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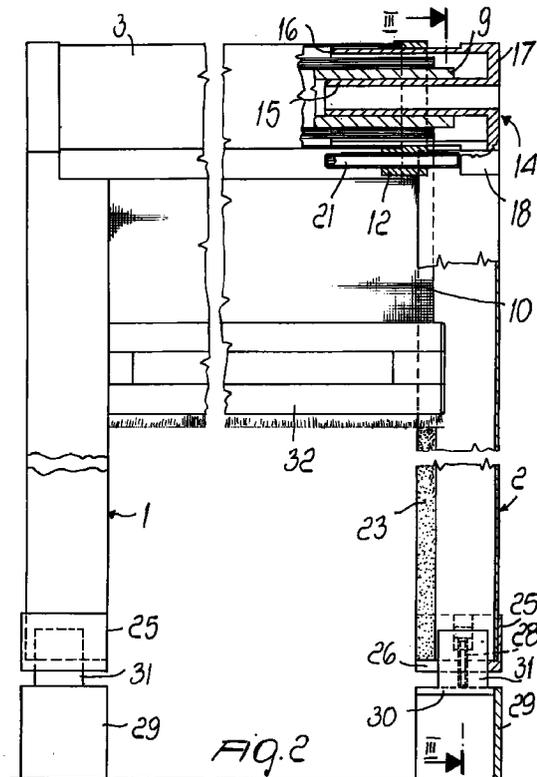
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(54) Mosquito net having improved features

(57) An improved mosquito net, comprising a rectangular frame (1, 2, 3) which is adapted to be arranged in a window opening and is composed of an upper horizontal stringer (3), which forms a box for accommodating a roller (9) for rolling up and unrolling a sheet (10) of fine-mesh net, adapted to prevent the passage of mosquitoes, and of vertical posts (1, 2) which form guides for the lateral edges of said sheet. At least one of said posts (1, 2) has, at the top, an element (14) for coupling to said box (3) which is guided in one end of said box, and in that respective elements (25, 29) for resting on the sill (5) of the window opening are guided in the lower ends of said posts (1, 2), screw means (21) being further provided which act between said coupling element (14) and said box (3) and between said resting elements (25) and said sill (5) in order to produce a vertical and horizontal locking of said frame (1, 2, 3).



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Description

The present invention relates to a mosquito net having improved features. In the following the term "mosquito net" is meant to designate protective screens which can be rolled up on a roller, such as roll-up blinds, fine-mesh nets, Venetian blinds and the like.

Current mosquito nets are usually constituted by a rectangular frame which is arranged in the window opening and in which the upper horizontal stringer forms a box for accommodating the roller on which, and from which, a sheet of fine-mesh net is respectively rolled up and unrolled; said sheet constitutes the screen which prevents the entry of mosquitoes in rooms.

When the screen is lowered to close the window opening, the lateral edges of the screen can slide in lateral guides formed in the vertical posts of the frame.

Conventional mosquito nets entail the drawback that the frame does not perfectly fit the dimensions of the window opening and therefore rather wide lateral gaps remain through which mosquitoes can pass.

The aim of the present invention is therefore to provide a mosquito net which substantially eliminates the shortcomings of conventional mosquito nets.

Within the scope of this aim, an object of the present invention is to provide a mosquito net which, although having adjustable dimensions, still has a structure which is simple, easy to assemble and inexpensive.

This aim, this object and others which will become apparent hereinafter are achieved by an improved mosquito net, comprising a rectangular frame which is adapted to be arranged in the window opening and is composed of an upper horizontal stringer, which forms a box for accommodating a roller for rolling up and unrolling a sheet of fine-mesh net, adapted to prevent the passage of mosquitoes, and of vertical posts which form guides for the lateral edges of said sheet, characterized in that at least one of said posts has, at the top, an element for coupling to said box which is guided in one end of said box, and in that respective elements for resting on the sill of the window opening are guided in the lower ends of said posts, screw means being further provided which act between said coupling element and said box and between said resting elements and said sill in order to produce a vertical and horizontal locking of said frame.

Further characteristics and advantages of the mosquito net according to the present invention will become apparent from the following detailed description of preferred embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a front view of an improved mosquito net installed in a window opening, according to the present invention;

Figure 2 is a partially sectional enlarged-scale front view of the mosquito net of Figure 1;

Figure 3 is a sectional view, taken along the vertical plane III-III of Figure 2;

Figure 4 is an exploded perspective view of one side of the mosquito net;

Figure 5 is a view of a different embodiment of the mosquito net; and

Figures 6 and 7 are sectional views, taken along the planes VI-VI and VII-VII, respectively, of Figure 5.

With reference to the above figures, the mosquito net is constituted by a rectangular frame composed of two vertical posts 1 and 2 and of an upper horizontal stringer 3 which lies between the tops of the posts 1 and 2.

