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(12) # EUROPEAN PATENT APPLICATION

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(71) Applicant: **HUNTER DOUGLAS INDUSTRIES B.V.**
Piekstraat 2
NL-3071 EL Rotterdam(NL)

(72) Inventor: **Oskam, Herman**
Vlisterdijk 14
Bergambacht(NL)

(72) Inventor: **Hennequin, Petrus Johannes**
Oldenoord 52
Rotterdam(NL)

(74) Representative: **Allen, William Guy Fairfax et al,**
J.A. KEMP & CO. 14 South Square Gray's Inn
London WC1R 5EU(GB)

(54) **Venetian blind.**

(57) A venetian blind comprising a headrail (10), a lift and tilt mechanism (12), a non-tilting bottom rail (16), a plurality of parallel tiltable slats (18) mounted on ladder means (14) extending between said tilt mechanism (12) and said bottom rail (16), lift means (22) being connected to the lift mechanism (12) by connecting element (20) mounted on said bottom rail (16) and connected to the lift means (22). The connecting element (20) includes a body portion (38) mounted on said bottom rail (16), a winding pin (48) rotatable on said body portion (38) and upon which said flexible lift means (22) can be wound, a latching mechanism (44 to 57) associated with said winding pin (48) to restrain in the plurality of rotational discrete winding positions and means (60) enabling the latching mechanism (44 to 57) to be temporarily deactivated to allow the winding pin (48) to be directly and individually rotated from the exterior of the bottom rail (16). The bottom rail (16) has a continuous uninterrupted cross-section forming a continuous longitudinal space (31) into which the body portion (38) of the connecting means (20) can be inserted and retained at any location along the length of the bottom rail (16).

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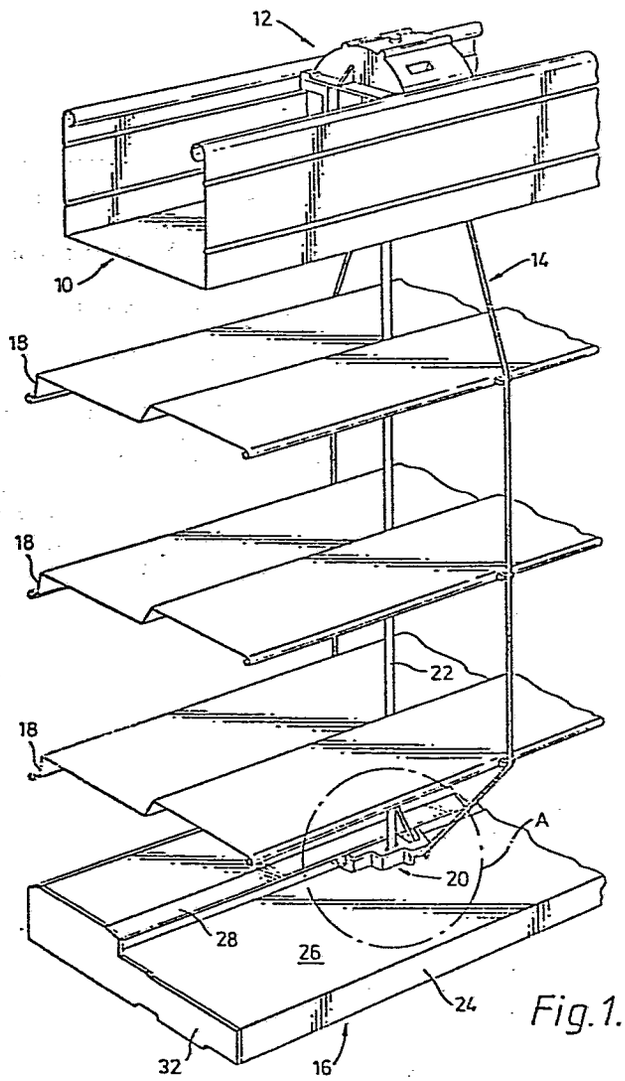

Fig.1.

DESCRIPTION

The present invention relates to a venetian blind.

