June 1, 1926. 1,586,795

C. E. GODLEY

FOCUSING DEVICE

Filed May 9, 1925

Fig. 1.

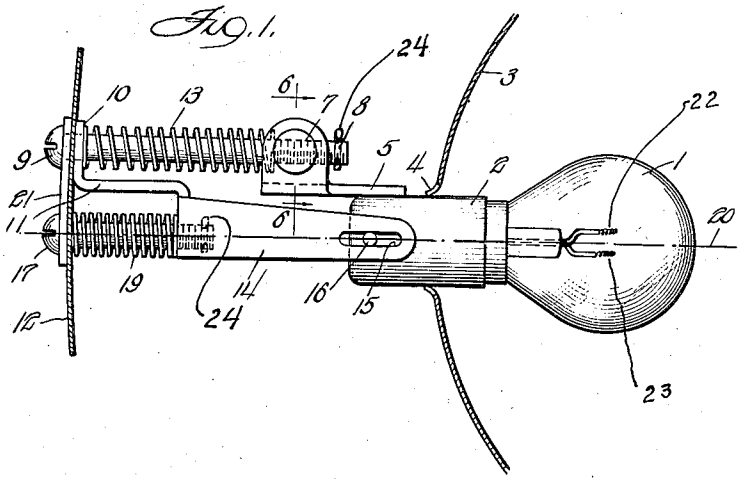


Fig. 3.

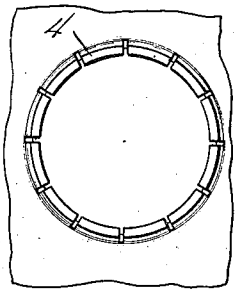


Fig. 2.

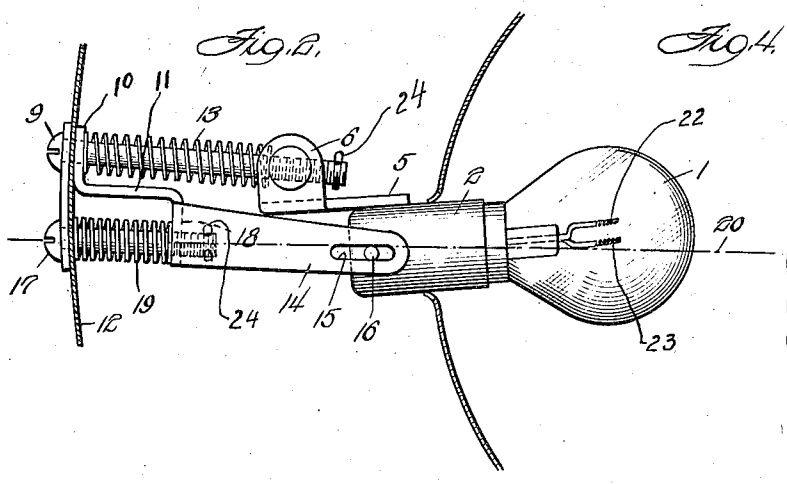


Fig. 4.

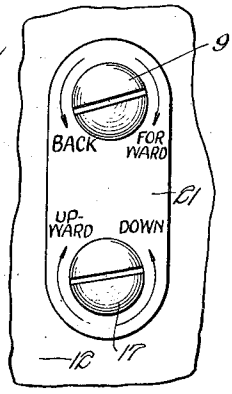


Fig. 5.

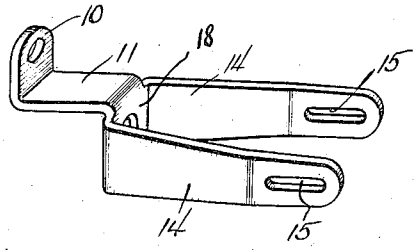
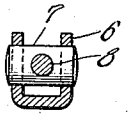


Fig. 6.



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UNITED STATES PATENT OFFICE.

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FOCUSING DEVICE.

Application filed May 9, 1925. Serial No. 29,038.

My invention relates to focusing devices of the general class employed for shifting the position of a lamp with respect to a reflector.

Generally speaking, my invention aims to provide an unusually simple, inexpensive and easily adjusted focusing device adapted to adjust the position of a lamp socket so as to move the socket and lamp axially of the reflector, and also adapted to tilt the lamp socket so as to raise or lower the filament of the lamp. It also provides a construction for this purpose particularly suited for use in a lamp which has the back of the casing disposed at some distance behind the reflector. Moreover, my invention provides a focusing device of this type which can readily be manipulated even by inexperienced users and which can have simple direction indications marked on an exposed portion thereof for designating the directions in which the adjusting screws of the device are to be moved for effecting the several possible adjustments. Still further and also more detailed objects will appear from the following specification and from the accompanying drawings, in which—

Fig. 1 is a fragmentary vertical section through a lamp equipped with my focusing device, taken along the axis of the reflector of the lamp and showing a two-filament lamp bulb positioned with its filaments respectively above and below the axis of the reflector.

