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(54) **COMPACT TRANSVERSE WINDING DRUM FOR BLINDS**

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Description

OBJECT OF THE INVENTION

[0001] This invention relates to a compact transverse hoist for blinds meant to be installed in the narrow cavity defined by the window frame with the masonry, with a front opening for the handle used to raise the blinds.

[0002] This hoist is characterised by the features according to claim 1, it has special configuration that optimises the space inside the hoist so that a height difference can be determined between the case segment corresponding to the winding and the case segment corresponding to the main conical gear, so that the presence of a window is enough to thread the cable without having to open the cover.

[0003] Additionally a special configuration of the shaft supporting the main conical gear, is provided, this gear being joined only to a part of the case so that high forces will not tend to open the case, as when using bushings trapped between the two parts of the case.

BACKGROUND OF THE INVENTION

[0004] Transverse hoists for blinds are known such as that described in the Utility Model with publication number ES1032899U, consisting of two pairs of gears, a straight pair and a conical pair, installed in the window frame.

[0005] This hoist improves on the known state of the art as described in its background section, which cites as first antecedents the mechanisms used to raise the side windows of automobiles.

[0006] In these mechanisms, the structure is limited by the need for installation in a narrow space of the door front panel, such that the gears of these mechanisms are frontally disposed on a single plane perpendicular to the actuation handle shaft.

[0007] In the Utility Model cited, the complexity is increased as the actuation handle shaft is frontal, not perpendicular to the plane of the gears. In this specific case a pair of conical gears are used, with the limitation imposed by establishing an oblique gearing line. The inclination of the gearing line imposes a greater width of the hoist, so that if the design is not ideal the thickness of the hoist can be greater that that allowed by the span of the window frame in which it is installed.

[0008] The design employed uses a considerably flattened main conical gear that engages the driving pinion, which is directly connected to the input handle. The configuration is such that the driving pinion shaft crosses above the main conical gear until it reaches the opposite side. In this opposite side it enters a bushing, which is trapped at the mid line between the two halves of the case.

[0009] In addition, in this Utility Model it is not possible to thread the cable except by opening the case to access the winding spool.

[0010] Also known is another kinematic arrangement as described in Spanish Utility Model with publication number ES1036147U. This Utility Model describes a transversally actuated embedded collecting hoist for blinds in which the handle acts directly on an endless screw to replace the first pair of conical gears.

[0011] In this case it is not possible to reduce the space required by the screw diameter, so that the screw must at least reach the gearing area.

[0012] In the Utility Model, the end of the endless screw opposite the handle entrance is housed in an orifice made in the case near its mid line.

[0013] An embodiment of the present invention establishes a new internal design of the gears and its supports that allows a more compact design resulting in a narrower and sturdier hoist that allows threading the cable without opening the two parts of the case.

DESCRIPTION OF THE INVENTION

[0014] This invention relates to a compact transverse hoist for blinds that operates from a side housed in the space left between the window frame and the masonry.

[0015] The hoist consists of at least two pairs of gears, a first pair of conical gears and a second pair of straight gears. The pair of conical gears corresponds to the driving pinion and the gear referred to herein as the main conical gear. The second pair of gears is that established between a toothing determined in the lower plane with a greater diameter that the main conical gear and the toothing determined in one of the faces of the cable collection spool.

[0016] At least two pairs of gears have been specified as it is possible to interpose an additional simple or double gear between the cable collection gear and the gear determined by the toothing of the lower plane.

[0017] Interposing a simple gear allows a better access from one toothing to the other when the distance between the shafts is large. The width of the cable collection spool will not be decreased and its sense of rotation will change, a fact that is scarcely or not at all relevant as regards its mode of operation.

[0018] To also modify the multiplication ratio, a double gear will be interposed. In this case the increased thickness of this gear will limit the winding capacity of the cable collection spool.

[0019] In any case, the presence or absence of this simple or double wheel will not modify the invention, which consists of a configuration that allows threading the hoist without having to open it.

[0020] The case is basically flat, with a small thickness to allow housing it in the space left between the window frame profile and the masonry. This profile has a front orifice that provides access to the hoist, through which enters the actuation handle. For this reason, the hoist is provided with a first pair of conical gears to change the direction of the rotation shaft of the front opening to the direction of the rotation shaft of the cable collection spool, whose axis is perpendicular to the main plane of the case.

[0021] The shape of the case is in accordance with the two main wheels, those constituted by the cable collection spool and by the main conical wheel; both are engaged by the straight gears. This configuration defines a height difference that is the main basis of the invention, as it will allow the presence of a second window and other details for threading the cable. Similarly, also belonging to this invention are the technical solutions used inside the hoist to obtain a compact design that allows the existence of this height difference.

[0022] Unlike the method used to attach the main conical wheel and the driving pinion in the Utility Model with publication number ES 1 032899U cited in the background, in the configuration object of this invention the main conical wheel is held by a turret that rises from the part of the case corresponding to its base.

[0023] This turret does not pass through, nor must it necessarily rest on the other half of the case. Instead, it ends at an orifice with a lateral recess that acts as a support bridge for the end of the driving pinion.

[0024] Optionally, the top end of the turret can rest on an orifice or a recess made in the top part of the case that acts as a cover.

[0025] This technical solution allows a reconfiguration of the case cover opposite the base of the turret and an optimisation of the space, as the driving pinion does not cross as far as the opposite side of the case, instead resting on the support bridge of the turret, which acts as the shaft of the main conical wheel.

[0026] Although the end of the pinion shaft rests on an orifice with a lateral recess, it is possible to have only a recess without a through orifice, providing a sturdier support that also leads to smaller tolerances.

[0027] With the turret joined only to one part of the case, the great loads to which the driving pinion is subjected only affect this part of the case, not bushings trapped between the two halves of the case. As a result, these loads do not tend to separate the two halves and offer a greater mechanical stability and stiffness to the moving components.

