

(19)



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(11)

EP 1 042 580 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

03.12.2003 Bulletin 2003/49

(21) Application number: **98964610.4**

(22) Date of filing: **16.12.1998**

(51) Int Cl.7: **E06B 9/78**, E06B 9/90

(86) International application number:
PCT/SE98/02336

(87) International publication number:
WO 99/032755 (01.07.1999 Gazette 1999/26)

(54) **DRIVE ASSEMBLY FOR A ROLLER**

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DISPOSITIF D'ENTRAÎNEMENT POUR ROULEAU

(84) Designated Contracting States:
DE DK FR GB SE

(30) Priority: **22.12.1997 SE 9704810**

(43) Date of publication of application:
11.10.2000 Bulletin 2000/41

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EP-A1- 0 086 000 **AU-A- 3 896 785**
FR-A- 1 475 634 **GB-A- 2 225 366**

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Description

TECHNICAL FIELD

[0001] The invention relates to a drive device for a roller with a screen which can be drawn up, for example a roller blind, a film screen, a map or similar. The drive device is of the type in which the screen is drawn up by pulling on a running line and unrolled by pulling on another running line.

PRIOR ART

[0002] Screens which can be drawn up, in particular roller blinds, have been known for a long time and are constructed with varying types of mechanisms for drawing up and down, i.e. drive devices. In one type, for example, the drive device has been provided with a spring which means that the blind goes up of itself when it is pulled at lightly. This type of drive device has the disadvantage that the spring becomes worn with time, in which case it would not pull the blind all the way up in spite of the fact that it can be tightened. In another type of drive device, to which this invention relates, the user has to pull on a running line which hangs at one side of the blind to draw the blind up and on another running line hanging close to the first one to draw the blind down.

[0003] A drive device is described in GB 2 180 872 for a roller of the last-named type, consisting of a wheel which is attached rotatably to a fixed casing. A channel for the running line runs between an outer and an inner disc in the wheel. This channel is provided with grooves for achieving a grip on the running line. In the lower part of the casing is a narrow opening/constriction, with rounded edges, for the incoming end and the outgoing end of the running line. When the screen endeavours with its own weight to set the roller and with it the wheel in rotation, the running line on the downward side will be drawn in under the wheel due to the grip of the grooves and will catch between the wheel and the rounded edge of the opening in the casing which belongs to the second line.

[0004] This construction has the disadvantage, however, that if the user wants to unroll the screen by pulling on it directly, the wheel locks in the same manner, in which case the entire roller including fastenings risks being torn down.

[0005] A similar drive device is described in GB-A-2225366.

[0006] In designing a drive device there are furthermore certain aspects which should be taken into account. It should take up little space, so that it is accommodated for example in a window frame without light-permeable gaps remaining at the side of the screen. It should also be designed so that the screen can be stopped in any position between fully drawn up and fully unrolled. Moreover, it should contain few components which are durable and easy to adjust if required.

ACCOUNT OF THE INVENTION

[0007] The above aspects are fulfilled by the drive device according to the invention as it is defined in claim 1, at the same time as the disadvantages of the earlier prior art are avoided.

[0008] The invention thus comprises a drive device for a roller with a screen which can be drawn up. The drive device is intended to be attached to one end of a roller which has a conventional rotatable suspension device without a drive mechanism at the other end. The drive device comprises a wheel which is connected in a rotationally driving manner to the roller, on which the screen is rolled up. The wheel is provided around the circumference with a running channel which runs between an inner and outer side of the wheel and which grips around a running line. The wheel is provided in the centre with an attachment device for rotatable attachment with or without bearings to a fixed casing which thus contains a receiving part for said attachment device, and, in a lower part, an opening for an incoming end and an outgoing end of said running line. The drive device also comprises a friction block (carrier) which, at a point in a lower part, is attached with or without bearings to a fixed member, preferably in the lower part of the casing. The attachment enables at least partial rotation about said point, at which the rotation is limited by the wheel. The friction block is, in an upper part, shaped to lie along a sector of a circle of the wheel, in or adjacent to said running channel, the ends of the running line running down or up, respectively, along either longitudinal side of the friction block. If the roller and with it the wheel strive to rotate without a load on one of the ends of the running line, for example owing to the screen's own weight, one of said ends (the end which lies on the downwards going side of the wheel, i.e. the same side of the roller as the screen does if rotation is caused by the screen wanting to go down) will be taken along in the rotation of the wheel, due to the grip of the running channel, in towards the friction block and will thereby press the upper part of the friction block against the wheel, whereupon rotation is checked. The roller is thus effectively prevented from rotating without the user pulling on one of the running lines. The friction block is adjusted in this respect to brake with a friction force of around 10-40 N, preferably 20-30 N, which is sufficient to prevent a screen of a length of at least 2 metres from unrolling due to the screen's own weight. If however a user pulls directly on the screen with the aim of unrolling it, he will easily overcome the friction force and can unroll the screen without any risk of the entire roller including fastenings being torn down. The friction block will function in this regard as a carrier and help in that case to bring out the running line.

