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(54) **Easily assembled and installed packet curtain**

(57) The present invention relates to an easily assembled and installed packet curtain (1). The subject curtain (1) comprises a supporting device (2) which includes winding means, in turn including at least a horizontal-axis pulley (5), which can be rotatively driven about a rotary axis thereof, and a fabric or cloth element (3) coupled at its top side to the supporting device (2). The cloth or fabric element (3) is provided, at said pulley (5), with a winding element (10), in turn coupled with an end thereof near the bottom side of the cloth element (3) and being slidably connected, along the extension

or length thereof, to a face of the cloth element (3) in a substantially vertical direction. The winding element (10) comprises, at the top end portion thereof, a coupling element (11) and the mentioned pulley (5) is provided with gripping elements (19a, 19b) for automatically engaging, as the pulley (5) is turned with the cloth element (3) in a fully extended condition, the coupling element (11) in order to progressively wind up the winding element (10) on the pulley (5). The pulley (5) is moreover provided with locating means (41) for properly locating the coupling element (11) on the bottom of the pulley groove at the start of the winding operation.

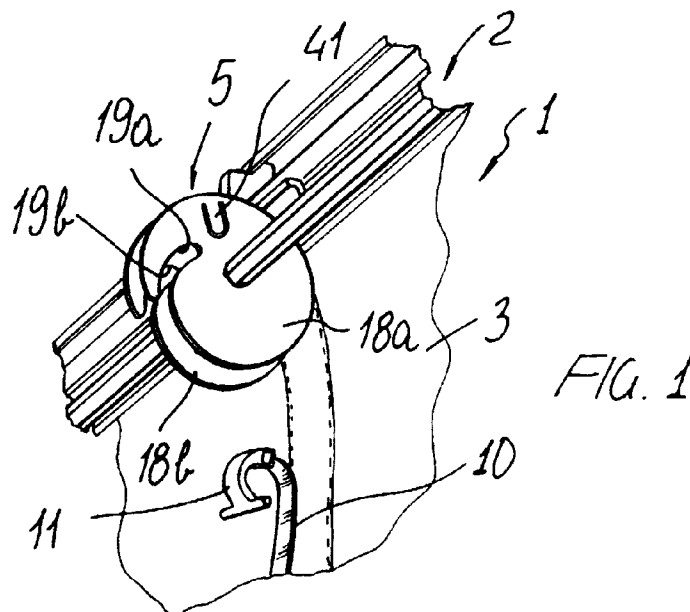


FIG. 1

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Description

BACKGROUND OF THE INVENTION

The present invention relates to an easily assembled and installed packet curtain.

As is known, packet curtains conventionally comprise a supporting device, provided for coupling to a top side of the window or window holder supporting construction, on which the curtain is to be mounted, as well as a frame which is provided with a top side associated with the mentioned supporting device.

The latter usually comprises a section member element which is horizontally fixed to the window or window holder bearing construction and which supports at least two coaxial pulleys, which have their axes arranged horizontally and spaced from one another in the width direction of the curtain fabric or cloth element.

The number of the mentioned pulleys can vary, depending on the cloth element width.

At or near each said pulleys, on the cloth element face facing said pulleys, a thread-like element is provided which has its top end fixed to one of said pulleys and its bottom end fixed near the bottom side of the cloth element.

Each thread-like element is moreover coupled, along the length thereof, to a face or surface of the cloth element by vertical rows of eyelet elements, fixed to the cloth element, which eyelet elements are slidably traversed by the thread-like element.

Thus, by rotatively driving the mentioned pulleys about their common axis, the cloth element is progressively wound up, and collected in a bellows like configuration, because of the pulling force exerted thereon by the thread-like element.

The cloth element, in particular, is unwound by operating or turning the pulleys in a turning direction causing the thread-like elements to be progressively unwound.

The above mentioned type of packet curtain, which is broadly used in indoor application, is however affected by some problems, mainly due to the vertical winding-unwinding direction thereof.

In fact, as the cloth or fabric element of the packet curtain is to be washed, it is necessary to partially disassemble the curtain, by disengaging the cloth element from the section elements of the supporting device, to allow the thread-like elements to be removed from their related pulleys.

