

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 957 230 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
17.11.1999 Bulletin 1999/46

(51) Int. Cl.⁶: **E06B 9/58**, E06B 9/78,
E04F 10/06

(21) Application number: **99201256.7**

(22) Date of filing: **20.04.1999**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **12.05.1998 NL 1009133**

(71) Applicant: **Mado Nederland B.V.**
NL-5652 AX Eindhoven (NL)

(72) Inventor: **Van Wageningen, Jakob**
5653 PH Eindhoven (NL)

(74) Representative:
Vollebregt, Cornelis Jacobus, Ir.
Algemeen Octrooibureau
World Trade Center
P.O. Box 645
5600 AP Eindhoven (NL)

(54) **A method for securing the cloth of a screen device**

(57) The invention relates to a method and a device for securing a cloth (3) of a screen device which has been unwound from a cloth roll (1). A cloth beam (6) whose ends are guided along fixedly disposed guide members (11) is fixed to the free end of the cloth remote from the end of the cloth (3) which is fixed to the cloth roll (1) in a connecting point (4,5). The cloth (3) is unwound from the cloth roll by rotating said cloth roll (1) in one direction. Once the cloth (3) has been completely unwound from the cloth roll (1) by rotating the cloth roll (1) in one direction, the cloth roll (1) is rotated further in the same direction, thereby pulling the cloth beam (6) towards the cloth roll (1) again. Latching elements (12) connected to the cloth beam (6) then engage with further latching elements (15,16,17,18) connected to said guide members (11). The cloth roll (1) is rotated in the opposite direction in order to release the latching engagement between said latching elements (15,16,17,18).

EP 0 957 230 A1

Description

[0001] The invention relates to a method for securing a cloth of a screen device which has been unwound from a cloth roll, wherein a cloth beam, whose ends are guided along fixedly disposed guide members, is fixed to the free end of the cloth remote from the end of the cloth which is fixed to the cloth roll in a connecting point, and wherein the cloth is unwound from the cloth roll by rotating said cloth roll in one direction.

[0002] With screen devices of this kind, the cloth is generally unwound in a direction parallel to a window or the like which is to be screened, in order to function as a sun blind. In practice it has become apparent that movements of the screen caused by wind and the like cause disturbance, for example when working with computer terminals and the like. The above reasons, among others, make it desirable to be able to secure the cloth that has been unwound from the cloth roll in a tautly stretched position.

[0003] According to the invention this objective can be accomplished in that, once the cloth has been completely unwound from the cloth roll by rotating the cloth roll in one direction, the cloth roll is rotated further in the same direction, thereby pulling the cloth beam towards the cloth roll again in order to bring latching elements connected to the cloth beam in engagement with further latching elements connected to said guide members, and the cloth roll is rotated in the opposite direction again in order to release the latching engagement between said latching elements.

[0004] When the method according to the invention is used, all that needs to be done to unwind and secure the cloth is to rotate the cloth roll in one and the same direction, whilst also the releasing of the latching engagement and winding up of the cloth only requires rotation of the cloth roll in one and the same direction. This provides considerable ease of operation whilst obtaining a reliable operation of the latching device.

[0005] Another aspect of the invention relates to a screen device comprising a cloth roll and a cloth, which is connected to said cloth roll with one end in a connecting point, whilst a cloth beam is fixed to the free end of the cloth remote from the cloth roll, which cloth beam extends between two fixedly disposed guide members for guiding the ends of the cloth beam.

[0006] According to the invention, first latching elements are provided on the ends of the cloth beam, which elements mate with second latching elements connected to said guide members, along which the latching elements connected to said cloth beam move when the cloth beam is unwound from the cloth roll by rotation of the cloth roll in a first direction of rotation, the construction being such that when the first latching elements, after having passed the second latching elements in a first direction, are moved in opposite direction by continued rotation of the cloth roll in the first direction of rotation, the first and the second latching

elements will engage each other so as to secure the cloth beam with respect to the guide members, and that the latching engagement of latching elements will be released upon subsequent rotation of the cloth roll in a direction of rotation opposed to the first direction of rotation.

