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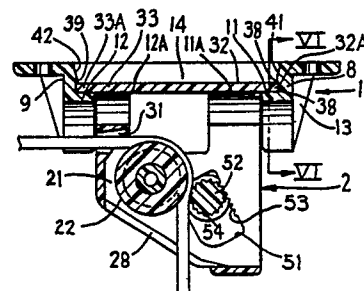
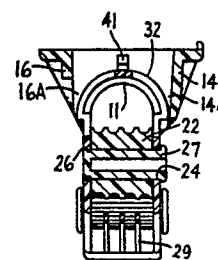
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⑫④ Designated Contracting States: **DE FR GB IT SE**

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⑫④ **Cord guide and support therefor.**

⑫⑦ Cord guide, such as a pulley (22), and support (2) therefore, for use with a liftable shade or blind, such as a Roman shade or a venetian blind. A pivotally suspended cord guide support (2) for use with a liftable shade suspends the cord guide (22) in a pivotal manner, so that the pull cords may be held for operation at a substantial angle with respect to the wall without diminishing their effectiveness in operating the shade. The cord guide (22) is supported within a clevislike structure (2) which has a specially constructed head end (32, 33) adapted for pivotal support (11, 32 and 12, 33) on and by a ceiling or wall attachable bracket (1). Thus, the support (2) and the cord guide (22) thereby, while normally hanging parallel with the wall, can be angled away from it to permit greater ease in pulling of the shade cords, but without diminishing the accuracy or effectiveness of the cords in the operating of the shade.



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CORD GUIDE AND SUPPORT THEREFOR

The invention relates to a support for a cord guide, such as a pulley, which may be used for the cords of a liftable shade, as a Roman shade or a venetian blind.

Liftable shades and the cord guide means, usually pulleys,
5 used therewith have been known for a long time and during all of this period there has necessarily been some means present for supporting such pulleys in a predetermined position with respect to the shade. This has usually been a fixed position with respect to the shade and a position wherein the plane of the pulley was
10 parallel to the plane of the window with which the shade was used. Since the normal method of handling the shade cords would involve maintaining them at least substantially in the plane of a given shade pulley, this would mean maintaining such cords at least substantially in a plane parallel to such window. A careful
15 operation of the shade would have no difficulty in so doing but a careless operator of the shade cords might well stand at some distance from the window, or the wall adjacent the window, and would particularly do so if there were furniture adjacent the wall. In so doing, he would angle the cords at what sometimes
20 became a substantial angle with respect to such wall. This often caused a cord feeding toward a pulley to fail to track with respect to such pulley and either go off the pulley entirely or at least jam between the edge of the pulley and the pulley support. This has in the past been met by providing various types of guiding
25 devices in association with the pulley in order that the cord would be fed onto the pulley in proper alignment therewith regardless of the angle at which the majority of the cords were held with respect to the adjacent wall, i.e., with respect to the plane of the pulley. This has worked with a reasonable degree of
30 satisfaction insofar as preventing the shade cord from escaping from the pulley but such guides normally generate a substantial amount of friction and thereby make more difficult the operation of the shade. While it is recognized that this is of no great consequence with small or short shades, in the case of large shades
35 where there is already a substantial load present, the addition of

such further frictional load is highly undesirable.

5 This problem has long been recognized but insofar as we are aware, there has been only one previous attempt made to deal differently with it. This attempt involved hanging the pulleys from a horizontal pin, in somewhat of a loop and pintle arrangement, to permit the pulley to pivot around a horizontal axis parallel with the longitudinal extent of the shade. This permitted the pulley to angle away from the wall to follow the shade cords if same were so angled in somewhat the same manner as the blocks (pulleys) often used in various positions, as on the deck, of a sailboat. This has provided a substantially improved operation but because of the use of metal components and the permanence resulting from metal fabrication, it presents certain problems in manufacturing and inventorying.

15 The present invention is defined in the appended claim 1, to which reference should now be made.

The invention will be described in more detail, by way of example, with reference to the drawings, in which:

20 Figure 1 is a side elevational view of a pulley support embodying the invention and showing same in a position for suspension from a downwardly facing surface, such as a ceiling.

