Aug. 26, 1930. S. F. ARBUCKLE 1,774,124

ADJUSTABLE HEADLIGHT SOCKET

Filed Dec. 6, 1926

Fig. 1.

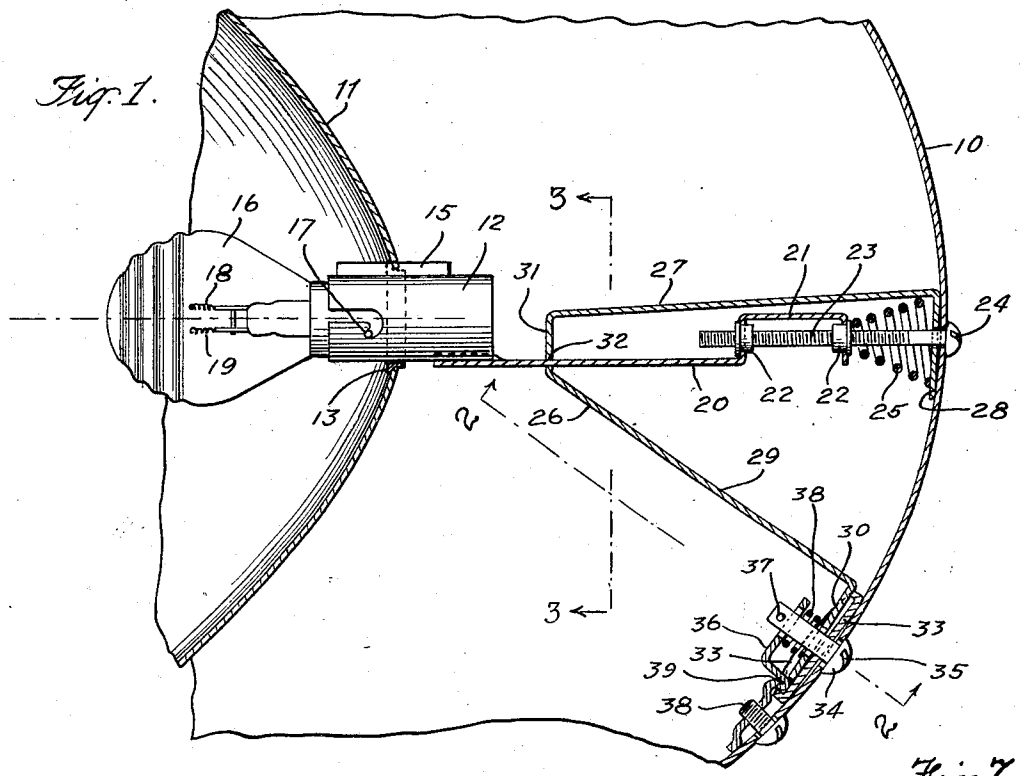


Fig. 7.

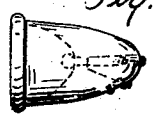


Fig. 3.

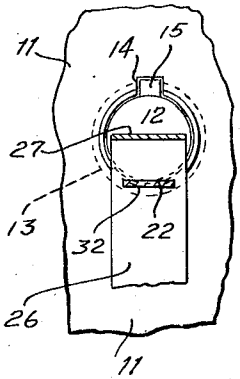


Fig. 5.

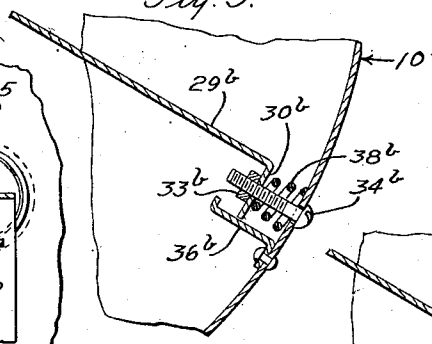


Fig. 2.

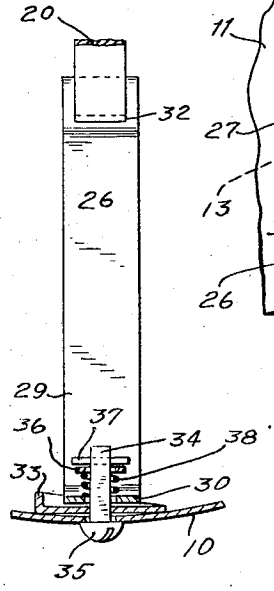


Fig. 6.