[0009] According to an aspect of the invention, a V-channel runs around the wheel between the inner and outer side of the wheel, radially inside said running channel. In this case the friction block has, in the part

which is shaped to lie along a sector of a circle of the wheel, a corresponding wedge-shaped part which, in the event of the roller and with it the wheel striving to rotate without a load on one of the ends of the running line, is pressed by one of the ends of the running line against the wheel and into the V-channel, at which rotation is checked.

[0010] According to a further aspect, said running channel has grooves on its side walls, preferably radial grooves, suitable for strengthening the grip of the running channel on the running line.

[0011] According to yet another aspect, said casing consists of an essentially cap-shaped casing with short cylindrical side walls and an opening provided with a collar in the lower side wall for the incoming and outgoing end of the running line.

DESCRIPTION OF DRAWINGS

[0012]

- Fig. 1 shows a drive device according to the invention, with a wheel, casing, friction block, running lines and suspension device.
 Fig. 2 shows a wheel according to the invention.
 Fig. 3 shows a section of the wheel in Figure 2.
 Fig. 4 shows a casing according to the invention.
 Fig. 5 shows a section of the casing in Figure 4.
 Fig. 6 shows a friction block according to the invention.
 Fig. 7 shows a section of the friction block in Figure 6.

[0013] Figure 1 shows a drive device according to the invention, in which detail number 1 symbolises the wheel, 2 is the casing, 3 is the friction block, 4a and 4b are the incoming and outgoing ends of the running line respectively and 5 is a suspension device which sits permanently in the casing and is intended to be attached for example to a wall or window frame. Which of the ends is incoming and which is outgoing naturally depends on whether the screen is being drawn up or unrolled. Normally the screen hangs down on the inside of the drive device, i.e. on the same side as the suspension device 5. When the screen is to be drawn down, the user pulls on the inner running line 4b and when it is to be drawn up he pulls on the outer running line 4a. The screen can be stopped in any position between fully rolled up and fully unrolled. The screen is effectively prevented in this case from rolling down further by the friction block 3. When the screen strives down on the inside of the drive device, it takes with it the roller and therewith the wheel 1 and running line 4a, 4b, which is held fast in the running channel, preferably by radial grooves. Since the outgoing end 4b of the running line is held fast in the running channel, it will follow the wheel on the underside of the same, at which there will be an inward bend in the line, which presses the upper part of the friction block 3 against the wheel, at which the rotation and with it the

downward striving of the screen is checked.

[0014] Figure 2 shows the wheel 1, which comprises an outer side 1a and an inner side 1b. Between these sides, the wheel is provided around the circumference with a running channel 6, which grips around the running line. A V-channel 7 preferably also runs around the wheel between the inner and outer side of the wheel, radially inside said running channel. The wheel is provided in the centre with an attachment device 8, for example a hub, for rotatable attachment with or without bearings to a fixed casing 2 (see Figure 4 and 5). On the opposite side of the wheel is a fastening cylinder 9, which is intended to be inserted into a roller.

[0015] Figure 3 shows a section A-A of the wheel 1. In this drawing the grooves 10, which are located preferably on one or both side walls of the running channel and have the function of strengthening the grip of the running channel on the running line, are seen clearly. These grooves are at best 6-18 in number on each side wall, preferably 8-16 grooves. If they are located on both walls, they should also be placed opposite one another on the respective wall.