Figure 2 is an end elevational view taken from the rightward end of Figure 1 showing also a ceiling and the relationship therewith of said pulley support.

25 Figure 3 is a top plan view of the pulley support of Figure 1.

Figure 4 is a sectional view taken on the line IV-IV of Figure 1.

30 Figure 5 is a sectional view taken on the line V-V of Figure 2.

Figure 6 is a sectional view taken on the line VI-VI of Figure 5.

35 Figure 7 is a side elevational view of a pulley support assembly utilizing the same hanger member as shown in Figure 1 but a different pulley support member.

Figure 8 is a sectional view taken on the line VIII-VIII of Figure 7.

Figure 9 is a sectional view taken on the line IX-IX of Figure 8.

Figure 10 is an end view of the pulley support similar to Figure 2 but showing the pulley support in a position of
5 operation appropriate to mounting same on a vertical wall.

Figure 11 is a side elevational view of a different embodiment of said pulley support.

Figure 12 is an end view of the pulley support of Figure 11 showing same in relationship with supporting means having a
10 downwardly facing surface and showing in broken lines the capacity of the pulley housing thereof for swinging with respect to the hanger section thereof.

Figure 13 is a top plan view of the pulley support shown in Figure 11.

Figure 14 is a section shown on the line XIV-XIV of Figure 2 but eliminating therefrom the supporting structure.

Figure 15 is a section taken on the line XV-XV of Figure 11 and showing same mounted upon a vertical supporting surface such as a wall.

Figure 16 is a side elevational, partially broken, view of a still further modified structure.

Figure 17 is an end elevational view of the structure of Figure 16 showing in broken lines therein the capacity of the pulley housing for swinging with respect to the hanger section.

Referring now to the drawings in more detail, there is shown in Figures 1-5 a support assembly for a cord guide, shown as a pulley, the assembly comprising a hanger section 1 and a pulley housing 2. The hanger section 1 is arranged for fixing rigidly, such as by screws, to support means, such as the ceiling 5
25 adjacent the upper end of a liftable shade, and the pulley housing is pivotally connected thereto for swinging motion as indicated by the arrows A and B in Figure 2.

First examining the hanger section in more detail, there is a body or plate member 3 having a central opening 4 therein for
35 purposes appearing hereinafter. Openings 6 are provided as desired for the entry of screws to fix the pulley hanger to a supporting surface, such as a ceiling. Short projections 7 are provided if

desired for firmly holding the hanger rigidly with respect to the supporting surface and preventing its twisting, especially during installation.

Depending from the plate member 3 are trunnion hangers 8 and 9 which carry on their mutually facing surfaces trunnions 11 and 12, these defining upwardly facing, convex, trunnion surfaces, as seen in Fig 4. These are of semicircular cross section and are fixed with respect to, e.g. molded integrally with, the trunnion hangers 8 and 9.

Reinforcing members 13 are provided at both ends of the hanger member as described and provide reinforcing between the plate member 3 and the trunnion hangers 8 and 9. Trunnion guards 14 and 16 extend downwardly from the plate 3, extend between the trunnion hangers 8 and 9 and are spaced at their lowermost extremities sufficient distances 14A and 16A from the trunnions 11 and 12 to provide for the passage there-between of the pulley housing trunnions as hereinafter described. The trunnion guard 16 may be somewhat shortened as compared to the trunnion guard 14 as shown in Figure 4 for purposes appearing further hereinafter.

Now turning to the pulley housing 2, this comprises a generally U-shaped body portion or clevis 21 (Fig 2) with a pulley 22 rotatably supported therein in any conventional manner such as by the shaft 23 projecting through suitable openings 24 and 26 in the side walls of said clevis. One end of said shaft may be upset as indicated at 27 for holding the pulley firmly in position. An opening 28 is provided in the bottom of the clevis for the passage of the shade cord and cord guides 29 may be provided across said opening 28 if desired. (Said cord guides will not generate appreciable, if any, friction with respect to the shade cords in view of the pivoting of the pulley as hereinafter described in more detail.) Further openings 31 are provided in horizontal alignment with the upper edge of the pulley 22 for the passage of the cords in the region of the pulley outwardly of said pulley housing toward the shade structure.