[0028] Another important aspect relates to the tolerances of the position of the pinion and the intermediate wheel that includes the conical and straight toothings. The invention uses the shaft for the intermediate wheel as a turret, prolonging it so that it holds the end of the pinion shaft. The fact that the two conical gears share the same support ensures their correct relative position in view of the large efforts applied by the handle. The result is a gear that prevents wear or even destruction of the two toothings.

[0029] In addition to these advantages related to strength and position tolerance, as the driving pinion shaft does not cross to the other side, a free space is determined above the main conical wheel that allows the second part of the case that acts as a cover to be closer to the mechanism, defining an external height difference.

[0030] This height difference allows opening a window that provides access to the cable collection spool on the side opposite the cable feeding window.

[0031] The cable can be threaded between these windows without having to open the case.

[0032] To perform this threading, the hoist handle is turned until two orifices of the inner cylinder of the spool in which the cable is wound is approximately aligned with the feeding windows and the second opposite window that is present due to the height difference.

[0033] In this position, the cable is introduced through the cable outlet window until it crosses the inner spool window, and lastly the cable comes out of the second window present due to the height difference.

[0034] When the cable end is out, a knot is made in it so that it can enter through the last window but not through the spool window, as the latter window is smaller.

[0035] In this way the cable is joined to the spool and is ready for winding, without requiring to open the hoist case.

[0036] The second window present due to the height difference can optionally be covered by a lid or by a groove that conveniently determines an outlet at a more distant part of the spool, for example covering the area of the height difference with a second surface.

[0037] Lastly, the same shaft of the driving pinion has a retention element that in addition to the bearings includes the spring that actually performs the retention. This retention element is placed at the part nearest the handle entrance and is housed in a strong seat of the same part of the case from which rises the supporting turret for the main conical wheel.

[0038] Also the object of the invention is the optional inclusion of a window in the opposite case part that allows the retention element to exit, given the diameter determined by the inner spring, to reduce even more the distance between the two planes that define the width of the assembly, resulting in a more compact design.

[0039] This configuration requires the seat of the retention element to have lateral attachment means in which it is inserted and fixed.

DESCRIPTION OF THE DRAWINGS

[0040] This descriptive memory is completed by a set of drawings meant to illustrate the preferred example and not limiting the invention in any way.

[0041] Figure 1 shows an exploded perspective view of the transversal hoist according to a first embodiment of the invention.

[0042] Figure 2 shows a perspective view of the same embodiment of the invention with the parts installed in place and with the upper case part that acts as a cover removed. This upper case part is not shown in this figure.

[0043] Figure 3 shows a perspective view of a second embodiment of the invention , with the top part of the case removed and shown above the rest of the assembly to reveal the inside of the transversal hoist.

[0044] Figures 4A, 4B and 4C establish a sequence of the process for threading and attachment the cable to

the winding spool. Each figure shows two views: a plan view of the spool and a perspective of the hoist showing the cable in spite of its inner disposition.

PREFERRED EMBODIMENTS OF THE INVENTION

[0045] This invention consists of a compact transversal hoist for blinds specifically conceived to be housed in the space between the window frame and the masonry.

[0046] This transverse hoist allows threading the cable without removing the case part that acts as a cover due to a compact design. The same compact design facilitates housing in even smaller spaces that those mentioned in the state of the art.

[0047] In all the examples of embodiment the cable that enters the hoist does so through a window placed above the position of the installed hoist.

[0048] As the invention is mainly centred on configuration details associated to a second window placed opposite the cable inlet window, the most suitable position for a graphical representation of the hoist is a prone position, as it is shown in each of the figures.

[0049] With this position selected for describing the various elements that compose the invention, hereinafter positional references such as upper, lower, lateral, etc. shall refer to the figures, not to the position adopted by the hoist when it is installed.

First example of embodiment of the invention

[0050] Figure 1 shows a first embodiment of the invention in an exploded perspective view, the part constituting the hoist located between the two parts of the case: the lower part (1) meant to house all of the hoist parts and the upper part (2) that acts as a cover.

[0051] The lower part (1) of the case has a body essentially consisting of a base and protection walls configured to hug two intersecting bodies with circular outlines. This shape is adapted to the two larger bodies: the spool (3) for winding the cable (7) (represented only in figures 4) and the wheel (6) with the main conical gear (6.1).

[0052] One of the greater walls of the lower part (1) of the case, externally straight, is prolonged in two fins (1.1) for attaching the assembly.

[0053] The actuation handle enters through this wall. The shaft of this handle is aligned with the drive pinion (5) that is joined to a retention body (5) that specifically includes the bearing(s) and the inner retention spring.

[0054] The retention body (4) is externally comprised of a plate (4.1) meant to be housed in a recess (1.4) for its attachment. The attachment is completed by several arch-shaped seats (1.5) provided in the lower part (1) of the case.

[0055] The attachment is ensured by the upper part (2) of the case that rests above the retention body (4). In this embodiment of the invention a window (2.1) is included in the upper part (1) of the case to reduce the space required to house the retention body (4).

[0056] The shaft of the drive pinion (5) is prolonged in a small external segment (5.1) meant to ensure the axial alignment of the pinion (5).

[0057] Under the drive pinion (5) is a wheel (6) that incorporates in its central area a conical gear (6.1) meant to engage the pinion (5), and on its perimeter a straight gear (6.2) to drive the spool (3) for winding the cable (7). The toothed wheel of the spool is under the lower face, so that it cannot be seen in the figures.

[0058] The spool (3) rests on a circular flange (1.2) above the lower part (1) of the case that acts as a rotation shaft, in turn engaging another flange (2.1) placed opposite it at a lower height on the upper part (2) of the case.

[0059] The main wheel (6) also has a large orifice (6.3) in its centre that allows passage of a turret (1.3) joined to the lower part (1) of the case.