One particular type of venetian blind includes a lift mechanism and a tilt mechanism, a non-tilting bottom rail, slat supporting means extending between the tilt mechanism and the bottom rail, a plurality of parallel tiltable slats mounted on the supporting means, flexible lift means, such as a lift, tape or cord, connected to said lift mechanism and a connecting element mounted on said bottom rail and connected to the lift means.

The connecting element is conventionally in the form of a clip which is inserted into a specially punched opening in the bottom rail at the correct location. Having passed the flexible lift tape or cord into this connecting means, one then has to adjust the lift tape or cord of each of the lift means, so that the bottom rail is at the correct height and also extends horizontally. Also one has to provide the openings in the bottom rail at the particular desired positions and this can often be inconvenient.

It is now proposed, according to one aspect of the present invention, for the bottom rail to be of a constant continuous, uninterrupted cross-section along its full length, for the cross-section to provide a longitudinally continuous space and a body portion of the connecting means to be provided with at least a part cooperatingly engaged in said space to enable the body portion to be secured to the bottom rail at any location along the length of the bottom rail.

One can therefore use the constant cross-section bottom rail which advantageously is an extrusion, by itself to retain the body portion of the connecting means. The element can simply be slid in from one end of the bottom rail but is preferably pushed in to the space at the desired location and the sizes, shapes and general resilience of the body portion and/or the bottom rail can be arranged adequately to retain the connecting element at that

longitudinal position, by providing an suitable frictional clamping force.

In one preferred construction, the bottom rail cross-section includes a main upper surface, an overhanging part cantilevered from the bottom rail to overlie and be spaced above some of the main upper surface, a downwardly extending rim at the free end of the overlying part, thereby to form said space, the body portion including a crest engageable by said rim to hold said body portion with part thereof in said space.

Advantageously, the connecting element and the bottom rail cooperate to enable said connecting element to be snap fitted into said space in the bottom rail. Preferably the body portion has a part which, in the mounted position, projects beyond the overhanging part, and this projecting part includes a guide for guiding or holding the lower part of the slat supporting means.

According to a further aspect of the present invention, the connecting element includes a body portion mounted in said bottom rail, a winding pin rotatable on said body portion upon which said flexible lifting means can be wound, a latching mechanism associated with said winding pin to restrain it in a plurality of rotationally discrete winding positions and means enabling the latching mechanism to be deactivated, temporarily to allow the winding pin to be directly and individually rotated from the exterior of the bottom rail and subsequently to be locked against rotation.

With such a construction, it is relatively simple, after the connecting element has been positioned on the bottom rail, for the winding pin to be directly and individually rotated thereby enabling an easy adjustment of the height of the bottom rail while maintaining it horizontal.

The rotation of the winding pin can be greatly facilitated if the axis of rotation of the winding pin is at an angle to the longitudinal axis of the bottom rail,

thereby enabling one more readily to apply a tool, such as a screwdriver, to the winding pin, to temporarily deactivate the latching mechanism and allow rotation of the winding pin.

The actual latching mechanism may take many forms. In one construction, the body portion includes a bore in which a portion, for example a head portion, of the winding pin is rotatable, a plurality of circumferentially spaced axially extending radially inwardly projecting ribs being formed on said bore and the portion of the winding pin in the bore may include a plurality of circumferentially spaced axially extending detents engageable in the spaces between the ribs.

The body portion advantageously also includes a guide for guiding the lower part of the ladder means of a blind.

In order that the invention may more readily be understood, the following description is given, merely by way of example, reference being made to the accompanying drawings, in which:-

Figure 1 is a schematic perspective view of one end of one embodiment of venetian blind according to the invention;

Figure 2 is an enlarged perspective view of a portion included in the circle A of Figure 1; and

Figure 3 is an enlarged end elevation of the bottom rail of Figure 1 with the end cap removed and the connecting element in place.

Referring first to Figure 1, the venetian blind illustrated therein comprises a conventional channel section headrail 10 including a lift mechanism and a tilt mechanism indicated as one item 12 in the drawings, although it could be provided separately. The tilt mechanism supports conventional slat supporting means 14 upon which are mounted a stack of slats 18, only three of which have been shown for simplicity.