[0016] Figure 4 shows the casing 2 and Figure 5 shows a section B-B of the same. The casing is preferably essentially cap-shaped and has short cylindrical sides 11. In the centre is a receiving part 12 with or without bearings for the hub 8 of the wheel. Other types of attachment devices which permit rotation are of course also conceivable. Located in the lower part of the casing is an opening 14 with sides 15 shaped as a collar for the incoming and outgoing end of the running line respectively. In the lower part of the casing there is also a shaft journal 13 for rotatable attachment of the friction block. Rotation is in this regard laterally limited by the wheel.

[0017] Figure 6 shows the friction block 3 and Figure 7 shows a section of this. The friction block has an upper, wide part 16 which is shaped to lie along a sector of a circle of the wheel. This upper part preferably has a cross-section shaped as a wedge, see Figure 7, intended to fit in the V-channel 7 of the wheel. In the lower part of the friction block is a recess 17 or a hole for the shaft journal 13 of the casing. The friction block is partially rotatable about the shaft journal and is then rotated to brake the wheel.

Claims

1. Drive device for a roller with a screen which can be drawn up, which drive device comprises a wheel (1), which is connected in a rotationally driving manner to said roller, said wheel being provided around the circumference with a running channel (6) which runs between an inner (1b) and an outer (1a) side of the wheel, which running channel grips around a running line (4a, 4b) and said wheel being provided in the centre with an attachment device (8) for rotatable attachment to a fixed casing (2), which cas-

ing contains a receiving part (12) for said attachment device (8), and an opening (14) for an incoming end and an outgoing end of said running line, whereby a friction block (3) which, at a point (17) in a first end, is attached to a fixed member, preferably in the lower part of the casing (2) and the ends (4a, 4b) of the running line running along either longitudinal side of the friction block **characterized in that** the attachment of said friction block (3) is facilitating at least partial rotation about said point, and **in that** said friction block is shaped at a second end (16) to lie along a sector of a circle of the wheel, in or adjacent to said running channel (6) and, in the event of the roller and with it the wheel striving to rotate without a load on one of the ends of the running line, one of said ends of the running line being taken along in the rotation of the wheel and thereby pressing said second end (16) of the friction block against the wheel (1), at which rotation is checked.

2. Drive device according to claim 1, **characterized in that** a V-channel (7) runs around the wheel (1) between the inner (1a) and outer (1b) side of the wheel, radially inside said running channel (6), and that said friction block, at said second end (16) which is shaped to lie along a sector of a circle of the wheel, has a correspondingly wedge-shaped cross-section which, in the event of the roller and with it the wheel striving to rotate without a load on one of the ends of the running line, is pressed by one of the ends of the running line against the wheel and into the V-channel (7), at which rotation is checked.

3. Drive device according to claim 1 or 2, **characterized in that** said running channel (6) has, on one or both side walls, grooves (10), preferably radial grooves, suitable for strengthening the grip of the running channel on the running line.

4. Drive device according to any of the above claims, **characterized in that** said casing (2) consists of an essentially cap-shaped casing with short cylindrical side walls (11) and an opening (14) provided with a collar (15) for the incoming and outgoing end (4a, 4b) of the running line.

5. Drive device according to any of the above claims, **characterized in that** the casing is fixed in a suspension device (5) for suspension on for example a wall or window frame.

6. Drive device according to any of the above claims, **characterized in that** said friction block (3) is adjusted to brake with a friction force of 10-40 N, preferably 20-30 N.

