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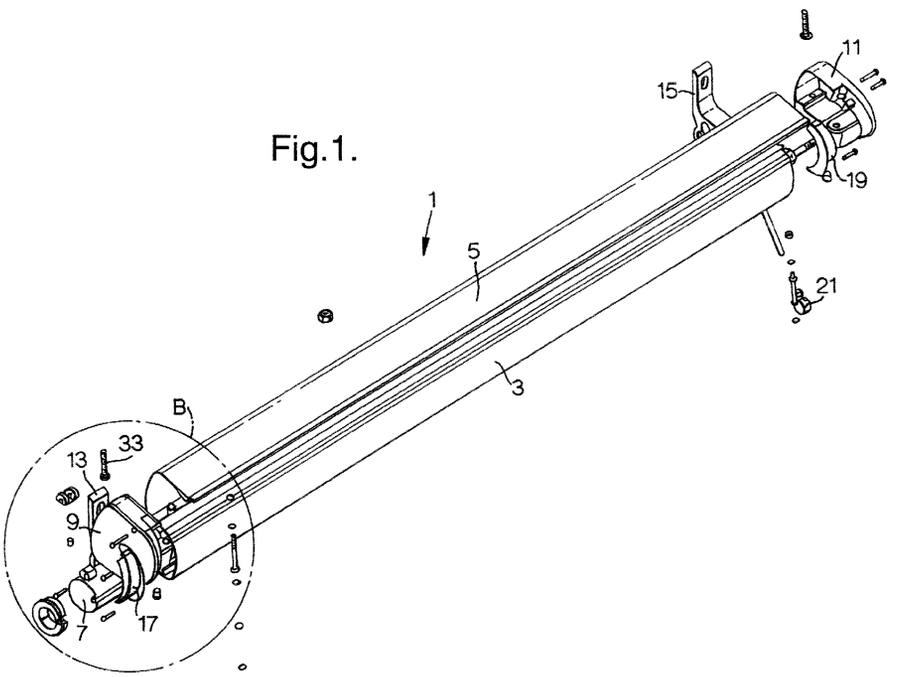
## (54) Mounting arrangement for an awning and awning including such an arrangement

(57) An awning including a head box having an elongated housing (5), first and second end members (9) on opposite confronting first and second longitudinal ends of the housing (5) and a roller (7) mounted for rotation in the housing between the first and second end members (9), so as to be rotatable about an axis coextending in parallel with the elongated housing and a pair of mounting brackets (13) for securing the head box to a building, each bracket (13) comprising a mounting section for attachment to a surface of the building and a holding section extending forwardly of the mounting section wherein, each of the first and second end members (9) is pivotally engageable with the holding section of a respective one of the pair of brackets about a pivot pin (57) parallel to the roller axis and by an adjustable engagement (33,35,37) between each end member and each mounting bracket to adjustably fix the angular position of the end housing and wherein the adjustable engagement (33,35,37) can be snap-fitted together.

Fig.1.

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## Description

**[0001]** The present invention relates to a mounting arrangement for an awning and more in particular to an awning including such an arrangement for mounting. The awning includes: a head box having an elongated housing, first and second end members on opposite confronting first and second longitudinal ends of the housing and a roller mounted for rotation in the housing between the first and second end members, so as to be rotatable about an axis coextending in parallel with the elongated housing; and a pair of mounting brackets for securing the head box to a building, the bracket comprising a mounting section for attachment to a surface of the building and a holding section extending forwardly of the mounting section; wherein, each of the first and second end members is pivotally engageable with the holding section of a respective one of the pair of brackets about a pivot pin parallel to the roller axis and by an adjustable engagement between each end member and each mounting bracket to adjustably fix the angular position of the end housing. Such an awning is described in applicant's Dutch patent NL 1007834.

**[0002]** The mounting of such awnings to the outside of a building structure often requires the assistance of several manual workers, before the attachment is save enough to be left alone. This is not always convinient and may give rise to higher manual labor costs.

**[0003]** Accordingly it is an object of the present invention to overcome or ameliorate at least one of the disadvantages of the prior art. It is also an object of the present invention to provide alternative structures which are less cumbersome in assembly and operation and which moreover can be made relatively inexpensively.

**[0004]** To this end the present invention provides an awning as described above, wherein the adjustable engagement can be snap-fitted together.

**[0005]** The invention will now be described in reference to particular embodiments as illustrated in the accompanying drawings in which:

Figure 1 shows an awning according to the invention in a partly exploded arrangement;
Figure 2 is a partial front elevation of the right hand end of the awning of Figure 1;
Figure 3 is a cross-sectional view according to line III - III in Figure 2;
Figure 4 is an enlarged detail view of the portion labeled "B" in Figure 1, showing the left hand end of the awning in an exploded arrangement;
Figure 5 is an end on ghost view of the left hand awning end of Figure 4;
Figure 6 is a perspective view of a mounting bracket as included in Figures 1-5;
Figures 7A-D show various views of a first embodiment of bolt retainer pivot for use with the invention;
Figure 8 shows a perspective partial view from below of the left hand end of the awning with the mounting bracket of Figure 6 removed for clarity;
Figures 9A-F show various views of a second embodiment of bolt retainer pivot for use with the invention; and
Figures 10A-D show various views of a third embodiment of bolt retainer pivot for use with the invention.