The posts 1 and 2 are meant to be locked vertically in the above-described manner between a lintel 4 and a sill 5 of the window opening, while the upper stringer 3 is locked between the lateral shoulders 6 and 7 which vertically delimit the window opening.

The upper stringer 3 is constituted by a sort of rectangular prism-shaped box which is provided, in a downward region, with a slot 8 and which accommodates a roller 9 for rolling up a sheet 10 made of fine-mesh net which is suitable to prevent the passage of mosquitoes.

A rectangular auxiliary frame 12 is fixed, by means of screws 11, to the end of the box 3 to the right in Figure 1; said auxiliary frame has an opening 13 in a downward region, at the slot 8 of the box.

An element 14 is associated with the auxiliary frame 12 and is composed of a central pivot 15 suitable to fit in the roller 9 and surrounded by a tubular portion 16 whose external cross-section is complementary to the internal cross-section of the auxiliary frame 12, so that it can be inserted therein. The tubular portion 16 is also open in a downward region at the opening 13 of the auxiliary frame.

The pivot 15 and the tubular portion 16 protrude from a plate 17 which replicates the perimeter of the auxiliary frame 12 and from which a front tooth 18 protrudes downward; together with the lower edge of the plate 17, said tooth forms a seat 19 which is open downward. A vertical wing 20 protrudes from the rear edge of the plate 17 at right angles thereto and forms, together with the portion 16, an interspace in which the rear side of the auxiliary frame 12 fits. The tooth 18 is meant to act as an abutment for a screw 21 which is screwed into a hole formed at a lower enlarged corner of the auxiliary frame 12.

By acting on the screw 21, the element 14 can be moved with respect to the auxiliary frame 12 so as to lock the box between the shoulders 6 and 7 of the window opening, directly below the lintel 4. The upper end of the post 2 is arranged in the seat 19. The post 2 is constituted by a tubular profiled element which has a rectangular cross-section and has, on the face lying opposite to the face that is adjacent to the shoulder 7 of the window opening, i.e., is directed towards the sheet

10, a slot 22 along the edges whereof respective sealing elements are provided constituted by combs of mutually opposite bristles 23.

The arrangement of the post 2 in the seat 19 is such as to allow the top of said post to engage the opening 13 of the auxiliary frame 12, so that the lateral edge of the sheet 10 can slide in the slot 22 when the sheet is raised and lowered.

The lower end of the post 2 is inserted in a seat 24 of a prism-shaped body 25. The seat 24 is open on the same side as the slot 22 and is shaped complementarily to the post. At its lower edge, the seat 24 has a rim 26 which protrudes inward, acts as an abutment for the lower end of the post 2 and is as high as said post is thick. A vertical threaded hole 27 is formed in the body 25, to the side of the seat, and a through screw 28 is screwed therein.

An element 29 is arranged below the body 25 and acts as an element for resting the post 2 on the sill 5 of the window opening.

The element 29 is shaped like a right-angled prism and has a cavity 30 which is open towards the seat 24 and lies on the same side as the slot 22. Two parallel wings 31 rise from the upper edges that delimit the cavity 30 at the upper face of the element 29 and pass through the seat 24; their mutual distance is such that they can engage without play in the lower end of the post 2. Accordingly, as shown more clearly in Figure 3, the wings 31 act as an element for the coupling and guiding of the base of the post.

The left post 1 of the mosquito net is fully identical to the right post 2. Moreover, the elements by virtue of which it is coupled to the box 3 and rested on the sill 5 are entirely mirror-symmetrical with respect to those of the right post. The assembly of the described mosquito net in the window opening, although evident from the provided description, is as follows.

First of all, the box 3 is arranged below the lintel 4, so that no appreciable gap remains between the lintel and the box. Then, by acting on the screws 21 of the right and left elements 14, the box is locked between the shoulders 6 and 7.

At this point, the posts 1 and 2 are arranged adjacent to the shoulders 6 and 7, inserting their upper ends in the seats 19 of the elements 14 and arranging the lower elements 29 so that they rest on the sill 5.

Finally, the screws 28 are actuated so as to lock the posts 1 and 2 between the respective elements 14 and the sill 5.

The mosquito net is thus installed so that the lateral edges of the sheet 10 are slidingly engaged in the posts 1 and 2 through the slots 18 and allow to lift the sheet until a bar 32, fixed on the lower horizontal edge of the sheet, abuts below the box 3. In the lowered position of the sheet, the bar 32 rests on the sill 5.

It is evident that the invention perfectly achieves the intended aim and object. In particular, the possibility to move the elements 14 laterally with respect to the box 3

allows to widen the frame so as to perfectly adapt it to the dimensions of the window opening, compensating for any variations in said dimensions but without producing gaps which might allow mosquitoes to enter the spaces that the mosquito net is meant to protect. The posts 1 and 2 in fact continue to adhere perfectly to the shoulders 6 and 7 in any case.

