounted at the free extremity of the upper tube portion. Further, by providing the cam recesses in the sleeve near the receiving member, the point of engagement of first and second portions will be at a distance from the upper edge of the lower tube portion of the leg and the highest possible degree of stability of the assembly will be obtained.

[0012] The receiving member is preferably made of two halves, engaging one another e.g. by a snap connection. This offers a simple possibility to enclose the sleeve rotatably between said two halves of said receiving member. Here, it is further provided for, that the sleeve rotatably received in said receiving member has at least one circumferentially extending guiding rim and said receiving member has a corresponding guiding track or guiding tracks for receiving the guiding rim or guiding rims.

[0013] The operating arm in the second embodiment is mounted at or near the extremity of the rotatable shaft and extends from the top within the leg near to or directly below the top to beyond said leg.

[0014] According to a further elaboration, means are provided for forcing said rotatable shaft having at least one row of cams or the rotatable sleeve having cam recesses into the first position, in which the first and second parts are locked in relation to one another.

This prevents the shaft having at least one row of cams or the rotatable shaft having cam recesses will move in the second position unintentionally, in which a passage for the cams is provided and the work- or tabletop will suddenly move to an oblique position or will slide down completely.

[0015] A simple embodiment is provided in that these means substantially comprise spring means engaging the operating arm. The height adjustment will then only be possible by moving the operating arm against the action of the spring, which will almost certainly exclude uncontrolled movements.

[0016] Another embodiment provides for that a taper is arranged within the cam recesses, such that first and second parts are forced into the first position in which said first and second parts are locked in relation to one another in axial direction. Therefore, in order to rotate the operating arm it is necessary that first the part of the table or the desk above the tube portion of the leg concerned is moved upwards at least across the height of the taper.

Such an oblique taper is an extremely effective protection in the locked position.

[0017] The invention is further explained by way of the example given in the drawing, in which:

figs. 1A, B illustrate a cross-section of a leg comprising two parts with an adjusting member ac-

fig. 2 cording to the first embodiment received therein;
illustrates in plan view and partly in cross-section the leg according to fig. 1;
figs. 3A,B illustrate a view and cross-section of a shaft having two rows of cams according to the first embodiment;
fig. 4 illustrates a cross-section of a leg comprising two tube portions with an adjusting member according to the second embodiment received therein;
figs. 5A-I illustrate a longitudinal section of the adjusting member according to the second embodiment, a detail thereof, as well as some cross-sections.

[0018] Fig. 1A indicates schematically a leg 1 of e.g. a worktable or desk having a top beam 22 and a top 23 comprising two telescopic tube portions 2, 3. The leg 1 mounts the adjusting member 4 comprising a part 5 fixedly placed in the lower tube portion 3 and a shaft 6 engaging the upper tube portion 2 and being provided with two opposite rows of cams 7, 8. Although configurations having e.g. one row of cams or more than one row of cams are possible, an embodiment having two rows is preferred since it can be manufactured in a relatively simple way and it is furthermore very stable.

[0019] The fixed part 5 bears on the lower tube portion 3 with edge 9 and is provided with a central passage 10 of a substantially round shape, see also Fig. 1B, in which the shaft 6 is received loosely. Following said passage 10, opposite slots 11 have been mounted which provide passage to the cams of said rows of cams 7, 8. By rotating the shaft 6 to a position in which the rows of cams 7, 8 are aligned with the slots 11 with the help of operating arm 12, the shaft 6 can be moved in height in relation to the fixed portion 5 and with it the tube portions 2, 3 of the leg 1.

[0020] Fig. 1B illustrates the shaft 6 with the rows of cams 7, 8 in two different positions. In the first position, with said cams 7, 8 in one line in the drawing from left to right, the cams 7, 8 are located in cam recesses 24 and first and second parts 6, 5 are locked in relation to one another in axial direction. By rotating the shaft 6 across an angle of approximately 45° in the drawing, the cams 7, 8 will be aligned with the slots 11 and first and second portions can be moved in axial direction in relation to one another.

[0021] In the example illustrated, the shaft 6 consists of two parts 13, 14 being coupled to a snap connection. Said snap connection is designed in such a way that the shaft parts 13, 14 can not rotate in relation to one another, e.g. by having them engage one another with a radially extending profile. The shaft 6 will only be executed in two parts if mounting the shaft into an upper tube portion of a leg would be too complicated or impossible on account of the shape and/or dimensions. However, it is preferred to produce the shaft 6 as an integral part.