**[0006]** Figure 1 shows a pivoting arm awning of the type having an awning cloth windable on, and unwindable from, a roller and a movable end thereof supported by a header bar and articulated arms. The general arrangement of such awnings are amply described in applicant's European patent specifications EP 0125727 B1 and EP 0422720 B1 which are herewith incorporated by reference. The present description will henceforth concentrate on the constructional distinctions of the present invention and avoid duplication of the skilled person's general knowledge.

**[0007]** In Figure 1 the awning 1, which is shown in a partly exploded arrangement, is in its retracted position with a header bar 3 in close proximity to a awning roller housing 5. The housing 5 accommodated an awning roller 7 which is journalled between a left hand end member 9 and a right hand end member 11. On assembly the end members 9 and 11 are spaced by and attached to the housing 5. Each of the left and right hand end members 9, 11 attaches to a confronting left and right hand mounting bracket 13, respectively 15, which mounting brackets are adapted to be secured to a building surface (not shown, but conventional). The header bar 3 on each of its ends is provided with a left hand and a right hand end cap 17, 19 respectively.

**[0008]** Figure 2 is a partial front elevation the right hand end of the awning of Figure 1 in an assembled arrangement. It also shows in somewhat more detail a coupling 21 for a driving crank to operate the awning in a manner conventional for this type of product. Again in a conventional manner known to the skilled person, the crank drive can be replaced by an electric motor drive incorporated in roller tube 7.

**[0009]** Figure 3 shows a transverse cross-section according to line III - III of Figure 2 and shows the position of roller 7 in end member 11 when mounted. Header bar 3 is shown to engage the housing 5 in the retracted position of the awning. Integrally formed on end member 11 is a hinge bearing 23 for pivotally mounting an inner end of a folding arm (not shown, but conventional). The left hand end member 9 is substantially the mirror image of end member 11 shown in Figure 3. A drive means, such as crank drive 21 can optionally also be mounted on the left hand end member if desired. Usually one drive means on one end is sufficient, but conceivably one end could be provided with a manual drive and another end could be provided with an electric drive means.

**[0010]** Figure 4 shows a detail of Figure 1, detail "B", on an enlarged scale. Upper and lower journal bushes

25, 27 will be engaged in the hinge bearing 23 after which pivot bolt 29 and nut 31 will mount the rear end of an awning arm (not shown, but conventional). Bolt 33 is an adjusting bolt, which has a head 35 engageable in a bolt retainer pivot 37 and upon engagement therein can be locked in position by a grub screw 39. The bolt retainer pivot 37 will first be pivotally engaged in mounting bracket 13 as will be described in more detail hereinbelow. End member 9 affixes to the housing 5 by means of screws 41 and 43, which engage in appropriate openings, such as 45, in the end member 9. End cap 17 is attached to front bar 3 by means of screw 47 engaging in opening 49 of end cap 17 and further by means of screw 51 engaging front bar guiding nose 53 and mounting same together with an upper end of end cap 17 to header beam 3. The header bar 3 is conveniently made as a metal extrusion, which on its inside has suitable formation in which screws 47 and 51 can engage. The roller tube 7 engages on a collar 55 which can be journalled on the inside of end member 9 in a conventional manner (not shown).

**[0011]** Figure 5 is a ghost view, end on, of the components of Figure 4 in their assembled arrangement. In comparing Figures 3 and 5 it can be seen that the entire awning box structure, comprised of housing 5, roller 7, end members 9 and 11 is angularly adjustable with respect to mounting brackets 13 or 15 respectively.

This angular adjustment is obtained by a pivot bolt 57 which pivotally engages a forward leg 59 of bracket 13, respectively 15 and by adjusting bolt 33 to be screwed into end member 9, or 11 respectively, to a further or lesser extent as will be apparent from a comparison of Figures 3 and 5.

**[0012]** The mounting bracket 13, or 15 respectively, as shown in Figure 6 has a wall mount section 61 and forward leg 59. The wall mount section includes openings 63 and 65 for the engagement of mounting screws (not shown, but conventional in mounting brackets to building surfaces). The forward leg 59 has a hook formation 67 adapted to receive the pivot bolt 57 of an end member (9, respectively 11). Further the forward leg 59 in its portion adjoining the wall mount section 61 has a cylindrical transverse bore 69 into which the bolt retainer pivot 37 is engageable. Intersecting with this transverse bore 69 is a top opening 71 and a bottom opening 73 (visible only in Figure 5). When mounted and as shown in Figure 5 the bolt 33 will extend from the top opening 71 and grub screw 39 will be reachable through bottom opening 73.

