

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 463 503 A1

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **91109739.2**(51) Int. Cl.⁵: **F21M 7/00**(22) Date of filing: **13.06.91**(30) Priority: **29.06.90 IT 6747190****I-10135 Torino(IT)**(43) Date of publication of application:
02.01.92 Bulletin 92/01(72) Inventor: **Rivoira, Luigi**
Via Bologna, 15
I-10090 Sangano(IT)(84) Designated Contracting States:
DE ES FR GB(71) Applicant: **CARELLO S.p.A.**
Corso Unione Sovietica, 600(74) Representative: **Jorio, Paolo et al**
Studio Torta, Via Viotti, 9
I-10121 Torino(IT)(54) **A reflector for vehicles.**

(57) A parabolic reflector (1) provided with a rear annular socket (7) which defines a collar (10) having a shaped rear attachment edge for a fixing device (29) for fixing a flange (6) of a lamp (5); the fixing device (29) being defined by the combination of two

brackets (17) associated with diametrically opposite points of the collar (10), and one or the other of two resilient elements (30,31) the alternative coupling of which to the brackets (17) is made possible by the shape of the brackets (17) themselves.

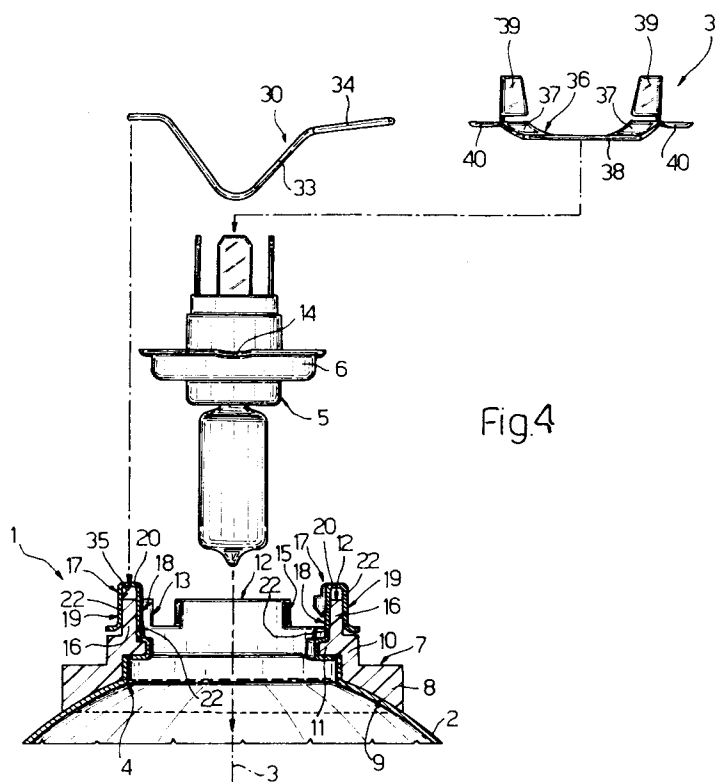


Fig.4

EP 0 463 503 A1

The present invention relates to a reflector for vehicles.

In particular, the present invention relates to a reflector for vehicles, of the type comprising a forwardly open reflecting body having a rear axial hole, a lamp mounted in the axial hole and having an intermediate flange, an annular socket connected to the rear end of the reflecting body and comprising a collar co-axial with the axial hole and co-operating with the said flange, and resilient fixing means associated with the collar and cooperating with the flange to fix the lamp axially, in a releasable manner, with respect to the reflecting body, the resilient fixing means including resilient thrust means co-operating with the said flange and means for engaging the resilient thrust means to the collar.

In general, in known reflectors of the type described above, two different types of resilient thrust means are utilised.

The first known type of resilient thrust means comprise a leaf spring pivoted at one of its ends on to the said collar and rotatable with respect to the collar itself between an open position and a closed operative position. When disposed in its closed operative position the leaf spring is engaged in a releasable manner at its second end, to related engagement means associated with a portion of the collar diametrically opposite that hingedly coupled to the first end of the spring itself.