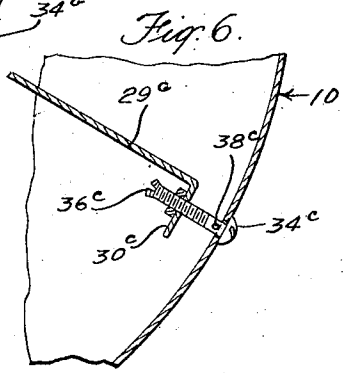
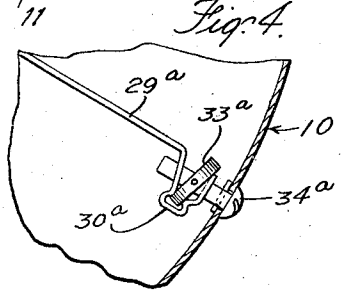


Fig. 4.



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Patented Aug. 26, 1930 1,774,124

UNITED STATES PATENT OFFICE

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ADJUSTABLE HEADLIGHT SOCKET

Application filed December 6, 1926. Serial No. 152,834.

This invention relates to automobile headlights, and more particularly, to means for adjusting the lamp bulb with respect to the reflector. It is well known in the art that the filaments of an electric lamp bulb for a headlight must be properly placed with respect to the reflector in order to obtain the desired lighting effect. Particular difficulty has been found in obtaining electric light bulbs whose filaments are so accurately placed within the bulb, that they will fall in the desired position with respect to the reflector when a bulb is inserted in a fixed socket. This is particularly true of lamp bulbs having two filaments of different light intensities, which must be accurately located with respect to the reflector or great confusion of light rays will result. The object of this invention, therefore, is to provide a socket movable with respect to the reflector and a simple and accurate means to be attached to the socket for adjusting the socket and bulb axially of the reflector, and also in a vertical plane.

Another object of the invention is to provide an adjusting mechanism for a two filament bulb which may be used in a bullet-shaped headlamp.

Other objects and objects pertaining to economies of manufacture will be apparent as the description proceeds.

Broadly, the invention provides a socket slidably and pivotally mounted at the base of the reflector and having an adjusting strip attached thereto, and longitudinally movable by a screw which engages a threaded portion of the adjusting strip and whose head is accessible from the rear of the headlight. A second strip co-operates with the first strip to permit the first strip to slide longitudinally, but to prevent it from flexure. This second strip is anchored on the casing, and means are provided operable from outside of the casing to move this supporting strip to cause flexure of the longitudinal adjusting strip, and a corresponding tilting of the socket and light bulb about its fulcrum at the base of the reflector.

One embodiment of the invention is illustrated in the accompanying drawings, in which

Fig. 1 is a sectional side elevation of a portion of a headlight showing the reflector and the adjusting means connected to the socket;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Figs. 4, 5 and 6 are three modifications of the vertical adjusting means shown in Fig. 1; and

Fig. 7 is an elevation of a bullet-shaped lamp to which this invention is particularly adapted.

Like reference characters indicate like parts throughout the several views.

In Fig. 1 a lamp casing 10 is shown supporting a reflector 11 in the base of which a lamp socket 12 is movably mounted in a collar 13. The collar 13 has an opening 14 at the top thereof, which is adapted to receive a lug 15 rigidly attached to the socket 12. The collar 13 is narrow enongh to permit pivotal movement of the socket therein, and the lug 15 within the opening 14 of the collar prevents the socket from turning and helps to steady the socket in the collar. The bulb 16 may be mounted in the socket with the usual bayonet joint 17. The filaments 18 and 19 as illustrated in Fig. 1, are positioned one above and one below the axis of the reflector, and by tilting the socket 12, it will be seen that these filaments may be adjusted with respect to the axis of the reflector; also the socket, when moved axially will cause the filaments to move on the axis of the reflector toward or away from the focal point of the reflector.