**[0013]** The further arrangement of these components will now be described in reference to Figures 7 and 8. Figure 7A shows an end elevation of bolt retainer pivot 37, Figure 7B shows a side elevation of bolt retainer pivot 37 and Figure 7C is a top plan view of bolt retainer pivot 37. Figure 7D is a general perspective view of bolt retainer pivot 37. As visible in Figure 7B the retainer pivot 37 has a mouth 75, defined by opposite sloping surfaces 77 and 79 on respective flexible arms 81 and 83. With the retainer pivot 37 snuggly engaged in the transverse bore 69 of the mounting bracket 13 or 15 the mouth 75 will line-up with the top opening 71 for the introduction of bolt head 35 from above. This feature will significantly simplify the mounting of the awning after installation of the mounting bracket 13 and 15 to a building surface and moreover will enable this operation to be performed by a single person only. Once the wall mount brackets 13 and 15 have been affixed in their proper position the headbox assembly of housing 5, roller 7, end members 9 and 11, generally inclusive of header bar, awning arms and awning cloth, can be hooked with the pivot bolts 57 onto the hook formations 67 of the mounting brackets 13 and 15. This then takes the weight of the assembly out of the hands of the installing person. Having the adjustment bolts 33 already installed in the end members 9, 11 with their heads 35 extending, these can now simply be engaged with the respective bolt retainer pivots 37 in mounting brackets 13 and 15. By having the bolt heads 35 pressing against the opposite sloping surfaces 77 and 79 of retainer pivot 37 the flexible arms 81 and 83 will resiliently spread apart and allow the heads 35 to be snap-fittingly engaged behind detent wall surfaces 85 and 87, provided for this purpose. By this at least a temporary fixation of the awning box on its mounting brackets will be obtained. At this stage an allen wrench or screw driver may be inserted through the bottom opening 73 in the forward bracket leg 59, which tool would then engage the bolt head 35 through screw threaded opening 89 in web portion 91 of retainer pivot 37. After suitable adjustments have been made the grub screw 39 may be engaged in screw threaded opening 89 and be engaged against the bolt head 35. Thereby the flexibility of the pivot retainer 37 will be diminished and the awning will have obtained a wind resistant fixation on its mounting brackets. It will be appreciated that the flexibility and resiliency of the pivot retainer is dependant on the material from which it is made, and can be adapted as required by using different shapes and sizes for the flexible arms 81 and 83 and/or the web portion 91. Increasing the flexibility of arm portion 81 and 83 can be accomplished by additional central holes 93 and 95 therein.

**[0014]** A slightly amended form of the first embodiment of retainer pivot is shown in a mounted position in Figure 8. Figure 8 is a perspective view, looking upwardly from below the left hand end of the awning head box structure. Mounting bracket 13 as well as the header bar assembly (3, 17 and 19) have been deleted from Figure 8 for clarity. This allows to recognize a cavity 97 in the lower end of end member 9 into which a large part of the mounting bracket front leg 59 can be accommodated, when hooked up with pivot bolt 57 and engaged with the adjustment screw head 35 through retainer pivot 137. It is seen from Figure 8 that the retainer pivot 137 uses a different kind of shape for its flexible arms 181 and 183 as well as for its web portion 137. It has been found that aluminium alloy would be a suitable material

for the retainer pivot 37 (Figure 7) or 137 (Figure 8). Some plastic materials may be suitable as well, but then the shape of retainer pivot 137 as in Figure 8 may be preferable. It should be emphasized that Figure 8 is only for illustrative purposes as actual assembly requires a different sequence, not including a stage as shown in Figure 8.

**[0015]** As it will be appreciated that differing exposures to wind on the outside of a building may require a variety of flexible bolt retainer pivots, such as 37 and 137, two further variations of such retainer pivots will now be described in reference to Figures 9, A through F, and Figures 10, A through D.

**[0016]** Figure 9A shows a perspective view of a substantially modified second embodiment of bolt retainer pivot 237. Similar reference numbers, but with a "200" - prefix, will be used for elements similar to those of the first embodiment. It is seen in Figure 9A, that retainer pivot 237 has a mouth 275, bordered on opposite sides by sloping surfaces 277 and 279 (see also Figure 9B) for engagement by the bolt head 35. Retainer pivot 237 further includes separate first and second halves 281 and 283 which are held together resiliently by means of a leaf spring 291, see in particular Figures 9B and 9C. The leaf spring 291 is attached to the first and second halves 281 and 283 by suitable screws, such as 293 and 295. The leaf spring 291 has a central aperture to allow for the passage of grub screw 39 which cooperates with a complementary screw threaded sections on the first and second halves 281 and 283.