The second known type of said resilient thrust means comprise a resilient ring deformable in an axial sense which is inserted into the interior of the collar and in contact with the flange of the lamp, which has radial projections which, by means of rotation of the ring itself, engage in bayonet fashion with respective engagement means associated with the collar thereby axially fixing the lamp on to the rear socket of the reflector.

The two different types of known resilient thrust means described above obviously require the associated engagement means and the collar of the related reflector to have a precise shape and are not interchangeable with one another.

Consequently, it is necessary for headlamp manufacturers to adopt the expensive solution of producing, for the same headlamp, a multiplicity of mouldings for the formation of different collars adapted to permit the utilisation of one or the other of the two different types of resilient thrust means previously described.

The object of the present invention is that of eliminating the disadvantage described above by providing a reflector on which the axial fixing of the lamp can be effected equally well by utilising one or the other of the two different known types of resilient thrust means described.

According to the present invention there is

provided a reflector for vehicles, of the type comprising a forwardly open reflecting body and having a rear hole, a lamp mounted in the said hole and having an intermediate flange, an annular socket connected to the rear end of the reflecting body and including a collar co-axial with the said hole and co-operating with the said flange, and resilient fixing means associated with the collar and co-operating with the flange to fix the lamp axially, in a releasable manner, with respect to the reflecting body, the resilient fixing means, including resilient thrust means co-operating with the said flange and means for engaging the said resilient thrust means to the collar, characterised by the fact that the said engagement means comprise a pair of identical engagement brackets coupled to diametrically opposite portions of the collar; each bracket extending in a direction substantially parallel to an axis of the said hole, and having at least one associated lateral slot extending transversely of the said axis; each slot communicating with the outside through a respective opening formed in the said collar and including an inlet portion and a terminal portion for form engagement of the said resilient thrust means; and the first of the said brackets defining, with the said collar, a cavity substantially parallel to the associated said slot.

Preferably, the said resilient thrust means comprise a leaf spring in turn comprising at least one curved arm a first end section of which engages rotatably in the said cavity to provide the hinged coupling between the leaf spring itself and the collar, and a second end section of which is coupled in a releasable manner to the second of the said brackets and engages the said hollow terminal portion of the associated said slot.

Alternatively, the said resilient thrust means are coupled to the said collar by means of a bayonet coupling, and comprise an annular body resiliently deformable in an axial sense and disposed within the said collar and in contact with a rear surface of the said flange, and two projections extending radially out from the annular body and through an associated said slot; each projection being coupled to the associated slot by means of a respective said bayonet coupling.

The invention will now be described with reference to the attached drawings which illustrate two non-limitative embodiments, in which:

Figure 1 is a rear view of a first preferred embodiment of the reflector according to the present invention;

Figure 2 is a rear view of a second preferred embodiment of the reflector according to the present invention;

Figure 3 is an artificial exploded rear view of the embodiments of Figures 1 and 2;

Figure 4 is an exploded, partially sectioned side

view taken on the line IV-IV of Figure 3 illustrating the embodiments of Figures 1 and 2;

Figure 5 is a section taken on the line V-V of Figure 3;

Figure 6 is a front view of the reflector of Figure 1 or Figure 2, with parts removed for clarity;

Figure 7 illustrates a detail of Figure 1 on an enlarged scale, and partly in section;

Figure 8 illustrates a detail of Figure 2 on an enlarged scale and partly in section; and

Figure 9 illustrates a detail of Figure 2 in side elevation.

In the attached Figures and, in particular, in Figures 3 and 4, the reference numeral 1 indicates a reflector for vehicles, comprising a reflecting body 2 of generally parabolic form which has an optical axis 3, and is provided with a rear axial hole 4 to allow passage for a lamp 5 disposed on the optical axis 3 and having an intermediate flange 6 for coupling to the reflecting body 2.

The reflector 1 further includes an annular rear socket 7 which is preferably made of moulded plastics material and comprises, in turn, an annular plate 8 limited at the front by a parabolic surface 9, which is coupled to a portion of the reflecting body 2 surrounding the hole 4. The socket 7 further includes a generally cylindrical collar 10 co-axial with the axis 3. The collar 10 projects rearwardly from a rear surface of the plate 8 and has at its front end an internal flange 11. The collar 10 is rearwardly limited by an edge 12 having a plurality of axial reference cavities 13 for receiving projections 14 extending radially outwardly from the flange 6, and four further axial recesses 15 defining, on the collar 10, two diametrically opposed projections 16.