Patentansprüche

1. Antriebsvorrichtung für eine Rolle mit einer Abschirmung, die hochgezogen werden kann, wobei die Antriebsvorrichtung ein Rad (1), das auf eine drehend antreibende Weise mit der Rolle verbunden ist, wobei das Rad um den Umfang mit einem Laufkanal (6) bereitgestellt ist, der zwischen einer Innen- (1b) und einer Außen- (1a) Seite des Rads läuft, wobei der Laufkanal um eine Laufleine (4a, 4b) greift und wobei das Rad in dem Zentrum mit einer Befestigungsvorrichtung (8) zur drehbaren Befestigung an einem feststehenden Gehäuse (2) bereitgestellt ist, wobei das Gehäuse einen Aufnahmeteil (12) für die Befestigungsvorrichtung (8) und eine Öffnung (14) für ein eintretendes Ende und ein abgehendes Ende der Laufleine enthält, einen Reibblock (3) enthält, der an einem Punkt (17) in einem ersten Ende an einem feststehenden Element, vorzugsweise in dem unteren Teil des Gehäuses (2), befestigt ist und wobei die Enden (4a, 4b) der Laufleine entlang beiden Längsseiten des Reibblocks laufen, **dadurch gekennzeichnet, dass** die Befestigung des Reibblocks (3) wenigstens eine Teildrehung um den Punkt erleichtert und dadurch, dass der Reibblock an einem zweiten Ende (16) geformt ist, um entlang eines Sektors eines Kreises des Rads in oder benachbart zu dem Laufkanal (6) zu liegen, und in dem Fall, dass die Rolle und mit ihr das Rad bestrebt ist, ohne eine Belastung an einem der Enden der Laufleine zu drehen, eines der Enden der Laufleine in der Drehung des Rads mitgenommen wird und dadurch das zweite Ende (16) des Reibblocks gegen das Rad (1) drückt, an dem die Drehung gehemmt wird.

2. Antriebsvorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** ein V-Kanal (7) um das Rad (1) zwischen der Innen- (1a) und Außen- (1b) Seite des Rads radial inwendig in dem Laufkanal (6) läuft und dass der Reibblock an dem zweiten Ende (16), das geformt ist, um entlang eines Sektors eines Kreises des Rads zu liegen, einen entsprechend keilförmigen Querschnitt aufweist, der in dem Fall, dass die Rolle und mit ihr das Rad bestrebt ist, ohne eine Belastung an einem der Enden der Laufleine zu drehen, von einem der Enden der Laufleine gegen das Rad und in den V-Kanal (7) gedrückt wird, an dem die Drehung gehemmt wird.

3. Antriebsvorrichtung gemäß Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der Laufkanal (6) an einer oder beiden Seitenwänden Rillen (10), vorzugsweise Radialrillen, aufweist, die zur Verstärkung des Griffs des Laufkanals an der Laufleine geeignet sind.

4. Antriebsvorrichtung gemäß irgendeinem der voran-

gehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gehäuse (2) aus einem im wesentlichen kappenförmigen Gehäuse mit kurzen zylinderförmigen Seitenwänden (11) und einer Öffnung (14) besteht, die mit einem Kragen (15) für das eintretende und abgehende Ende (4a, 4b) der Laufleine bereitgestellt ist.

5. Antriebsvorrichtung gemäß irgendeinem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** das Gehäuse in einer Aufhängungsvorrichtung (5) zur Aufhängung an zum Beispiel einer Wand oder einem Fensterrahmen angebracht ist.
6. Antriebsvorrichtung gemäß irgendeinem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der Reibblock (3) eingestellt ist, um bei einer Reibkraft von 10-40 N, vorzugsweise 20-30 N, zu bremsen.