**[0017]** With the pivot retainer 237 installed in the bracket transverse bore 69 the head 35 of adjustment bolt 33 upon insertion through top opening 71 in the bracket (13 or 15) can spread apart the first and second halves 281 and 283 by engaging the opposite sloped surfaces 277 and 279. Provided that the bolt head 35 itself is sufficiently rounded it is conceivable for the opposite surfaces 277 and 279 not to be sloped, as is alternatively illustrated in Figure 9D.

The underside of the bolt head 35 is preferably perpendicular to the threaded shank 33, so that it will be securely retained by inner detent surfaces on the bolt retainer pivot (such as inwardly directed detent surfaces 385, 387 as best shown in Figure 10D in relation to the third embodiment).

After insertion of the adjustment bolt head 35 and proper adjustment, the flexibility of the retainer pivot 237 can thereafter be eliminated by screwing home the grub screw 39.

Again a still further third embodiment of pivot retainer 337 is illustrated in Figures 10A through 10D. Similar reference numbers, but with a "300"-prefix, will be used for like elements as in the previous embodiments.

**[0018]** Figure 10A shows retainer pivot 337 together with the adjustment screw 33 and the grub screw 39 in an exploded arrangement. Retainer pivot 337 comprises first and second halves 381 and 383 as well as a central collar 391. The central collar 391 has a central screw threaded bore 389 for receiving the grub screw 39. The central collar 391 also has opposite radially extending smaller threaded bores 388 and 390 for accepting mounting screws 393 and 395. The mounting screws 393 and 395 engage through sufficiently large unthreaded bores 396 and 398 respectively in the first and second halves 381 and 383. By the interposing of a coil spring 392, 394 between each of the heads of bolts 393, 395 and each of the halves 381, 383, these are both resiliently pressed together and retained to the central collar 391. Figures 10B, C and D show an assembled stage of the retainer pivot as it would appear after insertion of the adjustment bolt 33 and grub screw 39, but without being engaged in the transverse bore 69 of the mounting bracket 13 or 15. It should be clear that this is for illustrative purposes only and that the adjustment bolt 33 and scrub screw 39 would normally only be attached after that the assembled retainer pivot components have been positioned in the bracket transverse bore 69. In Figure 10D it is shown how the bolt head 35 is retained by detent surfaces 385 and 387 on each of the halves 381, 383. In this third embodiment the flexibility, or rather the freedom of movement, between the halves 381 and 383 can be influenced by enlarging or diminishing the bores 396 and 398 therein. Enlarging of the bores 396 and 398 in relation to the diameter of screws 393 and 398 would also enable relative movement in other directions than strictly axial of the halves 381,383. Screwing home of grub screw 39 will again eliminate this freedom of movement once the adjustment bolt 33 has been inserted.

**[0019]** It is thus believed that the operation and construction of the present invention will be apparent from the foregoing description. The term comprising when used in this description or any appended claim should not be construed in an exclusive or exhaustive sense. Features not specifically or explicitly described may be additionally included in the structure according to the invention without deviating from its scope. Within the purview of the skilled person modifications to any of the embodiments herein described are possible and should be considered within the scope of any appended claim. Reference to directions being axial, radial or tangential in the above should generally be considered in relation to rotatable or cylindrical bodies of the elements described. Similarly references to longitudinal, transverse or lateral are in respect of the length direction of elements which have an oblong appearance in any of the accompanying drawings. This interpretation is only for ease of reference and should not be construed as a limitation of the shape of such elements. Expressions, such as right, left, horizontal, vertical, upper, lower, top, bottom or the like in reference to this construction are relative to the position as illustrated in the relevant drawing figure and should not be construed to exclude other possible positions.

## Claims

**1.** Awning including:

a head box having an elongated housing, first and second end members on opposite confronting first and second longitudinal ends of the housing and a roller mounted for rotation in the housing between the first and second end members, so as to be rotatable about an axis coextending in parallel with the elongated housing; and

a pair of mounting brackets for securing the head box to a building, the bracket comprising a mounting section for attachment to a surface of the building and a holding section extending forwardly of the mounting section;

wherein, each of the first and second end members is pivotally engageable with the holding section of a respective one of the pair of brackets about a pivot pin parallel to the roller axis and by an adjustable engagement between each end member and each mounting bracket to adjustably fix the angular position of the end housing and

wherein the adjustable engagement can be snap-fitted together.