This operation is a comparatively complex one and it frequently requires skilled operators.

In particular, this method includes a very complex step for coupling-removing the top end portions of the thread-like elements and related pulleys.

Moreover, since the winding of the thread-like element on the pulleys can be different from pulley to pulley, the thread-like elements can be wound with different diameters, i.e. in different winding amounts, thereby caus-

ing the bottom side of the cloth element to be arranged in a slanted attitude instead of a precise horizontal attitude.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned problems, by providing such a packet curtain in which the cloth element can be quickly and easily coupled to/disengaged from its supporting device.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such a packet curtain in which the elements coupling the cloth element to the winding-unwinding pulleys can be coupled in a very simple and quick manner.

Another object of the present invention is to provide such a packet curtain which is very reliable and safe in operation.

Yet another object of the present invention is to provide such a packet curtain in which the cloth or fabric element can be wound/unwound in a very even manner, so as to always hold the bottom edge of the cloth element in an accurate horizontal attitude.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an easily assembled and installed packet curtain, comprising a supporting device including winding means, in turn including at least a horizontal axis pulley which can be rotatively driven about a rotary axis thereof, and a cloth element having a top side coupled to said supporting device and provided, at said pulley, with a winding element having one end portion thereof coupled, near the bottom side of the cloth element and slidably connected, along the length thereof, to a face of said cloth element along a substantially vertical direction, characterized in that said winding element is provided, at its top end portion thereof, with a coupling element and in that said pulley is provided with gripping means for automatically gripping, at the start of the rotation of said pulley with said cloth element in a fully unwound condition, said coupling element to cause the winding element to be progressively wound on said pulley, said pulley comprising moreover locating means for locating said coupling element on the bottom of the pulley groove at the start of the winding of said winding element on said pulley.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the packet curtain according to the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of said packet curtain which is illustrated, by way of a merely indicative, but not limitative, example, in the figures of the accompanying drawings, where:

Figure 1 is a perspective view illustrating a portion of the subject packet curtain near the supporting device therefor, as seen from the side thereof facing the pulleys with the winding element being disengaged from its related pulley;

Figure 2 illustrates a portion of the packet curtain according to the present invention, as seen from the cloth element side facing the pulleys; and

Figures 3 and 4 are respective cross-sectional views of Figure 2, substantially taken along the section line III-III, and specifically showing the operating sequence in which the coupling element of the winding element is latched by its related pulley.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the number references of the above mentioned figures, the packet curtain according to the present invention, which has been generally indicated by the reference number 1, comprises a supporting device 2, provided for connection to the top side of the window or window holder frame, on which the packet curtain is to be mounted, as well as a cloth or fabric element 3 which is associated, at its top side, with said supporting device 2.

The supporting device 2 comprises moreover a section member 4, provided to be horizontally connected to the window or window holder bearing construction, on which the packet curtain is to be mounted, and which supports at least two pulleys 5, coaxial to one another, which have their common axis horizontally arranged and which can be rotatively driven about said horizontal axis.

More specifically, said pulleys 5 are keyed on a polygonal cross-section shaft 6, which is supported by said section member 4 by means of arms 7 and which can be rotatively driven about its rotary axis by a conventional driving device, such as, for example, a drum rigid with said shaft 6 and which can be turned by a pulling driving force provided on a chain or belt element, partially entrained about said drum, not shown for simplicity.

The pulleys 5 are spaced from one another in the width direction of the cloth element 3, and the number thereof can be varied depending on the width of the cloth element 3.

The cloth element 3 comprises, for each said pulleys 5, a winding element which preferably includes a web or strip like element 10, which is in turn coupled, at the bottom end portion thereof, near the bottom side of the cloth element 3 and being provided, at its top end portion, with a coupling element 11 which can be automatically latched or engaged by gripping means 12 as suitably provided for each said pulleys 5.

Each strip element 10 is slidably coupled, along the length thereof, to a face of the cloth element 3, since each said strip-like element slidably passes through a vertical row of eyelet elements 13 fixed to a face of the

cloth element 3.

The bottom end portion of the strip-like element 10 can be coupled near the bottom side of the cloth element 3 by a hook element 14 engaging through a slot 15 correspondingly associated with the cloth element 3, so as to provide a removable type of coupling of the bottom end portion of the strip like element 10 and bottom side or edge of the cloth element 3.

