J. C. STEARNS.

ELECTRIC LAMP.

APPLICATION FILED APR. 9, 1914.

1,115,033. Patented Oct. 27, 1914.

Fig. 1.

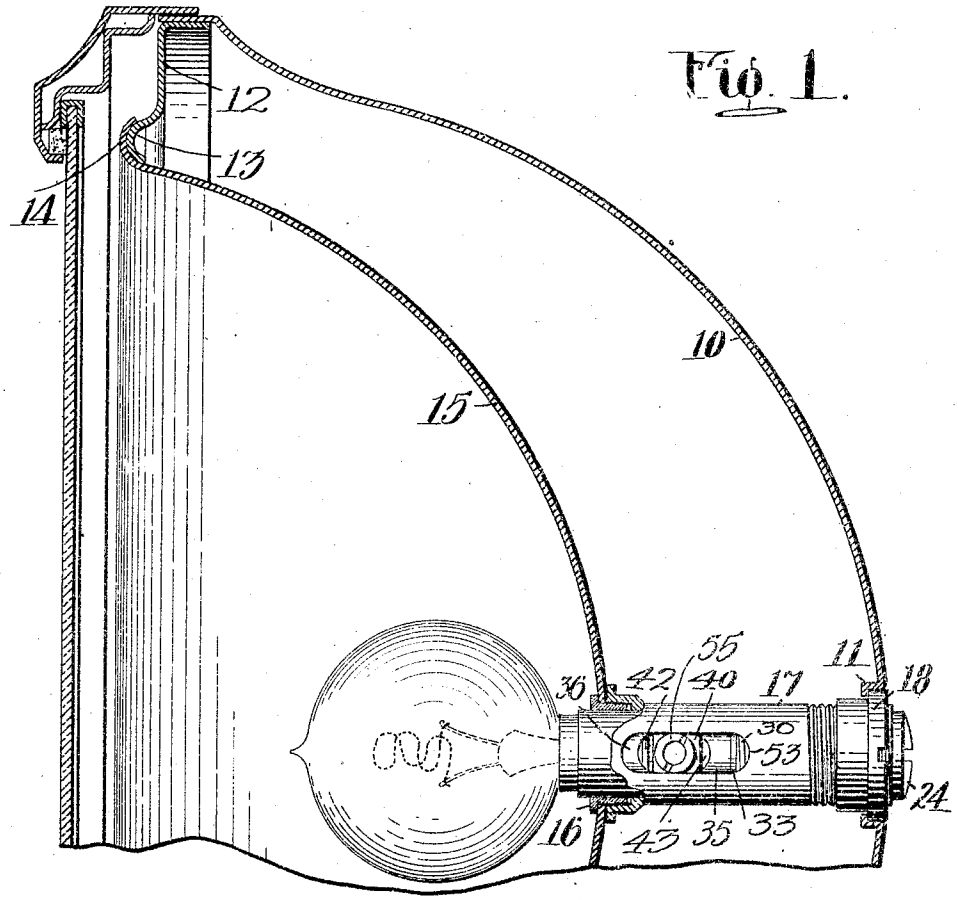


Fig. 2.

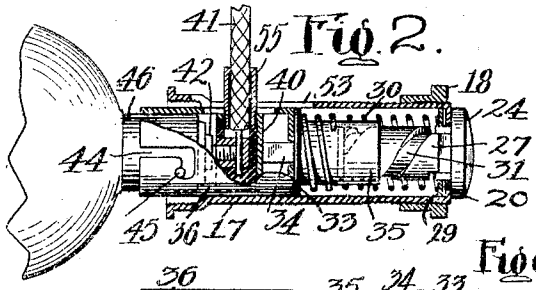


Fig. 3.

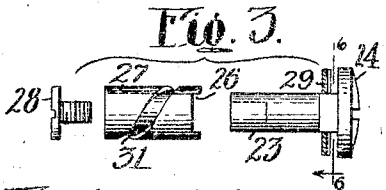


Fig. 8.

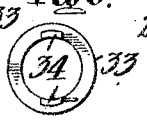


Fig. 6.



Fig. 5.

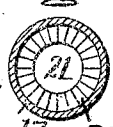


Fig. 4.

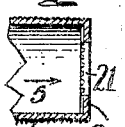


Fig. 7.