Each projection 16 is engaged by a respective substantially U-shape bracket 17 which is preferably made of punched and folded sheet metal, and is force fitted on to the projection 16 itself. The brackets 17 extend in a direction substantially parallel to the optical axis 3, are identical to one another, and each comprises two arms 18 and 19 parallel to one another, the first extending inwardly and the second outwardly of the associated projection 16 parallel to the optical axis 3, and a cross piece 20 for connecting and joining the rear ends of the arms 18 and 19. Each of the arms 18 and 19 has, in plan, a substantially T-shape form and comprises a crosspiece 21 adjacent to the crosspiece 20, and a stem 22 extending from an intermediate portion of the associated crosspiece 21 and of width at least equal to the width of the associated projection 16.

As illustrated, in particular in Figures 7 and 8, the outer shape of each stem 22 (only one of which is illustrated) merges with the outer profile of the associated crosspiece 21 forming two semi-circular

seats 23. Moreover, each stem 22 of each arm 18 carries, connected to its free end, an intermediate portion of a further crosspiece 24, a portion of which is clenched to the flange 11 to prevent accidental separation of the associated bracket 17 from the associated projection 16. The crosspiece 24 defines, together with the crosspiece 21, two slots 25 and 26 extending transversely of the optical axis 3. The slots 25 and 26 are disposed on opposite sides of the stem 22 and define an entrance, through the respective recesses 15, to the associated seats 23 each of which constitutes a terminal portion of the associated slot 25, 26.

From a free end of the crosspiece 21 of each arm 18 extends a projection 27 which is substantially parallel to and faces the associated crosspiece 24, and is limited on the side facing the crosspiece 24 itself, by a cam face 18 having an intermediate cusp facing towards the crosspiece 24 and constituting a rear edge of an entrance portion 28a of the associated slot 25.

The brackets 17 constitute a part of a fixing device 29 which further includes a first or second resiliently deformable element, respectively indicated 30 and 31, each of which is coupled to the brackets 17 alternatively to the other to fix the flange 6 of the lamp 5 with the associated projections 14 in contact with the bottom of the associated recess 13.

With reference to Figures 3 and 4, the element 30 is constituted by a double leaf spring preferably made of metal wire bent in such a way as to define two curved arms 32 substantially parallel to one another, one end of each of which is fixedly connected to a corresponding end of the other arm 32 by means of a crosspiece 33, and an opposite end section which is folded to form a loop 34. The crosspiece 33 is fitted in a rotatable manner, through a cavity 35 (Figure 4) defined between the crosspiece 20 of a first of the brackets 17 and the edge 12 of the collar 10, in such a way as to form a hinge 35a coupling the element 30 to the said first bracket 17 and, therefore, to the collar 10, and to permit the element 30 itself to rotate about the axis of the crosspiece 33 between an open position (illustrated in broken outline in Figure 1) and an operative closed position, to reach which a portion of each loop 34 is inserted, by resilient deformation of the associated arm 32, into contact with the flange 6 of the lamp 5 within the slot 25 or 26 of the second of the brackets 17, and laterally displaced until it snap-engages with the associated seat 23.

With reference to Figures 3, 4 and 9, the resilient element 31 comprises an annular body 36 defined by two diametrically opposite annular portions 37 (Figure 9) joined together by two further offset annular portions 38 disposed in contact with

an upper surface of the flange 6 of the lamp 5. Each portion 37 has an associated axial projection 39 and an associated projection 40 extending radially outwardly. The dimensions of the annular body 36 and the projections 40 are such that the annular body 36 can be fitted axially within the collar 10 carrying the projections 40 so that each engages a respective recess 15 communicating with an associated slot 25. By means of axial resilient deformation of the portions 37, and subsequent rotation of the annular body 36 imparted by acting on the projections 39, it is possible to cause sliding of each projection 40 along the entrance portion 28a of the associated slot 25, and to contact the rear cam edge 28 of the slot 25 itself, and subsequently to cause snap-engagement of this projection 40 beyond the cusp of the said edge 28 and into substantial coupling with the associated seat 23 to define, with the associated bracket 17, a bayonet coupling 41.