The coupling element 11, in particular, is provided with a substantially T-shape, the central leg of the T being connected to the top end portion of the strip-like element 10, and the two transverse legs of the T laterally projecting from the strip-like element 10.

The coupling element 11 has moreover a stiffness greater than the flexure stiffness of the strip-like element 10, and being suitably curved along the extension thereof.

At the end of the eyelet element 13 row, at a related pulley 5, to said cloth element 3 a supporting eyelet element 16 is connected, for holding the coupling element 11 at a position suitable for engagement by the gripping means 12.

Said supporting eyelet element 16 is provided with a projection or lug 30, adapted to engage in a suitable recess 31, provided on the arms 7.

As shown, each pulley 5 comprises a pulley groove 17, for engaging and holding therein the strip-like element 10, as said strip-like element 10 is wound, said groove being laterally delimited by two side walls 18a and 18b of disc-like configuration.

The gripping means 12 comprise a spiral recess or hollow 19a, 19b which is formed in the side walls 18a and 18b starting from the periphery of said side walls.

Thus, The spiral configuration of the recesses 19a and 19b, in cooperation with the disc-like configuration of the side walls 18a and 18b, as the pulleys 5 are turned about their turning or rotary axis, will allow the recesses 19a and 19b to be automatically engaged with the two legs of the coupling element 11, arranged transversely of the groove 17, as the cloth element 3 is fully unwound and with the coupling element 11 facing the related pulley 5.

Moreover, each pulley 5 is provided with locating means for properly locating the coupling element 11 on the bottom of the groove of the pulley at the start of the winding of the element 10 on the pulley.

More specifically, said locating means comprise a projecting push-button 40, which projects on the bottom side of the wall 18a and which is arranged at one end of a resiliently flexible tongue 41, formed on said wall 18a. The push-button 40 and tongue 41 operate to hold the coupling element 11, which, upon engaging by the recesses 19a and 19b will project inwardly of the push-button 40 due to the resilient flexibility of the tongue 41, tightly adhering on the bottom of the groove of the pulley 5 at the start of the winding operation, thereby providing a very even winding of the winding element 10.

The section member 4 of the supporting device 2

and bottom side of the cloth element 3 are provided with mutually engaging means of a removable type for allowing, in a very simple and quick manner, the cloth element to be removed from and reconnected to its supporting device 2.

Said mutual engagement means are preferably constituted by a tearing strip, for example of the VEL-CRO type, including two elements of which an element 20 is seamed or coupled in any other known manner near the top side of the cloth element 3, and a further element 21 which is coupled to the section member 4 of the supporting device 2.

Thus, as the cloth element 3 is to be removed from its supporting device 2, it will be sufficient to remove or detach the top side of the cloth element 3, in its fully unwound condition, from the section member 4, by exploiting the detachment capability provided by the tearable or removable strip including the mentioned elements 20 and 21 and by turning the pulleys 5 to cause the disengagement of said elements from the coupling elements 11.

Then, the strip-like element 10 can be fully disengaged or unthreaded from the eyelet elements 13, by disengaging its hook-like bottom end portion 14 from the elongated slot 15.

Thus, the cloth element 3 can be washed without any problems.

After the washing operation, in order to relocate the cloth element again, it will be sufficient to apply the top side of the cloth element 3 to the section member 4 of the supporting device 2, by using again the removable strip including the mentioned elements 20 and 21, by properly locating each coupling element 11 near its related pulley 5.

By rotatively driving, in the winding direction, the pulleys 5, the spiral recesses 19a and 19b will be automatically engaged again with the legs of the coupling elements 11, thereby the top end portion of the strip-like element 10 will be engaged with said pulleys 5, after having coupled the bottom end portion of said strip-like element to the hook element 14 of the elongated slot 15.

After engagement with the recesses 19a and 19b, the coupling element 11 will leave, as disclosed, the push-button 40 thereby properly arranging on the bottom of the groove of the related pulley, where it will be held by said push-button 40.

The rotary driving, in the winding direction of said pulleys 5, will cause the strip-like element 10 to be progressively wound about said pulleys 5, thereby the curtain will be packaged.