**2.** Arrangement of components, as herein disclosed and for the purpose as set forth.

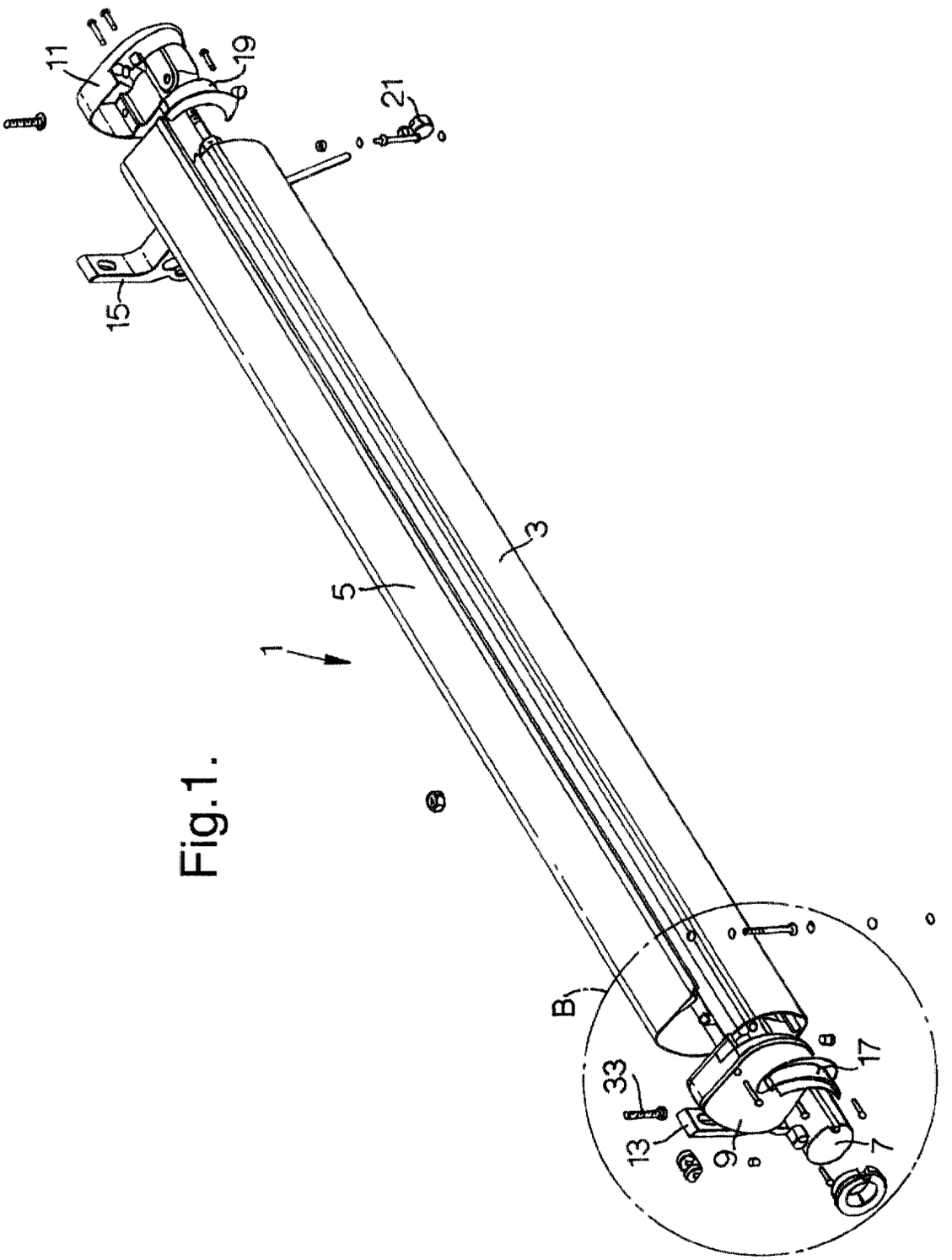


Fig.1.

Fig.2.

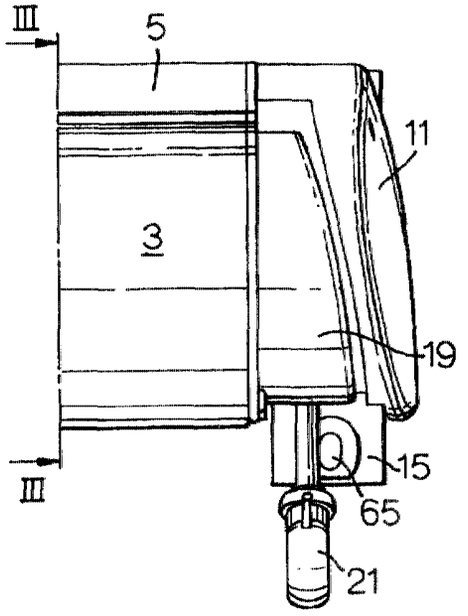


Fig.3.

