

Oct. 4, 1932.

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1,880,399

FLOODLIGHT

Filed March 17, 1930

2 Sheets-Sheet 1

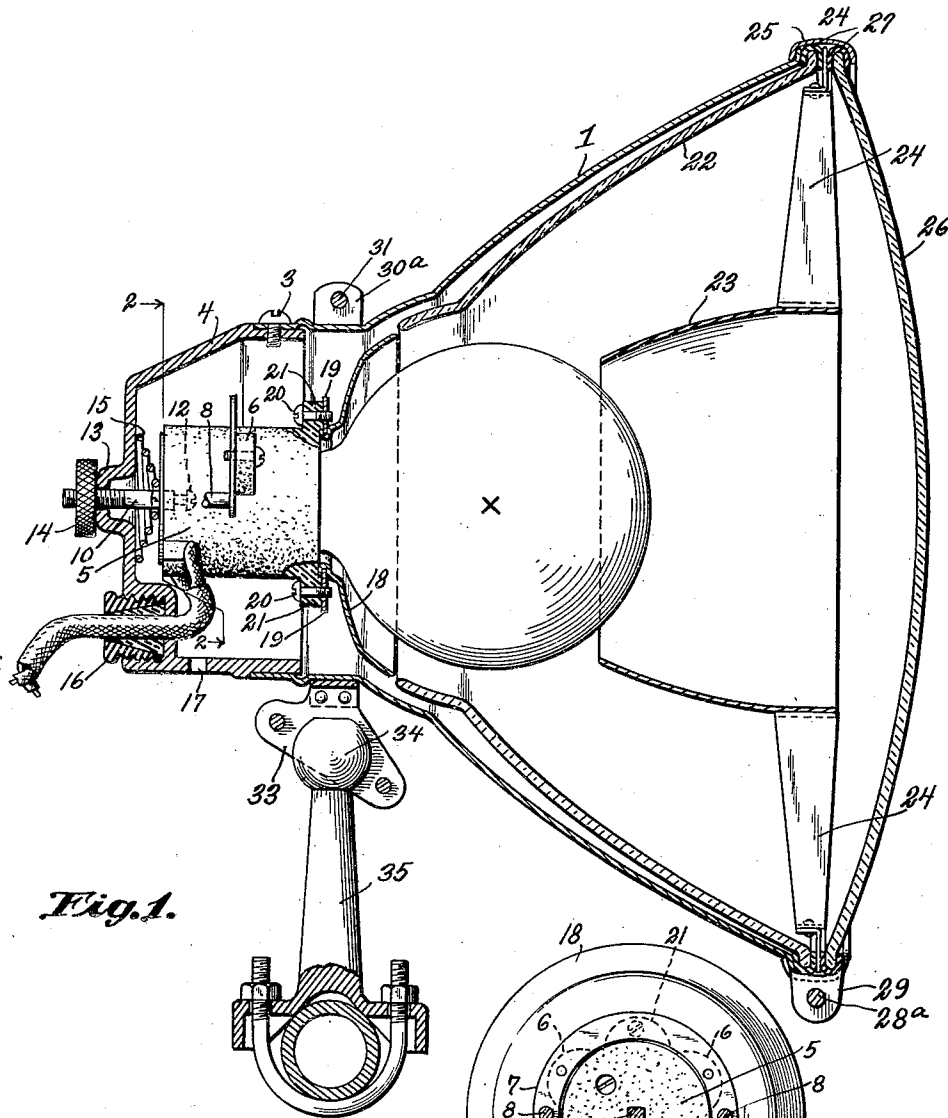


Fig. 1.