[0022] At the top, an axial portion 16 of a smaller diameter is provided in the shaft 6, a collar part 17 being slid across said axial portion 16. Collar part 17 is provided with a slot 18 extending along a large part of the circumference, with which it can be slid into a recess provided for it in the leg 1. Collar part 17 is preferably made of a resilient material so that it can enclose the shaft far enough and can always remain located around the shaft in this way. See also Fig. 2. The recess for the collar part 17, instead of in leg 1, can also be provided in a top beam mounted on leg 1. However, the structure is preferably always such, that operating arm 12 ends closely below or against the bottom side of a work- or desktop.

[0023] Fig. 3A shows that a resilient lip 19 is arranged at the bottom side of the shaft 6 at the extremity. Lip 19 is provided with a stop 20. By manufacturing the shaft 6 or the shaft part 14 from a resilient plastic, such a lip 19 can be realized simply by cutting it from a hollow shaft part 14. Said lip 19 with stop 20, having a bevel at the bottom, serves for being able to project said shaft part 14 through fixed part 5 and to prevent that it can be removed from the fixed part in opposite direction without further measures.

[0024] Fig. 3B illustrates a cross-section along line A-A in Fig. 3A. It is clearly visible that the shaft 6 is substantially massive and that it is further only provided with recesses 25 at both sides. This leads to savings in material and in weight.

[0025] Fig. 4 illustrates schematically a leg 1 of a worktable having a top beam 22 and a top 23, in which the leg comprises an upper and a lower tube portion 2, 3. In this embodiment, the upper tube portion 2 slides into the lower tube portion 3. The shaft 26 having rows of cams 7, 8 is fixedly mounted in the lower tube portion 3 on an attachment fitting 27. A receiving member 28 having a rotatable sleeve 29 fixedly mounted therein, is mounted in the bottom of upper tube portion 2, see Fig. 5.

[0026] Fig. 5A illustrates a section in longitudinal direction of fixed shaft 26 having rows of cams 7, 8, the receiving member 28 and the rotatable sleeve 29. Said rotatable sleeve 29 extends across the full length of the upper tube portion 2 and has its operating arm 12 projecting beyond said upper tube portion 2 and then ends closely below the worktop. Fig. 5 illustrates a cross-section of the sleeve 29 along the line S-S. At this level, the rotatable sleeve is a hollow sleeve without any further provisions.

[0027] Fig. 5C illustrates a cross-section along the line R-R with said receiving member 28, the rotatable sleeve 29 and the fixed shaft 26 having cams 6, 7. Receiving member 28 comprises two halves 30, 31 engaging one another with snap connections 32. The connecting means 33, 34 which together can constitute said snap connections 32 are mounted in openings 35 recessed to that end in said receiving member 28. This cross-section was taken between subsequent cams 7, 8 so that the cams are not visible here. What can be seen is that slots 36 have been made in the rotatable sleeve 29, which are

intended for inserting the cams 7, 8. Said cams 7, 8 of the fixedly mounted shaft 26 are in one line in the drawing from left to right and the rotatable sleeve will have to be rotated clockwise across an angle of approximately 45° for having the slots 36 correspond to the cams 7, 8 so as to be able to adjust the rotatable sleeve 29 with receiving member 28 in relation to the fixed shaft 26.

[0028] The cross-section according to fig. 5D was taken according to the line P-P at the level of the cams 7, 8 and illustrates again said receiving member 28 comprising two halves, rotatable sleeve 29 and fixed shaft 26 with cams 7, 8. Following the slots 36 extending in longitudinal direction, cam recesses 37 have been mounted, in which the cams 7, 8 can be locked. In the position indicated, the cams 7, 8 are in the cam recesses 37 and rotatable sleeve 29 with receiving member 28 are locked in axial direction in relation to fixed shaft 26.

[0029] The slots 36 and the cam recesses 37 have been made in the portion of the rotatable sleeve 29 which is in the receiving member 28, see also Fig. 5G. Said slots 36 connect to the hollow profile of said rotatable sleeve 29 located above it, so that the fixed shaft 26 can slide further into it if the worktop would be set to the smallest adjustable height.

[0030] Figs. 5A and 5F further show that the rotatable sleeve 29 is provided with a circumferentially extending guiding rim 38 accommodated in a guide track 39 mounted in said receiving member 28. In the drawing, a further guide rim 41 and a guide track 40 intended for it has been mounted over it between the successive openings 35 with connecting means 33, 34 for the snap connection 32 between both halves of the receiving member 28. Finally, fig. 5G indicates how the forces are transferred from the upper tube portion 2 of the leg 1 to the fixed shaft 26.

[0031] Figs. 5E and 5F illustrate successive cross-sections through the massive shaft 26.