It should be noted that during assembly the posts are spaced by a more or less significant extent depending on the variations in the distance between the shoulders 6 and 7 of the window opening. However, said spacing is determined so that the lateral edges of the sheet remain perfectly guided in the slots 18.

If the variations of the window opening are modest and can be compensated by spacing a single element 14 from the box, it is possible to eliminate the opposite element. In this case, instead of the auxiliary frame 12 and of the corresponding element 14 a simple rectangular cover is used, which can be applied to the box and is provided with a supporting pivot for the roller 9 and with a coupling seat for the top of the post.

Numerous modifications and variations are possible in the practical embodiment of the invention and all are within the scope of the same inventive concept.

Figures 5, 6 and 7 illustrate a second embodiment of the mosquito net, in which the parts that are equivalent to those of the embodiment of Figures 1-4 are designated by the same reference numerals increased by 100.

In particular, pivots 115 are provided for supporting the rollers 109 which, instead of being rigidly coupled to the plate 117, are rigidly coupled to the auxiliary frame 112. The pivots 115 are hollow and accommodate springs 33 that act against the plates 117.

The pressure of the springs 33 allows to keep the plates 117 against the shoulders 6 and 7 during the assembly of the posts 101 and 102 without requiring temporary external support, considerably simplifying installation work.

In a further embodiment, the bodies 125 have a tubular portion 34 which protrudes downward so as to cover the element 129. The portion 34 keeps the prism-shaped body 125 and the element 129 aligned and thus no longer requires the wings 31 used in the embodiment of Figures 1-4.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An improved mosquito net, comprising a rectangular frame (1, 2, 3) which is adapted to be arranged in a window opening and is composed of an upper

horizontal stringer (3), which forms a box for accommodating a roller (9) for rolling up and unrolling a sheet (10) of fine-mesh net, adapted to prevent the passage of mosquitoes, and of vertical posts (1, 2) which form guides for the lateral edges of said sheet, characterized in that at least one of said posts (1, 2) has, at the top, an element (14) for coupling to said box (3) which is guided in one end of said box, and in that respective elements (25, 29) for resting on the sill (5) of the window opening are guided in the lower ends of said posts (1, 2), screw means (21) being further provided which act between said coupling element (14) and said box (3) and between said resting elements (25) and said sill (5) in order to produce a vertical and horizontal locking of said frame (1, 2, 3).

2. A mosquito net according to claim 1, characterized in that it comprises an auxiliary frame (12) which can be fixed to one end of the box (3) and is provided, in a downward region, with an opening (13) at the slot (8) of the box (3), from which said sheet (10) protrudes, an element (14) being associated with said auxiliary frame (12) and being composed of a central pivot (15) suitable to enter the roll-up roller (9) of the sheet (10) accommodated in said box (3) and surrounded by a tubular portion (16) the outer cross-section whereof is complementary to the inner cross-section of the auxiliary frame (12), so that it can be inserted therein, said tubular portion (16) being open in a downward region at said opening (13) of the auxiliary frame (12) and said pivot (15) and said tubular portion (16) protruding from a plate (17) which is shaped so as to act as an abutment for a screw (21) which is screwed into a threaded hole formed in said frame (12) and is suitable to produce the movement of said element (14) with respect to said auxiliary frame (12) so as to lock the box (3) between the shoulders (6, 7) of the window opening.
3. A mosquito net according to claim 1, characterized in that it comprises an auxiliary frame (112) which can be fixed to one end of the box (103) and has a hollow pivot (115) for supporting the sheet roll-up roller, a plate (117) which can be coupled to said auxiliary frame and a spring (33) which is accommodated in a cavity of said pivot (115) and acts on said plate (117) so as to retain said plate against a respective shoulder of the window opening.
4. A mosquito net according to claim 3, characterized in that said resting element (25) is constituted by a prism-shaped body (25) provided with a seat (24) which is open towards said frame, is shaped complementarily to the post (2) and has, at the lower edge, a rim (26) which acts as an abutment for the lower end of said post (2) and is as high as said

post is thick, a threaded hole (27) being formed in said body (25), a through screw (28) being screwed into said hole and acting on an element (29) which acts as an element for resting the post (2) on the sill (5) of the window opening, a cavity (30) being formed in said element (29) and being open towards said seat (24) of said body (25) and towards said sheet (20), two parallel wings (31) being formed at the upper face of said element (29) by the upper edges of said cavity, said wings rising with a mutual spacing that allows them to snugly engage the lower end of the post (2) and acting as coupling and guiding elements for the base of the post (2).

5. A mosquito net according to claim 4, characterized in that said body (125) has a tubular portion (34) so as to cover the coupling between said body (125) and said resting element (129).