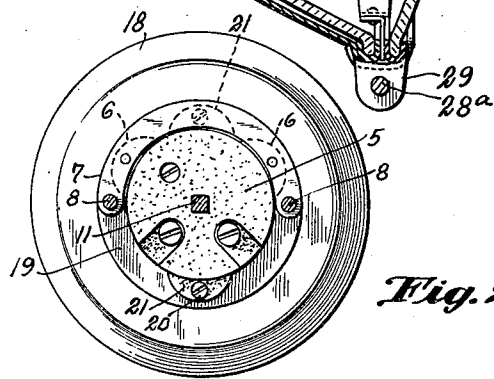


Fig. 2.

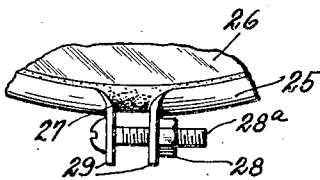


Fig. 6.

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2 Sheets-Sheet 2

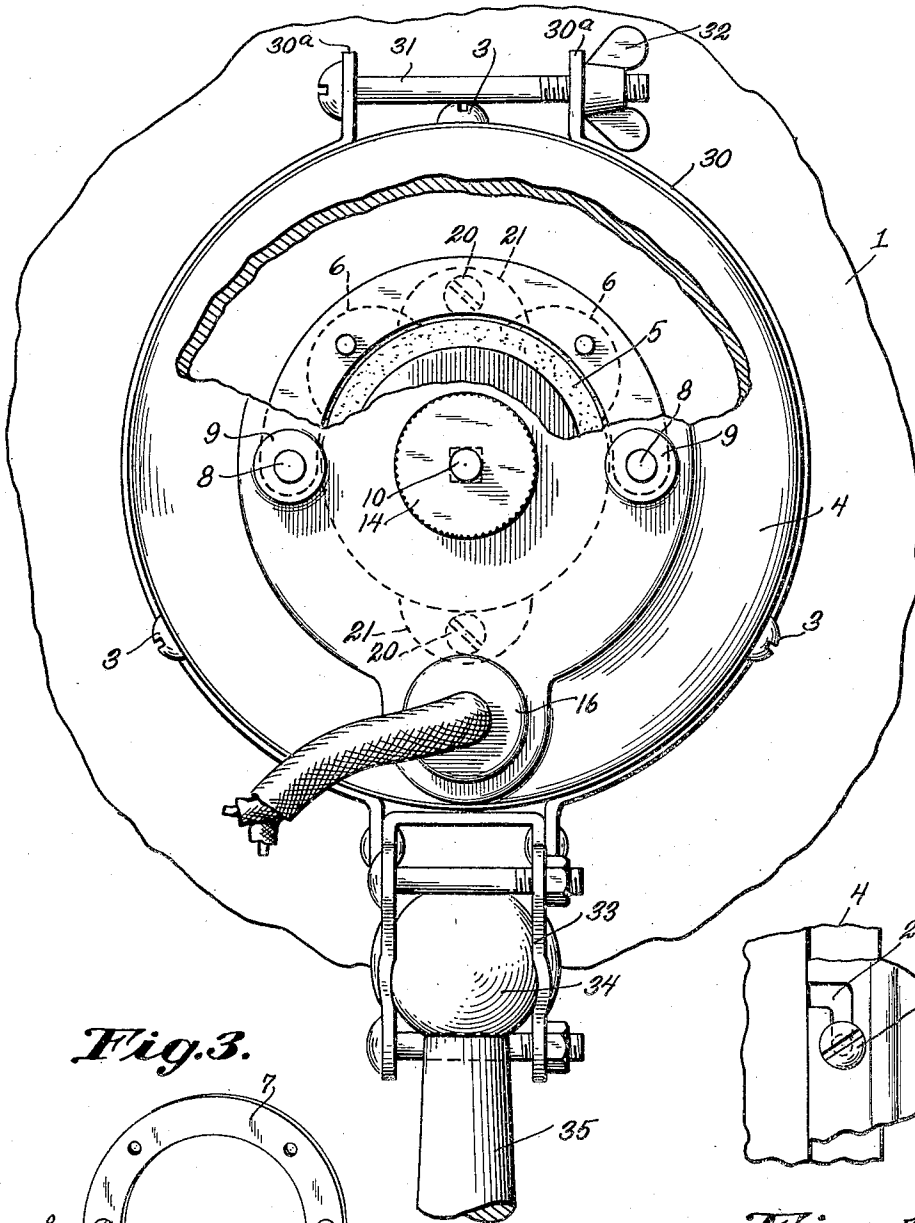


Fig. 3.