Revendications

1. Dispositif d'entraînement destiné à un rouleau doté d'un écran qui peut être tiré, lequel dispositif d'entraînement comprend une roue (1), qui est reliée audit rouleau en vue de l'entraîner en rotation, ladite roue étant dotée périphériquement d'une gorge de commande (6), qui s'étend entre un côté intérieur (1b) et un côté extérieur (1a) de la roue et qui enserme un cordon de commande (4a, 4b), et ladite roue étant dotée au centre d'un dispositif de fixation (8) destiné à la fixation à un boîtier fixe (2) tout en permettant la rotation, lequel boîtier contient une pièce de réception (12) destinée audit dispositif de fixation (8), et une ouverture (14) destinée à une extrémité entrante et une extrémité sortante dudit cordon de commande, un bloc de friction (3), en un point (17) situé à une première extrémité, étant fixé à un élément fixe, de préférence dans la partie inférieure du boîtier (2), et les extrémités (4a, 4b) du cordon de commande courant longitudinalement des deux côtés du bloc de friction, **caractérisé en ce que** la fixation dudit bloc de friction (3) facilite la rotation au moins partielle autour dudit point, et **en ce que** ledit bloc de friction est conformé à une deuxième extrémité (16) de façon à reposer sur un secteur de cercle de la roue, dans ladite gorge de commande (6) ou à proximité de celle-ci et, dans le cas où le rouleau et, avec lui la roue, tente de tourner sans qu'un effort ne soit exercé sur l'une des extrémités du cordon de commande, l'une desdites extrémités du cordon de commande est prise pendant la rotation de la roue et presse ainsi ladite deuxième extrémité (16) du bloc de friction contre la roue (1), de sorte que la rotation est bloquée.
2. Dispositif d'entraînement selon la revendication 1, **caractérisé en ce qu'une** gorge en V (7) s'étend autour de la roue (1) entre le côté intérieur (1a) et le côté extérieur (1b) de la roue, radialement à l'intérieur de ladite gorge de commande (6), et **en ce que** ledit bloc de friction, au niveau de ladite deuxième extrémité (16) qui est conformée de façon à reposer le long d'un secteur de cercle de la roue, a une section cunéiforme correspondante, dans le cas où le rouleau, et avec lui la roue, tentant de tourner sans qu'un effort ne soit exercé sur l'une des extrémités du cordon de commande, est pressé par l'une des extrémités du cordon de commande contre la roue (1) et dans le canal en V, de sorte que la rotation est bloquée.
3. Dispositif d'entraînement selon la revendication 1 ou 2, **caractérisé en ce que** ladite gorge de commande (6) comporte, sur l'une des parois latérales ou sur les deux, des cannelures (10), de préférence des cannelures radiales, appropriées pour renforcer la prise de la gorge de commande sur le cordon de commande.
4. Dispositif d'entraînement selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit boîtier (2) consiste en un boîtier sensiblement en forme de capuchon comportant de courtes parois (11) latérales cylindriques et une ouverture (14) dotée d'un collier (15) destiné aux extrémités entrante et sortante (4a, 4b) du cordon de commande.
5. Dispositif d'entraînement selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le boîtier est fixé dans un dispositif de suspension (5) destiné à la suspension par exemple sur un mur ou un cadre de fenêtre.
6. Dispositif d'entraînement selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit bloc de friction (3) est ajusté de façon à freiner avec une force de freinage de 10 à 40 N, de préférence de 20 à 30 N.