In order to accomplish this axial movement, a strip 20 of metal is rigidly attached to the socket 12 by any convenient method, such as soldering and has its end portion bent in the form of a channel 21. Nuts 22 are attached to the sides of this channel portion and engage the screw 23, the head 24 of which is on the outside of the casing. A spring 25 around the screw 23 urges the strip 20 and the attached socket 12 forwardly away from

the casing 10. When the screw 23 is rotated, by means of an ordinary screw driver inserted in the slot in the head 24, the nuts 22 move along the screw and carry the strip 20 and the socket 12 backward or forward depending on which way the screw is rotated.

The means for causing the vertical adjustment of the socket comprises a strip 26 bent substantially in the shape of a V. One leg 27 of the V extends parallel and adjacent to the adjusting strip 20 and terminates in a foot 28 which is adapted to contact with the casing 10, and through a hole in which the screw 23 passes. The foot 28 is held against the casing 10 by the spring 25, the other leg 29 of the strip 26 terminates in a foot 30 which is bent at right angles thereto and is adapted to lie parallel with the casing 10. The V shaped strip has a straight portion 31 adjacent the vertex thereof, and this straight portion has a slot 32 in which the strip 20 is adapted to slide. When the leg 29 of the strip 26 is moved longitudinally, the portion 31 is raised or lowered and the strip 20 is flexed causing the socket to tilt about the collar 13. Longitudinal movement of the leg 29 is accomplished by a crown cam 33 which is positioned between the casing 10 and the foot 30; a pin 34 extends through the casing and crown cam, and also through a hole in the foot 30. The crown cam 33 is fixed to the pin 34 and may be rotated by a screw driver inserted in the slot 35 in the head of the pin 34. A locking arm 36 is also positioned so that the pin 34 passes through a hole therein and a cotter pin 37 is inserted in the end of the pin 34 to prevent the arm 36 from slipping off from the pin. A spring 38 is positioned between the foot 30 and the locking arm 36 and tends to keep the foot 30 pressed against the crown cam and the head of the pin 34 in contact with the casing 10. A screw 38 passes through a hole in the casing 10 and is threaded into the locking arm 36, and a portion 39 of the locking arm is bent downwardly in proximity to the crown cam 33, and is adapted to grip the crown cam and hold the same against rotation when the screw 38 is tightened. When the screw 34 is rotated, the crown cam 33 rotates and pushes the foot 30 forwardly, thereby causing the vertical adjustment as above described.

In Figures 4, 5 and 6, modifications of the vertical adjustment means are illustrated. In Figure 4 the pin 34^a has a disc 33^a mounted thereon at an angle. The leg 29^a has its end bent in a U-shaped portion 30^a through holes in the legs of which the pin 34^a is adapted to pass and whose legs straddle the disc 33^a. The bending of the portion 30^a is such that this portion contacts with the disc 33^a at one portion only in the circumference thereof, and therefore when the disc 33^a is rotated, the leg 29^a is moved longitudinally.

In Figure 5, the leg 29^b terminates in a foot 30^b which has a nut 33^b attached thereto; a screw 34^b is threaded into the nut 33^b passing through a hole in the casing; a spring 38^b urges the foot 30^b away from the casing; a guide member 36^b is attached to the casing and is adapted to limit the inward motion of the foot 30^b.

Figure 6 is somewhat similar to Figure 5. In this case however, the screw 34^c is held in the casing by the cotter pin 38^c, and the foot 30^c of the leg 29^c is prevented from coming off of the screw by having the end of the screw split and expanded as at 36^c.

In the operation of the preferred form of the device illustrated in Figures 1, 2 and 3, axial adjustment of the bulb may be made by rotating the screw 24, and vertical adjustment may be made by rotating the screw 34. While the adjustment in one direction might possibly throw out the adjustment in the other direction, several alternate adjustments of the screws will place the filaments in the exact position desired.

It will be noted that in Fig. 1 the springs 25 and 38 provide enough friction between the moving parts to prevent accidental displacement after the parts have been adjusted. However, to make it doubly sure that the vertical adjusting means may not become accidently displaced, the same may be locked tightly by means of the screw 38 and the locking arm 36.

While I have described and illustrated certain embodiments of the invention, many modifications may be made in the construction without departing from the spirit of the invention, and I desire it to be understood that my invention is not limited to any specific form or arrangement of parts except in so far as such limitations are specified in the claims.