[0007] When using the device according to the invention, automatic securing of the cloth in its unwound position can be effected upon unwinding of the cloth by rotating the cloth roll in a first direction, whilst the cloth can be automatically released and be wound on the cloth roll by rotating the cloth roll in a direction opposed to said first direction of rotation. This arrangement enables a simple construction and operation of the screen device, wherein the screen is secured in its unwound position in a simple manner.

[0008] The invention will now be explained in more detail by means of embodiments of the construction according to the invention which are schematically shown in the accompanying figures.

Figures 1 - 3 are schematic cross-sectional views of a screen device according to the invention, showing successive phases of the unwinding of the cloth.

Figure 4 is a partially sectional view of one end of a cloth beam and of the lower end of a guide member. Figure 5 is a plan view of the end of a cloth beam and a cross-sectional view of the guide member. Figure 6 is a view of a latching element, seen along line VI-VI in Figure 4.

Figure 7 is a plan view of another embodiment of a latching element to be connected to the end of a cloth beam.

Figure 8 is a view of Figure 7, seen in the direction indicated by arrow VIII in Figure 7.

Figure 9 is a view corresponding to Figure 6 of a latching element to be connected to a guide member, which is intended to mate with the latching element as shown in Figures 7 and 8.

[0009] The screen device which is schematically shown in the figures comprises a cloth roll 1, which is mounted in a frame 2 to be fixed to a wall of a building or the like, in such a manner that it is capable of rotation about a (usually horizontal) axis of rotation.

[0010] A cloth 3, which may be a gauze-like material, is connected to the cloth roll in a connecting point with one end by means of a cord 4 incorporated in said end of the cloth, which has been slid in a usual manner into a recess 5 formed in the cloth roll for that purpose, which recess extends along the length of the cloth roll.

[0011] A cloth beam 6 is fixed to the end of cloth 3 remote from the cloth roll. Closing plates 7 are fixed to the ends of cloth beam 6 by means of pins 7' (Figures 4, 5) which are integrally formed with said closing plates 7 and which extend into recesses in cloth beam 6.

[0012] A hub 8, which is in one piece with closing plate 7 is fixed to the side of closing plate 7 remote from the

cloth beam. A flange 9, which extends parallel to the closing plate 7 and which is integrally formed with hub 8, is provided on the free end of hub 8. A pin 10 is inserted in a bore which extends through flange 9 and hub 8, in such a manner that pin 10 projects from flange 9 along part of its length.

[0013] Guide members in the form of sections 11 of substantially C-shaped cross-section are provided for guiding the cloth beam 6 during the winding and unwinding of cloth 3 on and from cloth roll 1. As appears in particular from Figures 4 and 5, the construction is thereby such that the hubs 8 mounted on the ends of cloth beam 6 can move through the gap which is bounded by the facing ends of said C-shaped sections, whilst flanges 9 are positioned in the interior of the guide members or sections 11.

[0014] Provided near the lower end of each section 11 is a latching element made up of an elongated member 12, which is connected to section 11 near its upper end by means of a screw 13 and a nut 14, in such a manner that latching element 12 is capable of pivoting movement with respect to section 11 about a pivot pin in the form of screw 13 extending parallel to the cloth roll.

[0015] Latching element 12 is provided with a groove 15 which is open on its upper end, which groove, in the position wherein latching element 12 is freely suspended in section 11 in unloaded condition, extends approximately parallel to the longitudinal axis of said section and in the path of movement of a pin 10 which moves downwards in the direction indicated by arrow A (Figure 1) in said section when cloth 3 is being unwound.

[0016] Said groove 15 blends near its lower end into a groove 16 which slopes downwards at an obtuse angle with respect to groove 15. Latching element 12 is furthermore provided with a more or less V-shaped recess 17 beside groove 16, which recess is present at substantially the same height as groove 16, whereby groove 16 and recess 17 are in open communication with each other near their upper ends. A groove 18 sloping upwards in the direction of groove 15 connects to the upper end of recess 17, which groove 18 opens into the upper end of groove 15 near its upper end.

[0017] A recess 20 is provided in the underside of the portion 19 of the latching element that is present between grooves 15 and 18, which recess is bounded by boundary surfaces whose free ends 21 and 22 are disposed on either side of the end facing towards said recess 20 of the portion 23 of latching element 12 that is disposed between groove 16 and recess 17.