From the preceding description it is possible to note that by means of the use of the two brackets 17, which can be completely identical to one another for economies of scale, it is possible to form on the same reflector 1 fixings for the lamp 5 in two different modes chosen by the user.

Claims

1. A reflector for vehicles, of the type comprising a forwardly open reflecting body (2) having a rear hole (4), a lamp (5) mounted in the said hole (4) and having an intermediate flange (6), an annular socket (7) connected to the rear end of the reflecting body (2) and including a collar (10) co-axial with the said hole (4) and co-operating with the said flange (6), and resilient fixing means (17,30;17,31) associated with the collar (10) and cooperating with the flange (6) to fix the lamp (5) axially in a releasable manner with respect to the reflecting body (2), the resilient fixing means (17,30;17,31) comprising resilient thrust means (30;31) cooperating with the said flange (6) and engagement means (17) for engaging the resilient thrust means (30;31) to the collar (10), characterised by the fact that the said engagement means comprise a pair of connector brackets (17) identical with one another and coupled with diametrically opposite portions (16) of the collar (10); each bracket (17) extending in a direction substantially parallel to an axis (3) of the said hole (4), and having at least one respective lateral slot (25) extending transversely of the said axis (3); each slot (25) communicating with the outside through a respective cavity (15) formed in the said collar (10), and including an entrance portion (28a) and a terminal

hollow portion (23) for the said resilient thrust means (30;31); and a first of the said brackets (17) defining, with the said collar (10), a cavity (35) substantially parallel to the associated said slot (25).

2. A reflector according to claim 1, characterised by the fact that the said entrance portion (28a) comprises a rear cam edge (28) having a cusp facing towards the facing body (2).
3. A reflector according to Claim 1 or Claim 2, characterised by the fact that each said bracket (17) is substantially U-shape and is fitted onto the associated portion (16) of the collar (10); The said cavity (35) being defined between an intermediate portion (20) of the first bracket (17) and a rear portion (12) of the said collar (10).
4. A reflector according to any of Claims 1 to 3, characterised by the fact that the said resilient thrust means comprise a leaf spring (30) in turn comprising at least one curved arm (32), a first end section (33) of which engages rotatably in the said recess (35) to form a hinged coupling (35a) between the leaf spring (30) and the collar (10), and a second end section (34) of which is coupled in a releasable manner to the second of the said brackets (17) and engaging the said terminal hollow portion (23) of the associated said slot (25).
5. A reflector according to any of Claims from 1 to 3, characterised by the fact that the said resilient thrust means (31) are coupled to the said collar by means of a bayonet coupling (41).
6. A reflector according to Claim 5, characterised by the fact that the said resilient thrust means (31) comprise an axially resiliently deformable annular body (36) disposed within the said collar (10) and in contact with a rear surface of the said flange (6), and two projections (40) extending radially outwardly from the annular body (36) and through an associated said slot (25); each projection (40) being coupled to the associated slot (25) by means of a respective said bayonet coupling (41).

