G. E. RICKER.

ELECTRIC LAMP.

APPLICATION FILED JAN. 14, 1918. RENEWED MAY 12, 1920.

1,344,429. **Patented June 22, 1920.**

2 SHEETS—SHEET 1.

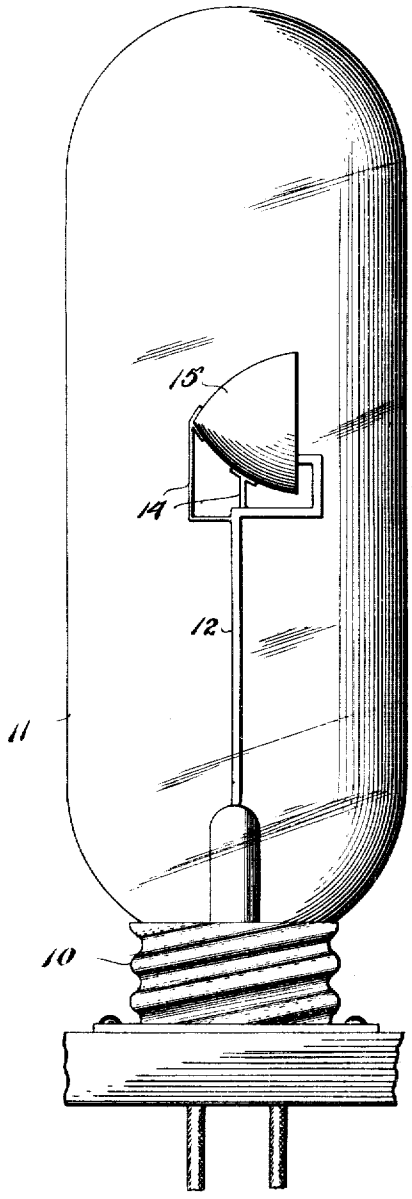


Fig. 1.

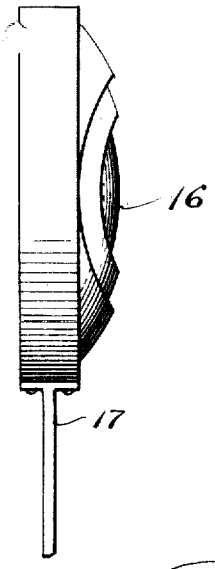
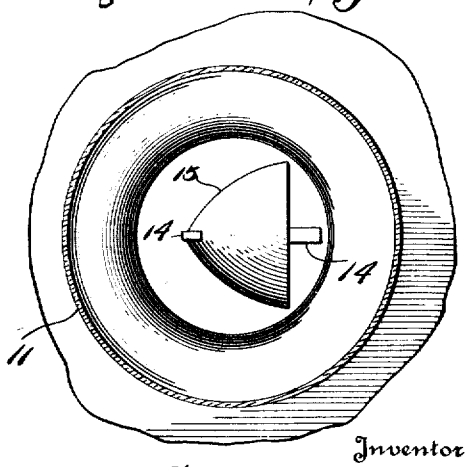


Fig. 3.



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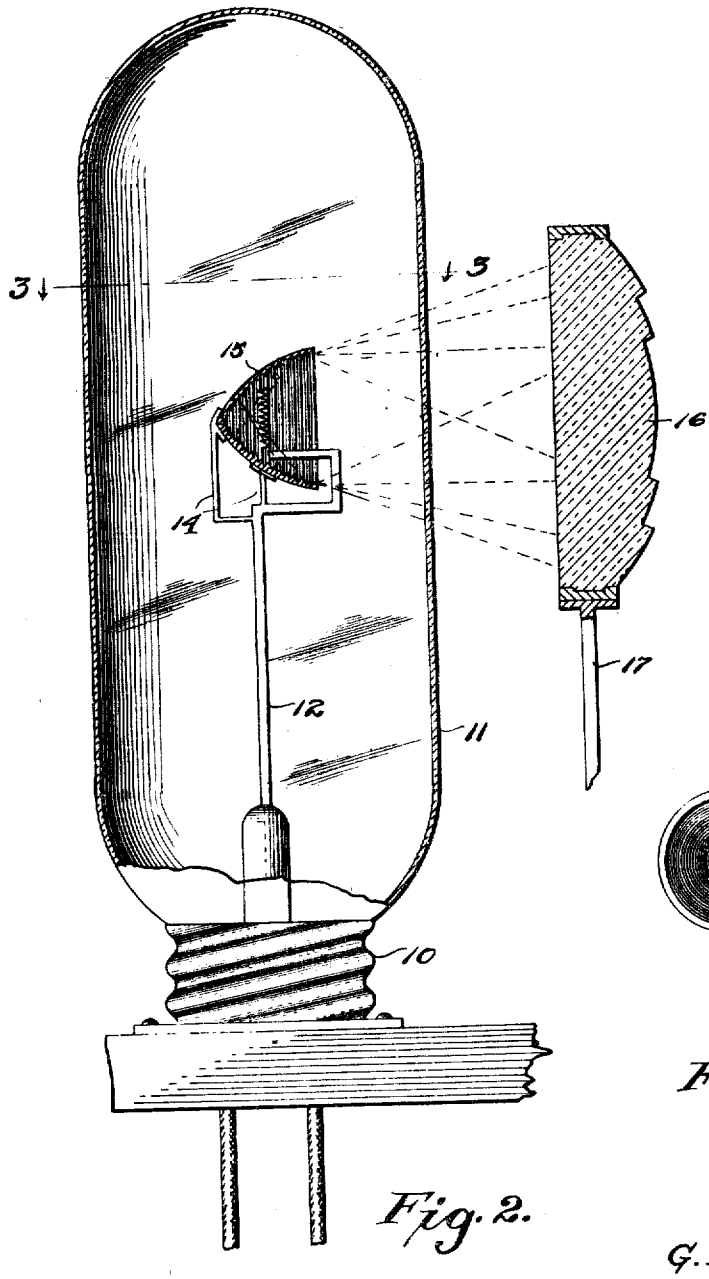