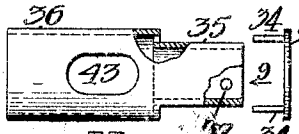


Fig. 10.

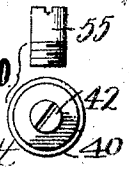


Fig. 9.

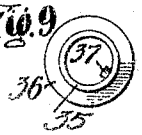
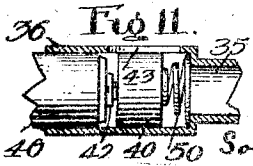


Fig. 11.



Witnesses
C. F. Mason
L. L. Hartnett

Inventor
J. C. Stearns
By Attorneys
Southgate & Southgate

UNITED STATES PATENT OFFICE.

JASON C. STEARNS, OF WORCESTER, MASSACHUSETTS.

ELECTRIC LAMP.

1,115,033. Specification of Letters Patent. Patented Oct. 27, 1914.

Application filed April 9, 1914. Serial No. 830,783.

To all whom it may concern:

Be it known that I, JASON C. STEARNS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Electric Lamp, of which the following is a specification.

This invention relates to an electric lamp capable of several uses but especially adapted for use as a head light upon automobiles and other vehicles.

The principal objects of the invention are to provide a construction for this purpose in which the lamp can be focused by moving it axially with respect to the mirror without opening the casing or door; to provide a construction in which the frame which supports the lamp socket will also hold the mirror in position at the center and thus do away with the usual series of screws around the edge and also hold it yieldingly so that the vibration will not work the parts loose; to provide a construction for this frame of such a character that the entire frame can be secured to the back of the reflector and inserted in the casing with it, so that the assembling of the parts will be simplified and the cost thereof reduced; to provide a simple construction in which by a very simple spring arrangement, the ratchet which controls the motion of the lamp out and in and the terminal which presses against the lamp base will be yieldingly held in position so as to prevent sidewise motion of the lamp; and to provide improvements in the details of construction of the above mentioned parts and especially the mechanism for adjusting or focusing the lamp from the exterior of the casing.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a central sectional view of a lamp casing provided with a preferred embodiment of this invention showing the parts at the center in side elevation; Fig. 2 is a central sectional view of the parts connecting the casing and reflector; Fig. 3 is a side elevation of certain of these parts removed from the frame and separated from each other; Fig. 4 is a longitudinal central sectional view of one end of the ratchet mechanism; Fig. 5 is an end elevation of the same; Fig. 6 is an end elevation of the washer constituting the other member of the ratchet device, the adjusting stud appearing in section; Fig. 7 is a side elevation partly in section of the lamp socket and connected parts; Fig. 8 is an end elevation of the washer shown in Fig. 7; Fig. 9 is an end elevation of the lamp socket shown in Fig. 7; Fig. 10 is an end view of the contact member showing the retaining screw removed therefrom; and Fig. 11 is a longitudinal central sectional view similar to Fig. 2 of a modified form of the invention.

The invention is shown as applied to a sheet or spun-metal head lamp casing 10 of the usual construction, except that at the center of the rear it is provided with a perforation having a shoulder 11. At the outer edge it is provided with a sheet metal ring 12 shown as brazed on the edge of the casing, although it can be formed in any other desired way. This ring is provided with a curved flange 13 at its inner edge for receiving a curved flange 14 on the outer edge of the sheet metal reflector 15. This flange 14 simply rests at its concave side against the convex side of the flange 13 and is held against the same by the mechanism about to be described. At the center of the reflector it is provided with a perforation through which passes a shouldered bushing 16. On the exterior of this bushing is a screw-thread which receives a thread on the inside of the end of a tubular connecting frame 17. This frame is arranged axially and is secured in position on the reflector by screwing it on the bushing. It is then secured to the casing by a lock nut 18 on its outer end which enters the opening in the back of the casing and presses up against the shoulder 11. It will be seen therefore, that this frame 17 can be inserted with the reflector and secured in position in a very simple manner. The assembling of these parts is complicated ordinarily by the fact that when ready to assemble the mirror is all silvered and that surface is in the condition in which it is desired to put it on the market. Consequently it must be handled very carefully and the less manipulation it is subjected to, the better. With this construction it will be seen that the bushing can be dropped into the perforation in the end of the mirror and the frame secured to it from the back with-

out touching the silvered surface. After these parts are firmly secured together by screwing up the frame the mirror can be handled by its edge and put into place very readily. Then the nut 18 is screwed up from the outside and the parts are thus securely fixed in position. This is a great convenience in the assembling of the parts and reduces the cost of that operation. It will be obvious that having screwed the frame up as far as it will go on the bushing 16, the nut 18 can be manipulated to hold the reflector and casing together with any desired amount of pressure. These parts being of thin metal, there is enough give in them and in the ring 12 to take up the changes due to vibration and they are held together with a yielding pressure.