[0018] As is shown in Figure 1, the cloth beam 6 will move downwards along sections 11 in the direction indicated by arrow A upon unwinding of cloth 3, in that the cloth roll is rotated in the direction indicated by arrow D. When cloth beam 6 approaches the lower ends of sections 11, the pins 10 on cloth roll 6, which form latching elements, will move downwards in grooves 15. The construction is thereby such that when the connecting point

of cloth 3 on cloth roll 1, that is, rope 4, reaches its lowermost position, seen in Figure 1, once the cloth has been completely unwound from the cloth roll, pins 10 will have passed the lower ends 22 of the boundary surfaces of recess 20 and have moved to a position under recess 20 as a result of their movement in grooves 16.

[0019] When the rotation of cloth roll 1 is continued in the direction indicated by arrow D, cloth 3 and cloth beam 6 will be pulled upwards again in the direction indicated by arrow B (Figure 2), wherein the pins 10 forming the latching elements will fall into recesses 20 forming latching elements, so that cloth 3 can be pulled taut in that cloth beam 6 is held in position by the mating latching elements 10 and 10, wherein said latching element will be slightly pivoted, as will be apparent from Figure 2.

[0020] When the cloth is to be wound up, the cloth roll will be rotated in a direction opposed to the direction indicated by arrow D (Figure 3). The cloth beam 6 and the pins 10 fixed thereto will initially move downwards thereby, with pins 10 moving into recesses 17 due to the above-described form of the recesses 20 and of the parts 23 of latching elements 12 that are disposed between grooves 16 and recesses 17. When the rotation of the cloth roll is continued in a direction opposed to the direction indicated by arrow D, pins 10 will move upwards through groove 18 in the direction indicated by arrow B, as a result of which they will be released from latching elements 12 when cloth 3 is being wound up.

[0021] Said rotation of the cloth roll can be effected by hand in the usual manner, of course. In an efficient embodiment, however, an electric motor accommodated within the cloth roll is used, which motor and the associated parts are so constructed that the motor will turn off automatically when a certain resistance is encountered during rotation of the cloth roll in the direction indicated by arrow D, because the cloth beam 6 is being locked against movement in the direction indicated by arrow B in the above-described manner.

[0022] As is shown in Figures 7 and 8, it is also possible to opt for a construction wherein the above-described flange 9 has been substituted for a flange 24, which is rotatably connected to hub 8 by means of a shaft 25 extending parallel to the longitudinal direction of cloth roll 6. A pin 26 forming a latching element, which extends parallel to shaft 25, at some distance therefrom, is fixed to flange 24, on the side of said flange remote from shaft 25.

[0023] When using such a pin 26 which can be rotated relative to cloth beam 6 about a shaft 25 extending parallel to the cloth roll, the latching element 27 which is shown in Figure 9 can be used, which latching element can be fixedly disposed in a respective section 11. Said latching element 27 is thereby provided with a groove 15' similar to groove 15, which opens at its upper end into a funnel-shaped recess 28, which is open at its upper end. Said latching element 27 is furthermore provided with parts 16' - 23' corresponding to the above-

described parts 16 - 23.

[0024] The two latching elements 26 and 20' according to the embodiment of Figures 7 - 10 mate in principle in the same manner as the latching elements 10 and 20 of the above-described embodiment, wherein the pivotable arrangement of latching element 26 enables a fixed position of latching element 27.

[0025] Modifications and additions to the above-described embodiments are conceivable within the spirit and scope of the invention, of course. Thus, the latching elements "connected" to guide members 11 may for example be disposed at some distance from said guide members.