The bottom rail 16 is provided with two or more (only one shown) connecting elements 20 to which is secured a

flexible lift means in the form of tape 22. The bottom rail itself is in the form of a constant, continuous, uninterrupted cross-section extrusion 24 having a main generally flat upper surface 26. An over-hanging part 28 is cantilevered out from the bottom rail and is provided at its free end with a longitudinal rim 30, thereby to define thereunder a groove forming a longitudinally continuous space 31.

The connecting element 20 includes a body portion 58, (Figure 2) having an upper surface 40 provided adjacent each end, with a ramp-like crest 42. By this means the body portion can be pushed under the overhanging part 28 into the groove or space 31 and the crests 42 can engage under the rim 30. The resilience of the body portion 38 and/or of the overhanging portion 28 and the shape and size of these parts are chosen to provide a sufficient clamping force, frictionally to hold the connecting element in place. It will be capable of some longitudinal movement although this will be quite difficult if the tolerances are chosen properly.

Formed in the body portion 38 is a bore 44 provided with fixed circumferentially spaced, axially extending, radially inwardly projecting ribs 46. A winding pin 48 can be engaged in a bearing recess 50, a head portion 52 of the winding pin having six circumferentially spaced axially extending detents 54 positioned to engage in the spaces between the ribs 46.

The winding pin 48 is provided with a longitudinal slit 56 through which the lift tape 22 can be passed and the lift tape can then be wound, as shown, onto the winding pin. A resilient tongue 57 on the body portion 38 abuts the end of the winding pin 48 remote from the head 52 and forces the head into the bore 44 so that the detents 54 are engaged in the spaces between the ribs 46. The detents and ribs thus act as a latching mechanism to prevent the winding pin 48 from rotating. The lift means 22 is passed down through an

opening 58 in the body 38 before being wound onto the pin 48. The tension in the lift means tends to pull the winding pin into the bearing recess away from the upper open face thereof. The head of the winding pin is provided with a screwdriver slot 60 which can be engaged by a screwdriver 61 so that the pin can be rotated to loosen or tighten the lift means 22. This is made possible by pushing axially with the screwdriver to flex back the tongue 57 and thereby deactivate the latching mechanism, i.e. by disengaging the detents 54 from the ribs 46.

It will be seen that the body portion 38 also includes a guide surface 62 through which the lower part of the ladder means 14 can pass.

C L A I M S

1. A venetian blind comprising lift mechanism, a tilt mechanism (12), a non-tilting bottom rail (16), slat supporting means (14) extending between said mechanism (12) and said bottom rail (16), a plurality of parallel tiltable slats (18), supported by said supporting means, flexible lift means (22) connected to said lift mechanism (12) and a connecting element (20) mounted on said bottom rail (16) and connected to said lift means, characterised in that the bottom rail (16) is of a constant, continuous, uninterrupted cross-section along its full length, in that the cross-section provides a longitudinally continuous space (31) and a body portion (38) of the connecting means (20) is provided with at least a part (42) cooperatingly engaged in said space to enable the body portion (38) to be held on the bottom rail at any location along the length of the bottom rail.

2. A venetian blind according to claim 1, characterised in that the sizes, shapes and materials of the connecting element and the cross-section of the bottom rail are chosen so that their interengagement causes resilient deformation of said connecting element and/or of said cross-section, to an extent to create a clamping force frictionally holding said connecting means in position lengthwise of said bottom rail.

3. A venetian blind according to claim 1 or 2, characterised in that the cross-section (24) of the bottom rail (16) includes a main upper surface (26), an overhanging part (28) cantilevered from said bottom rail to overlie and be spaced above some of said main upper surface (26) and a downwardly extending rim (30) at the free end of the overhanging part, thereby to form said space (31) and in that said body portion (38) includes a crest (42) engageable

behind said rib to hold said body portion with part thereof in said space (31).