[0060] This turret (1.3) has two functions: acting as a rotation shaft for the doubly-toothed conical and straight wheel (6); and supporting the end segment (5.1) of the shaft of the pinion (5). The turret (1.3) can also incorporate a bushing, not shown in the figure, to receive the end of the shaft of the pinion (5).

[0061] The support is established by passing the end segment (5.1) of the shaft of the pinion (5) through a bridge (1.3.1) configured on the end of the turret (1.3).

[0062] Turning the handle will drive the pinion (5), which in turn will engage the main conical gear (6.1) of the lower wheel (6), driving it. As the wheel (6) engages the straight gear (6.2) disposed peripherally on the spool (3), the latter will turn and wind or unwind the cable (7) depending on the direction of rotation.

[0063] For the sake of clarity and simplicity of the description, none of the examples of embodiment of the invention incorporate an additional wheel interposed between the straight peripheral gear (6.2) of the wheel (6) with its shaft in the turret (1.3) and the spool (3), which does not mean that this is not considered in the invention.

[0064] In this preferred embodiment, the spool (3) has two pairs of windows (3.1) in its inner central cylindrical surface to allow threading with two different orientations, where the windows of each pair are placed diametrically opposite each other.

[0065] The upper part (2) of the case closes the entire assembly, protecting the mechanism and attaching the various parts by its supporting function.

[0066] As additional details, in addition to the window (2.2) that allows housing the upper part of the retention body (4) another window (2.6) is provided to allow a greater diameter of the driving pinion (5).

[0067] A third window (2.5) in the upper part (2) of the case houses the upper end of the turret (1.3), reducing its bending capacity, so that the stiffness of the assembly is increased. Unlike the case when the shaft of the pinion (5) is housed in a bushing held between the two parts (1, 2) of the case in which the gearing forces tend to separate the parts, the window (2.5) only absorbs the lateral loads due to the bending of the turret (1.3) and no separation

loads between the case parts (1, 2).

[0068] The main advantage of this configuration is not only the sturdiness and small space required by this design, but that it allows establishing a height difference (2.3) that allows the existence of a window (2.4) for accessing the spool (3) at a point opposite the inlet window for the cable (7).

[0069] The height difference (2.3) mainly spans the area corresponding to the main intermediate wheel (6) opposite the area occupied by the pinion (5), as there are no internal parts that occupy space and the shaft of the pinion (5) is not prolonged beyond the turret (1.3).

[0070] The window (2.4) will allow threading the cable (7) without having to open the upper part (2) of the case.

[0071] Figure 1 shows the notches (1.6, 2.7) respectively made in the lower part (1) and upper part (2) of the case that define the inlet window for the cable (7). Figure 4 shows a threading sequence for the cable (7).

[0072] The position of the window (2.4) present in the height difference (2.3) of the upper part (2) of the case, being opposite the inlet window for the cable (7), allows aligning these two windows and the windows (3.1) of the spool (3), thereby allowing a cable (7) to pass.

[0073] After the cable (7) has crossed the spool (3) and exited through the window (2.4) of the height difference, a knot (7.1) is made in it. The size of the spool windows (3.1) is such that they allow the cable (7) to pass but not the knotted cable (7). In turn, the window (2.4) of the height difference (2.3) allows the cable (7) to pass whether with or without a knot (7.1), so that after a knot is made in it, it can be introduced in the hoist again.

[0074] When the cable (7) is inside the hoist the know (7.1) will prevent it from exiting through the spool (3), thereby completing the hoist threading operation.

[0075] As the windows (3.1) of the spool (3) have different sizes, placing the larger window (3.1) on the side of the window (2.4) of the height difference (2.3) will mean that after threading the knot (7.1) will enter as far as the inside of the central cylinder of the spool (3), as shown in figure 4C.

[0076] The step determined by the height difference (2.3) can be established in several ways, or can even be covered by a second surface that prolongs the exit of the cable (7) at a farther position of the inlet window for the cable (7). Any of these situations are considered to be within the scope of the same invention, as this invention consists of an efficient design of the space that allows the presence of a window (2.4) opposite the inlet window for the cable (7) due to the existence of a height different (2.3).

Second example of embodiment of the invention

[0077] Figure 3 shows a second example of embodiment in which the design of the support turret (1.3) has been changed.

[0078] In this example of embodiment, the turret (1.3) does not have a bridge (1.3.1) that defines a through orifice that houses the end segment (5.1) of the shaft of the pinion (5). Instead, the turret (1.3) is prolonged in an approximately cylindrical shape to its upper end, with a blind lateral recess in which enters the end segment (5.1) of the shaft of the pinion (5).

[0079] This configuration prevents axial displacements of the shaft of the pinion (5), and more importantly establishes a stronger attachment at a point in which the demands resulting from the handle torque and the engagement of the pinion (5) are among the greatest in the hoist.

[0080] The window (2.5) in which enters the end of the support turret (1.3) has a shape adapted to this new configuration, so that it is somewhat larger due to the greater diameter of the end of the turret (1.3).

Claims

1. Compact transverse hoist for blinds, from among hoists to be installed in the cavity defined between the window frame and the masonry with a front outlet for the handle, composed of a case having two parts, a bottom part (1) that houses a set of internal parts and an upper part (2) that mainly acts as a cover, the internal parts including at least two pairs of gears, a conical pair and a straight pair, in which the first pair of gears consists of a pinion (5) and an internal conical toothing made in a main intermediate wheel (6) that is in turn peripherally provided with another straight toothing that engages a toothing connected to a spool (3) constituting the second pair of gears, **characterised in that** the upper part (2) of the case has a height difference (2.3) at the area corresponding to the main intermediate wheel (6) with a window (2.4) at a step defined by said height difference (2.3) opposite the inlet window a the cable (7) that can be aligned with an internal windows (3.1) of the spool (3).

2. Compact transverse hoist for blinds according to claim 1, **characterised in that** the main intermediate wheel (6) turns by means of a central orifice (6.3) from which emerges a turret (1.3) joined only to the lower part (1) of the case that acts as a shaft for the main intermediate wheel (6) and also as a support of the end segment (5.1) of the shaft of the pinion (5).