Claims

1. A method for securing a cloth of a screen device which has been unwound from a cloth roll, wherein a cloth beam, whose ends are guided along fixedly disposed guide members, is fixed to the free end of the cloth remote from the end of the cloth which is fixed to the cloth roll in a connecting point, and wherein the cloth is unwound from the cloth roll by rotating said cloth roll in one direction, characterized in that once the cloth has been completely unwound from the cloth roll by rotating the cloth roll in one direction, the cloth roll is rotated further in the same direction, thereby pulling the cloth beam towards the cloth roll again in order to bring latching elements connected to the cloth beam in engagement with further latching elements connected to said guide members, and the cloth roll is rotated in the opposite direction in order to release the latching engagement between said latching elements.
2. A screen device comprising a cloth roll and a cloth, which is connected to said cloth roll with one end in a connecting point, whilst a cloth beam is fixed to the free end of the cloth remote from the cloth roll, which cloth beam extends between two fixedly disposed guide members for guiding the ends of the cloth beam, characterized in that first latching elements are provided on the ends of the cloth beam, which members mate with second latching elements connected to said guide members, along which the latching elements connected to said cloth beam move when the cloth beam is unwound from the cloth roll by rotation of the cloth roll in a first direction of rotation, the construction being such that when the first latching elements, after having passed the second latching elements in a first direction, are moved in opposite direction by continued rotation of the cloth roll in the first direction of rotation, the first and the second latching elements will engage each other so as to secure the cloth beam with respect to the guide members, and that the latching engagement of latching elements will be released upon subsequent rotation of the cloth

roll in a direction of rotation opposed to the first direction of rotation.

3. A screen device according to claim 2, characterized in that pins extending parallel to the longitudinal direction of the cloth beam, which form latching elements, are mounted on the ends of the cloth beam, which pins mate with latching elements connected to said guide members which are provided with a first groove, which extends substantially in the direction of movement of the cloth beam and which blends into a second groove including an obtuse angle with said first groove, which second groove is separated from a recess disposed adjacently thereto by a rib, which rib is disposed under a recess formed in said latching element, which also forms a latching element, which recess is bounded by boundary walls whose free ends are disposed on either side of said projecting rib.
4. A screen device according to claim 3, characterized in that a further groove joins said recess, which groove slopes upwards in the direction of the upper end of the first groove and which connects to said first groove at that location.
5. A screen device according to claim 3 or 4, characterized in that said latching element is capable of pivoting movement near its upper end about a pivot pin extending parallel to said cloth roll.
6. A screen device according to claim 3 or 4, characterized in that a pin connected to said cloth beam is capable of pivoting movement with respect to said cloth beam about a pivot pin extending parallel to said cloth roll.