[0032] Figs. 5H and 5I illustrate the attachment of the operating arm 12 on the rotatable sleeve 29. Said operating arm 12 comprises a fitting piece 43 which must be able to be placed on to the extremity of the rotatable sleeve 29 within the outer circumference 42 of the upper tube portion 2 across the elongated head piece 44. After that, said fitting piece 43 can be rotated to the correct position in relation to a passage 45 and the actual arm portion can be projected to the outside through it. Subsequently, a retaining piece 46 is slid across the head piece 44 in which said retaining piece 46 has a pin 47 protruding into an opening 48 intended for it in said fitting piece 43. In this structure, said rotatable sleeve 29 is rotated across an angle by pushing arm 12 inwards. Except for the conversion from translation to rotation, the structure is also meant for guiding the arm 12 outwards at both sides of a leg with the same parts.

Claims

1. Adjusting member for adjusting a leg (1) of a work- or desktop (23) for bringing this at a predetermined height, said leg (1) comprises two telescopic tube portions (2,3), **characterized in that** said adjusting member (4) comprising two telescopic parts and locking means being present for locking said telescopic parts (2,3) in respect of each other, said locking means comprising two parts (5,6), one being a shaft (6,26) having a row of cams (7,8) arranged in longitudinal direction of it and the other part (5) being provided with slots (11) for accommodating one or more of said cams (7), an operating arm (12) being present for rotating one of said parts (5,6) over a given angle for unlocking and locking said cams (7) and slots (11), said adjusting member (4) being positioned inside said tube portions (2,3), the shaft (6,26) of said adjusting member (4) being rotatably mounted to one (2) of said tube portions whereas the second part (5) is fixedly positioned in the other tube portion (3).
2. Adjusting member according to claim 1, **characterized in that** said shaft (6) comprises a first shaft part (14) provided with at least one row of cams (7,8) and a second shaft part (13) to which said operating arm (12) is affixed, which parts can be coupled by a snap connection.
3. Adjusting member according to claim 1 or 2, **characterized in that** said shaft (6) is provided with a resilient lip (19) mounted to the lower extremity of it for forming a stop (20).
4. Adjusting member according to claim 1, **characterized in that** said first part (6) is provided with a web-shaped recess along the circumference near its upper extremity, said recess having a smaller diameter than said first part with which it is intended to engage a complementary part in said upper tube portion of said leg (1).
5. Adjusting member according to claim 4, **characterized in that** a flange part of a resilient material is arranged at the web-shaped recess, said flange part being intended to engage a complementary part in the upper tube portion of said leg (1).