Fig. 2 is a similar section taken after the lower or tilt-effecting screw has been somewhat tightened so as to tilt the lamp bulb to dispose both filaments above the axis of the reflector.

Fig. 3 is an enlarged rear view of the central portion of the reflector, showing the slits which afford spring fingers engaging the lamp socket.

Fig. 4 is an enlarged rear view of a portion of the lamp back, showing the adjustment-indicating markings on the stiffening plate of the focusing device.

Fig. 5 is a perspective view of the rocking member of the device.

Fig. 6 is a vertical section taken through the pivoting bracket on the lamp socket and the pivot nut, along the line 6—6 of Fig. 1.

In accomplishing the purposes of my invention after the manner of the drawings, I mount the lamp bulb 1 in a lamp socket 2 which has a cylindrical shell portion extending slidably through a central perforation in the reflector 3. The portion of the reflector surrounding this perforation is preferably drawn into a rearwardly tapering tubular formation and is provided with a number of longitudinal slits, thereby affording a plurality of fingers 4 which have their tips in yielding engagement with the socket shell 2. Thus constructed, these spring fingers permit the socket shell to be slid backwards or forward through the perforation in the reflector and also permit this shell to be rocked about the wall of the perforation as a fulcrum.

The socket shell 2 has fast upon it a pivoting member, here shown as comprising a bracket having a stem 5 soldered to the shell and having a forked rear end 6 in which a nut 7 is pivoted. Threaded through this nut is a screw 8 which has its head 9 exposed at the back of the lamp and which also extends somewhat loosely through the foot 10 of a tilting member 11, the said foot being continuously pressed towards the back 12 of the lamp body by a compression spring 13 interposed between the said foot 10 and the pivotally mounted nut 7. The tilting member 11 has its forward portion formed so as to provide a pair of arms 14 which extend along opposite sides of the socket shell 2, each of these arms having a longitudinal slot 15 slidably engaging a laterally projecting pin 16 on the socket shell.

Extending also through the back 12 of the lamp body is a screw 17 which is threaded through a part of the tilting member, this part being here shown as a vertically disposed portion 18 which connects the two arms 14 with the more rearward portions 10 and 11 of this tilting member. Interposed between this vertical portion 18 and the back 12 of the lamp casing is a compression spring 19 which desirably is considerably stronger than the spring 13. This latter spring continuously urges the part 18 forwardly, so as to draw the head of the screw 17 against the back of the lamp body and so as to prevent both backlash in the threaded engagement of the screw with the part 18 and an accidental loosening of the screw. The screw 17 desirably is disposed so that it will be coaxial with the reflector when the socket shell is also in alinement with that axis, while the companion screw 9 desirably

extends parallel to the axis of the reflector when the socket shell is in its said axial alinement with the reflector.

Since the bracket 5 is rigidly connected to the socket shell, it forms a substantially integral pivoting portion of the lamp socket. Consequently, a tightening of the upper screw 9 will draw the socket shell rearwardly, while a loosening of this screw will cause the nut to move the bracket 5 and the socket shell forwardly. Likewise, an adjustment of the screw 9 will move the lamp filament either forwardly or rearwardly, according to the direction in which this screw was rotated.

If the lower screw 17 is rotated in a direction tending to screw it further through the part 18 of the tilting member, this member is rocked upon its foot 10 so as to move the arms 14 downwardly, thereby causing the upper walls of the slots 15 to press the rear end of the socket shell downwardly, thereby tilting the socket shell about its fulcruming engagement with the wall of the perforation 9 in the reflector. By forming the reflector parts adjacent to this central aperture into spring fingers, I readily permit the wall of this perforation to adjust its shape to correspond to such a tilting of shell, while still having the socket shell gripped laterally to prevent rattling. The slight amount of play between the shank of the screw 9 and the perforation in the foot 10 of the tilting member also permits this screw to tilt correspondingly. Consequently, the parts of my device will be moved to a position such as that shown in Fig. 2, namely one in which both filaments 22 and 23 of the lamp is raised above the axis 20 of the reflector. Likewise, if the lower screw 17 is turned in the opposite or loosening direction from its position of Fig. 1, the forward movement imparted to the part 18 of the tilting member will rock the latter in the opposite direction about its foot, thereby raising the pins 16 and causing the lamp to tilt forwardly downward. Hence any needed adjustment of the filaments can readily be made forward or rearward of the reflector, and also upward or downward.