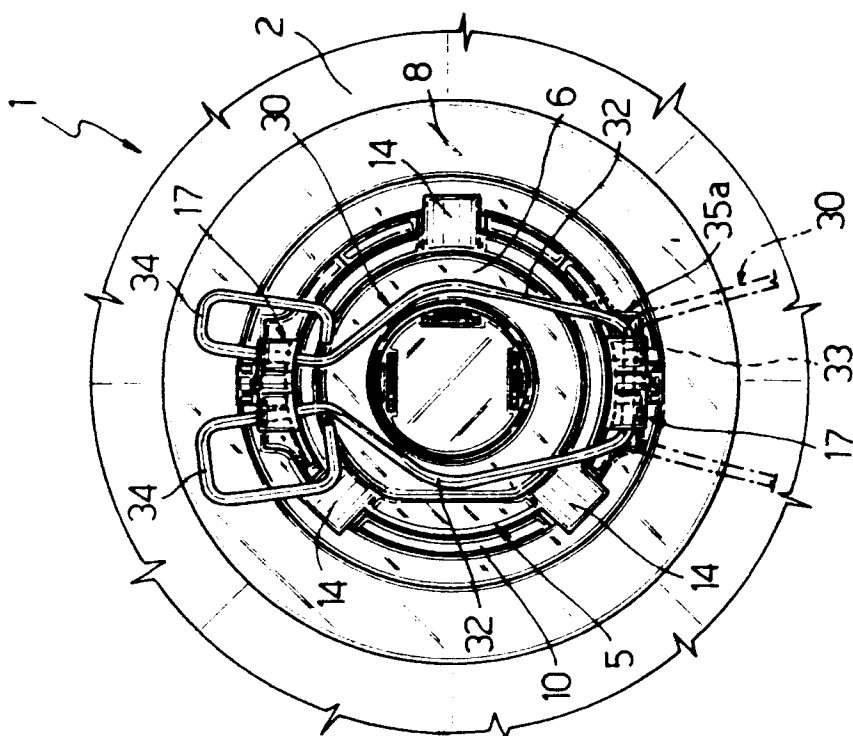


Fig. 1