At the upper side of said clevis 21 at each horizontal end thereof there are provided the pulley trunnions 32 and 33, both having, in this embodiment, downwardly facing concave

trunnion surfaces. Same are fixed with respect to, here molded integrally with, the adjacent portions of the clevis 21 and have portions thereof 32A and 33A extending beyond respectively corresponding ends of said clevis for overlapping, engaging with and being supported by, the support trunnions 11 and 12. The curvature of the respectively interengaging trunnions is, of course, substantially concentric to ensure smooth operation, although if desired the pulley support trunnions 32 and 33 may be designed on a radius slightly longer than that of the support trunnions to ensure against blinding therebetween.

The length of the pulley housing is such as to fit snugly between the mutually facing ends 11A and 12A of the support trunnions 11 and 12 and the distance between the respective outer surfaces 36 and 37 of the housing trunnions 32 and 33 is such as to permit said housing trunnions to fit snugly but slidably between the end surfaces 38 and 39 of the opening 4. Thus, the pulley housing can be inserted into operative position merely by passing it through the opening 4 between the trunnions 11 and 12 until the housing trunnions 32 and 33 engage in supporting relationship said hanger trunnions 11 and 12.

If desired, cam-shaped projections 41 and 42 may be provided to provide a snap-in relationship between the hanger 1 and pulley housing 2 for holding same together during the mounting procedure. If said cams 41 and 42 are sloped also on the lower side thereof as shown in the drawings, the parts may be taken apart by a reverse snapping motion to that above described for assembly.

Any desired locking mechanism may be provided for holding the shade cords in a fixed position. In the present embodiment the locking mechanism constitutes a sloped slot 51 with a knurled pin 52 positioned therein. Same will effect more positive operation if there are provided the teeth 53 along one side of said slot into which can fit the teeth 54 comprising the knurling of said pin.

In one use of this embodiment said hanger is supported, as shown in Figure 2, from a ceiling adjacent the upper end of

the shade with which same is used. Alternatively, however, with the trunnion guard 16 shortened as shown in the drawings, the clevis may be rotated 90° with respect to the plane of the plate 3 and said plate then fixed, as shown in Figure 10, to a vertical wall adjacent the window with which the shade is used. In either case, the cords are introduced through the openings between the guards 29 over the pulley 22 and behind the pin 22 as shown in Figure 5.

When the cord is pulled downwardly, the pin 52 will release same and when said cord is permitted to move back upwardly, particularly if it is angled slightly rightwardly as shown in Figure 5, it will engage said pin and cause same to lock the cord at the desired point against further upward movement. Likewise in either case, whether the plate 3 is positioned vertically or horizontally, the cords may be angled away from the wall adjacent the window with which the shade is being used and said clevis will pivot as needed away from the wall to maintain the plane of the pulley in alignment with the alignment of the cords. This will minimize any friction which would otherwise exist between the cords and the cord guides and still ensure that the cords remain in proper operative position on the pulley. In this connection it will be evident that the openings 31 should be arranged as closely as possible to the centre or centres around which said trunnions operate in order to ensure that pivoting of the clevis with respect to the hanger will not generate undesired friction between said cords and the walls defining said openings 31.

Figures 7-9 illustrate the same base 1 utilized with a different form of pulley housing, such as that used intermediate the ends of a Roman shade. In this embodiment there is provided a clevis structure 61 for holding a pulley, same being rotatably mounted therein in generally the same manner as above described in connection with said pulley 22. Extending above said clevis is a hemicylindrical portion 56 having extensions 57 extending from each respective end thereof to constitute trunnions. Said trunnions engage the trunnions 11 and 12 of the base 1 in the same manner as above described for the engagement

of the trunnions 32A and 33A with the base trunnions 11 and 12.

Trunnion guards 58 and 59 are provided similar to the trunnion guards 14 and 16 and in this case there is provided a cutout 61 if desired to enable the pulley housing to rotate sufficiently to assume a position such that the plane of its pulley is parallel with the plane of the plate 3. This enables this unit also to be wall mounted if desired as well as ceiling mounted in the same general manner as already illustrated with respect to the form of Figures 1-5.

This construction may also be snapped in and out of operative position in the same manner as above described for the form of Figures 1-5.

