

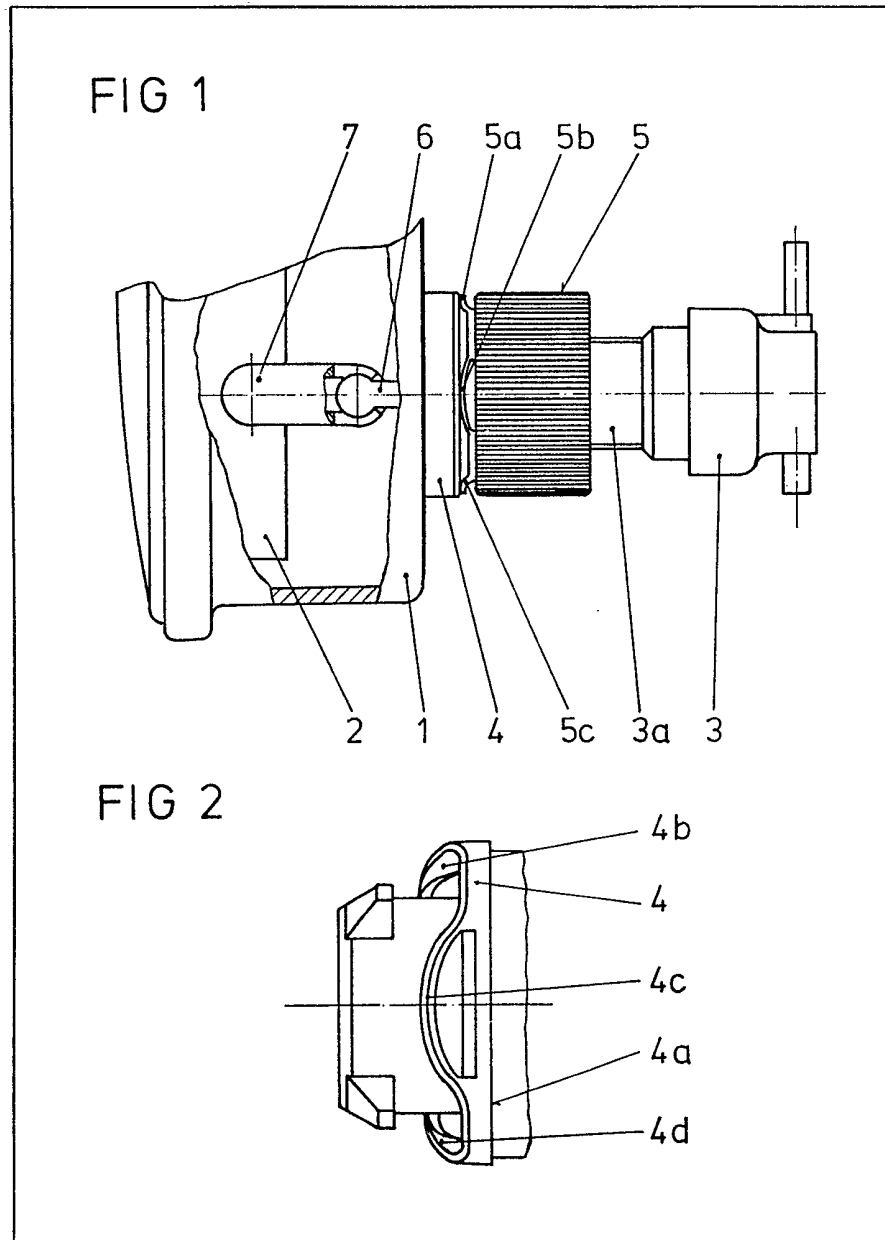
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(54) Device for adjusting a headlamp for a motor vehicle

(57) A headlamp adjustment device comprises an adjusting nut (5) which bears against a supporting face (4a) through integral resilient webs (5a,

5b, 5c) formed convexly thereon to take up axial play. The member (4) of the device providing the supporting face similarly has integral resilient webs (4b, 4c, 4d) taking up axial play between it and a fixed part (1) of the headlamp to which it is attached.