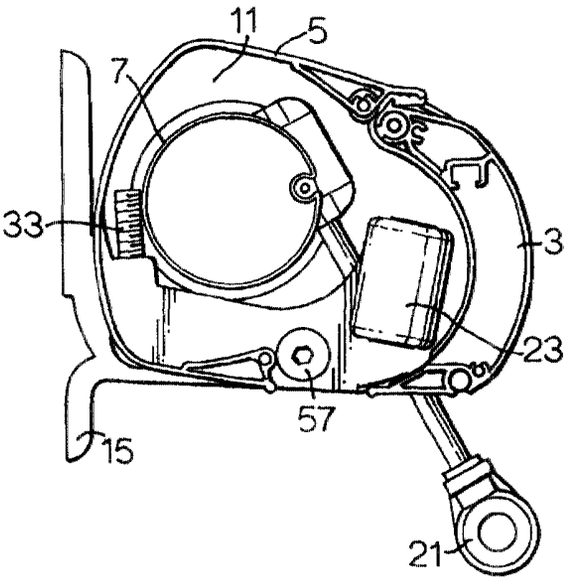


Fig.4.

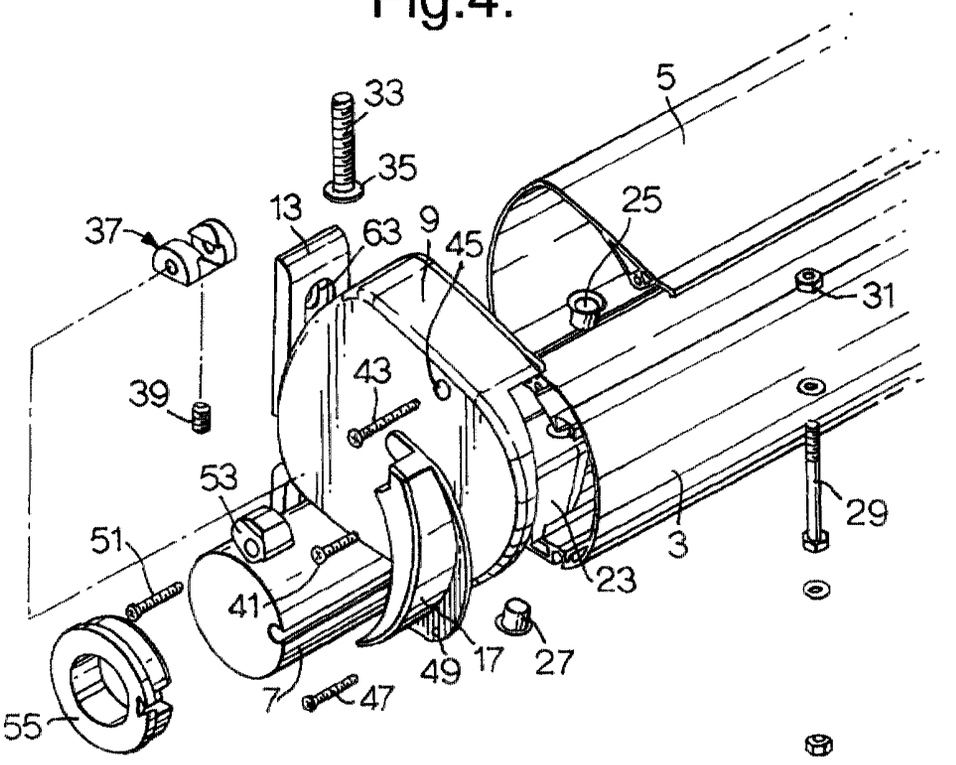

Fig.5.

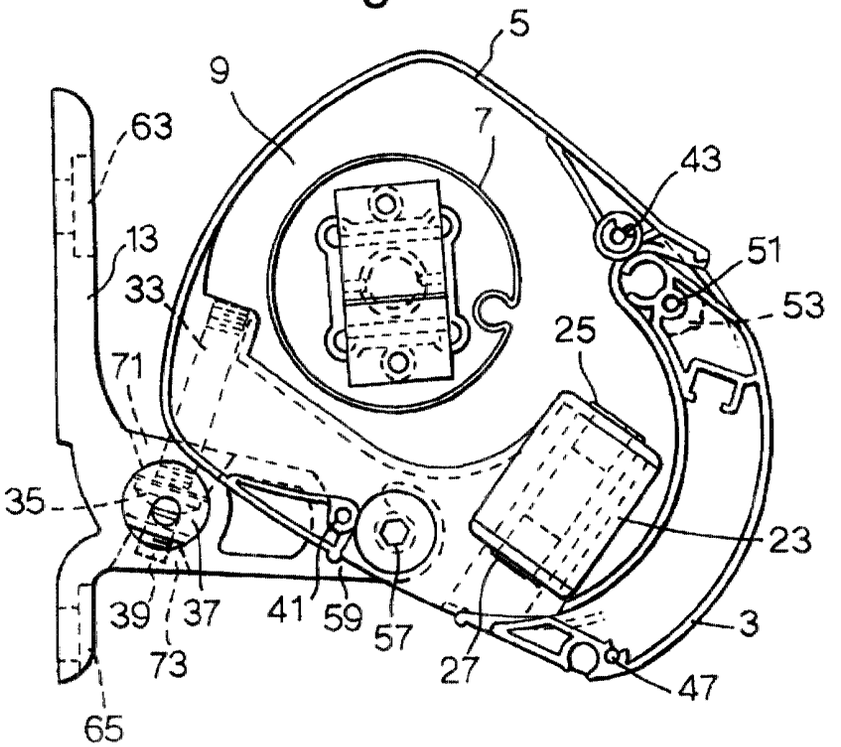
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Fig.6.