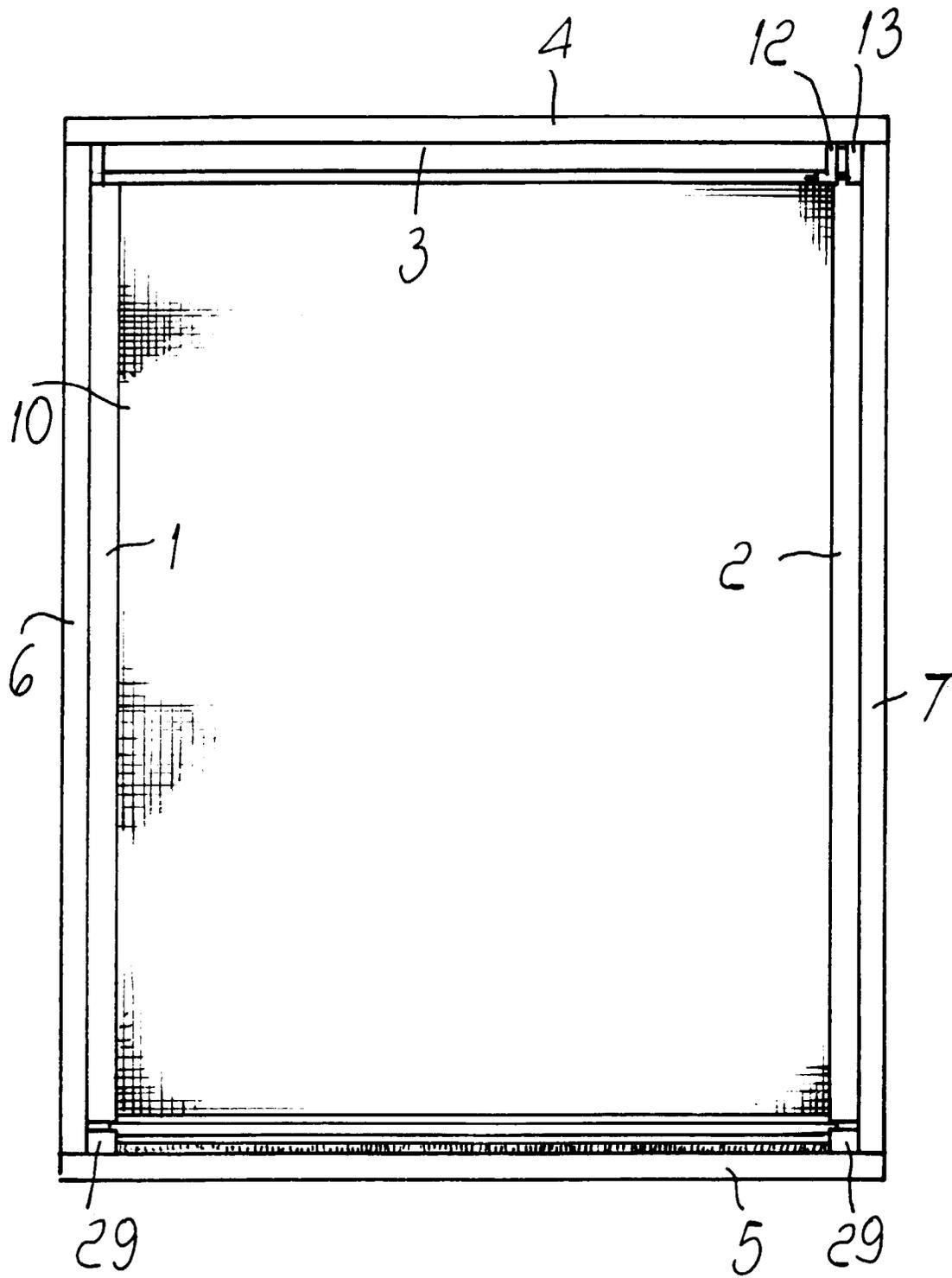