What I claim is:

1. In a headlight, a casing; a reflector positioned within said casing; a socket movably mounted in said reflector; a strip rigidly attached to said socket and extending axially thereof; means to support the other end of said strip upon said casing; a V-shaped strip supported by the legs thereof upon said casing, one of said legs extending parallel and adjacent to said first strip, and the other of said legs extending at an angle with respect to said first strip, said V-shaped strip having a slot through which said first strip is adapted to have axial movement; and means to move the second mentioned leg of said V-shaped strip whereby said first mentioned strip is flexed and said socket tilted.

2. In a headlight, a casing; a reflector positioned within said casing; a socket movably mounted in said reflector; a strip rigidly attached to said socket and extending axially thereof; means to support the end of said strip upon said casing; a second strip co-operating with said first strip to permit lon-

gitudinal but not vertical movement thereof; a foot on the end of said second strip, and a crown cam adapted to engage said foot and move said strip longitudinally when said cam is rotated whereby said first strip is flexed and said socket tilted.

3. In a headlight, a casing; a reflector positioned within said casing; a socket movably mounted in said reflector; a strip rigidly attached to said socket and extending axially thereof; means to support the end of said strip upon the casing; a second strip co-operating with said first strip to permit longitudinal but not vertical movement thereof; a foot on the end of said second strip and a crown cam adapted to engage said foot and move said strip longitudinally when said cam is rotated, whereby said first strip is flexed and said socket tilted; and means to lock said cam against rotation.

4. In a headlight, a casing; a reflector positioned within said casing; a socket movably mounted in said reflector; a strip rigidly attached to said socket and extending axially thereof; means to support the end of said strip upon said casing; a second strip co-operating with said first strip to permit longitudinal but not vertical movement thereof; a foot on the end of said second strip and a crown cam adapted to engage said foot and move said strip longitudinally when said cam is rotated, whereby said first strip is flexed and said socket tilted; and a spring adapted to hold said foot against said cam.

5 In a headlight, a casing; a reflector positioned within said casing; a socket movably mounted in said reflector; a strip rigidly attached to said socket and extending axially thereof; means to support the end of said strip upon the casing; a second strip co-operating with said first strip to permit longitudinal but not vertical movement thereof; a foot on the end of said second strip and a crown cam adapted to engage said foot and move said strip longitudinally when said cam is rotated, whereby said first strip is flexed and said socket tilted; a locking strip; and means to tighten said locking strip against said cam to prevent rotation thereof.

6. In a headlight, a casing; a reflector positioned within said casing; a socket movably mounted in said reflector; a strip rigidly attached to said socket extending axially thereof; a nut attached to the end of said strip; a screw rotatably mounted in said casing and having threaded engagement with said nut; a spring normally urging said strip toward said reflector; a second strip co-operating with said first strip to permit longitudinal but not vertical movement of said first strip with respect to said second strip; a foot on the end of said second strip; and a cam rotatably mounted on said casing and adapted to engage said foot to cause longitudinal movement of said second strip.

7. In a headlight, a casing; a reflector positioned within said casing; a socket movably mounted in said reflector; a strip rigidly attached to said socket extending axially thereof; a nut attached to the end of said strip; a screw rotatably mounted in said casing and having threaded engagement with said nut; a spring normally urging said strip toward said reflector; a V-shaped strip mounted upon the casing by the legs thereof, the vertex of said strip having sliding engagement with said first mentioned strip and a cam between the end of one of said legs and the casing and rotatably mounted upon the casing and adapted to cause a tilting action of said V-shaped strip when said cam is rotated, whereby said first mentioned strip is flexed and said socket tilted.

8. In a headlight, a casing; a reflector positioned within said casing; a socket movably mounted in said reflector; a strip rigidly attached to said socket and extending axially thereof; means to support the other end of said strip upon said casing; a second strip mounted upon said casing adjacent said first strip and having a portion extending parallel therewith to a point adjacent said socket and a second portion extending downwardly and rearwardly, said second strip having a slot therein adjacent the bend thereof through which said first strip is adapted to have axial movement; a cam rotatably mounted on said casing and adapted to engage with the other end of said second strip whereby rotation of said cam will cause movement of one end of said second strip and a consequent flexing of said first strip whereby said socket is tilted vertically in said reflector.

In testimony whereof, I affix my signature.

SAMUEL F. ARBUCKLE.