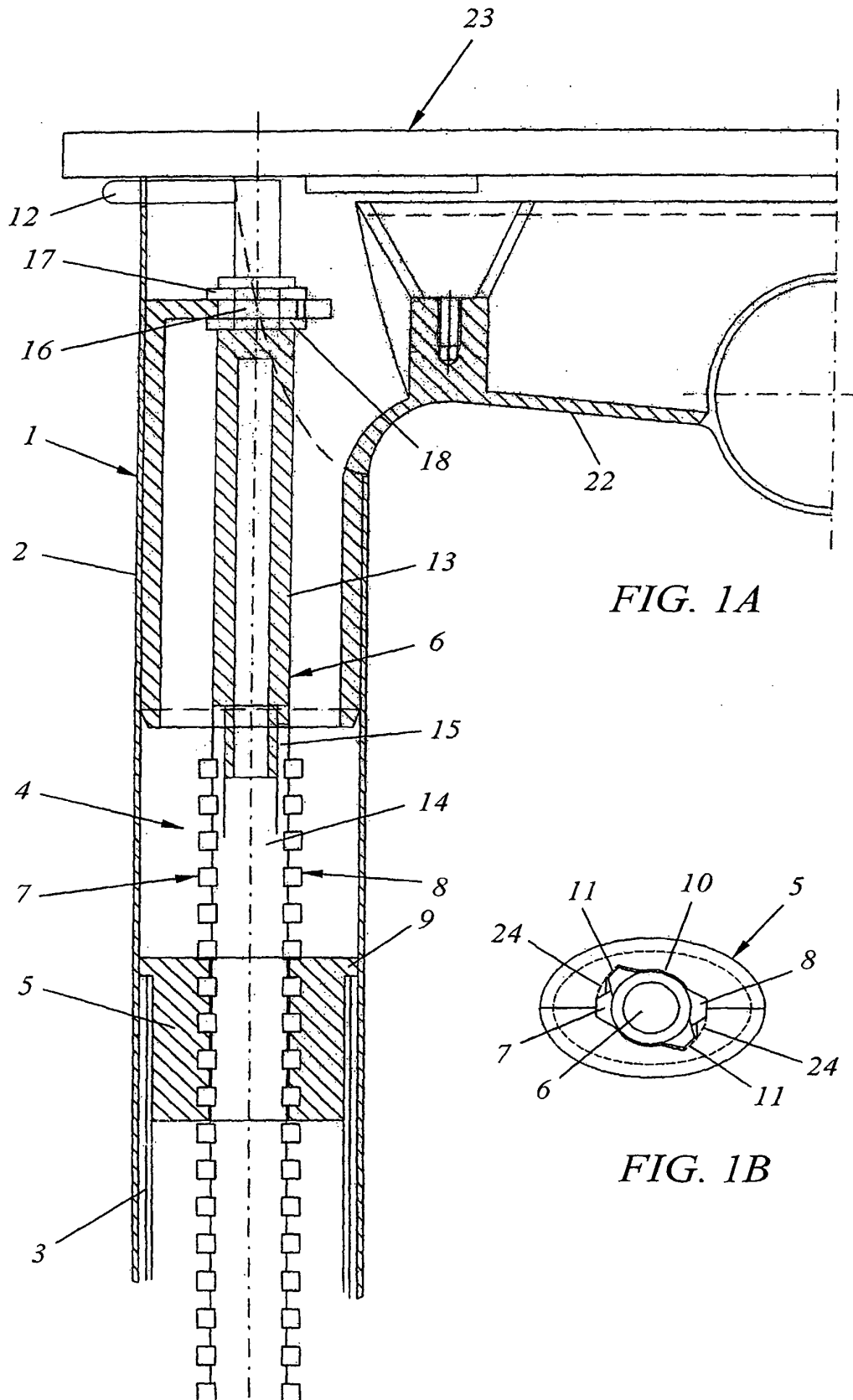
Patentansprüche

1. Einstellungselement zum Einstellen eines Beins (1) einer Arbeits- oder Schreibtischplatte (23), um diese auf eine vorher festgelegte Höhe zu bringen, wobei das genannte Bein (1) zwei ausziehbare Rohrab-schnitte (2, 3) umfasst, **dadurch gekennzeichnet, dass** das Einstellungselement (4) zwei ausziehbare

- Teile umfasst und ein Arretiermittel vorhanden ist, um die genannten ausziehbaren Teile (2, 3) miteinander zu arretieren, wobei das genannte Arretiermittel zwei Teile (5, 6) umfasst, von denen eines ein Schaft (6, 26) mit einer Reihe Nocken (7, 8) ist, die in Längsrichtung davon angeordnet sind, und das andere Teil (5) mit Schlitz (11) zum Aufnehmen eines oder mehrerer der Nocken (7) versehen ist, wobei ein Betätigungsarm (12) zum Drehen eines der genannten Teile (5, 6) über einen gegebenen Winkel zum Lösen und Arretieren der genannten Nocken (7) und Schlitz (11) vorhanden ist, wobei das genannte Einstellungselement (4) in den genannten Rohrabschnitten (2, 3) positioniert ist, wobei der Schaft (6, 26) des genannten Einstellungselements (4) drehbar an einem (2) der genannten Rohrabschnitte montiert ist, wohingegen der zweite Teil (5) unbeweglich in dem anderen Rohrabschnitt (3) positioniert ist.
2. Einstellungselement nach Anspruch 1, **dadurch gekennzeichnet, dass** der genannte Schaft (6) einen ersten Schaftteil (14), der mit mindestens einer Reihe Nocken (7, 8) versehen ist, und einen zweiten Schaftteil (13), an den der genannte Betätigungsarm (12) befestigt ist, umfasst, wobei diese Teile durch eine Schnappverbindung gekuppelt werden können.
 3. Einstellungselement nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der genannte Schaft (6) mit einem elastischen Ansatz (19) versehen ist, der an dem unteren Ende davon montiert ist, um einen Anschlag (20) zu bilden.
 4. Einstellungselement nach Anspruch 1, **dadurch gekennzeichnet, dass** der genannte erste Teil (6) um den Umfang herum in der Nähe seines oberen Endes mit einer stegförmigen Aussparung versehen ist, wobei die genannte Aussparung einen kleineren Durchmesser als der erste Teil aufweist, mit dem es in einen komplementären Teil in dem genannten oberen Rohrabschnitt des genannten Beins (1) eingreifen soll.