3. Compact transverse hoist for blinds according to claim 2, **characterised in that** the turret (1.3) that supports the end segment (5.1) of the shaft of the pinion (5) is configured by abridge (1.3.1) through which passes the aforementioned end segment (5.1) of the shaft of the pinion (5).

4. Compact transverse hoist for blinds according to claim 2, **characterised in that** the turret (1.3) that supports the end segment (5.1) of the shaft of the

pinion (5) is configured by a blind lateral recess in which enters the aforementioned end segment (5.1) of the shaft of the pinion (5).

5. Compact transverse hoist for blinds according to claim 1, **characterised in that** the spool (3) has at least one pair of windows (3.1) diametrically opposite each other in the inner cylindrical surface, one larger than the other.

6. Compact transverse hoist for blinds according to claim 1, **characterised in that** the pinion (5) includes a retention body (4) that contains at least the bearings and the retention spring together with a transverse plate (4.1), supported and attached in turn by a recess (1.4) that houses the transverse plate (4.1) and arch-shaped seats (1.5) present in the lower part (1) of the case.

7. Compact transverse hoist for blinds according to claim 1, **characterised in that** the upper part (2) of the case has a window (2.2) to allow a partial exit of the retention assembly (4) reducing the width of the case.

8. Compact transverse hoist for blinds according to claim 1, **characterised in that** the upper part (2) of the case has a window (2.6) to allow a partial exit of the pinion (5) reducing the width of the case.

9. Compact transverse hoist for blinds according to claim 1, **characterised in that** the upper part (2) of the case has a window (2.5) to house the end of the turret (1.3) that supports the end segment (5.1) of the shaft of the pinion (5).

10. Compact transverse hoist for blinds according to claim 1, **characterised in that** the greater straight wall is prolonged on its ends by corresponding fins (1.1) for attaching the assembly.

11. Compact transverse hoist for blinds according to claim 1, **characterised in that** the spool (3) turns due to a disc-shaped flange (1.2) of the lower part (1) of the case and another flange (2.1) of the upper part (2) of the case that enter the inner cylindrical space of the spool (3).

12. Compact transverse hoist for blinds according to claim 1, **characterised in that** the turret (1.3) incorporates a bushing to receive the end of the shaft of the pinion (5).

13. Compact transverse hoist for blinds according to claim 1, **characterised in that** between the straight peripheral toothing of the main conical wheel 86) and the toothing of the spool (3) there is an additional simple wheel without changing the multiplication ratio.

14. Compact transverse hoist for blinds according to claim 1, **characterised in that** between the straight peripheral toothing of the main conical wheel 86) and the toothing of the spool (3) there is an additional double wheel that changes the multiplication ratio.

Patentansprüche

1. Kompakter Querhebezug für Rollläden, aus einer Reihe von in der zwischen dem Fensterrahmen und dem Mauerwerk definierten Aussparung mit einem vorderen Ausgang für den Griff zu installierenden Hebezügen, bestehend aus einem Gehäuse, das zwei Teile hat, einen unteren Teil (1), der einen Satz von Innenteilen aufnimmt, und einen oberen Teil (2), der hauptsächlich als Abdekkung fungiert, wobei die Innenteile zumindest zwei Getriebepaare beinhalten, ein kegelförmiges Paar und ein gerades Paar, in welchem das erste Getriebepaar aus einem Ritzel (5) und einer kegelförmigen Innenverzahnung besteht, die in einem Hauptzwischenrad (6) hergestellt ist, welches seinerseits an seinem Umfang mit einer weiteren geraden Verzahnung versehen ist, welche in eine Verzahnung eingreift, die mit einer Spule (3) verbunden ist, welche das zweite Getriebepaar darstellt, **dadurch gekennzeichnet, dass** der obere Teil (2) des Gehäuses einen Höhenunterschied (2.3) in dem Bereich hat, der dem Hauptzwischenrad (6) entspricht, mit einem Fenster (2.4) an der durch den genannten Höhenunterschied (2.3) definierten Stufe, das dem Eingangsfenster für das Kabel (7) gegenüberliegt, das mit einem Innenfenster (3.1) der Spule (3) bündig angeordnet werden kann.

2. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** sich das Hauptzwischenrad (6) durch eine zentrale Bohrung (6.3) dreht, aus der ein Drehkreuz (1.3) hervorragt, das lediglich mit dem unteren Teil (1) des Gehäuses verbunden ist, der als Welle für das Hauptzwischenrad (6) und auch als Träger des Endsegments (5.1) der Welle des Ritzels (5) fungiert.

3. Kompakter Querhebezug für Rollläden nach Anspruch 2, **dadurch gekennzeichnet, dass** das Drehkreuz (1.3), welches das Endsegment (5.1) der Welle des Ritzels (5) trägt, durch eine Verkürzung (1.3.1) ausgebildet ist, durch welche das zuvor genannte Endsegment (5.1) der Welle des Ritzels (5) hindurchgeht.

4. Kompakter Querhebezug für Rollläden nach Anspruch 2, **dadurch gekennzeichnet, dass** das Drehkreuz (1.3), welches das Endsegment (5.1) der Welle des Ritzels (5) trägt, durch eine seitliche Sack-

ausnehmung gebildet ist, in welche das zuvor genannte Endsegment (5.1) der Welle des Ritzels (5) eintritt.

5. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** die Spule (3) zumindest ein Paar von Fenstern (3.1) hat, die sich in der zylindrischen Innenfläche diametral gegenüberliegen, wobei eines größer als das andere ist.

6. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** das Ritzel (5) einen Rückhaltekörper (4) beinhaltet, welcher zumindest die Getriebe und die Rückhaltefeder zusammen mit einer Querplatte (4.1) enthält, die ihrerseits durch eine Ausnehmung (1.4) getragen und befestigt ist, welche die Querplatte (4.1) und im unteren Teil (1) des Gehäuses vorhandene bogenförmige Sitze (1.5) aufnimmt.

7. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** der obere Teil (2) des Gehäuses ein Fenster (2.2) hat, um einen Teilaustritt der Rückhaltegruppe (4) mit einer Verringerung der Gehäusebreite zu ermöglichen.

8. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** der obere Teil (2) des Gehäuses ein Fenster (2.6) hat, um einen Teilaustritt des Ritzels (5) mit einer Verringerung der Gehäusebreite zu ermöglichen.

9. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** der obere Teil (2) des Gehäuses ein Fenster (2.5) hat, um das Ende des Drehkreuzes (1.3) aufzunehmen, welches das Endsegment (5.1) der Welle des Ritzels (5) trägt.

10. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** die größere, gerade Wand an ihren Enden durch entsprechende Rippen (1.1) zum Befestigen der Gruppe verlängert ist.

11. Kompakter Querhebezug für Rolläden nach Anspruch 1, **dadurch gekennzeichnet, dass** sich die Spule (3) aufgrund eines scheibenförmigen Flansches (1.2) des unteren Teils (1) des Gehäuses und eines weiteren Flansches (2.1) des oberen Teils (2) des Gehäuses dreht, welche in den zylindrischen Innenraum der Spule (3) eintreten.

12. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** in dem Drehkreuz (1.3) eine Buchse integriert ist, um das Ende der Welle des Ritzels (5) aufzunehmen.

13. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** zwischen der geraden Umfangsverzahnung des Hauptkegelrads (86) und der Verzahnung der Spule (3) ein zusätzliches einfaches Rad vorliegt, ohne dass sich das Übersetzungsverhältnis ändert.

14. Kompakter Querhebezug für Rollläden nach Anspruch 1, **dadurch gekennzeichnet, dass** zwischen der geraden Umfangsverzahnung des Hauptkegelrads (86) und der Verzahnung der Spule (3) ein zusätzliches Doppelrad vorliegt, welches das Übersetzungsverhältnis ändert.

Revendications

1. Treuil transversal compact pour stores, du type de treuils à installer dans la cavité définie entre l'encadrement de la fenêtre et la maçonnerie avec une sortie avant pour le manche, composé d'un boîtier ayant deux parties, une partie inférieure (1) qui loge un ensemble de parties internes et une partie supérieure (2) qui agit principalement comme un couvercle, les parties internes incluant au moins deux paires d'engrenages, une paire conique et une paire droite, dans lesquelles la première paire d'engrenages consiste en un pignon (5) et une denture conique interne dans une roue intermédiaire principale (6) qui est à son tour pourvue périphériquement d'une autre denture droite qui est en prise avec une denture connectée à une bobine (3) qui constitue la seconde paire d'engrenages, **caractérisé en ce que** la partie supérieure (2) du boîtier a une différence de hauteur (2.3) dans la zone correspondant à la roue intermédiaire principale (6) avec une fenêtre (2.4) dans un échelon défini par ladite différence de hauteur (2.3) opposée à la fenêtre d'entrée pour un câble (7) qui peut être aligné avec une fenêtre interne (3.1) de la bobine (3).

2. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que** la roue intermédiaire principale (6) tourne au moyen d'un orifice central (6.3) à partir duquel émerge une tourelle (1.3) unie seulement à la partie inférieure (1) du boîtier qui agit comme un arbre pour la roue intermédiaire principale (6) et également comme un support du segment d'extrémité (5.1) de l'arbre du pignon (5).

3. Treuil transversal compact pour stores selon la revendication 2, **caractérisé en ce que** la tourelle (1.3) qui supporte le segment d'extrémité (5.1) de l'arbre du pignon (5) est configurée par un pont (1.3.1) à travers lequel passe ledit segment d'extrémité (5.1) de l'arbre du pignon (5).

4. Treuil transversal compact pour stores selon la re-

vendication 2, **caractérisé en ce que** la tourelle (1.3) qui supporte le segment d'extrémité (5.1) de l'arbre du pignon (5) est configurée par un évidemment latéral de store dans lequel entre ledit segment d'extrémité (5.1) de l'arbre du pignon (5).

5. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que** la bobine (3) a au moins une paire de fenêtres (3.1) diamétralement opposées l'une de l'autre sur la surface cylindrique intérieure, l'une étant plus grande que l'autre.

6. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que** le pignon (5) inclut un corps de rétention (4) qui contient au moins les coussinets et le ressort de rétention conjointement avec une plaque transversale (4.1), supportée et fixée à son tour par un évidemment (1.4) qui loge la plaque transversale (4.1) et des sièges sous forme d'arc (1.5) présents dans la partie inférieure (1) du boîtier.

7. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que** la partie supérieure (2) du boîtier a une fenêtre (2.2) pour permettre une sortie partielle de l'ensemble de rétention (4) qui réduit la largeur du boîtier.

8. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que** la partie supérieure (2) du boîtier a une fenêtre (2.6) pour permettre une sortie partielle du pignon (5) qui réduit la largeur du boîtier.

9. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que** la partie supérieure (2) du boîtier a une fenêtre (2.5) pour loger l'extrémité de la tourelle (1.3) qui supporte le segment d'extrémité (5.1) de l'arbre du pignon (5).

10. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que** la paroi droite plus grande se prolonge sur ses extrémités par des ailettes correspondantes (1.1) pour fixer l'ensemble.

11. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que** la bobine (3) tourne à cause d'un rebord sous forme de disque (1.2) de la partie inférieure (1) du boîtier et d'un autre rebord (2.1) de la partie supérieure (2) du boîtier qui entrent dans l'espace cylindrique intérieur de la bobine (3).

12. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que** la tourelle (1.3) incorpore une douille pour recevoir l'extrémité de l'arbre du pignon (5).

13. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que**, entre la denture périphérique droite de la roue conique principale (6) et la denture de la bobine (3), il y a une roue simple additionnelle qui ne change pas le rapport de multiplication.

14. Treuil transversal compact pour stores selon la revendication 1, **caractérisé en ce que**, entre la denture périphérique droite de la roue conique principale (6) et la denture de la bobine (3), il y a une roue double additionnelle qui change le rapport de multiplication.

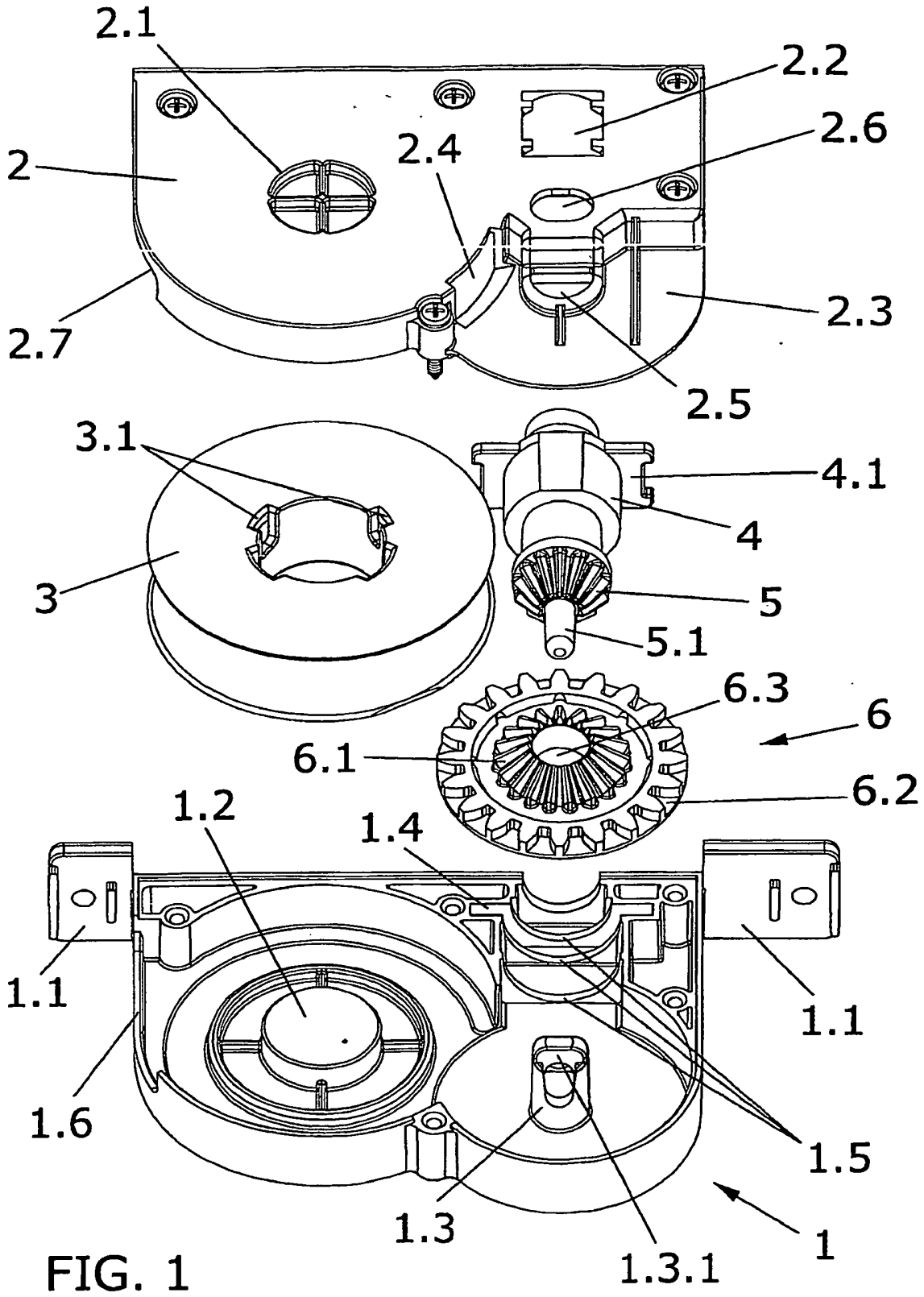
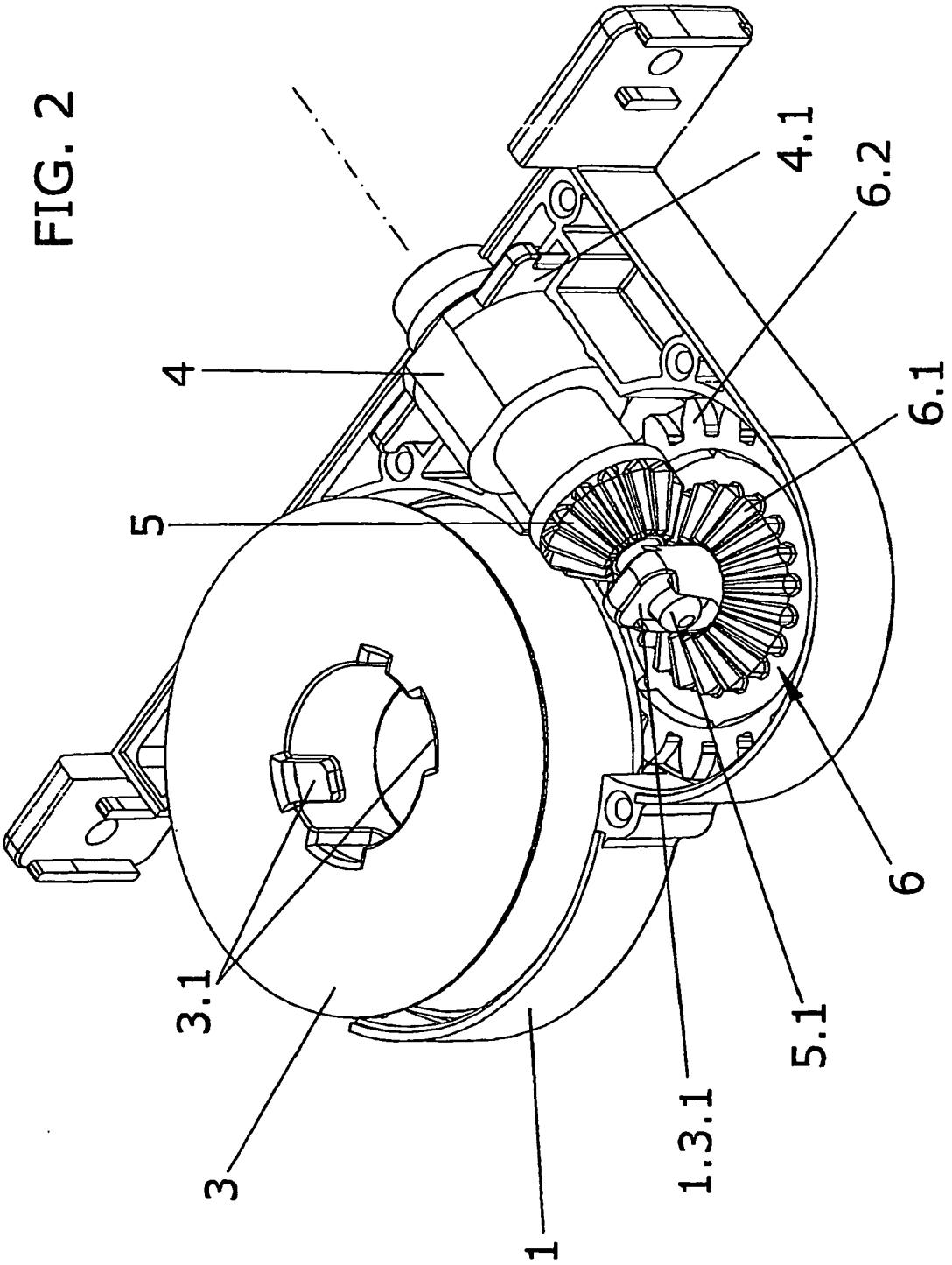