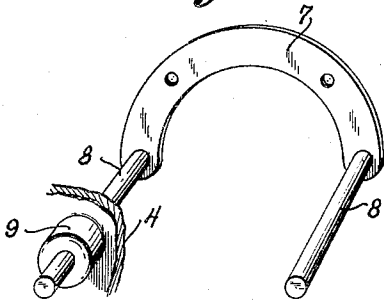


Fig. 5.

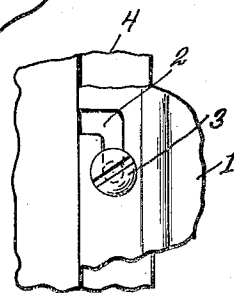


Fig. 4.

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UNITED STATES PATENT OFFICE

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FLOODLIGHT

Application filed March 17, 1930. Serial No. 436,338.

This invention relates to lighting fixtures and has special reference to lighting fixtures of the type known as floodlights.

More particularly this invention relates to floodlights which may be focused to give a concentrated or diffused beam of light, as desired, and in which the rays of light, except those projecting substantially straight forward, are intercepted and projected outwardly by the reflectors employed in the fixture at a comparatively small angle of deviation from the horizontal axis of the fixture.

Where it is desirable to have a spread beam of elliptical form, the front glass of the present fixture may be made of lens construction designed to spread the projected beams, as substantially all the light rays are projected forward by the reflectors. But due to the large proportion of divergent rays of direct light projected out through the lens in ordinary floodlights a spread beam lens cannot be used efficiently, as a front lens cannot be made to correct the divergent rays projected directly out through the lens and at the same time take care of the rays projected outward by the reflectors. As the present device is rotatable about its horizontal axis, as well as being pivotally adjustable about a fixed point, the beam of light may be spread transversely in any direction and thrown in any locality desired.

A fixture of this type, due to its high foot candle power, is unusually well adapted for night use in railroad yards and manufacturing plants, and industrial yards in general where a strong concentrated beam is desirable for safety or detail work. The present construction can also be employed in spotlights of the type used in automobiles and the like.

An object of this invention is to provide a highly efficient lighting fixture having a novel arrangement of relatively movable reflectors whereby substantially all the light from a light source may be projected in a concentrated beam. In order to accomplish this the present device is provided with a stationary main reflector, a stationary suspended reflector positioned forward of the lamp, and an inner reflector attached to the lamp socket

and movable horizontally with the socket. The inner portion of the inner movable reflector is made preferably parabolic, while the outer extremity is made spherical with a radius drawn from or near the lamp center. The inner end of the main reflector is likewise made spherical with a radius drawn from the same center.

The spherical portion of the two reflectors effects a cylindrical band in which there is no projection of light outwardly as the rays are reflected by the spherical portions of the reflectors against the main reflector, which then projects these rays outwardly. It is in this cylindrical band that the suspended reflector is positioned so that the outer surface thereof does not intercept any light rays.

If only the main reflector and the inner reflector were employed, a substantial portion of the direct rays would pass out through the front lens of the fixture without being intercepted by the reflector and could not, therefore, be concentrated. In order to avoid this, a third reflector, suspended forward of the lamp, is used. This latter reflector extends back between the center of the lamp and the outer edge of the main reflector, so that all the direct rays, except those directed almost straight forward or intercepted by the main reflector, are intercepted by this suspended reflector and are projected substantially straight outwardly, which makes for a strong beam and a highly efficient fixture.