It will thus be understood that a single design of base 1 may be utilized with a variety of pulley housings as desired thus simplifying both manufacturing procedure and the inventorying thereof.

Referring now to the cord guide shown in Figures 11-15, it will be seen that in this instance the base structure has a pair of concave upwardly opening trunnion supports which carry a pair of trunnions which in turn support the pulley housing.

Referring to these figures in more detail, the hanger section 71 here comprises a pair of base plates 73 and 74 positioned perpendicularly with respect to each other and fixed rigidly with respect to each other as by being integrally molded as a single unit. Said base plates have means such as openings 76 and 77 associated therewith for reception of screws or other means for fixing same to a downwardly facing surface as shown in Figure 12 or to a vertical surface as shown in Figure 15. A plurality, here two, protuberances 78 are provided for guide structure against an edge as shown in Figure 12 or for reception into a slightly deformable sealing surface for rigidifying said hanger structure 71 with respect thereto.

Projecting from and between the base plates 73 and 74 are a pair of spaced trunnion supports 81 and 82, each having coaxial upwardly opening concave surfaces 83 and 84 (Figures 12 and 13). Said surfaces are curved on the same radius and are

hence in alignment with each other.

Suspended from said hangers 81 and 82 is the cord guide, here pulley, housing 72. Same comprises a generally boxlike structure 86 having sides 87 and 88 parallel with and spaced from each other. Said sides are connected and positioned rigidly with respect to each other by ends 91 and 92 which are rigidly fixed, as by being molded integrally with, said sides 87 and 88. Said box structure 86 also includes a pair of fixed, as integrally molded, trunnions 89 and 90 extending from each end thereof and presenting downwardly facing convex surfaces which rest on the upwardly facing concave surfaces of the respective hangers 81 and 82. Said convex trunnion surfaces are curved on a slightly smaller radius than that of the concave hanger surfaces 83 and 84, as best shown in Figure 12, in order to ensure easy pivoting with respect thereto and avoidance of binding.

Roller and lock structure is provided here generally similar to that of Figures 1-5. In this instance, a roller 93 is mounted on an axle 94 which is fixed rigidly between and with respect to said sides 87 and 88. Same may be so fixed in any convenient manner as by upsetting as indicated at 96 (Figure 15). As best shown in Figure 14 the upper surface of said roller is aligned with or slightly above the upper surface 97 of one of the trunnions in order that a cord C guided thereby may lead out therefrom to the structure it is controlling.

Lock structure is also provided for said cord C which is the same as that above described in connection with Figures 1-5. Since same is identical to the structure already described in connection with Figures 1-5, a further detailed description is unnecessary and it is sufficient only to identify the parts thereof, namely the slot 101 having teeth 102 along one side thereof, the cord engaging knurled roller 103 and a small pinion 104 (Figure 11) integral therewith for engaging the rack 102. Thus, rotation of the knurled roller 103 by contact with a moving cord C will cause said pinion 104 to walk along the rack teeth 102 and assure movement of said lock in a proper direction for fixing or releasing same as desired and as determined by the direction of movement of said cord C.

In the form here shown, the stiffener 106 is of such thickness that it is not possible (see Figure 15) for the pulley guide 172 to assume a position parallel with the base plate 73 and the design and use of the structure in question is such that such a positioning would seldom if ever be necessary. However, if even greater versatility is desired for this unit, said stiffener 106 may be made of slightly less thickness in the vertical direction as appearing in Figure 15 and with such modification the pulley guide 72 can assume a position parallel with that of the base plate 73.

In Figures 16 and 17 is shown a unit corresponding to that of Figures 7-9 and used, for example, intermediate the ends of a Roman shade. If desired, the hanger portion 111 thereof may be identical with the hanger 71 or as shown in the drawing and as will be more common in actual use, same may be slightly shorter to accommodate a pulley housing 112 which is somewhat shorter than the pulley housing 72.

The hanger 111 is, however, excepting for its length, identical with the hanger 71 and hence needs no detailed description. The numerals used thereon are the same as the numerals of the hanger 71 with the letter "A" associated therewith.