4. A venetian blind according to claim 3, characterised in that the connecting element and the bottom rail cooperate to enable said connecting element to be snap fitted into said space in the bottom rail.

5. A venetian blind according to claim 3 or 4, characterised in that the body portion (38) has a part which, in the mounted position, projects beyond the overhanging part (28), and in that this projecting part includes a guide (62) for guiding or holding the lower part of the slat supporting means (14).

6. A venetian blind according to any preceding claim, characterised in that said connecting element (20) includes a body portion (38) mounted on said bottom rail (16), a winding pin (48) rotatable in said body portion and upon which said flexible lift means (22) can be wound, a latching mechanism (44 to 57) associated with said winding pin (48) to restrain it in a plurality of rotationally discrete winding positions, means (60) enabling the latching mechanism to be de-activated temporarily to allow the winding pin to be directly and individually rotated from the exterior of the bottom rail (16), and subsequently to be locked against rotation, and in that the axis of rotation of the winding pin (48) in itself or in its projection in the horizontal plane through the longitudinal axis of the bottom rail (16) is at an angle to the longitudinal axis of the bottom rail (16), to facilitate temporary deactivation of said latching mechanism and allow rotation of the winding pin (48).

7. A venetian blind comprising a lift mechanism, a tilt mechanism (12), a non-tilting bottom rail (16), slat

supporting means (14) extending between said tilt mechanism (12) and said bottom rail (16), a plurality of parallel tiltable slats (18), mounted on said supporting means, flexible lift means (22) connected to said lift mechanism (12) and a connecting element (20) mounted on said bottom rail (16) and connected to said lift means, characterised in that said connecting element (20) includes a body portion (38) mounted on said bottom rail (16), a winding pin (48) rotatable in said body portion and upon which said flexible lift means (22) can be wound, a latching mechanism (44 to 57) associated with said winding pin (48) to restrain it in a plurality of rotationally discrete winding positions and means (60) enabling the latching mechanism to be de-activated temporarily to allow the winding pin to be directly and individually rotated from the exterior of the bottom rail (16) and subsequently to be locked against rotation.

8. A venetian blind according to claim 7, characterised in that the axis of rotation of the winding pin (48) in itself or in its projection in the horizontal plane through the longitudinal axis of the bottom rail (16) is at an angle to the longitudinal axis of the bottom rail (16), to facilitate temporary deactivation of said latching mechanism and allow rotation of the winding pin (48).

9. A venetian blind according to claim 6 or 7, characterised in that the connecting element body portion (38) includes a bore (44) in alignment with said winding pin and in which an end portion (52) of said winding pin (48) is received, in that a plurality of circumferentially spaced, axially extending, radially inwardly projecting ribs (46) are formed on said bore, and in that an end portion (52) of said winding pin (48) includes a plurality of circumferentially spaced axially extending detents (54), that can enter the spaces between said ribs (46), to form

therewith a latching mechanism, in that said detents and ribs are held in engagement by resilient means (57), e.g. a resilient tongue on the body portion of the connecting element acting on the other end of the winding pin (48), the detents and ribs being temporarily disengaged to deactivate the latching mechanism, by manually urging the winding pin (48) against the action of said resilient means (27) to enable the winding pin to be rotated in either rotational sense to wind or unwind the lift means.

10. A venetian blind according to claim 7, 8 or 9, characterised in that said body portion (38) is provided with a recess (50) open to one side, to hold said winding pin (48) and with guide means (58) for guiding the flexible lift means, and positioned to cause the lift means, when lead over said guide means, to exert a force on the winding pin (48) directed away from the open side of said recess (50).