The frame 17 carries within it a number of elements which are assembled as a whole with it. At the rear end this casing is provided with an integral end plate 20 having a central circular perforation 21 therethrough, which perforation is surrounded by a set of ratchet teeth 22. Through this perforation extends the shank 23 of an adjusting stud. The shape of this shank at this point is shown in Fig. 6. It has a slotted head 24 on the outer end by which it can be manipulated. This head is so slotted that it can be operated either by a screw-driver or by inserting a coin, as for example, a cent or dime, and turning the same. The shank 23 of this adjustable stud is adapted to engage in slots 26 in the end of a cam sleeve 27 having a helical groove 31. This sleeve is hollow and the stud passes through it, being held to it by a screw 28. Between this sleeve and the ratchet 22 is a washer 29 having corrugations or ratchet teeth on its surface adapted to engage the teeth 22. It has an opening 25 at the center fitting the non-circular shank of the stud, and turns with it, while the stud turns in the perforation 21. This washer is pressed against the ratchet surface of the wall 20 by a spring 30 inside the frame but otherwise is free to move longitudinally. The spring 30 extends to the end of the sleeve 27 and beyond the same so as to engage a plunger washer 33. This washer is provided with a pair of legs 34 and is centrally perforated so as to fit on to a cylindrical projection 35 which extends out at the rear of the lamp socket 36. On the projection 35 is a pin 37 which is adapted to enter the helical groove 31 in the surface of the cam sleeve 27. The ends of the legs 34 are pressed to the left in these figures by the spring 30, pass through perforations in the bottom of the lamp socket and engage the surface of a member 40 which constitutes a connection for the electric wire 41. This is one lamp terminal, the frame constituting the other terminal. This connector or wire 41 is secured in position in the member 40 which is formed of insulating material by a terminal screw 42. The wire extends out of the frame through elongated slots 43 and 53 in the socket and frame. This lamp socket as usual is provided with L-shaped slots 44 for studs 45 on the base 46 of the lamp.

It will be obvious that the spring 30 not only holds the two ratchet rings together with a yielding pressure, but also holds the terminal screw 42 against the end of the lamp base when the lamp is in position. It also holds the lamp socket itself. By holding these parts with a yielding pressure, they are not likely to work loose or get out of order in practice. The operation required for adjustment is extremely simple, the head 24 of the adjusting stud being turned in either direction to cause the stud 37 to move along in the groove 31. The function of the ratchet, of course, is simply to hold the parts in any adjusted position and permit them to be adjusted in either direction readily.

In the form shown in Fig. 11, most of the same conditions prevail, but in that case the spring outside the projection 35 simply holds the ratchet, which is not shown in this figure, and the lamp socket. In this case an additional spring 50 is shown for holding the contact member against the end of the lamp base.

Although I have illustrated and described only two forms of the invention, I am aware of the fact that other modifications can be made therein without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited in these respects, but

What I do claim is:—

1. The combination with a lamp casing and a reflector therein, said casing having a flange extending inwardly at the edge thereof and the outer end of said reflector extending over the front of said flange, of a connecting frame located between the reflector and casing secured to the rear side of the reflector at one end, a lock nut centrally located at the rear of the outside of the casing for securing the frame to the casing and thus securing the reflector and casing together, a longitudinally adjustable lamp socket projecting from the inner end of said frame into the interior of the reflector, a slotted head concentric with said lock nut on the rear of the casing, means connected with and operated by said slotted head for adjusting said lamp socket, a spring-pressed terminal extending into and forming the bottom of said socket, and a conductor connected with said terminal and extending through the side of said frame into the space between the reflector and casing.