Turning now to the pulley housing 112, same comprises a generally rectangular box including a pair of spaced parallel sides 113 and 114 having fixed, as integrally molded, trunnions 116 and 117 at the upper end, same presenting a pair of downwardly facing convex trunnion surfaces for engagement with and support by the upwardly facing concave surfaces 83A and 84A of hangers 81A and 82A. A brace member 118 is provided across the bottom thereof. A pulley 119 is rotatably mounted between said side members 113 and 114 in any convenient manner, such as by a pin 94A which is identical with and upset in the same manner (Figures 14 and 15) as the pin 94.

Again, here, the stiffener 106A is of sufficient thickness that the pulley housing 112 is not able to quite assume a position parallel with the base plate 73A inasmuch as such positioning is seldom needed in the ordinary use of this pulley unit. However, if it is desired to have the greater versatility of such

positioning, then it is a simple matter to reduce the vertical
(as seen in Figure 16) dimension of the stiffener 106A and the
pulley housing 112 will then have no difficulty in assuming a
position parallel with the base plate 73A alternatively with its
5 position parallel with the base plate 74A.

In the drawings and description of them, it will be
noted that the cord guide has throughout been referred to as
usually a pulley, namely such as the pulleys 22, 65, 93, and 119.
However, it will be recognized that such use of a pulley within
10 the cord guide housing in each case is merely the preferable form
of cord guide for most instances. Such cord guide may instead
of a pulley be a rigid guide. Likewise the lock structure shown
in connection with Figures 1-5 and 11-15, while effective and capable
of good cooperation with the rest of the disclosed devices, is not
15 critical in any specific form as set forth in any of several
embodiments and same may be modified or omitted entirely excepting
as hereinafter otherwise specifically claimed.

Thus it is seen that the illustrated embodiment provides
a cord guide, such as a pulley, and a support therefor, for use
20 with a liftable shade or blind, as a Roman shade or a venetian
blind. A pivotally suspended cord guide support for use with a
liftable shade suspends the cord guide in a pivotal manner, so
that the pull cords may be held for operation at a substantial
angle with respect to the wall without diminishing their
25 effectiveness in operating the shade. The cord guide is supported
within a generally conventional clevislike structure which has
a specially constructed head end adapted for pivotal support on
and by a ceiling or wall attachable bracket. With such pivotal
support, the clevis and the cord guide carried thereby, while
30 normally hanging parallel with the wall, can be angled away
therefrom to permit greater ease in pulling of the shade cords but
without diminishing the accuracy or effectiveness of said cords
in the operating of the shade. A lock and guides for the shade
cords may also be provided if desired.

35 The cord guide support can be made entirely from plastics
material and can be manufactured as an independent unit or can be
incorporated into a shade as an integral part of it. The housing

and hanger sections have broadly mutually engageable load-bearing surfaces, rather than a pivot-and-pin relationship. Separate from this, the housing can snap-in to the hanger. A single hanger section design may be utilised for a plurality of cord guide support designs, leading to simplification in the inventorying of such components. The main parts can be assembled by a single motion.

CLAIMS

1. In a cord guide support for a liftable shade or blind, said cord guide support having a mounting surface and being articulated about a first axis parallel with said mounting surface, the combination comprising:
 - 5 hanger means having a housing receiving opening there-through and including means projecting into said opening from opposite sides thereof defining a pair of arcuate upwardly facing first surfaces;
 - cord guide housing means defining a cord guide surface
10 and having a first opening for introducing a cord to said cord guide surface and a second opening for leading a cord out of said housing means away from said cord guide surface, and means projecting from opposite ends of said cord guide housing means defining a pair of arcuate downwardly facing second surfaces,
15 said second surfaces having at least substantially the same radius of curvature as, and engageable with, said first surfaces;
 - said housing means being movable through said housing receiving opening whereby said second surfaces will engage and
20 be supported upon said first surfaces for pivotal movement of said housing means relative to said hanger means about said first axis.
2. A device according to claim 1, wherein said cord guide
25 means is a rotatable pulley.
3. A device according to claim 1 or 2, wherein said first surfaces are convex and said second surfaces are concave.
- 30 4. A device according to claim 1 or 2, wherein said first surfaces are concave and said second surfaces are convex.
5. A device according to any preceding claim, wherein said
35 hanger means includes means enabling it to be fastened directly to a supporting surface.