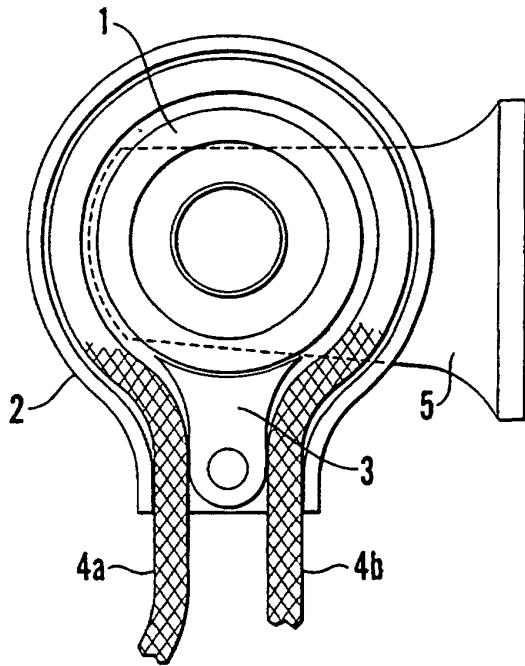


Fig. 1

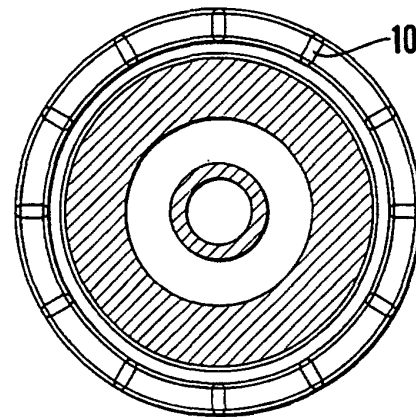


Fig. 3

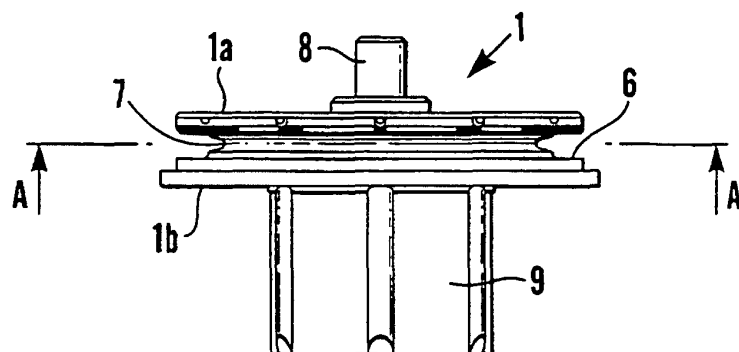


Fig. 2

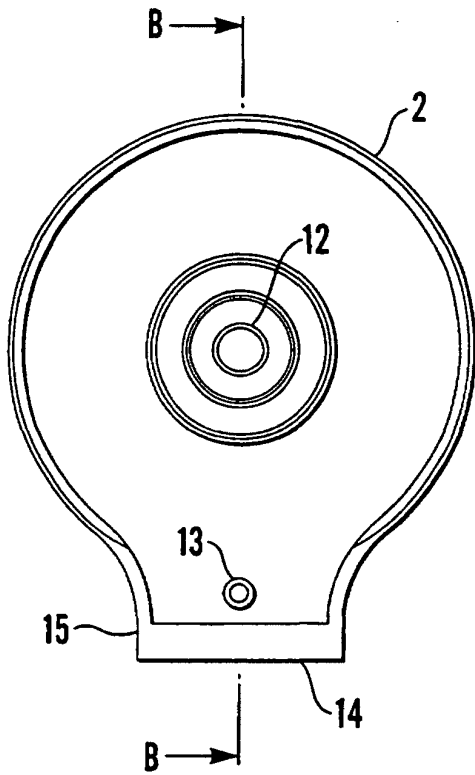


Fig. 4

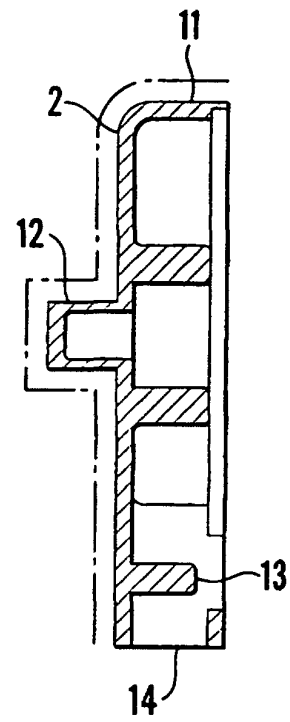


Fig. 5

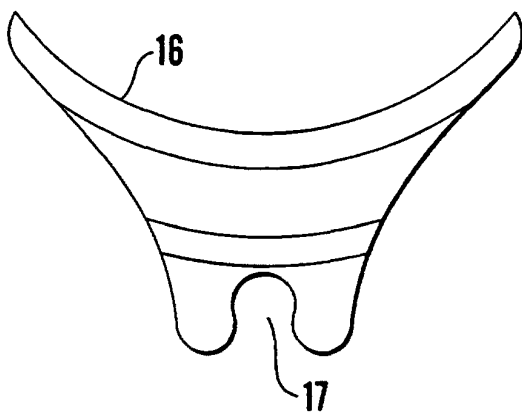


Fig. 6

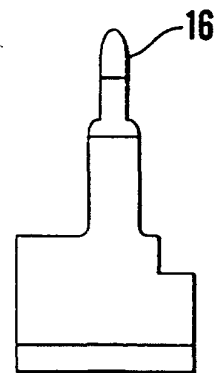


Fig. 7