 5. Einstellungselement nach Anspruch 4, **dadurch gekennzeichnet, dass** ein Flanschteil aus einem elastischen Material an der stegförmigen Aussparung angeordnet ist, wobei der genannte Flanschteil in einen komplementären Teil in dem oberen Rohrabschnitt des genannten Beins (1) eingreifen soll.
- 3), **charakterisiert in ce que** des moyens de blocage sont présents pour bloquer lesdites parties télescopiques (2, 3) l'une par rapport à l'autre, lesdits moyens de blocage comprenant deux parties (5, 6), l'une étant une tige (6, 26) ayant une rangée de cames (7, 8) agencées dans une direction longitudinale de celle-ci et l'autre partie (5) étant munie de fentes (11) pour recevoir une ou plusieurs desdites cames (7), un bras d'actionnement (12) étant présent pour faire tourner l'une desdites parties (5, 6) sur un angle donné pour débloquer et bloquer lesdites cames (7) et fentes (11), ladite pièce de réglage (4) étant positionnée à l'intérieur desdites parties de tube (2, 3), la tige (6, 26) de ladite pièce de réglage (4) étant montée de manière rotative sur l'une (2) desdites parties de tube alors que la seconde partie (5) est positionnée fixement dans l'autre partie de tube (3).
2. Pièce de réglage selon la revendication 1, **caractérisée en ce que** ladite tige (6) comprend une première partie de tige (14) munie d'au moins une rangée de cames (7, 8) et d'une seconde partie de tige (13) sur laquelle ledit bras d'actionnement (12) est fixé, lesquelles parties peuvent être assemblées par un raccord à encliquetage.
 3. Pièce de réglage selon la revendication 1 ou 2, **caractérisée en ce que** ladite tige (6) est munie d'une lèvre élastique (19) montée à l'extrémité inférieure de celle-ci pour former une butée (20).
 4. Pièce de réglage selon la revendication 1, **caractérisée en ce que** ladite première partie (6) est munie d'un évidement en forme d'âme le long de la circonférence près de son extrémité supérieure, ledit évidement ayant un diamètre plus petit que ladite première partie avec laquelle il est destiné à venir en prise avec une partie complémentaire dans ladite partie de tube supérieure dudit pied (1).
 5. Pièce de réglage selon la revendication 4, **caractérisée en ce qu'**une partie de bride en matériau élastique est agencée sur l'évidement en forme d'âme, ladite partie de bride étant destinée à venir en prise avec une partie complémentaire dans la partie de tube supérieure dudit pied (1).

Revendications

1. Pièce de réglage pour régler un pied (1) d'un plan de travail ou d'un dessus de bureau (23) pour amener celui-ci à une hauteur prédéterminée, ledit pied (1) comprend deux parties de tube télescopiques (2,



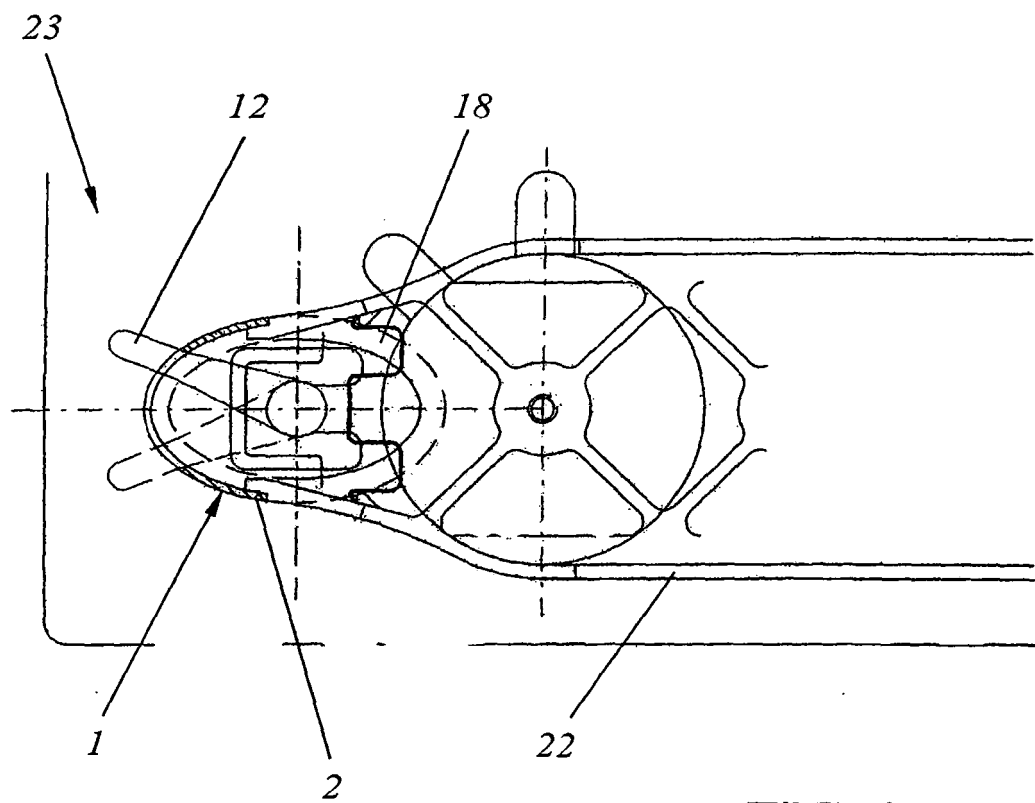
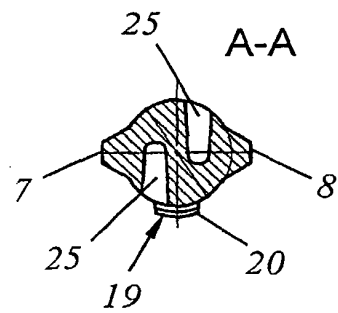
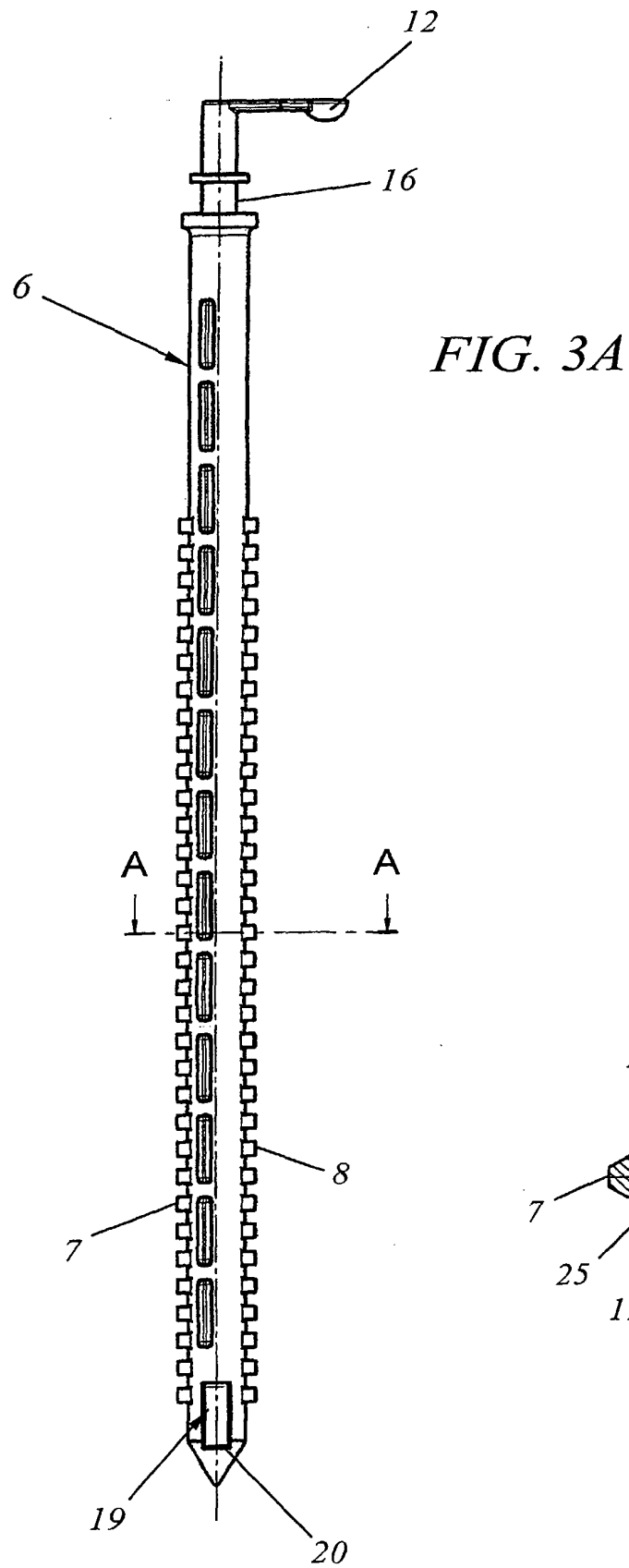
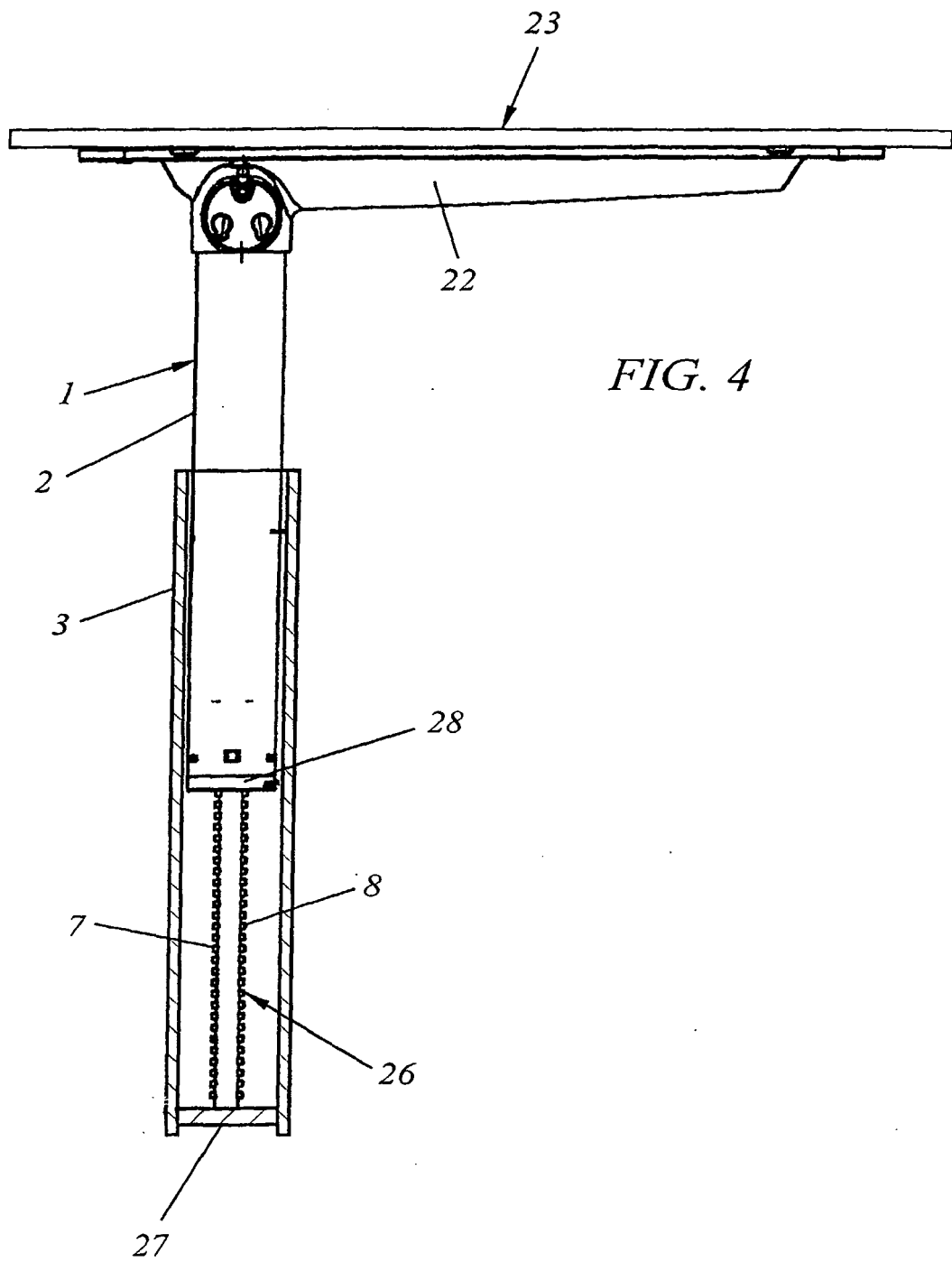


FIG. 2





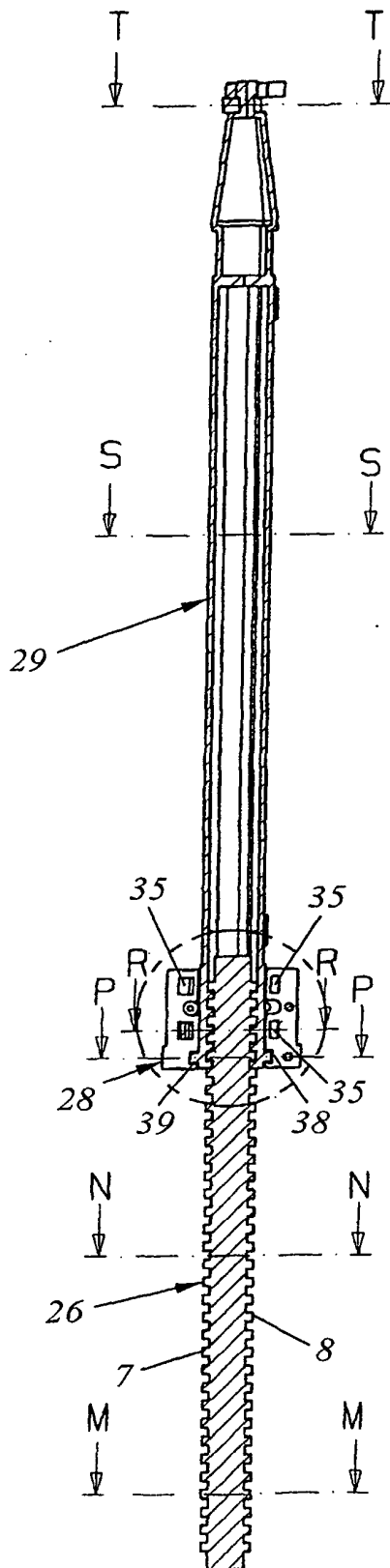


FIG. 5A

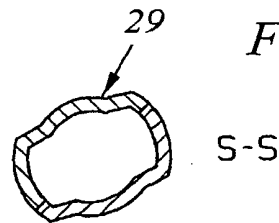


FIG. 5B

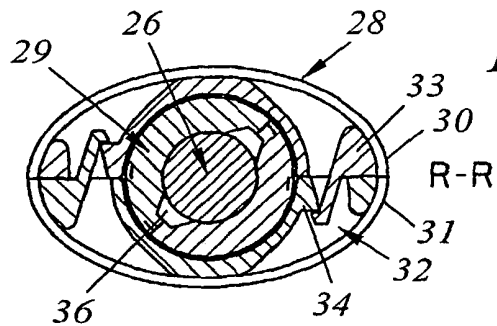


FIG. 5C

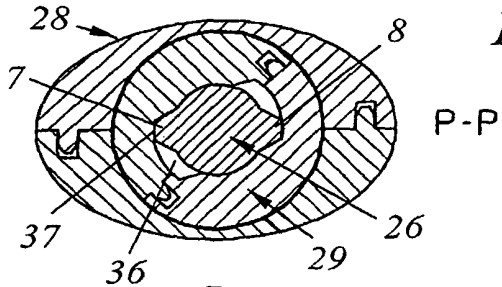


FIG. 5D



FIG. 5E



FIG. 5F

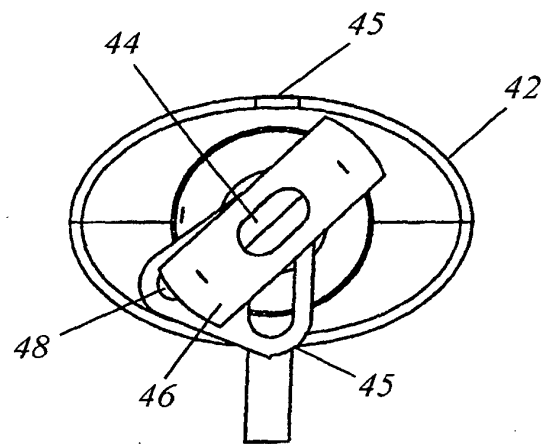


FIG. 5H

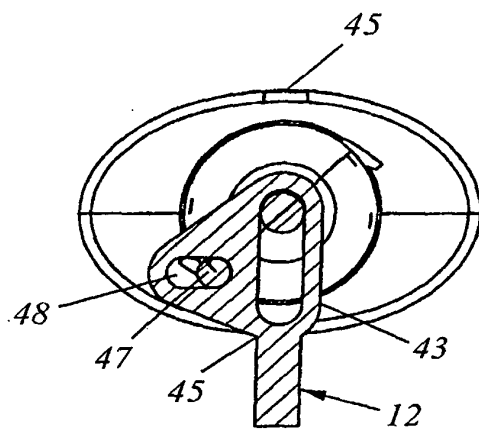


FIG. 5I

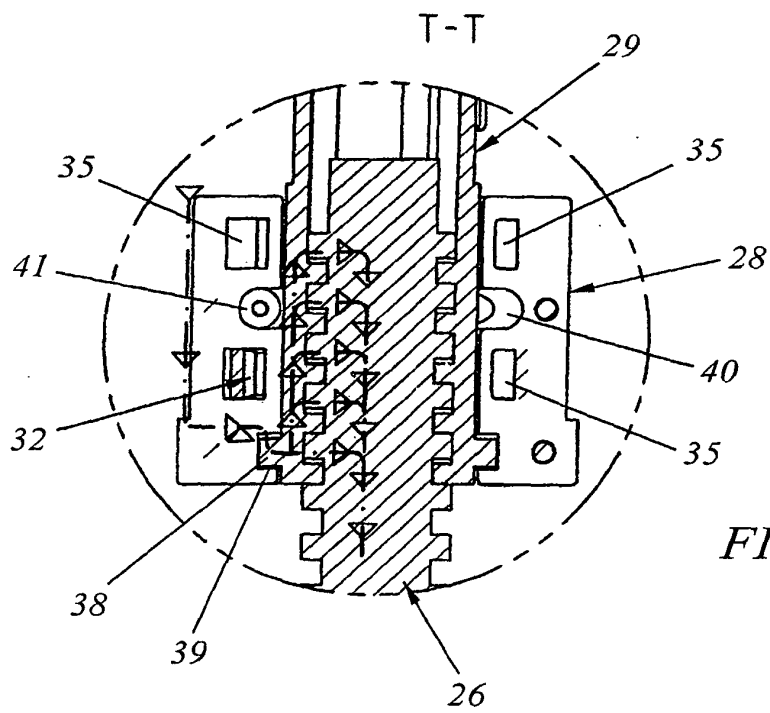


FIG. 5G

REFERENCES CITED IN THE DESCRIPTION

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