6. A device according to any preceding claim, wherein said housing receiving opening is rectangular and of greater length along the pivotal axis of said first surfaces than is its transverse dimension and wherein said second surfaces are provided by hemicylindrical members fixed to the housing means, said hemicylindrical members having lengths and diameters enabling them to fit closely but slidably into said housing receiving opening.
7. A device according to any preceding claim, wherein said second surfaces comprise a pair of hemicylindrical flanges projecting coaxially in opposite directions from opposite ends of said housing means.
8. A device according to any preceding claim, including also a cord-jamb mechanism incorporated into said housing means.
9. A device according to claim 8, wherein said jamb mechanism comprises a pair of slots in register with each other on opposite sides of said pulley hanger;
a pin extending through both of said slots;
teeth on the edges of said slots away from said pulley;
and
a knurled surfaces on said pin engageable with said teeth for positively effecting a jamming movement of said pin upon rotation thereof by a cord.
10. A device according to any preceding claim, including also at least one cam means positioned on one of said hanger means and said housing means for providing limited obstruction to the entry of said housing means into said housing receiving opening, and to its removal therefrom, whereby said housing means may be snapped into position and will tend to remain in such position until snapped past said obstruction for removal therefrom.
11. A device according to any preceding claim, including also at least one cam projecting into the housing receiving

opening of said base for providing a limited obstruction to the entry of said housing means into said central opening and its removal therefrom whereby said housing means may be snapped into position and will tend to remain in such position until snapped past said obstruction for removal therefrom.

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12. A device according to claim 10 wherein said cam means is on said housing means and effects interference with adjacent portions of said hanger means.

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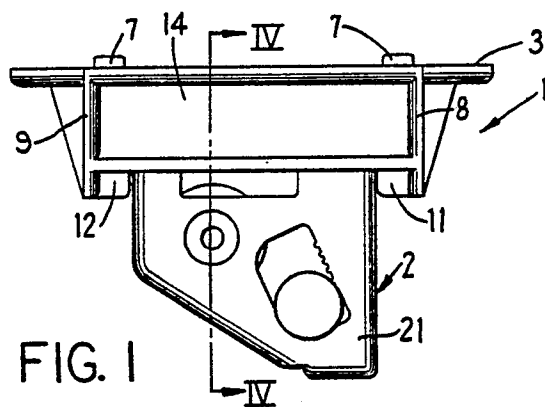