FIG. 1

FIG. 2



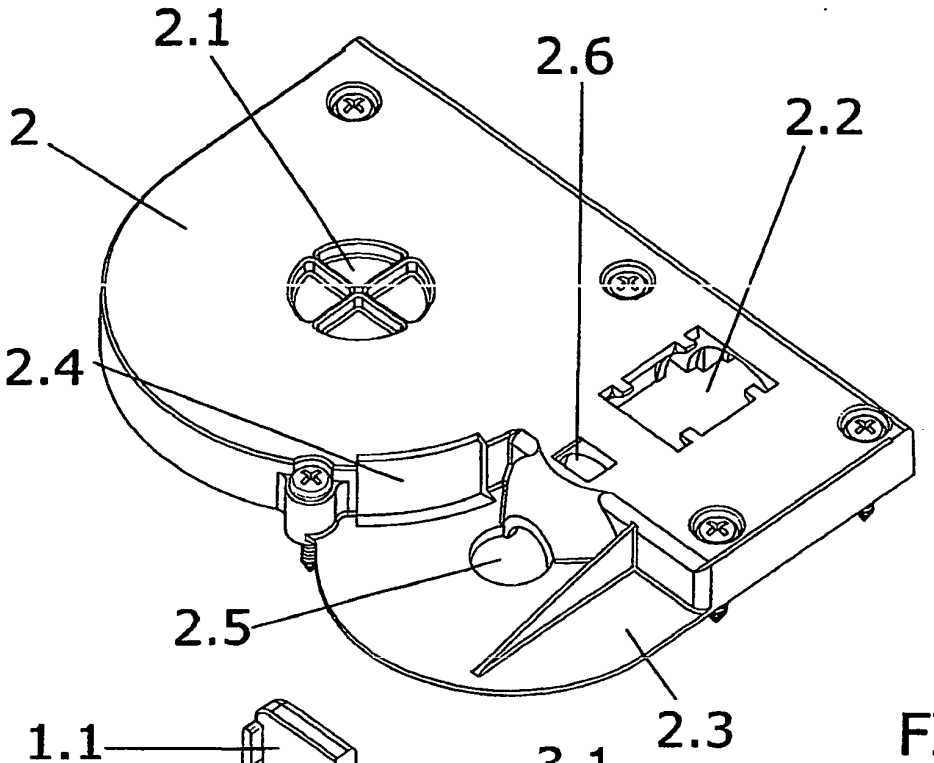
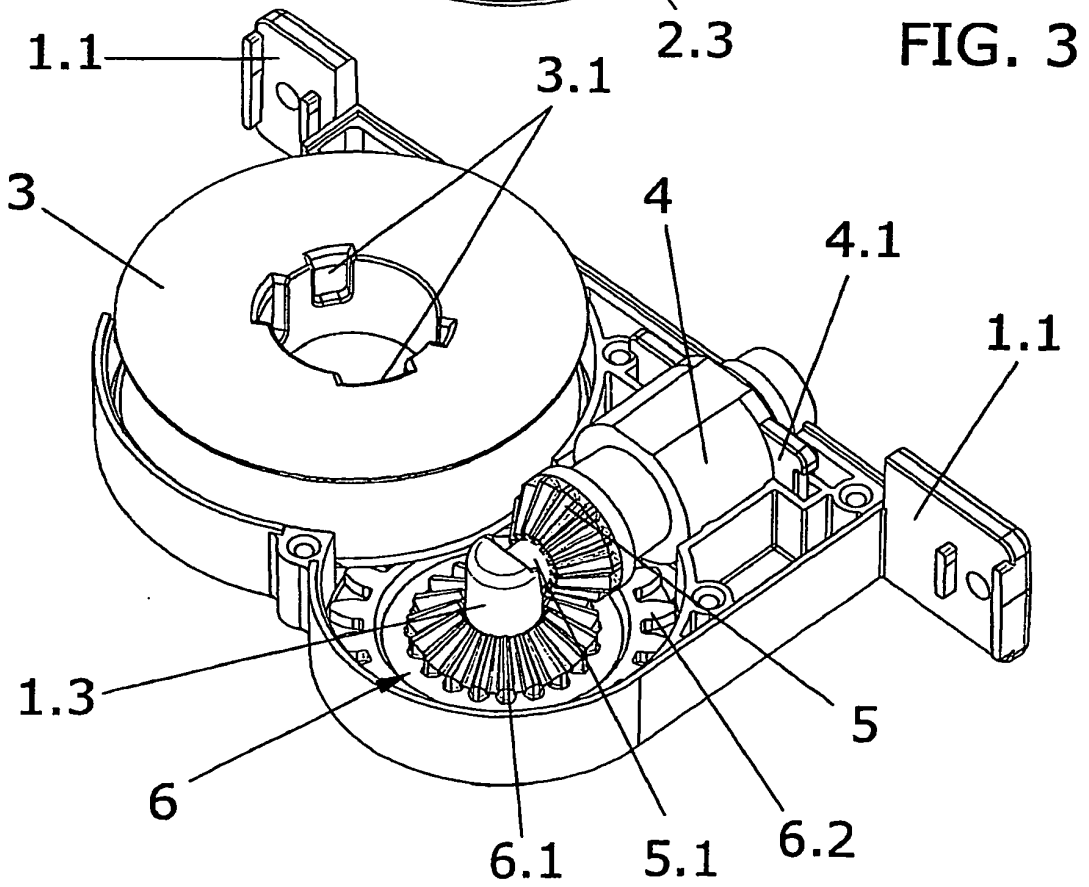