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FIG 1

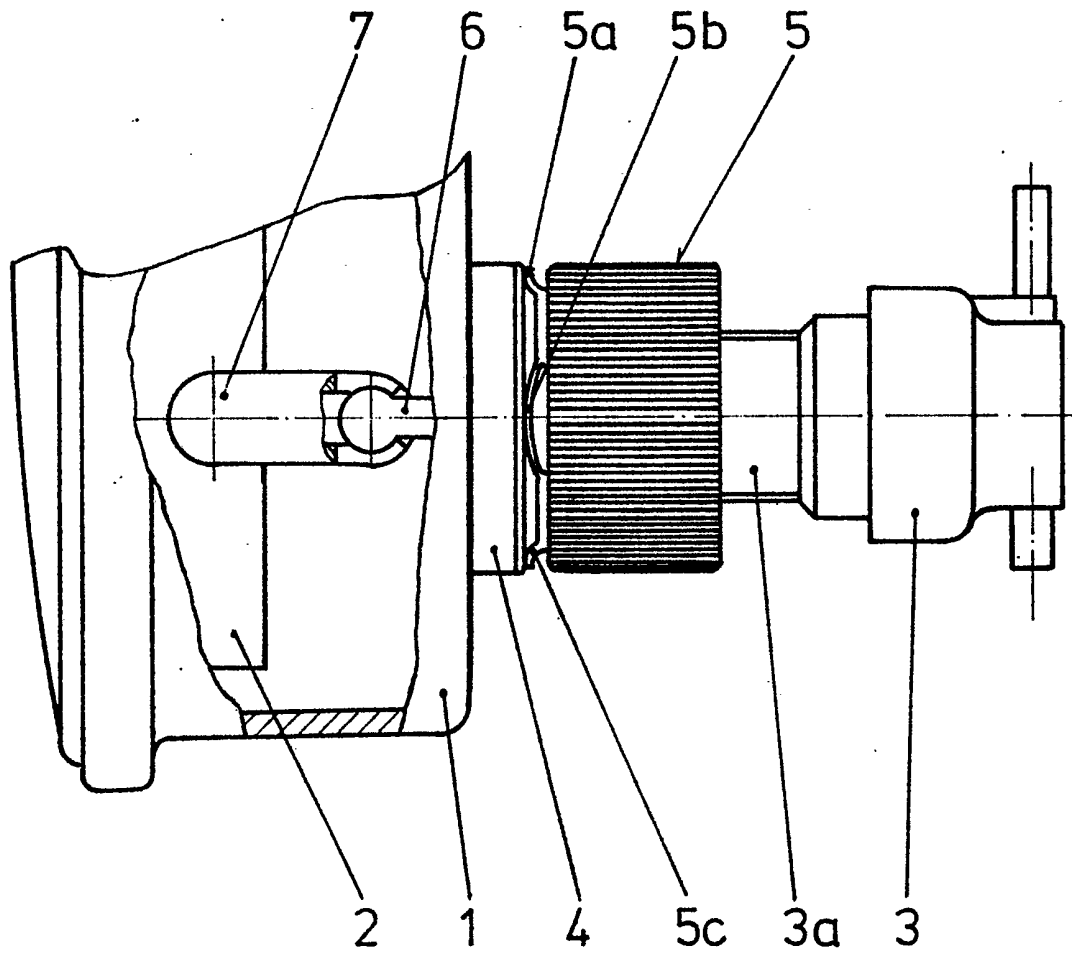
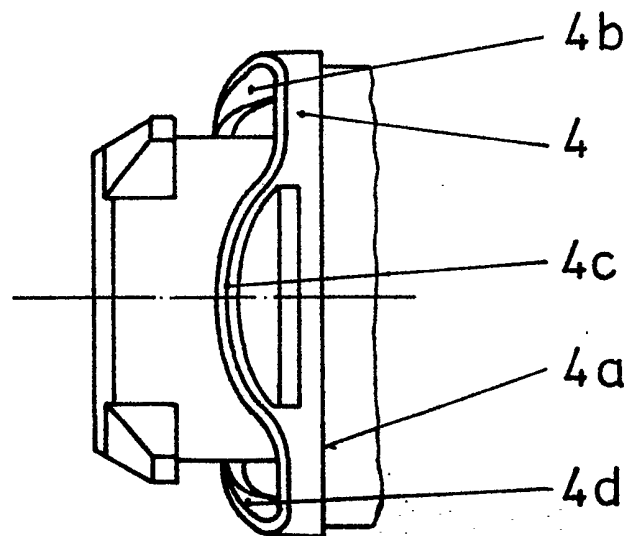