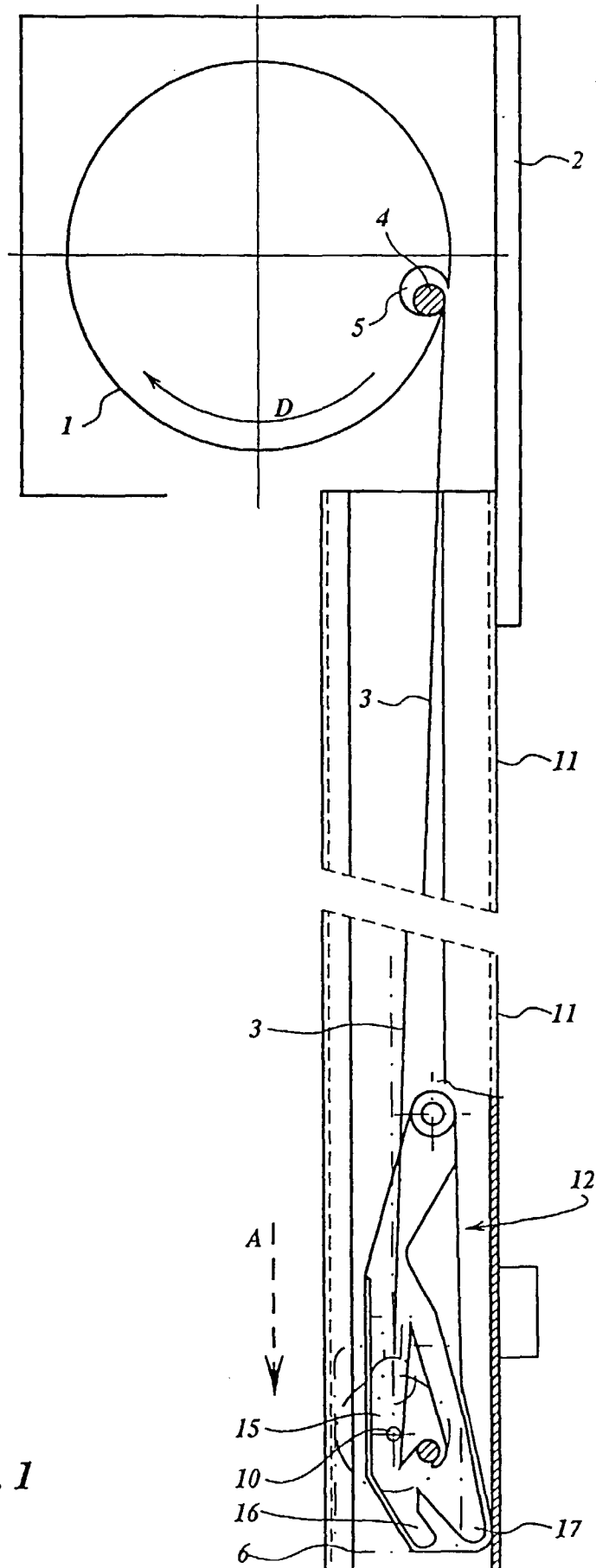


Fig. 1

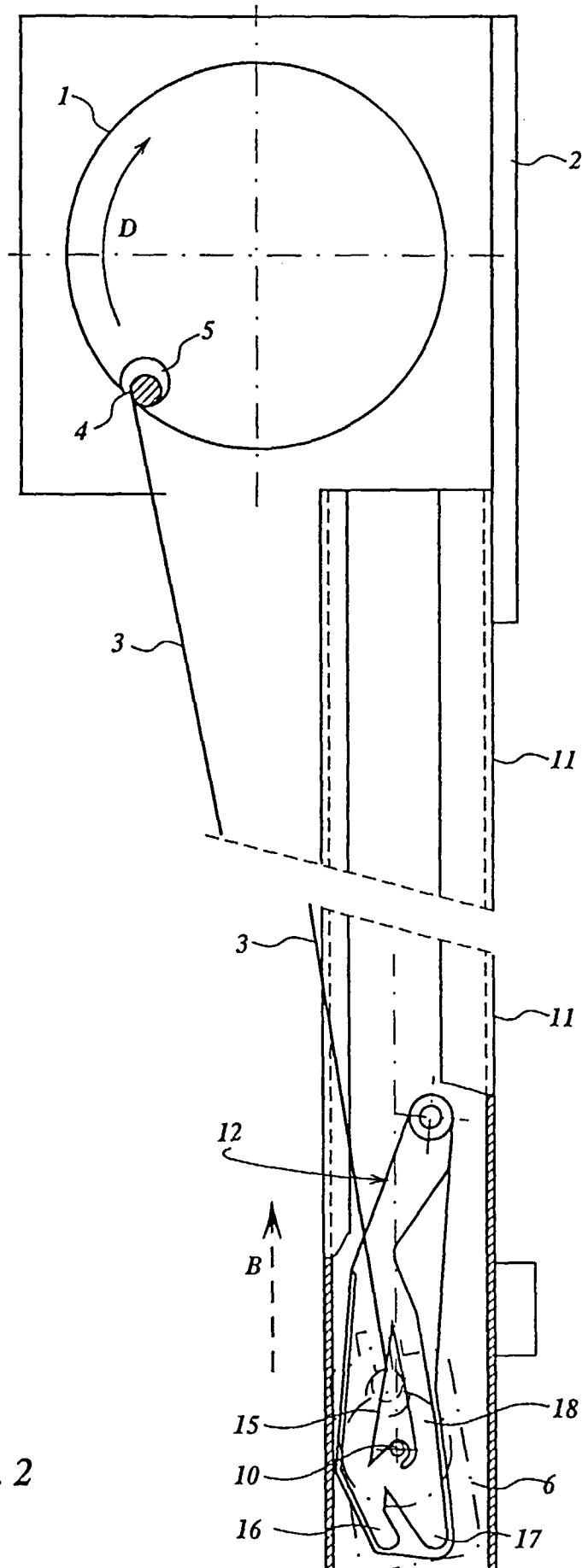


Fig. 2

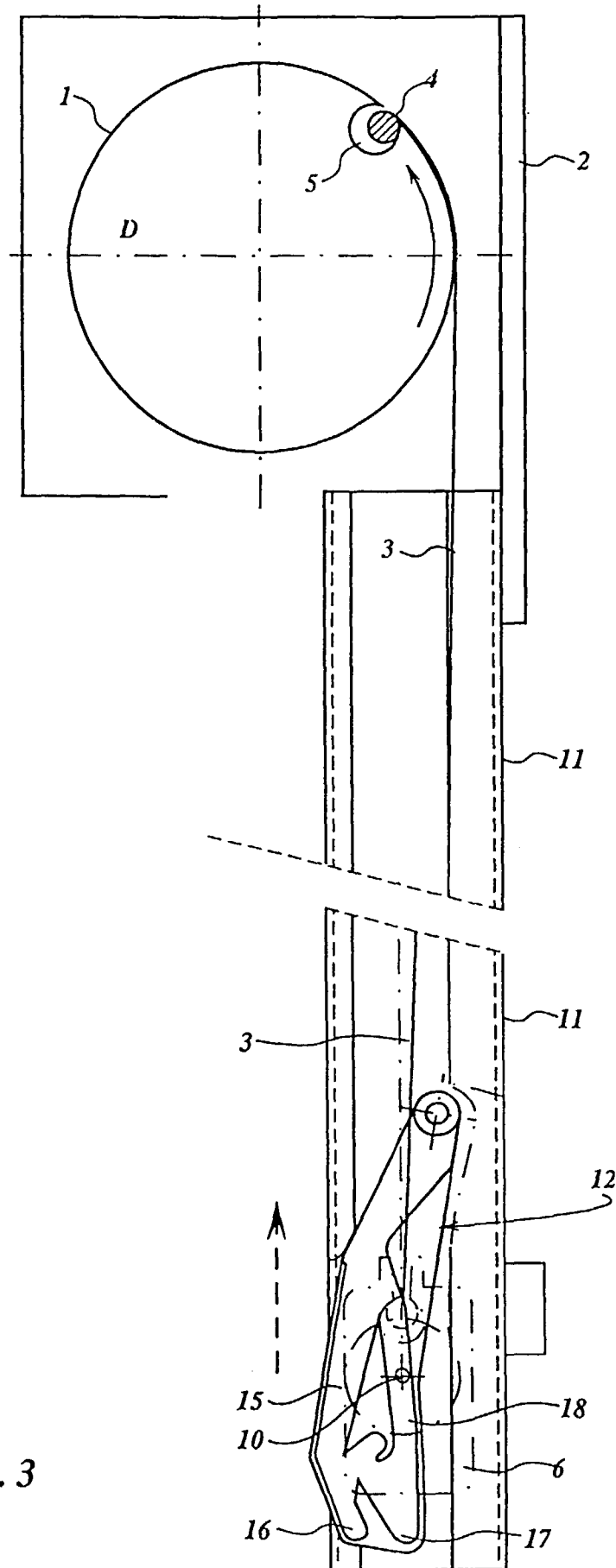


Fig. 3

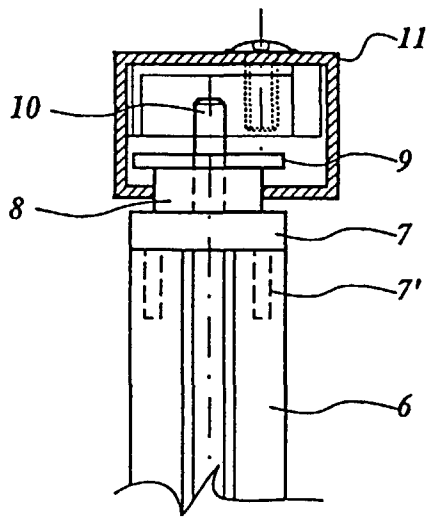


Fig. 5

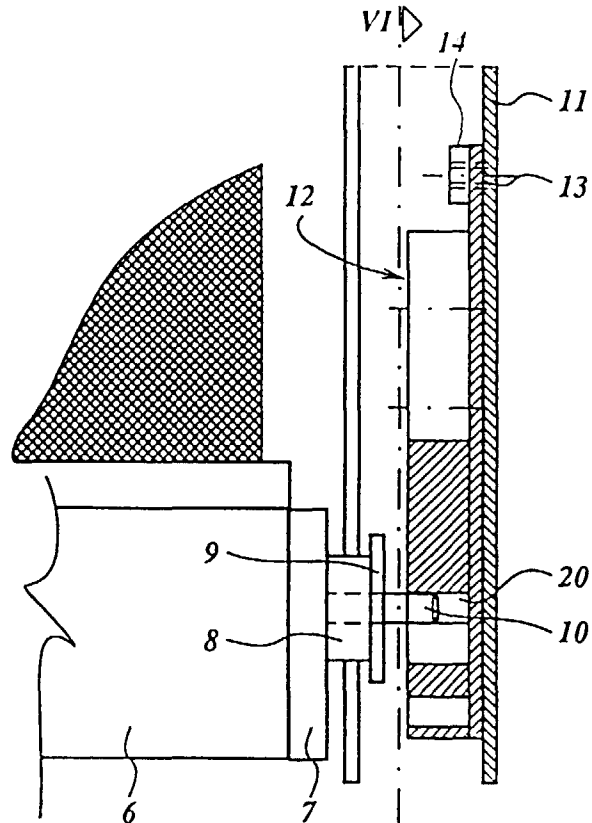


Fig. 4

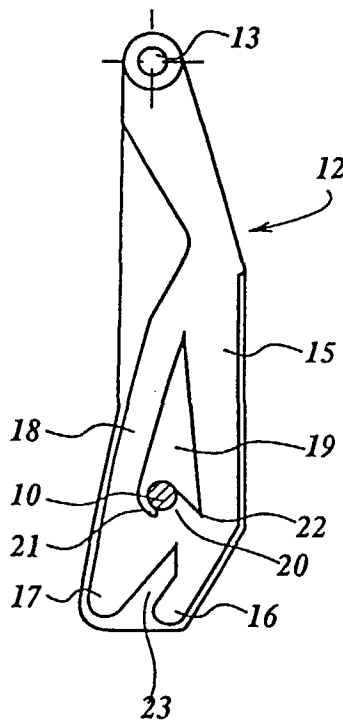


Fig. 6

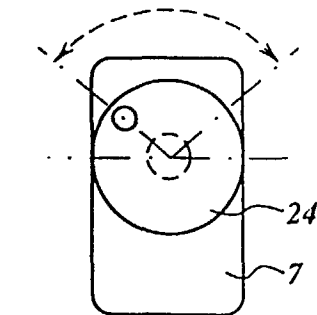


Fig. 8

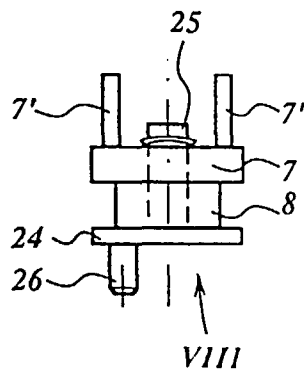