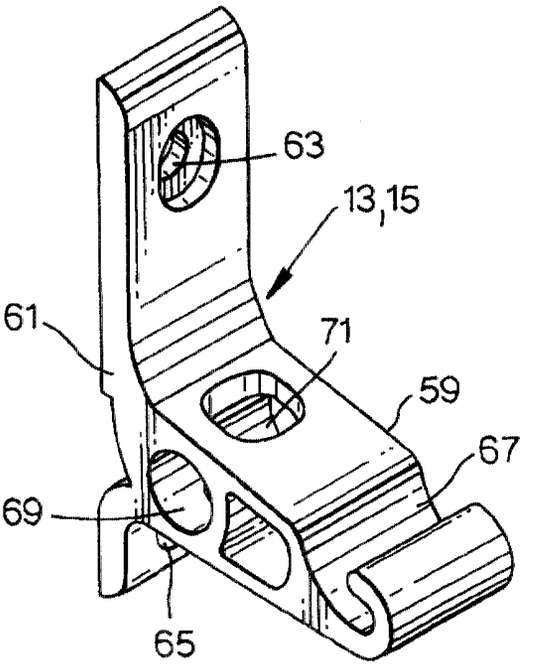
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Fig.7A.

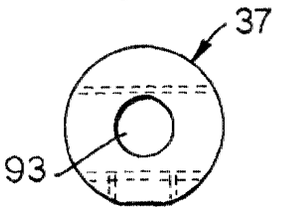


Fig.7B.

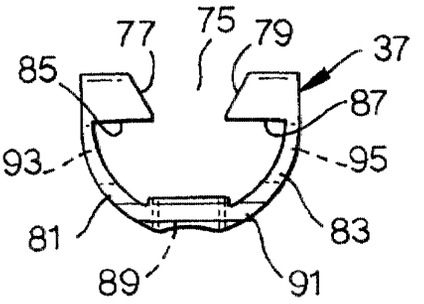


Fig.7C.

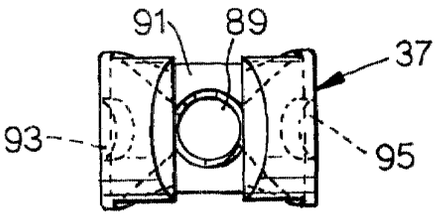


Fig.7D.

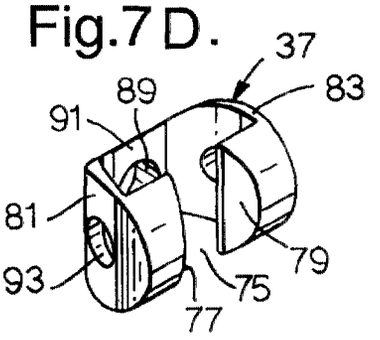


Fig.8.

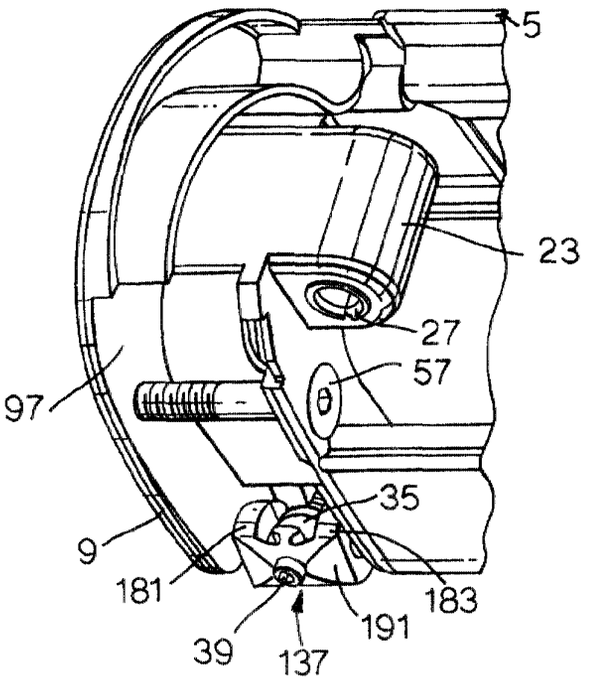

Fig.9A.