A further object of this invention is to provide a light fixture of the above-referred to type which may be focused to give a concentrated or diffused beam, as desired. The lamp socket to which the inner reflector is permanently attached is horizontally movable along the axis of the fixture, while the main reflector is stationary; therefore, when the socket and the inner reflector are moved rearwardly a highly concentrated beam results.

A still further object is to provide a spotlight in which the hood member carrying the socket may be easily removed, whereby it is necessary only to open the front of the fixture to replace a broken lens. A bayonet con-

nection between the casing and the hood is employed for this purpose.

A still further object of this invention is to provide a substantially weatherproof lighting fixture having relatively movable reflectors, and having easily accessible means for focusing and simultaneously adjusting the relative position of the reflectors.

Further objects and advantages will be more readily apparent from the following description and drawings, in which latter:

Figure 1 is a central, vertical, sectional view of the fixture with the lamp and socket shown in elevation;

Fig. 2 is a rear view of the socket and the inner reflector attached thereto, taken substantially on the line 2—2 of Figure 1.

Fig. 3 is a rear elevational view of the fixture with a portion of the hood removed to show the collar secured to the socket and slidably mounted in the hood;

Fig. 4 is a detailed plan view of one of the bayonet slots by which the hood is secured to the casing;

Fig. 5 is a perspective view of the collar for supporting the socket and the rods which project through the back of the hood and are slidably mounted therein; and

Fig. 6 is a fragmentary detailed view specifying the fastening means on the clamping member which holds the lens in place in the front of the casing.

Referring now to the drawings in detail, the construction shown comprises a casing 1, preferably parabolical. Attached to the inner end of the casing 1 by means of the bayonet slot 2 and the screw 3 is a hood 4. A lamp socket 5 is slidably mounted within the hood 4, said lamp socket 5 being provided with ears 6 to which is attached a U-shaped collar 7 which fits over the socket 5. This collar has horizontal rods 8 fastened adjacent each end of the collar 7 which extend rearwardly through guides 9 in the back of the hood member 4 and are slidable therein.

The rods 8 support the socket 5 within the hood 4 and guide it during horizontal movement. A stem 10 is secured to the rear end of the socket 5. Any means desirable may be used to secure the stem to the socket which in the present construction is accomplished by means of a square head on the stem being inserted into the square opening 11 in the back of the socket and held rigidly in place by a screw 12 inserted from the front of the socket through the bottom of the lamp-receiving opening therein.

The stem 10 having its outer end threaded projects outwardly through an opening in the recessed portion 13 in the back of the hood 4. A thumb nut 14 is threaded onto the threaded end of the stem 10 and by turning this nut the socket is moved horizontally and thereby focused.

Resilient means are positioned between the rear of the socket 5 and the hood which tend to urge the socket forward. Any resilient means may be employed, although a conical spring 15 is shown in the present construction.

A weatherproof wiring entrance 16 is provided in the rear of the hood and a drain opening 17 is formed in the bottom thereof.

Attached to the front end of the socket 5 is an inner reflector 18, the inner end of which is preferably parabolical. This reflector 18 is formed with an annular groove at the inner end in which is positioned a metal ring 19. The metal ring 19 is fastened to the socket 5 by means of screws 20 which extend through openings in the projecting portions 21 of the socket and thread onto the ring 19. The outer portion of the inner reflector 18 is preferably made spherical with a radius drawn from or near the light source and shown in Figure 1 by the cross.

A main reflector 22 having an outer parabolical portion is positioned within the casing 1 adjacent the sides thereof. The inner end of the main reflector 22 is also preferably made spherical with a radius drawn from the light source of the lamp. This inner end is made large enough to fit over the lamp to be used in the fixture. The reflectors 18 and 22 are preferably formed so that their adjacent ends always meet even when the socket is positioned toward the rear of the hood, whereby there is never a gap between the two reflectors through which the light rays may escape.