FIG. 1

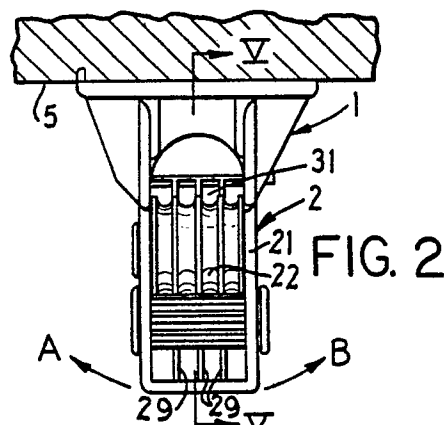


FIG. 2

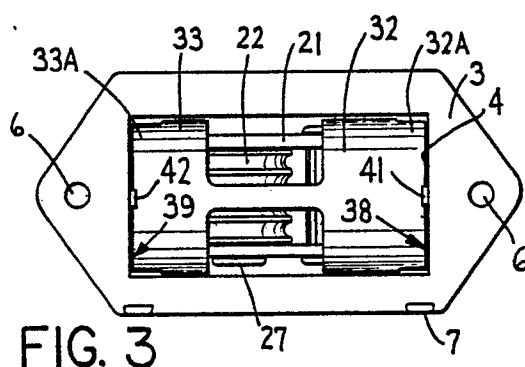


FIG. 3

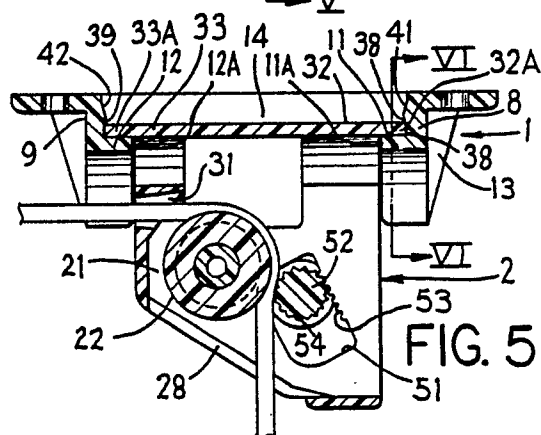


FIG. 4

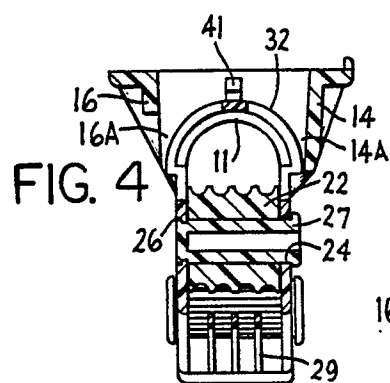


FIG. 5

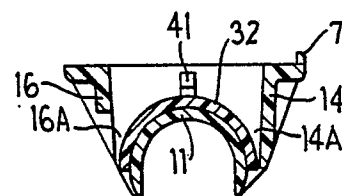


FIG. 6

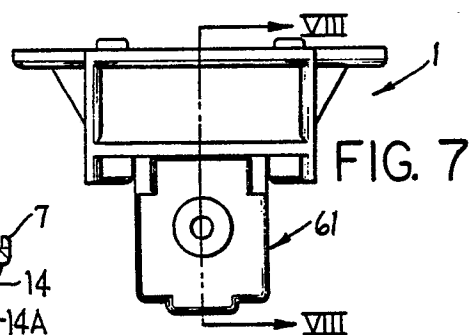


FIG. 7

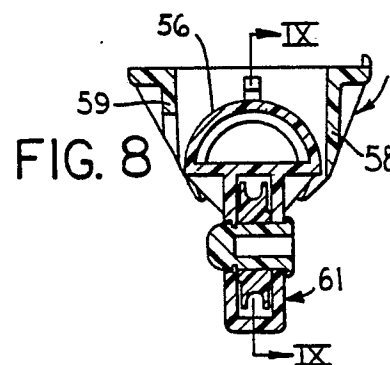


FIG. 8

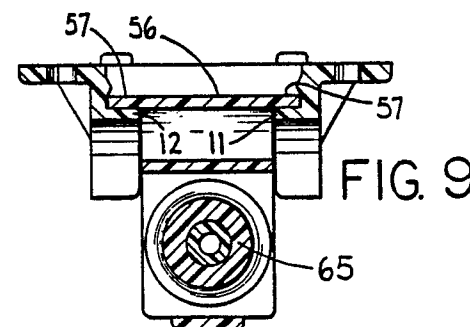


FIG. 9

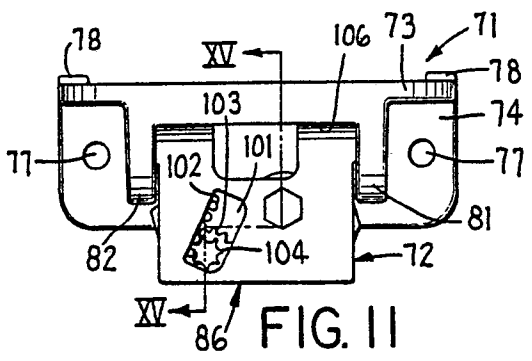


FIG. 11

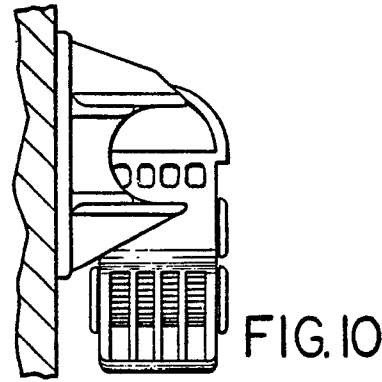


FIG. 10

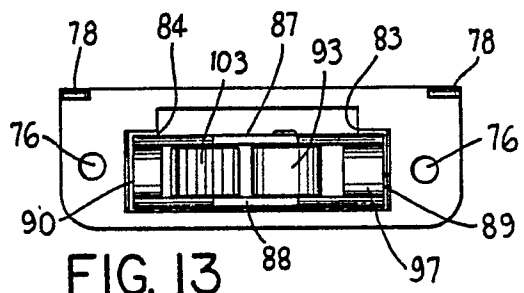


FIG. 13

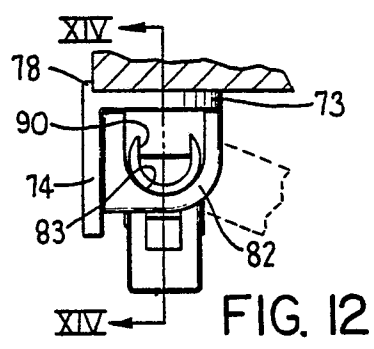


FIG. 12

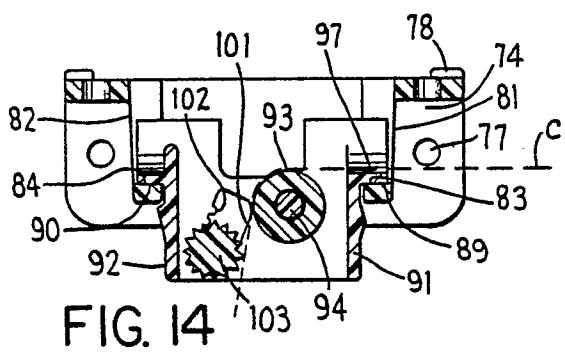


FIG. 14

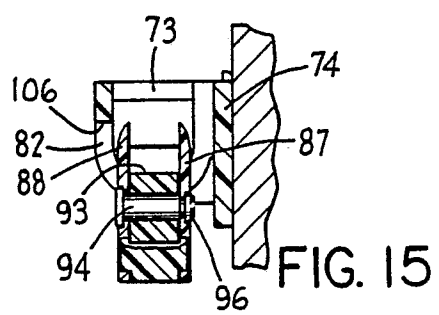


FIG. 15

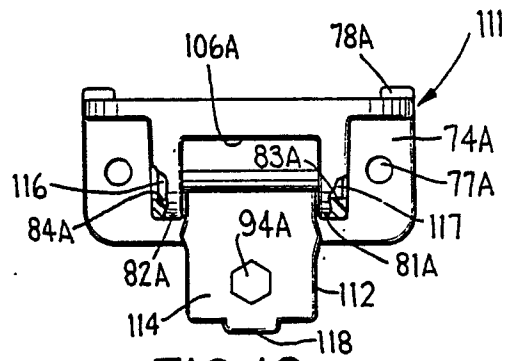


FIG. 16

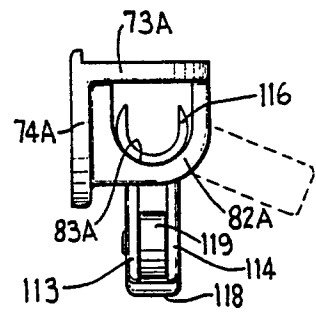


FIG. 17



European Patent
Office

EUROPEAN SEARCH REPORT

0010878
Application number

EP 79 302 117.1

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. CL)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	<u>US - A - 2 781 836</u> (J.C. BENNETT) * column 3, line 50 to column 4, line 12; fig. 2, 5, 6 * ---	1,2,4, 8	E 06 B 9/322 E 06 B 9/324
A	<u>US - A - 2 103 396</u> (W. WADE et al.) * page 1, left column, lines 23 to 30 * ---	1,2,3	
A	<u>US - A - 2 494 759</u> (C. HIRSCHY) * column 3, lines 8 to 14; fig. 4 to 6 * ---	8,9	TECHNICAL FIELDS SEARCHED (Int. CL)
A	<u>BE - A - 757 862</u> (PERSIANAS COLUMBIA) * page 10, lines 12 to 18; fig. 7 * -----	8	B 66 D 3/00 E 06 B 9/00
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			&: member of the same patent family, corresponding document
X	The present search report has been drawn up for all claims		
Place of search Berlin		Date of completion of the search 07-02-1980	Examiner WUNDERLICH