FIG. 3



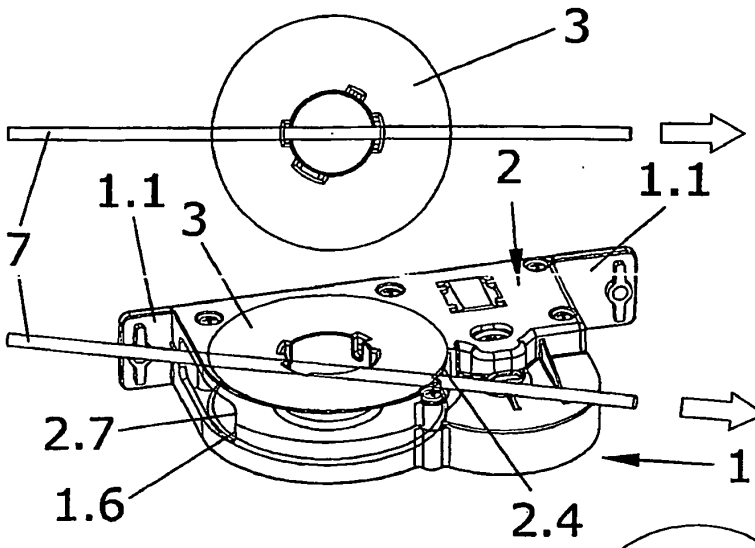


FIG. 4a

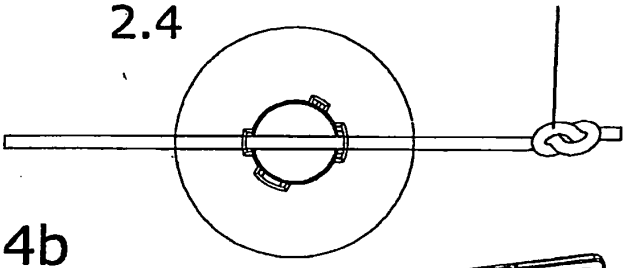
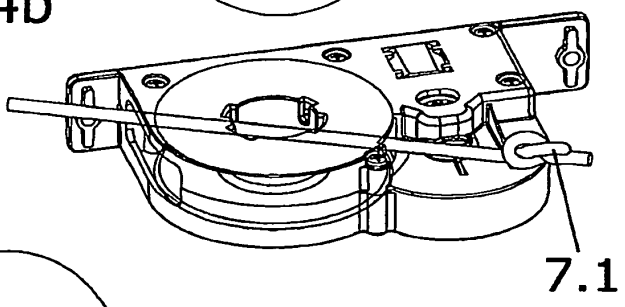


FIG. 4b



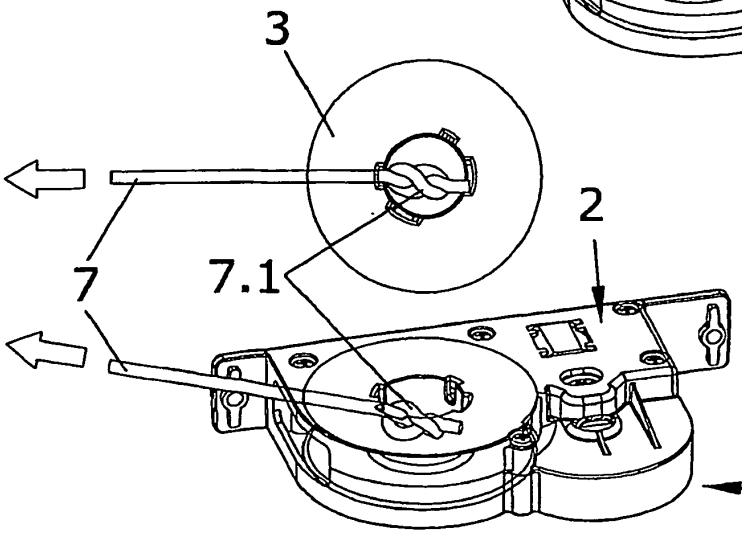


FIG. 4c

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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