A third parabolical reflector 23 which is substantially cylindrical at its outer end is suspended within the reflector 22 so that its inner end extends rearwardly and back of an imaginary line drawn between the light source of the lamp and the outer edge of the main reflector, whereby no rays of light from the lamp may be projected directly outwardly through the lens between the outer surface of the reflector 23 and the inner surface of the reflector 22. The reflector 23 is provided with arms 24 which extend outwardly and are secured to the casing 1 by the clamping member 25 which also secures the reflector 22 and the lens 26 to the casing 1.

In order to avoid any danger of rattling and to insure a tight fit, felt strips 27 are placed over the outer edges of the reflector 22 and the lens 26. The outer ends of the arms 24 lie between the felt strips placed over these edges. The clamping member 25 is then placed over them all and is made tight by the nut 28 being threaded onto the screw 28a, which screw extends through openings in the protruding portions 29 of the clamping member 25. Once the clamping member is positioned and made fast, it is mounted to remain permanent unless the lens is broken, since

easy access to the fixture is provided by means of the removable hood.

A band 30 is secured about the inner cylindrical end of the casing 1. The ends of the band 30 are bent so as to form parallel arms 30a having perforations through which a screw 31 is extended. A wing nut 32 threads onto the end of the screw 31 so that this band may be loosened or tightened at will, by which means the whole fixture may be rotated about a horizontal axis. A portion of the band intermediate the arms 30a is riveted to a socket 33 which is placed over the ball 34 to form a ball and socket connection, the ball 34 being mounted on the end of a stationary support 35.

Although the present fixture has been described as being constructed with the hood extending rearwardly of the casing, it may be constructed with the axis of the hood running vertically and the casing being at right angles to the hood. In such a construction the lamp would extend either upwardly or downwardly and the inner reflector 18 would be positioned at the rear of the lamp. Instead of the casing, the hood would be secured to the stationary support and the casing could be hinged to the hood so that the whole front portion of the fixture would swing out to afford access to the interior thereof.

Although the casing and reflectors have been described as being parabolical, the same could be flattened and made parabolical so as to provide an elliptical beam where such is desired.

From the foregoing description it will be apparent to those skilled in the art that various modifications thereof may be made without departing from the spirit and scope of this invention and I desire, therefore, that the same be limited only by the scope of the prior art and the appended claims.

I claim:

1. A lighting fixture comprising a casing having a main reflector therein, a hood removably secured to said casing, a lamp socket having ear portions extending outwardly therefrom, a collar member fitting over said socket and secured to said ear portions having rods extending rearwardly and through the back of said hood, registering guides in the back of said hood for slidably receiving said rods and maintaining said socket in said hood, and an inner reflector attached to the forward end of said socket and movable therewith.

2. A lighting fixture comprising a casing having a main reflector therein, a hood removably secured to said casing, a lamp socket having ear portions extending outwardly therefrom, a collar member fitting over said socket and secured to said ear portions having rods extending rearwardly and through the back of said hood, registering guides in

said hood for slidably receiving said rods and maintaining said socket in said hood, a stem fixedly secured to the back of said socket having the outer end thereof threaded and extending through an opening in the back of said hood, a thumb nut threaded onto said stem for moving said socket to focus the fixture, resilient means for urging said socket forwardly, and an inner reflector attached to said socket and movable therewith.

3. A lighting fixture comprising a casing having a main reflector therein, a hood removably secured to said casing, a lamp socket having ear portions extending outwardly therefrom, a collar member fitting over said socket and secured to said ear portions having rods extending rearwardly and through the back of said hood, registering guides in the back of said hood for slidably receiving said rods and maintaining said socket in said hood, a stem fixedly secured to the back of said socket having the outer end thereof threaded and extending through an opening in the back of said hood, a thumb nut threaded onto said stem for moving said socket to focus said fixture, a spring positioned between the rear of said socket and said hood for urging said socket forwardly, and an inner reflector attached to the forward end of said socket and movable therewith.

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN.