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SEARCHLIGHT

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Fig. 1.

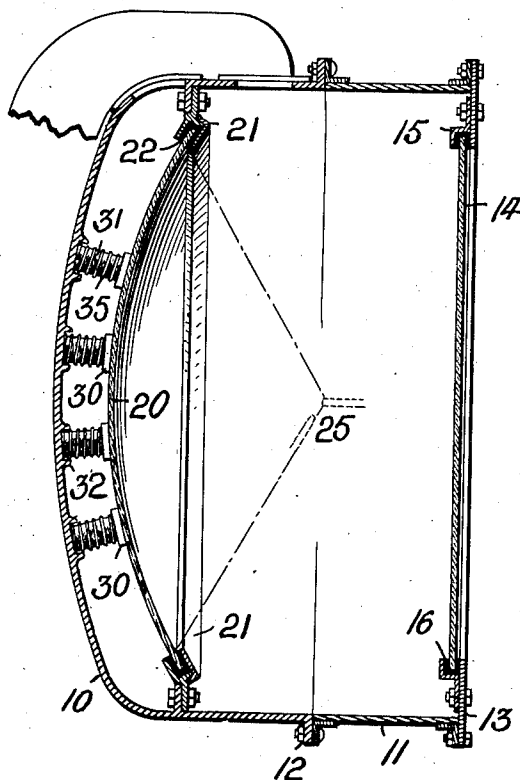
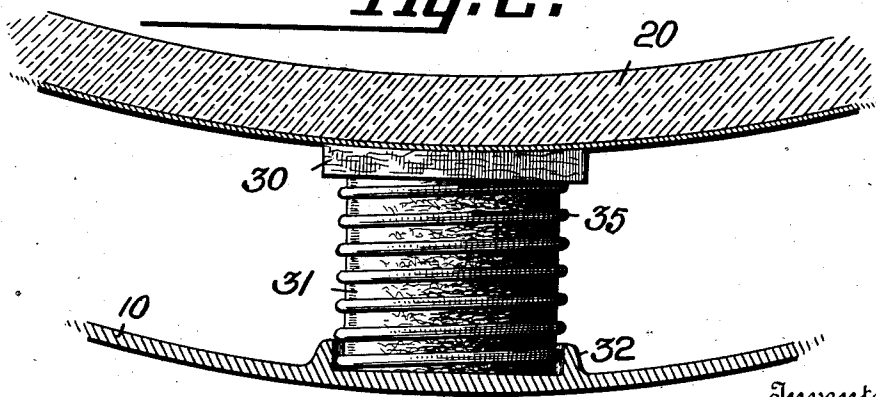


Fig. 2.



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UNITED STATES PATENT OFFICE

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SEARCHLIGHT

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This invention relates to searchlights, and more particularly to a method and means for supporting the reflecting member in said searchlights. Heretofore it has been usual to support the mirror by its edge within the searchlight drum. This usual method of mounting the mirror gave rise to difficulties when it was attempted to throw a beam in any but a substantially horizontal direction, for as the beam was directed toward the vertical, the weight of the mirror gave rise to sagging or bending, which tended to throw the lamp out of focus. This was particularly true where the light was used in anti-aircraft work, in which case the beam is directed substantially vertically and the mirror hangs vertically downward from the supporting rim. The distortion was particularly emphasized in the case of large mirrors such as those employed in the 60" searchlight. In the latter case it was found that the distortion and deflection of the mirror was such as to seriously impair the operating efficiency of the searchlight when used in anti-aircraft work.

My invention has for its principal object, therefore, the provision of means for preventing distortion of the mirror when supported in any position, whether horizontal or vertical. For this purpose I may employ various means interposed between the mirror and the searchlight drum for supporting the weight of the mirror when the latter takes up certain positions. Said means is preferably of a non-vibrant material to prevent transmission of shocks and vibrations to the mirror, which might possibly result in breakage of the reflector, but which is, nevertheless, of sufficient resisting power to prevent appreciable distortion of said reflector.