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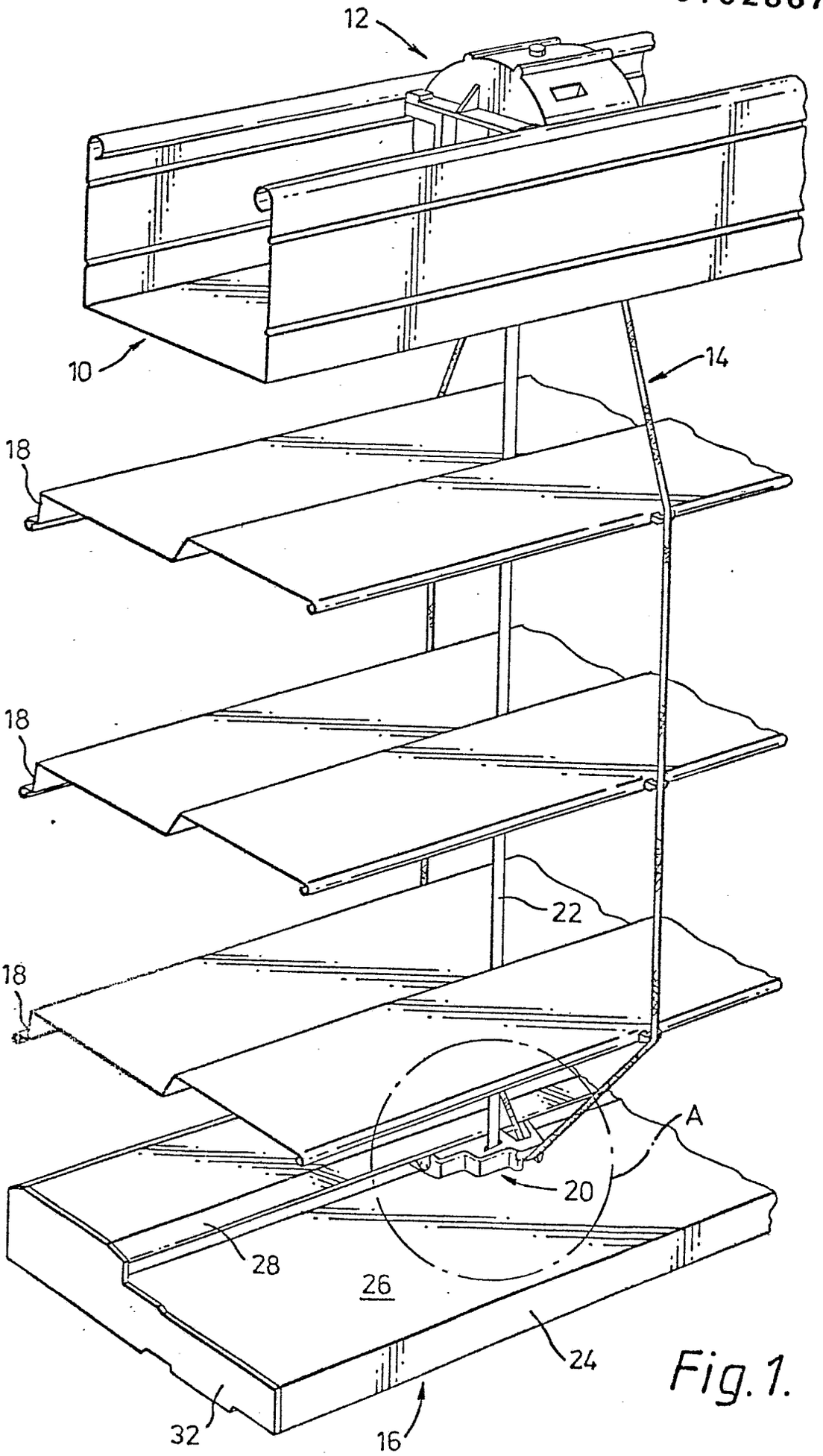
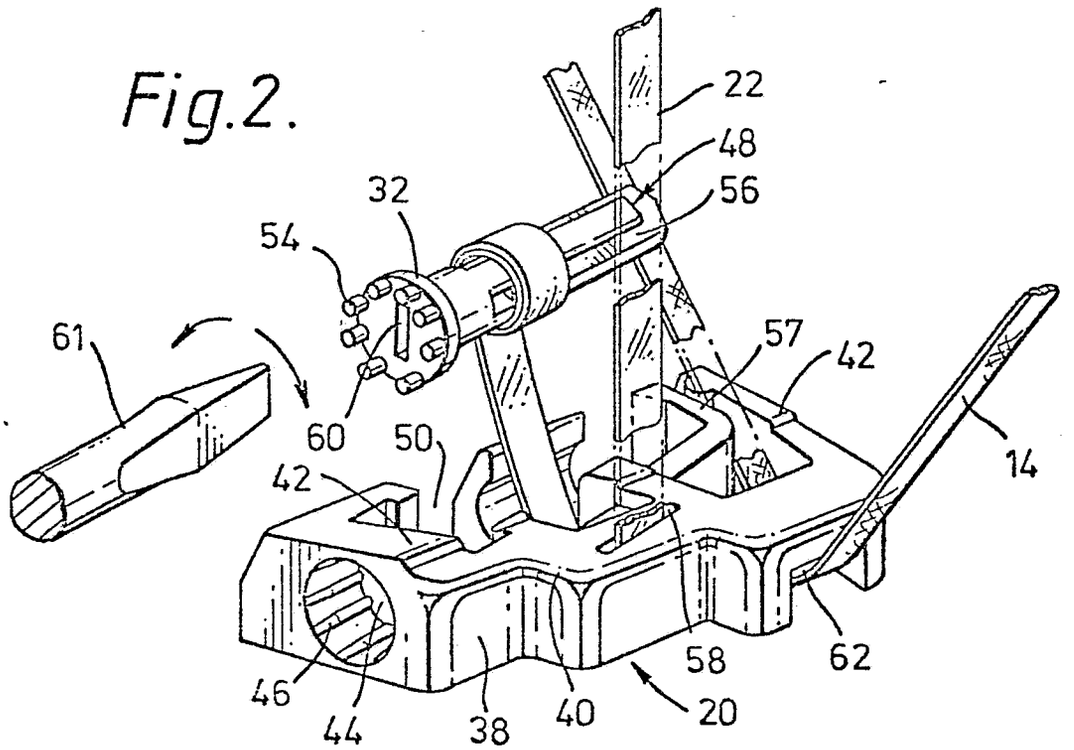