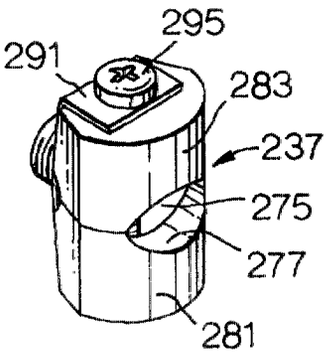


Fig.9B.

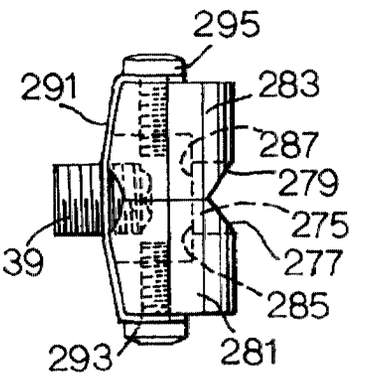


Fig.9C.

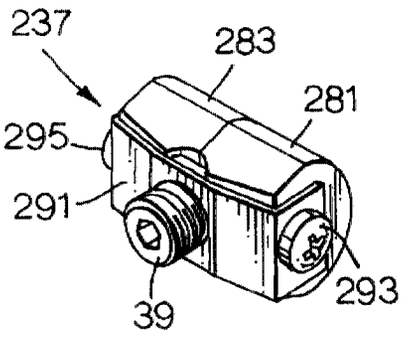


Fig.9D.

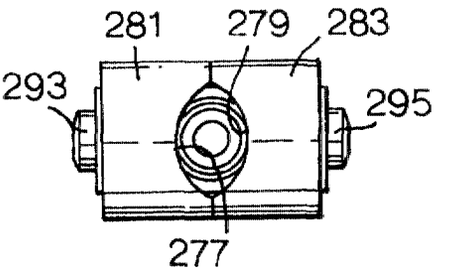


Fig.9E.

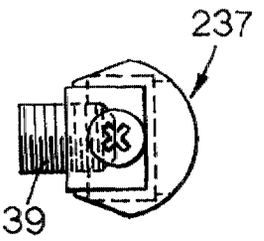


Fig.9F.

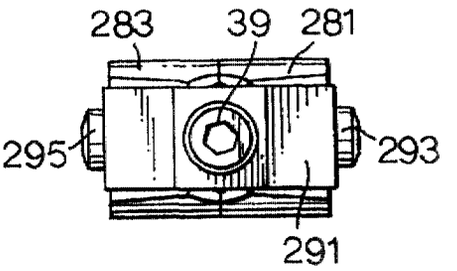

Fig.10A.

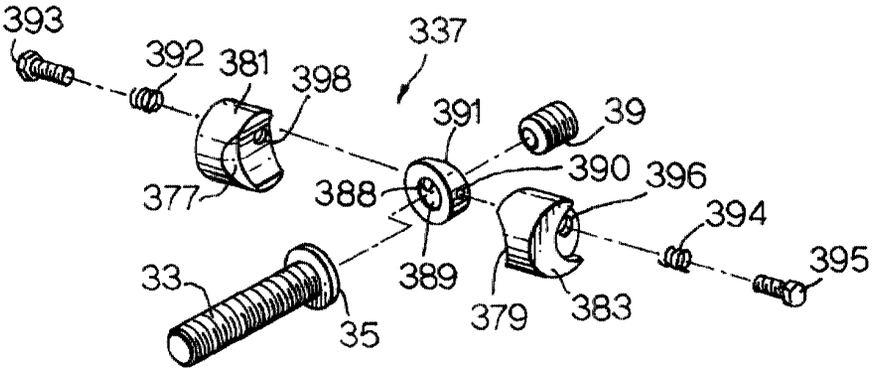


Fig.10B.

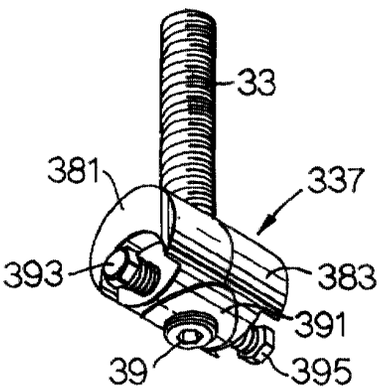


Fig.10C.

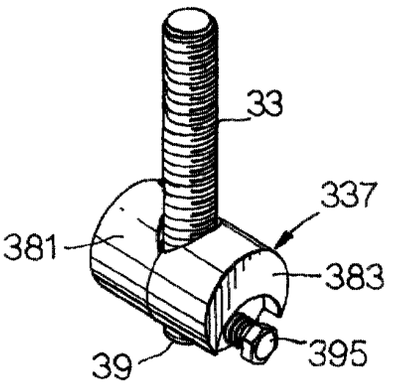


Fig.10D.