FIG 2



SPECIFICATION

Device for adjusting a headlamp for motor vehicles

5 The invention relates to a device for adjusting a motor vehicle headlamp in which a first part of the adjusting device secured to at least one part of the headlamp which is adjustable in relation to the motor vehicle body is movable in relation to a second part of the device secured to the motor vehicle body to effect the adjustment.

10 A known device for adjusting the headlamps of motor vehicles is disclosed in DE—OS 28 30 752 wherein a nut is provided which is in threaded engagement with a threaded sleeve which
15 engages with resilient projections behind a flange of a displaceably mounted bush. The nut is provided with an annular groove to receive the edge of a hole in a supporting wall of the device, a spring washer between these parts serving to
20 counteract the axial play. The adjustment of the device or the zero adjustment of the headlamps can be carried out by relative rotation of the nut in relation to the threaded sleeve. This known device is, however, relatively complicated in construction and accordingly expensive to mount and costly.

25 According to the present invention, there is provided a device for adjusting a headlamp of a motor vehicle, comprising a first member arranged to be secured to at least one part of the headlamp which is adjustable in relation to the motor vehicle body and a second member arranged to be secured to the vehicle body, said members being movable in relation to one another through a screw and nut mechanism having a rotatable face
30 engaging a support face that does not participate in the rotary movement of said mechanism, one of said faces being provided with a plurality of integral projections acting as a resilient support means serving to counteract axial play in said mechanism.

35 By this means, as compared with the known device an additional element in the form of a spring washer or a corrugated washer, for example, can be omitted and as a result the mounting of the device in particular is simplified. The resilient webs not only prevent an axial play of the parts in question but also cause a self-locking of the nut and a necessary torque.

40 The nut preferably is of a plastics material with appropriate resilient characteristics. It may, however, also be of metal. Three resilient webs are preferably provided. In addition, the same principle can be used for a member of the device which serves to secure the adjustment device to a part
45 fixed to the vehicle body, for example by means of a bayonet connection. Here, too, axial compensation is afforded and tolerances are permissible which would otherwise necessitate the use of spacer rings or the like.

50 The invention is explained in more detail by way of example with an embodiment which is illustrated in the accompanying drawing, in which:

Fig. 1 shows, partially in section, a motor vehicle headlamp with a device according to the

65 invention attached thereto for the adjustment of the headlamp,

Fig. 2 shows a detail of the device in Fig. 1.

70 The motor vehicle headlamp shown in Fig. 1 comprises essentially a part 1 which is fixedly connected to the motor vehicle body and a part 2 which is pivotable in relation to the part 1 and hence in relation to the motor vehicle body. The part 2 may, for example, be the reflector of the headlamp. The pivoting of the adjustable part of
75 the headlamp can serve both for the basic adjustment of the headlamp and for the regulation of the light range.

80 The light-range adjustment device comprises a main part 3 which is movable axially, by turning a knurled nut 5, in relation to a member 4 by means of which the main part 3 is secured to the part 1 of the headlamp fixed to the vehicle body. For engagement with the nut, the part 3 is provided with a screw thread in the region designated by
85 reference 3a. Projecting from the part 3 is a push rod 6 which is connected by means of a ball-head-and-socket connection to a lever 7 which in turn acts on the adjustable part 2 of the headlamp. On a movement of the push rod 6 directed axially to the part 3, therefore, the adjustable part of the headlamp is pivoted.

90 The displacement of the push rod 6 can be effected on the one hand as a result of the fact that a movement of the push rod 6 takes place inside the adjusting device as a result of the fact that a hydraulic or pneumatic means or an electric motor, for example, acts on the push rod 6 in the sense of regulating the light range. On the other hand, a displacement of the push rod 6 can be caused as a result of the fact that the knurled nut 5 is turned and in the course of this the main part 3 of the adjusting device is moved as a whole in relation the fixed part 1 of the headlamp and with it also the push rod 6 which is in a specific
95 position in relation to the part 3. This means, therefore, that by means of the knurled nut 5, the main part 3 of the adjusting device can be displaced so that a basic adjustment of the headlamp is carried out while afterwards, through
100 the action of the light-range regulation, corrections of this basic adjustment are carried out according to the state of loading of the motor vehicle.

105 The member 4 is secured to the part 1 of the headlamp by means of a bayonet connection. The member 4 is provided with a surface 4a against which the knurled nut 5 bears. The member also has three resilient webs 4b, 4c and 4d formed thereon which bear against the part 1 of the motor vehicle headlamp fixed to the vehicle body and so ensure compensation of the axial play if the member 4 is secured by its attachment projections of the bayonet connection to the part 1. The member 4 may consist of a suitable plastics material or possibly of a suitable metal on which the convexly shaped resilient webs 4b, 4c and 4d can easily be produced.

125 Correspondingly, the knurled nut 5 carries a plurality of resilient webs 5a, 5b and 5c convexly

formed thereon, which are supported on the surface 4a of the member 4. It may appropriately be a question of three such webs but another number may also be selected. These webs are also

- 5 formed integrally on the nut 5 which consists of a suitable material.
- The resilient webs 5a, 5b and 5c formed convexly on the end face of the knurled nut are supported on the surface 4a of the member 4
- 10 when the bayonet connection is made and so assume the function of spring elements.
- According to the thickness of these webs and their distance of projection beyond the end face, axial play is prevented and in addition a self-locking
- 15 action with a required torque is achieved at the knurled nut 5 without additional resilient parts, for example corrugated washers or the like, having to be inserted. This leads not only to a lower expenditure on components but also, in particular,
- 20 to lower expenditure during the assembly of the headlamp adjusting device, as a result of which a considerable saving results, particularly with such a mass-produced product.

CLAIMS

- 25 1. A device for adjusting a headlamp of a motor vehicle, comprising a first member arranged to be secured to at least one part of the headlamp which is adjustable in relation to the motor vehicle body and a second member arranged to be secured to
- 30 the vehicle body, said members being movable in relation to one another through a screw and nut mechanism having a rotatable face engaging a support face that does not participate in the rotary movement of said mechanism, one of said faces

35 being provided with a plurality of integral projections acting as a resilient support means serving to counteract axial play in said mechanism.

2. A device according to claim 1 wherein the nut of said mechanism is provided with said projections as a plurality of resilient webs formed convexly thereon.

3. A device according to claim 1 or claim 2 wherein there are three of said resilient

45 projections.

4. A device as claimed in any one of claims 1 to 3 wherein the screw and nut mechanism comprises a member which is arranged to be fixed to that headlamp part secured to the vehicle body and which comprises resilient engagement means with which it engages said headlamp part.

5. A device according to claim 4 wherein said resilient engagement means take the form of convexly projecting webs.

55 6. A device for adjusting a headlamp of a motor vehicle, comprising a first member arranged to be secured to at least one part of the headlamp which is adjustable in relation to the motor vehicle body and a second member arranged to be secured to the vehicle body, said members being movable in relation to one another through a screw and nut mechanism, a knurled nut of said mechanism being provided with a plurality of resilient webs serving as a means of counteracting axial play and

60 being supported on a surface of a part which does not participate in rotary movement of the nut.

7. A device for adjusting a headlamp of a motor vehicle, constructed and arranged for use and operation substantially as described herein with

70 reference to the accompanying drawings.