In order to release or extend the packaged curtain, it will be sufficient to drive the pulleys 5 with a rotary movement in the opposite direction.

From the above disclosure and from the observations of the figures of the accompanying drawings, it should be apparent that the invention fully achieves the intended aim and objects.

In particular, the fact is to be pointed out that a pack-

et curtain has been provided, the cloth or fabric element of which can be mounted and disassembled in a very quick and simple manner, thereby allowing the cloth element of the curtain to be washed in a very simple manner, as it is required.

A further advantage of the packet curtain according to the present invention, deriving from the use of a strip-like element to cause the curtain to be wound and unwound, is that it is possible to wind in a very even manner the strip-like elements thereby allowing the curtain cloth element to be evenly brought to its packet-like configuration, while holding its bottom side or edge in a perfect horizontal condition.

Claims

1. An easily assembled and installed packet curtain, comprising a supporting device including winding means, in turn including at least a horizontal axis pulley which can be rotatively driven about a rotary axis thereof, and a cloth element having a top side coupled to said supporting device and provided, at said pulley, with a winding element having one end portion thereof coupled, near the bottom side of the cloth element and slidably connected, along the length thereof, to a face of said cloth element along a substantially vertical direction, characterized in that said winding element is provided, at its top end portion thereof, with a coupling element and in that said pulley is provided with gripping means for automatically gripping, at the start of the rotation of said pulley with said cloth element in a fully unwound condition, said coupling element to cause the winding element to be progressively wound on said pulley, said pulley comprising moreover locating means for locating said coupling element on the bottom of the pulley groove at the start of the winding of said winding element on said pulley.
2. A packet curtain, according to Claim 1, characterized in that said winding element comprises a strip-like element.
3. A packet curtain, according to Claims 1 and 2, characterized in that said strip-like element traverses slidably, along the extension thereof, a vertical row of eyelet elements coupled to a face of said cloth element and spaced from one another along said substantially vertical direction.
4. A packet curtain, according to one or more of the preceding claims, characterized in that said cloth element is provided, at the end portion of said eyelet element row, with a supporting eyelet element arranged near said pulley and supporting said coupling element at a position suitable for engagement by gripping means of a related pulley.

5. A packet curtain, according to one or more of the preceding claims, characterized in that said coupling element is provided with a substantially T-shape and has a stiffness greater than that of said strip-like element and that said pulley is provided with a winding pulley groove delimited by two disc-like side walls, in said two disc-like side walls being defined a spiral recess provided for engaging the two legs of said coupling element, as transversely arranged of said winding groove. 5 10
6. A packet curtain, according to one or more of the preceding claims, characterized in that said cloth element, near its top end portion, and said supporting device, are provided with removable engagement means. 15
7. A packet curtain, according to one or more of the preceding claims, characterized in that said removable engagement means comprise a tearing or removable strip said removable strip including an element thereof coupled to said cloth element and another element thereof coupled to said supporting device. 20 25
8. A packet curtain, according to one or more of the preceding claims, characterized in that said strip-like element is provided, at the bottom end portion thereof, with removable engagement means which can be engaged with said cloth element near the bottom side of the latter. 30
9. A packet curtain, according to one or more of the preceding claims, characterized in that said removable engagement means of said strip-like element comprise a hook element which can be engaged with a corresponding elongated slot associated with said cloth element near its bottom side. 35
10. A packet curtain, according to one or more of the preceding claims, characterized in that said supporting eyelet element is provided with a projection adapted to engage in a mating recess formed on said arms. 40 45
11. A packet curtain, according to one or more of the preceding claims, characterized in that said curtain comprises moreover a fixed-joint type of device, including said projection and mating recess, allowing said coupling element and gripping means to be perfectly mated. 50
12. A packet curtain, according to one or more of the preceding claims, characterized in that said locating means comprise a push-button projecting inwardly of at least a wall of said pulley and adapted to hold said coupling element tightly adhering to the bottom of said groove of said pulley after engagement by said recesses. 55
13. A packet curtain, according to one or more of the preceding claims, characterized in that said push-button is supported by an end portion of a tongue element, associated with said pulley and of a resilient flexible nature in order to allow said coupling element to be displaced in the direction of the bottom of said pulley groove, at the start of the winding of said winding element.