Fig. 2.

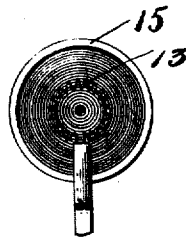

Fig. 4.

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UNITED STATES PATENT OFFICE.

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ELECTRIC LAMP.

1,344,429. Specification of Letters Patent. Patented June 22, 1920.

Application filed January 14, 1918. Serial No. 211,844. Renewed May 12, 1920. Serial No. 380,908.

To all whom it may concern:

Be it known that I, GEORGE E. RICKER, a citizen of the United States, residing at Fitzgerald, in the county of Ben Hill and State of Georgia, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification.

This invention relates to electric lamps and has special reference to the electric lamp of the incandescent type.

It is well known in the art of operating moving picture projectors that an intense beam of light is necessary which must be concentrated on the film in order to produce a sufficiently brilliant picture on the screen. Heretofore it has been common to utilize arc lamps for this purpose and it has not been possible to produce a properly concentrated light from an incandescent lamp wherein practically all of the light emanating from the incandescent filament will be utilized. Attempts have been made to utilize incandescent lamps by placing behind the bulb a reflector of parabolic or other suitable shape and in front of the bulb a condensing lens. The difficulty existing in the construction of this kind is that by far the largest portion of the light rays escape between the reflector and the lens.

The principal and most important object of the present invention is to produce an incandescent lamp containing within the bulb a reflector of such character as to reflect practically all of the rays in one direction.

A second very important object of the invention is to employ a lamp of this character in connection with a condensing lens so arranged that all of the rays which emanate directly from the incandescent filament together with those reflected from the reflector will impinge on the surface of the condensing lens or condenser and consequently substantially the entire quantity of light emanating from the filament will be utilizable for the purpose of illuminating the film picture.

With the above and other objects in view, such as will be hereinafter apparent the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawing, and specifically claimed.

In the accompanying drawing, like characters of reference indicate like parts in the several views, and:—

Figure 1 is a side elevation of a lamp constructed in accordance with this invention and showing the condensing lens in position in front of said lamp.

Fig. 2 is a transverse section through such a lamp and condensing lens.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a detail front elevation of the filament and its surrounding reflector.

In the embodiment of the invention herein illustrated there is provided a lamp socket 10 of the usual type to which is secured in the usual manner a bulb 11 of thin glass and from which the air has been evacuated as common in all such lamps. Extending up from the base of the lamp 10 is a standard 12 wherethrough pass the lead wires in the ordinary manner common to incandescent lamps. These lead wires terminate in the top in the usual filament 13, but in this instance the filament is arranged in a circular manner preferably about the center of illumination, the filament being spirally wound as can be seen clearly by reference to Fig. 4. Formed with the standard 12 are brackets 14 and mounted on these brackets 14 is a reflector 15 which is preferably of general parabolic form interiorly but which may if desired be stepped or corrugated the better to effect the purpose. Mounted in front of the bulb 11 is a condensing lens 16 which may be supported in any desired manner here typically indicated by the standard 17. Now it will be observed by reference to Fig. 2 that the reflector 15 practically incloses the filament on all sides except that facing the lens which filament is preferably located at or near the focal center of the reflector as will be found most convenient to procure the desired results. In any event the reflector so incloses the filament that the light rays emanating from the filament are limited in their travel from the reflector to the area of the lens 16. By this means all of the light rays from the filament strike the condensing lens and may be condensed on the films.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that many minor changes

may be made in the form and construction of the invention without departing from the material principles thereof. It is not therefore desired to confine the invention to the exact form herein shown and described but it is wished to include all such as properly come within the scope claimed.

Having thus described the invention, what is claimed as new, is:—

In an incandescent lamp the combination of an elongated bulb, a bracket located in said bulb, a reflector located within the bulb and secured to the inner end of said bracket, said reflector having a filament adjacent its center and the reflector surrounding the filament on all sides but one and being of substantially parabolic form.

In testimony whereof I affix my signature.

GEORGE E. RICKER.

Witnesses:
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B. OSBORNE.