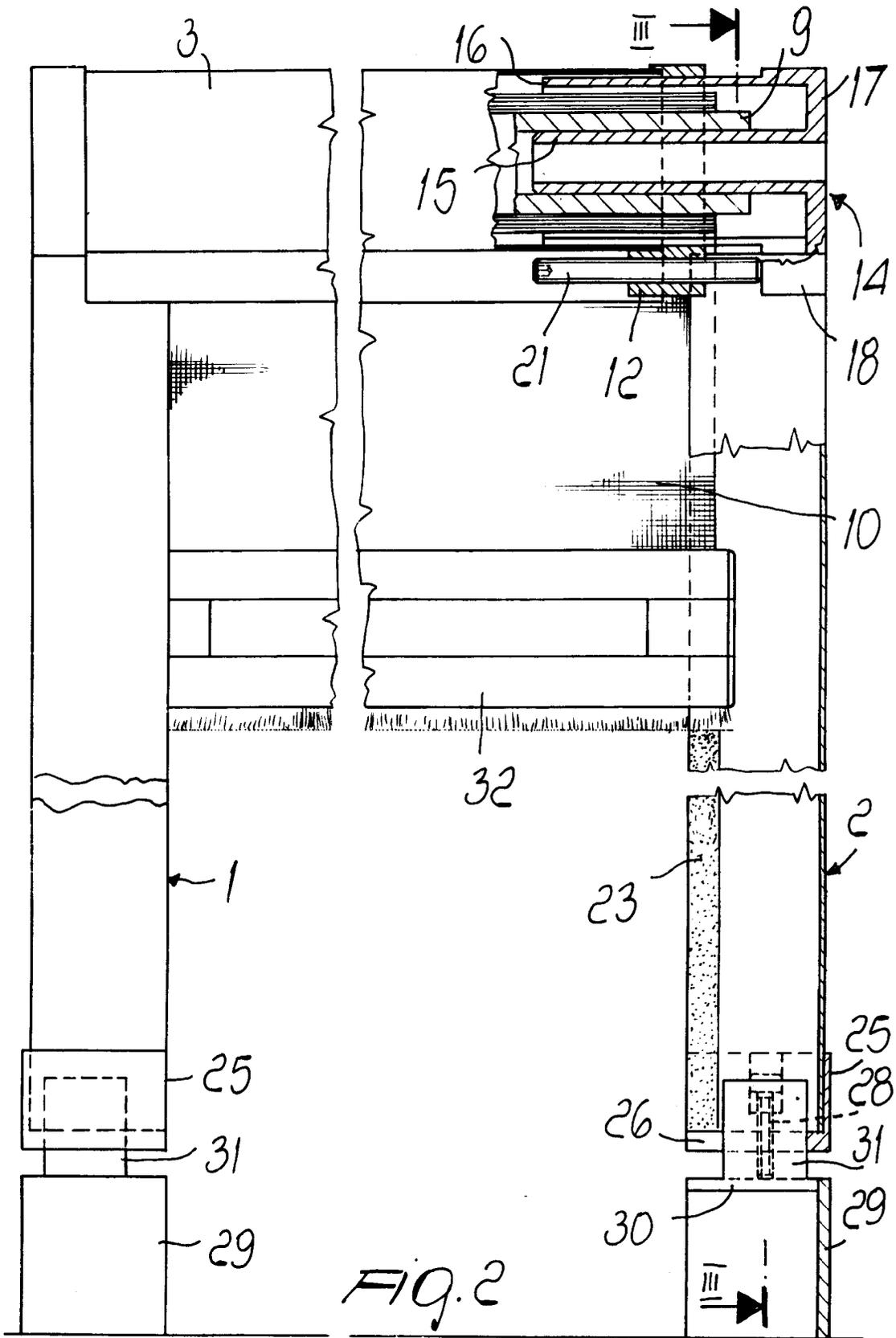