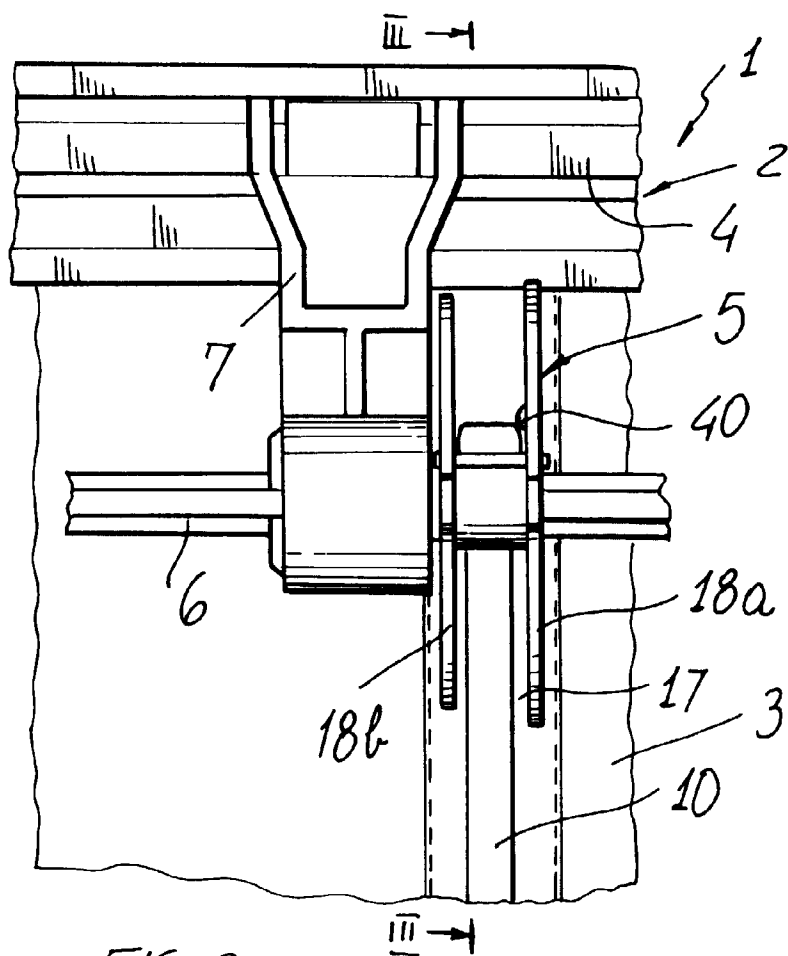


FIG. 2

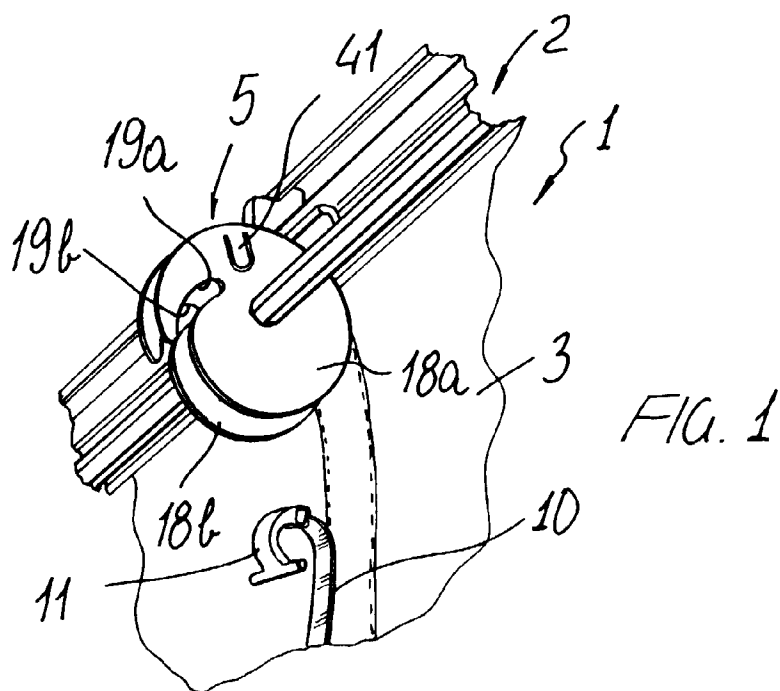