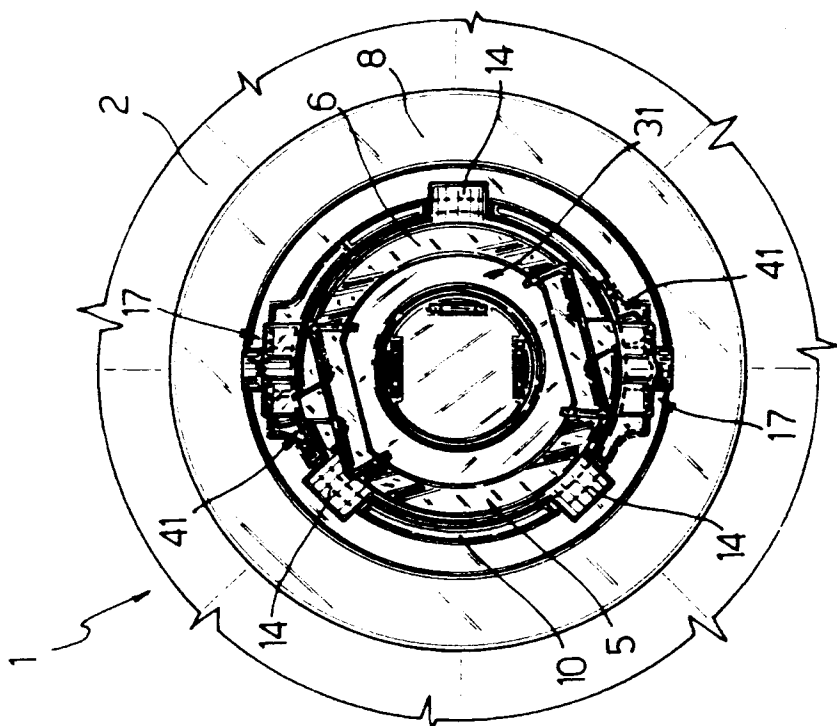


Fig. 2

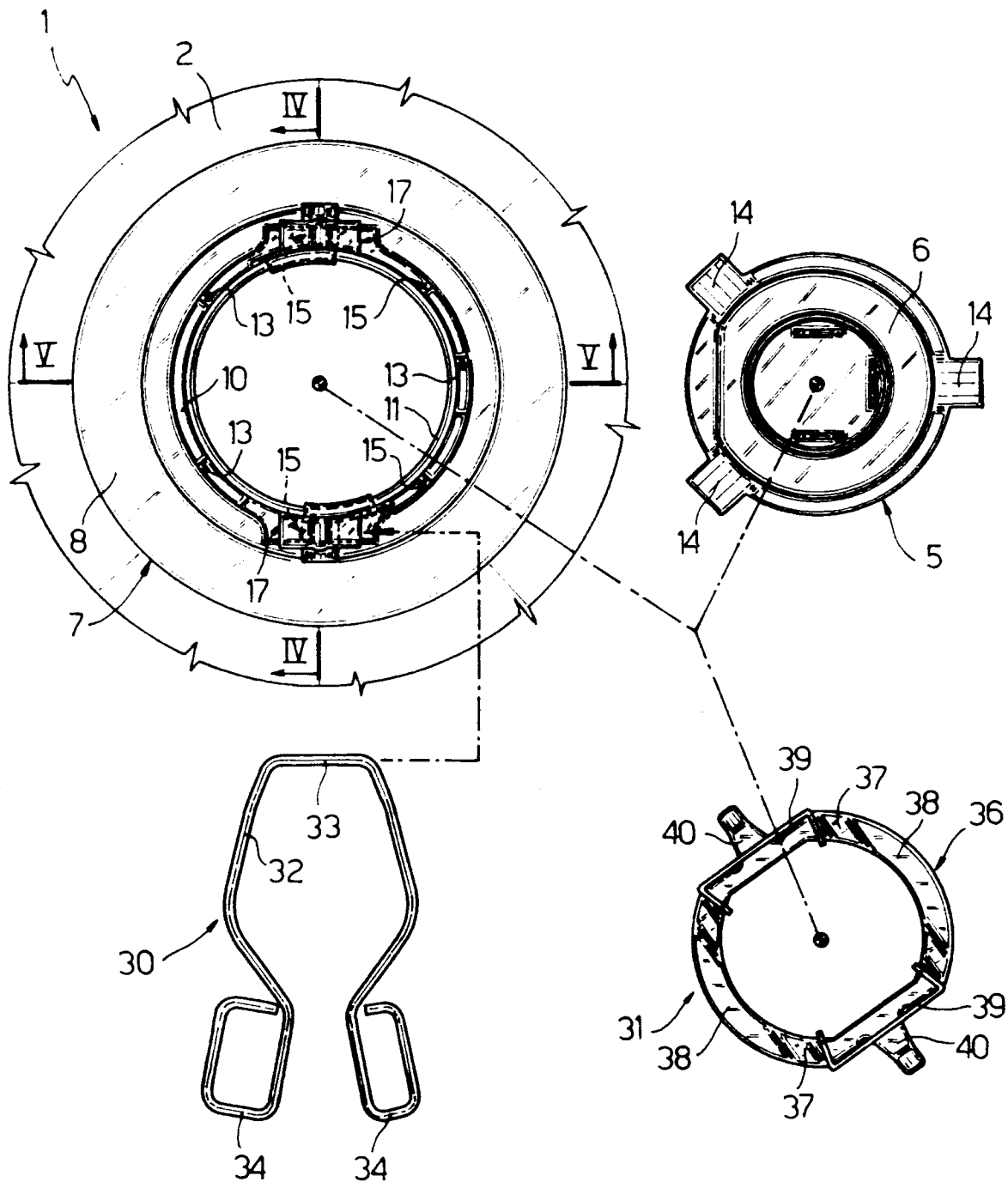