Other objects and advantages of this invention more or less broader than those hereinbefore stated will become apparent as the detailed description of the invention proceeds.

Referring to the drawings wherein I have shown what I now consider to be the preferred embodiment of my invention.

Fig. 1 is a vertical section through a searchlight, with parts of the supporting structure for said searchlight omitted, and

showing one embodiment of my invention applied thereto.

Fig. 2 is an enlarged detail of my invention as applied in Fig. 1.

In the drawings I have disclosed a searchlight drum which may consist of cast metal parts 10 and 11, suitably joined together as at 12 and having a front wall 13 provided with a window 14 suitably supported in said front wall as by means of a channel bar 15 and gasket 16. It will be observed that the rear wall is formed integrally with the cylindrical side wall or drum. By this construction the use of joints is avoided and the liability to distortion reduced forty to fifty per cent over the construction heretofore used, that is, a back cover bolted or otherwise fastened to the rear edge of the drum. The mirror 20 of the usual parabolic type is shown supported in the conventional manner with its circumferential edge embedded in a U-shaped channel bar 21 and gasket 22. The drum is supported in the usual manner by trunnions (not shown) for movement about both a horizontal axis and a vertical axis.

It will be readily apparent that when the beam is thrown upwardly so as to have a vertical component that the mirror or reflector 20 will be to a greater or lesser degree suspended from rim 21. This will tend to throw the weight of the mirror to a corresponding extent downwardly and thus distort the original shape of said reflector until when a beam is thrown directly vertically upward without a horizontal component, the entire weight of mirror 20 will be supported at its periphery and the distortion in the shape of the mirror will be a maximum. This distortion may be sufficient in the case of the larger type searchlights, such as the 60" type, to throw the arc formed at the electrodes 25 out of focus and render the light more or less useless for anti-aircraft work, or at least to seriously impair its operating efficiency.

To prevent distortion in the shape of the mirror when the latter is suspended wholly or in part by its periphery, I provide one member or a plurality of members adapted to support said mirror in such manner as to compensate for the downward component of

the suspended weight thereof and thus prevent distortion in the shape of the reflector. I may employ any one of a large number of supporting members interposed between the rear wall of the drum and the rear surface of the reflector. Said members are preferably non-vibrant so that shocks and vibrations are not transmitted to the reflector and thus danger of injury to the reflector is eliminated, but which are, nevertheless, of sufficient resisting power to compensate for the suspended weight of the mirror and prevent distortion.

In the drawings I have shown a cushioning member 30, which may be glued or otherwise affixed to the back of the reflector, or if desired, held in frictional engagement therewith, said cushioning member being supported upon a plug 31, which is preferably seated within a guiding flange 32 formed on the inner wall of the drum. The members 30—31 may be separate or integral and formed of a material such as felt, rubber, or the like. Said member 31 may be formed by any suitable means and surrounded by a coil spring 35. The supporting structure shown in Fig. 2 and hereinbefore described, may be multiplied as shown in Fig. 1, so that said mirror is supported at a plurality of points throughout its entire surface.

If desired, the cushions 30 and plugs 31 may obviously be employed without the springs 35. The essential feature consists in providing non-vibrant weight-supporting members (or a single member) which will take up the suspended weight of the mirror and thus prevent distortion.

In accordance with the provisions of the patent statutes, I have herein described the principle of operation of my invention, together with the apparatus, which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by other means. Also, while it is designed to use the various features and elements in the combination and relations described, some of these may be altered and others omitted.

Having herein described my invention, what I claim and desire to secure by Letters Patent is:

In a searchlight comprising a drum having a rear wall, a reflector spaced from said wall, supporting means adjacent the periphery of said reflector, and a plurality of additional supports interposed between said reflector and said wall, each of said additional supports comprising a shock-absorbing and oscillation-damping plug and a coil spring surrounding said plug.

In testimony whereof I have affixed my signature.

CHESTER B. MILLS.