2. The combination with a lamp casing

and a reflector therein, said casing having a flange extending inwardly at the edge thereof and the outer edge of said reflector extending over the front of said flange, of a connecting frame secured to the rear of the reflector, means on the rear of the casing for securing said frame in position thereon, a longitudinally adjustable lamp socket projecting from the inner end of said frame into the interior of the reflector for holding a lamp, a pair of ratchet members at the outer end of said frame, and means connected with one of said ratchet members and accessible from the rear of the casing for turning one ratchet member on the other to adjust said lamp socket back and forth.

3. The combination with a lamp casing and a reflector therein, of a connecting frame secured to the rear of the reflector, means for securing said frame in position on the casing, a longitudinally adjustable lamp socket projecting from the inner end of said frame into the interior of the reflector for holding a lamp, a pair of ratchet members at the outer end of said frame, means connected with one of said ratchet members and accessible from the rear of the casing for turning one ratchet member on the other to adjust said lamp socket back and forth, and yielding means within said frame for holding the ratchet members together and exerting a pressure on said lamp socket.

4. The combination with a lamp casing and reflector inside the same, of a frame connecting the reflector and casing, means outside the casing for securing the frame in position, a lamp socket in the inner end of said frame, means accessible from the rear of the casing for adjusting said lamp socket back and forth, said means comprising a pair of ratchet members, a terminal member in said frame having a terminal therein projecting into the socket and adapted to engage the end of a lamp base fitting in said socket, and a spring in said frame bearing at one end on one of the ratchet members to hold it against the other ratchet member and bearing at the other end on said terminal member to hold the terminal against the lamp with a yielding pressure.

5. The combination with a lamp casing and a reflector, of a frame connecting the reflector and casing, a lamp socket in the inner end of said frame, a pair of ratchet members, a terminal member in said frame having a terminal therein projecting into the socket and adapted to engage the end of a lamp base in said socket, and a spring in said frame bearing at one end on one of the ratchet members to hold it against the other ratchet member and bearing at the other end on said terminal member to hold the terminal against the lamp with a yielding pressure.

6. In a focusing device for an electric lamp, the combination with a mirror and a lamp casing, of a frame fixed to both of them and located between them, an adjusting stud extending from the end of said frame and casing, said frame being provided with a ratchet member fixed thereto, a second ratchet member coöperating with the first ratchet member and arranged to rotate with said adjusting stud, a sleeve rotatable with said adjusting stud and having a helical groove therein, and a lamp socket movably mounted in said frame and having a pin engaging said groove.

7. In a focusing device for an electric lamp, the combination with a mirror and a lamp casing, of an adjusting stud extending into the casing, a fixed ratchet member, a second ratchet member coöperating with the first ratchet member and arranged to rotate with said adjusting stud, a sleeve rotatable with said adjusting stud and having a helical groove therein, a lamp socket movably mounted in said frame and having a pin engaging said groove, and a spring for exerting pressure between the second member of said ratchet and the lamp socket, whereby they are both held yieldingly.

8. In a focusing device for an electric lamp, the combination with a mirror and a lamp casing, of a frame fixed to both of them and located between them, an adjusting stud extending from the end of said frame and casing, said frame being provided with a ratchet member fixed thereto, a second ratchet member coöperating with the first ratchet member and arranged to rotate with said adjusting stud, a sleeve rotatable with said adjusting stud and having a helical groove therein, a lamp socket movably mounted in said frame and having a pin engaging said groove, means for exerting pressure between the second member of said ratchet and the lamp socket, whereby they are both held yieldingly, a contact member located within the lamp socket and yieldingly pressed forward so as to engage a lamp base therein with a yielding pressure, and an electrical connection extending outwardly through the frame to said contact member.

9. In a focusing device for an electric lamp, the combination with a mirror and a lamp socket, of a non-rotatable ratchet ring, a second ratchet ring rotatably mounted with respect to said mirror and coöperating with the first ratchet ring, an adjusting device connected with the lamp socket and adapted to be held in adjusted position by the ratchet device, and a spring for holding the ratchet rings together.

10. In a focusing device for an electric lamp, the combination with a mirror and a lamp socket therein, of two coöperating

ratchet rings having teeth on their flat surfaces, one rotatable and the other non-rotatable, a stud and slot connection, the slot being helical and connected with one ratchet ring, and the stud being connected with the other, and a spring pressing said ratchet rings together.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

JASON C. STEARNS.

Witnesses:
ALBERT E. FAY,
C. FORREST WESSON.