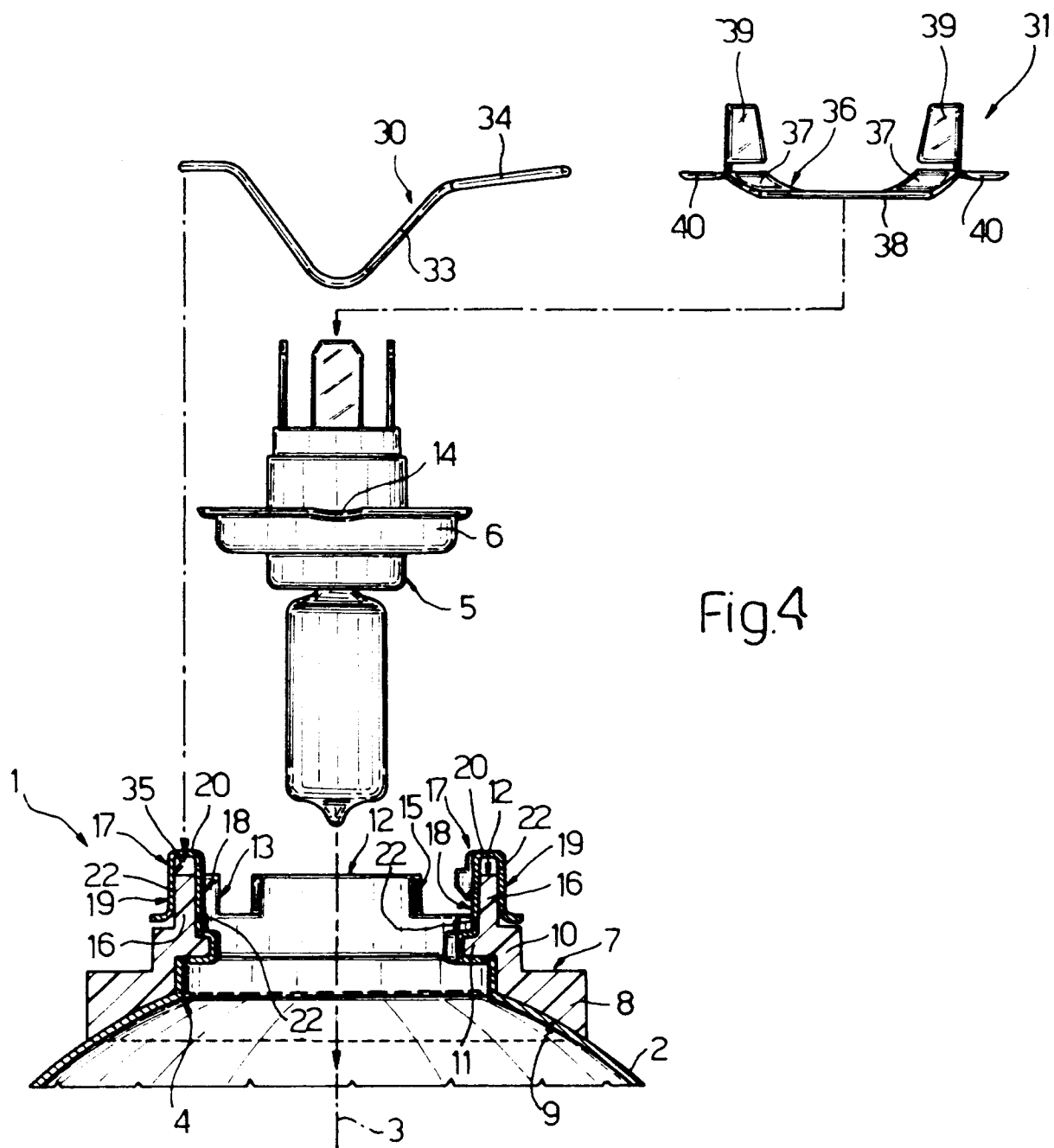