To prevent the ensuing tilting of the two screws with respect to the axis of the reflector from indenting or bending the back 12 of the lamp casing, I preferably reinforce the adjacent portion of the back by a plate 21. This plate is desirably provided with markings for indicating the directions in which the screw 9 is to be rotated respectively for effecting the forward or backward movement of the lamp, and also for indicating the directions in which the screw 17 is to be rotated for moving the lamp filament either upward or downward, such indications being shown in Fig. 4.

Thus arranged, each spring urges the adjacent screw forwardly, so that I secure an effective swiveling engagement of each screw with the stationary member through which the screw loosely extends, this member being here shown as the back 12 of a lamp casing. In addition to serving this purpose, each spring also takes up any backlash in the part through which the adjacent screw is threaded, and the upper spring 13 holds the foot 10 of the tilting member against the back of the casing while permitting the said member to be rocked about this foot. To prevent an excessive retraction of the screws by an inexperienced user, I desirably provide spring cotters 24 for limiting their unscrewing movement.

By making the spring 13 considerably lighter than the spring 19, I prevent an undue pressure of the former spring from interfering with the tilting adjustment which raises or lowers the optical center of the lamp filament or filaments and permit the socket shell to be moved forwardly or rearwardly (by means of the lower screw 19) without materially tilting the rocking member and the socket.

In applying my invention to an automobile head lamp, the two screws are desirably disposed above one another, so that the socket is rocked in a vertical plane. Hence I am illustrating a corresponding arrangement in connection with a lamp bulb having two filaments 22 and 23, this being a type of lamp bulb in which the several adjustments afforded by my focusing device are particularly needed.

Since my entire device only requires a few simple punchings together with two springs and two ordinary screws and a cheaply turned nut, it will be evident that this construction is exceedingly simple, cheap and easily assembled. So also, its manipulation is so simple that even an inexperienced person can readily accomplish the desired adjustments, particularly when the reinforcing plate is provided with arrows and corresponding letter indications after the manner of Fig. 4.

However, while I have illustrated and described my focusing device in an embodiment including certain desirable shapes of the various parts, and one in which the tilt-effecting screw is substantially axial of the reflector, I do not wish to be limited to these or other details of the construction and arrangement here disclosed, it being obvious that many changes might be made without departing either from the spirit of my invention or from the appended claims.

I claim as my invention:—

1. In a lamp, a reflector having a perforation, a lamp socket extending through the perforation, a stationary wall behind and spaced from the reflector, a pair of screws swiveled upon the wall, a nut threaded on

one of the screws and pivoted on the socket; and a lever having rocking engagement with the wall, threaded engagement with the other screw and pivotal engagement with the socket; the pivotal connections of the socket to the nut and the said other screw being spaced longitudinally of the socket.

2. A lamp construction as per claim 1, in which the rocking engagement of the lever with the wall is afforded by a foot through which the first named screw extends.

3. A lamp construction as per claim 1, in which the rocking engagement of the lever with the wall is afforded by a foot through which the first named screw extends and a compression spring interposed between the nut and the said foot for holding the foot against the wall.

4. In a lamp, a reflector, a lamp socket including a shell having a bracket fast thereon, a nut pivoted on the bracket, a casing having its back behind and spaced from the reflector, a screw extending forwardly through and swiveled upon the said back, the screw being threaded into the nut, a rocking member having its rear end pivoted on the said screw adjacent to the said back and having its forward end pivotally connected to the socket shell, a compression spring interposed between the said rear member end and the nut, a second screw extending forwardly through and swiveled upon the said back and threaded through a part of the rocking member, and a second spring interposed between the said member and the said part of the rocking member.

5. A lamp construction as per claim 1, in which the rocking lever has a pair of longitudinally slotted arms extending forwardly adjacent to opposite sides of the socket shell, and in which the socket is provided with a pair of pins each slidably housed by the slot in one of the said arms.

6. In a lamp, a reflector having an axial perforation; a lamp socket extending through the perforation, the reflector portion surrounding the perforation being formed into spring fingers engaging the socket to fulcrum the socket thereon, the pressure of the fingers being sufficiently light to permit both an axial sliding of the socket and a tilting thereof about its engagement with the said fingers; a pivoting element carried by the socket and disposed rearwardly of the reflector and at one side of the axis of the socket; a screw support behind and spaced from the socket; a screw swiveled on the screw support and threadedly connected to the pivoting element; a lever pivoted at one end to the screw support and at its other end to the socket, and a second screw swiveled on the screw support and threadedly connected to the lever intermediate of its end.

7. A lamp construction as per claim 6, in which the pivoting connection of the lever to the screw support is at one side of the axis of the reflector and in which the swiveling connection of the second screw to the screw support is substantially axial of the reflector.

Signed at Detroit, Michigan, May 5th, 1925.

CHARLES E. GODLEY.