FIG. 1

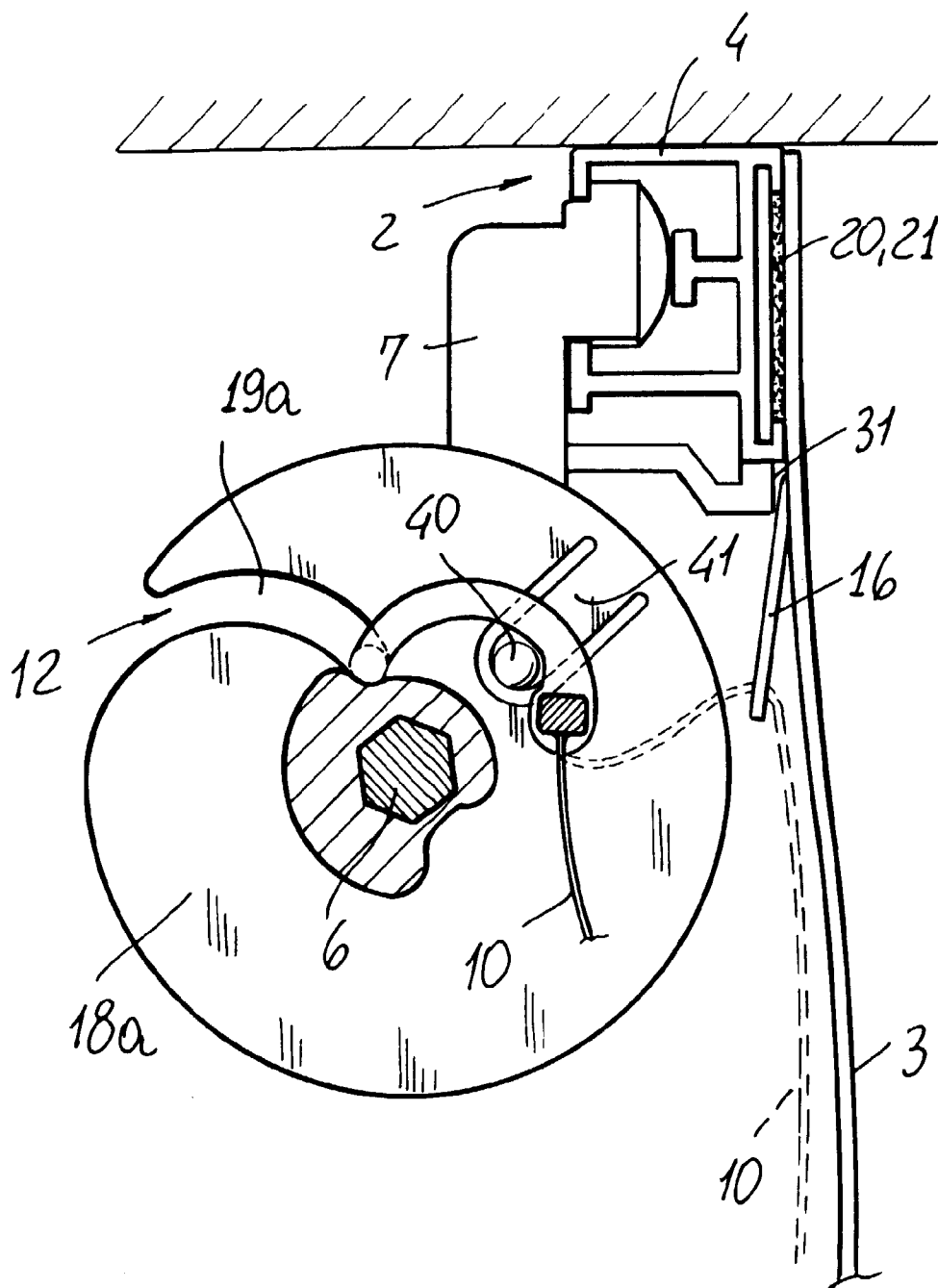


FIG. 3