Fig. 3



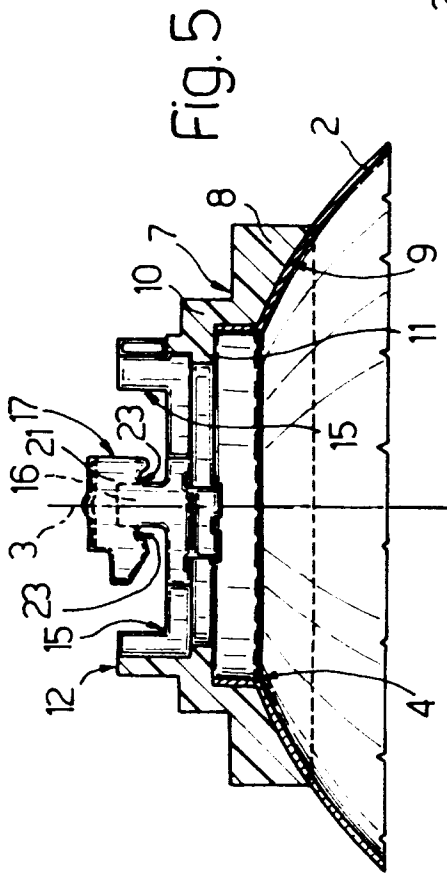


Fig. 5

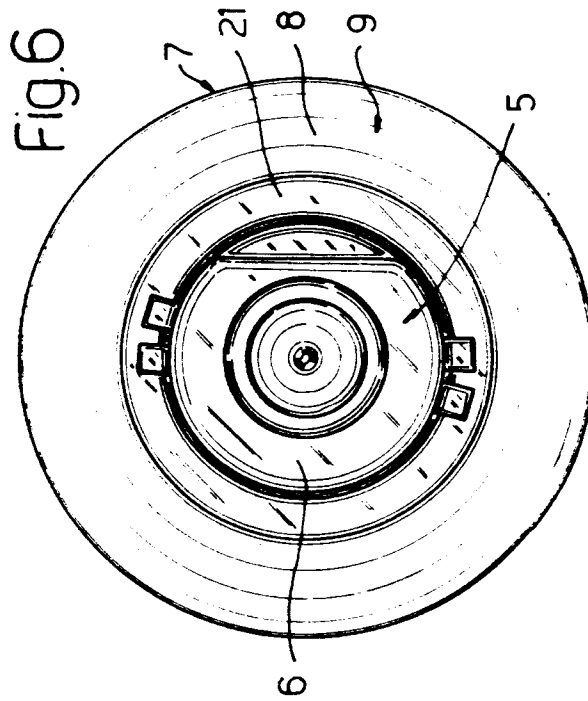


Fig. 6

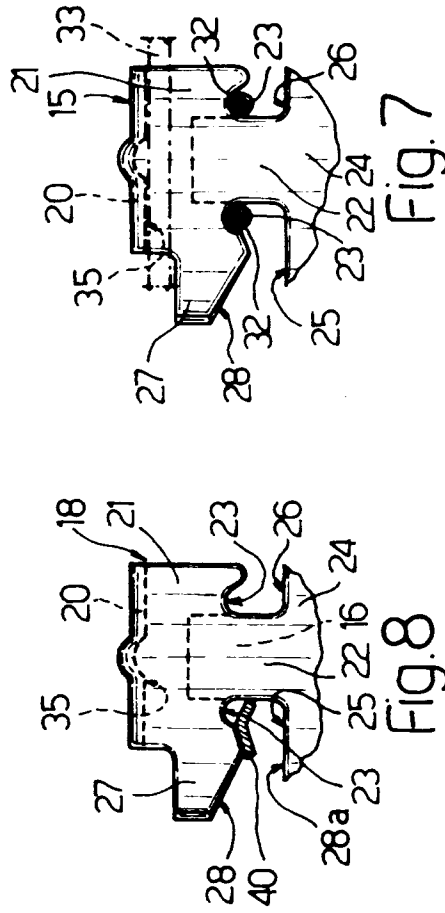


Fig. 7

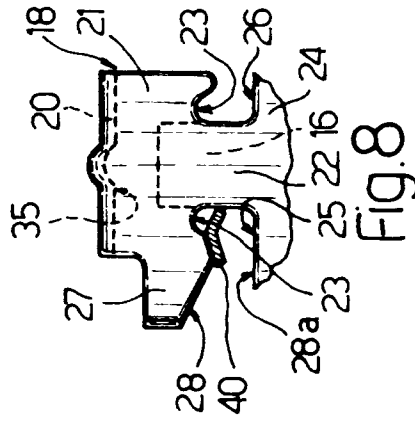


Fig. 8

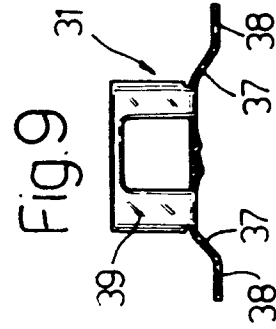


Fig. 9



European
Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 10 9739

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.5)
A	DE-A-3 432 445 (ROBERT BOSCH GMBH) * the whole document * — — —	1-4	F 21 M 7/00
A	FR-A-2 147 471 (CIBIE PROJECTEURS) * page 2, line 19 - page 3, line 24; figure 1 * — — — — —	1,2,5,6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			F 21 M F 21 Q
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 30 August 91	Examiner VAN OVERBEEKE J.J.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			