Fig. 1.

Fig.2.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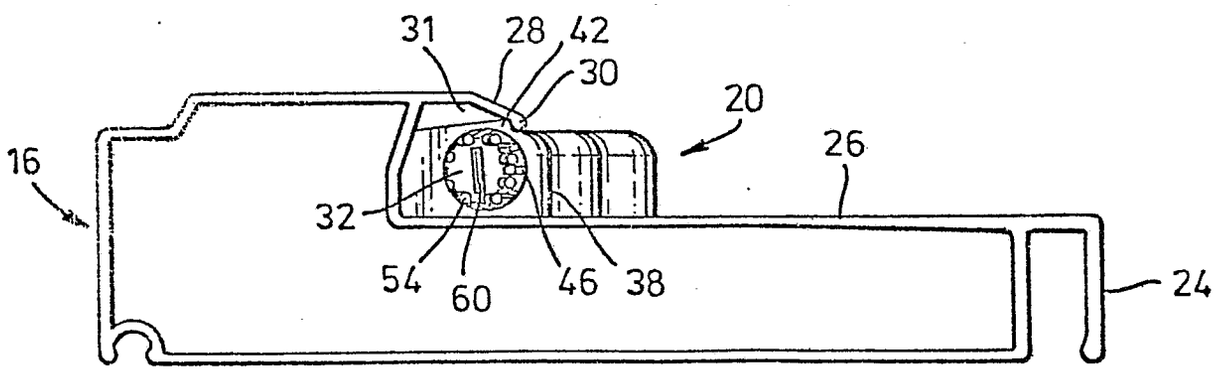
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Fig.3.

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EUROPEAN SEARCH REPORT

0192867
Application number

EP 85 30 1346

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 4)
A	GB-A-2 120 716 (LEVOLOR LORENTZEN INC.) * complete document * -----	1,7	E 06 B 9/32

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

E 06 B 9/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	18-10-1985	KRABEL A.W.G.

CATEGORY OF CITED DOCUMENTS

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