Fig. 7

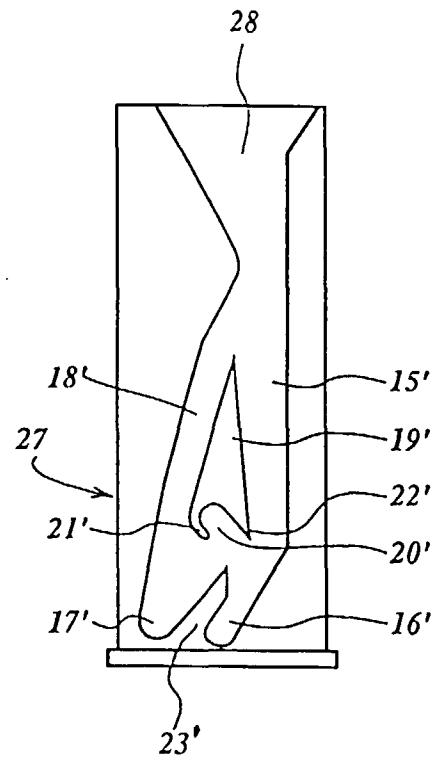


Fig. 9



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 20 1256

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	US 4 509 576 A (GIOVANNI SERAFINI) 9 April 1985 (1985-04-09) * column 3, line 50 - column 4, line 7; figures 2,3,5 * -----	1,2	E06B9/58 E06B9/78 E04F10/06
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E06B E04F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 August 1999	Examiner Peschel, G
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 20 1256

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-08-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4509576 A	09-04-1985	IT 1157068 B	11-02-1987
		AT 21429 T	15-08-1986
		EP 0108424 A	16-05-1984