FIG. 1



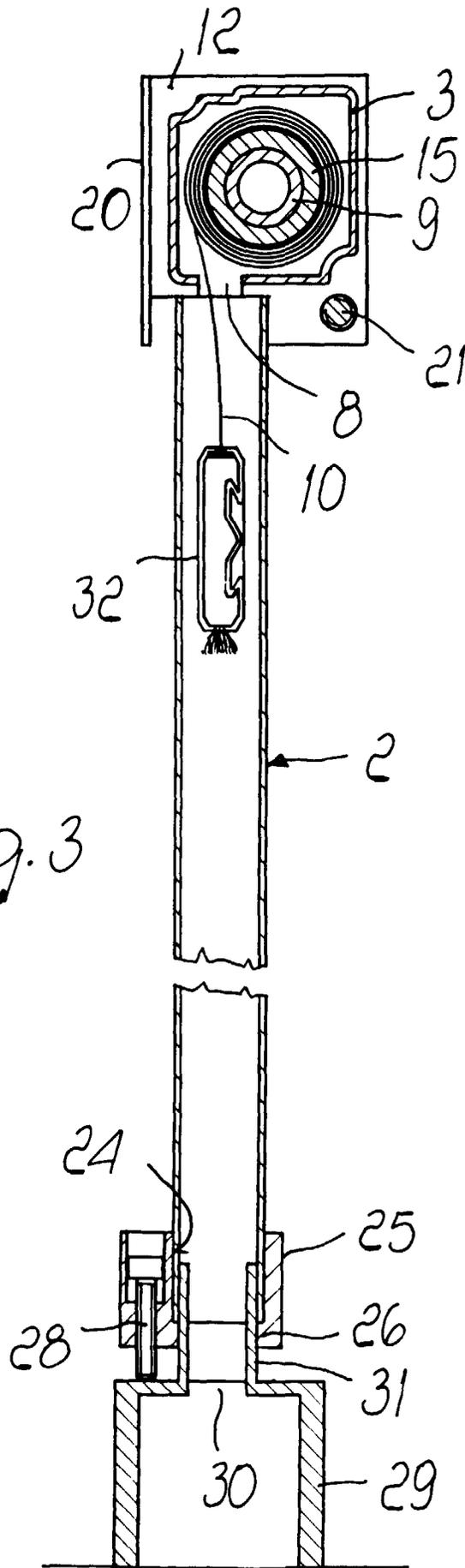


FIG. 3

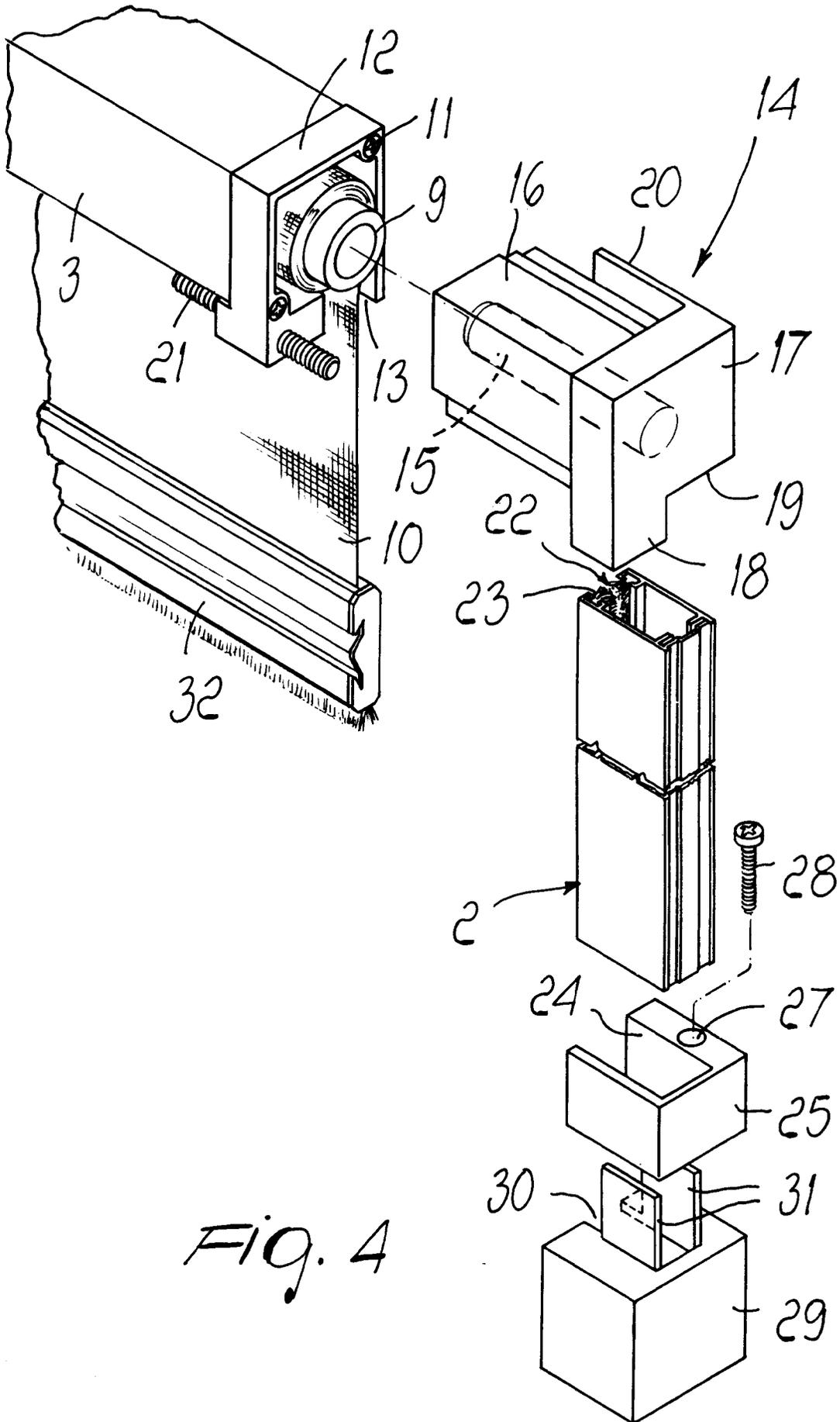


Fig. 4

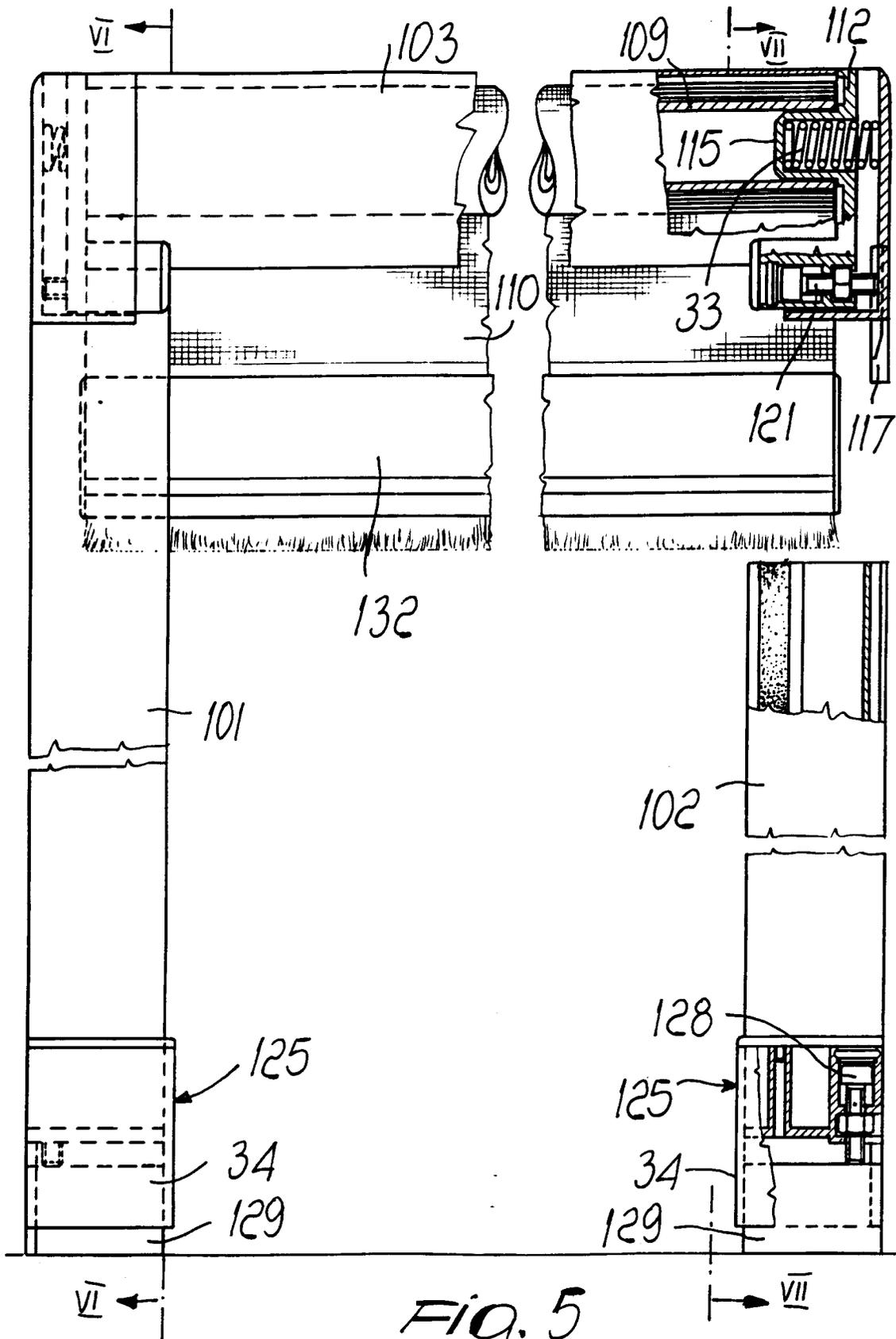


Fig. 5

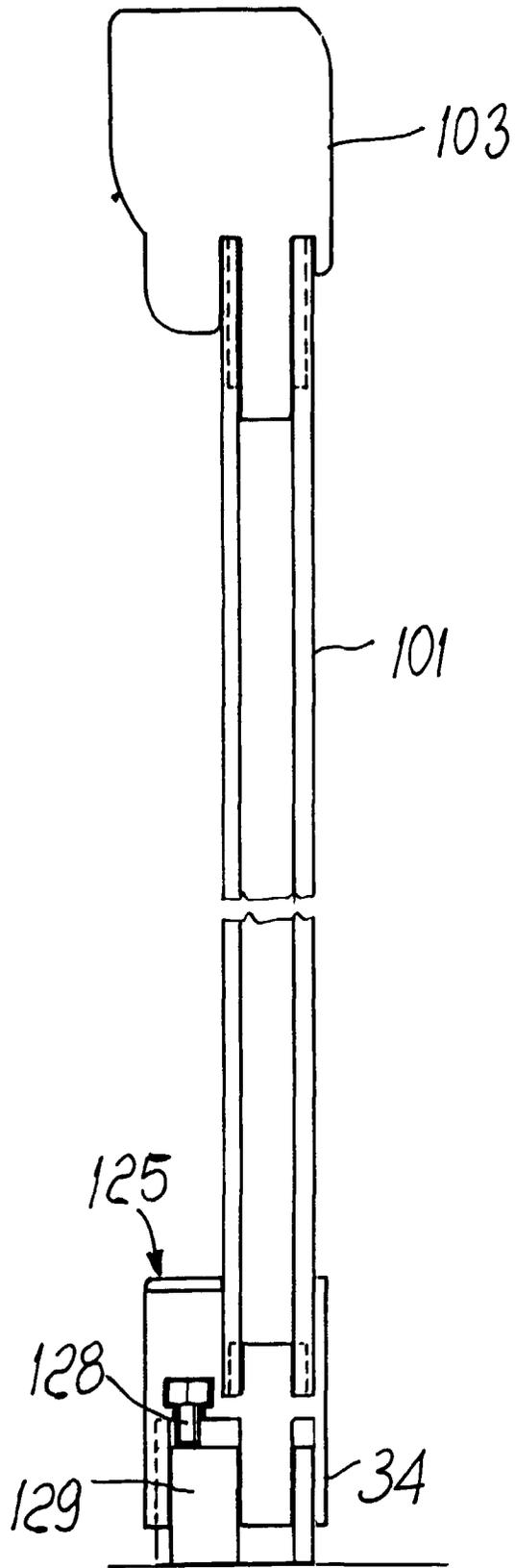


FIG. 6

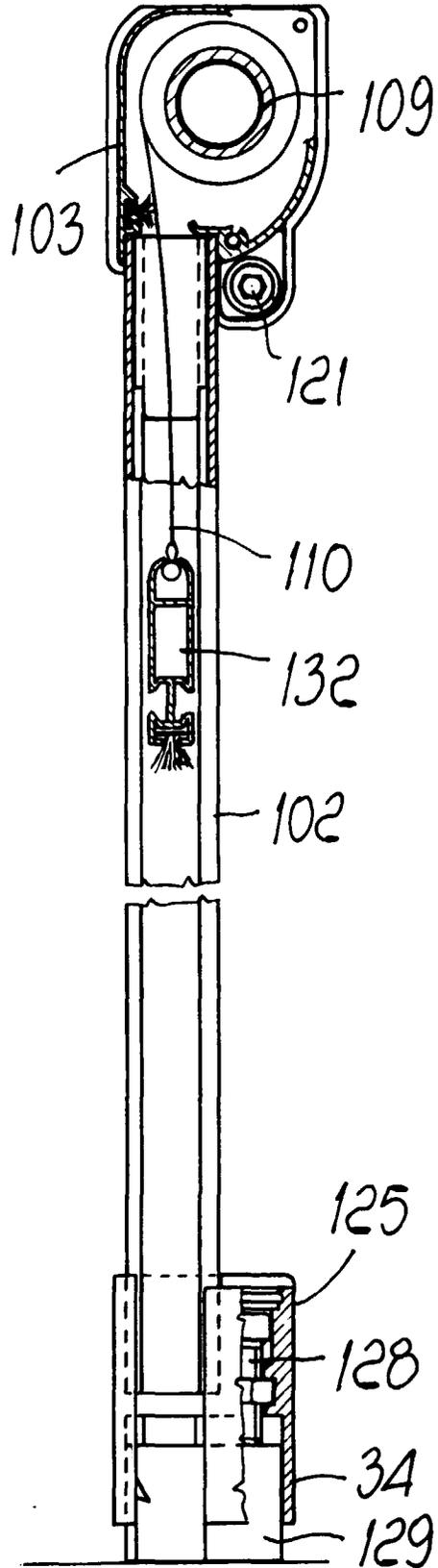


FIG. 7



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EUROPEAN SEARCH REPORT

Application Number
EP 98 10 6178

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	FR 2 449 193 A (MARITON YVES) 12 September 1980 * the whole document * ---	1	E06B9/54 E06B9/58 E06B9/17
A	US 4 848 432 A (CONNOLLY PETER F) 18 July 1989 * column 3, line 50 - column 5, line 48; figures 1-3 * ---	1	
A	US 1 779 262 A (SACERDOTE) 21 October 1930 * the whole document * ---	1	
A	US 2 072 726 A (YARTYAN) 2 March 1937 * the whole document * ---	1	
A	US 1 796 760 A (NORQUIST & NORQUIST) 17 March 1931 * the whole document * ---	1	
A	US 2 444 288 A (GILSON) 29 June 1948 * the whole document * -----	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6) E06B
Place of search THE HAGUE		Date of completion of the search 22 July 1998	Examiner Fordham, A
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