May 12, 1953 G. A. HARADEN 2,638,534

REFLECTOR MOUNTING STRUCTURE

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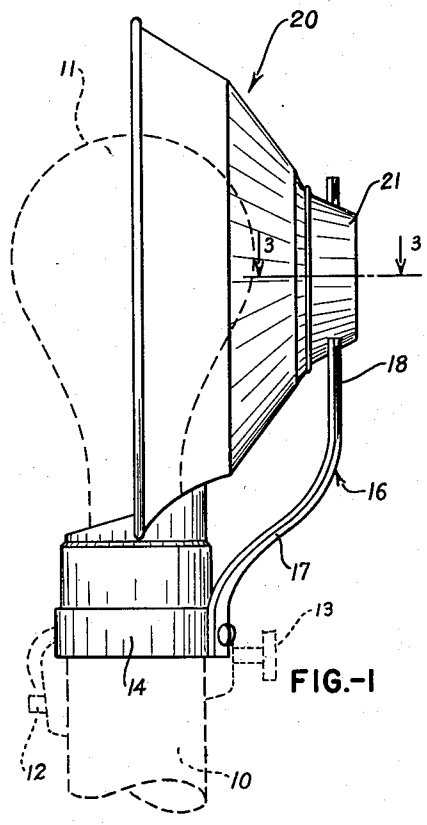


FIG.-1

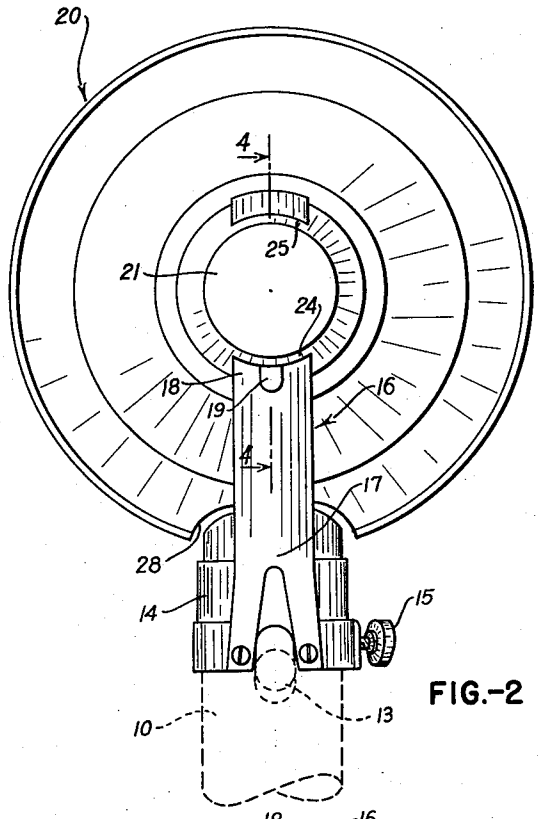


FIG.-2

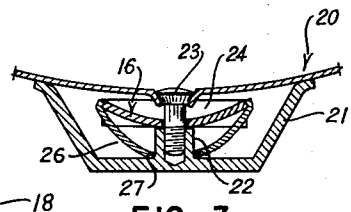


FIG.-3

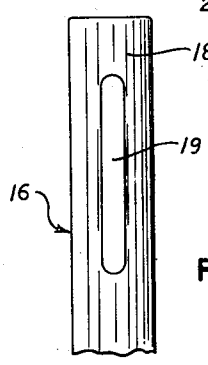


FIG.-5

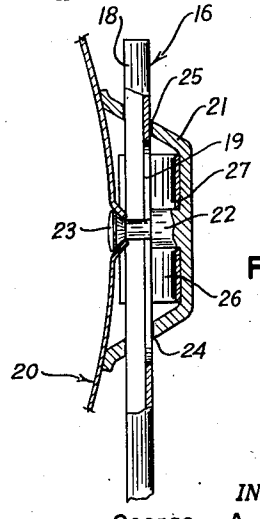


FIG.-4

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REFLECTOR MOUNTING STRUCTURE

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4 Claims. (Cl. 240—105)

1

This invention relates to reflectors for lamps and more particularly to improved means for mounting the reflectors for association with lamps.

One of the objects of the invention is to produce an improved reflector which can be easily and quickly adjusted relative to a lamp in order that the optical axis of the reflector may be aligned with the light source.

A more specific object is to produce an improved adjustable reflector for mounting on flash guns of photo-flash picture taking equipment.

A further object is to produce improved means for adjustably connecting a lamp reflector on a supporting bracket arm which will permit the reflector to be easily shifted on the arm to different positions without the necessity of operating set screws.

Yet another object is to produce improved frictional means for connecting a reflector to a supporting arm which will permit reflector adjustment by simple pushing or pulling forces and automatically hold the reflector in any position.

Other objects of the invention will become apparent from the following description taken in connection with the accompanying drawings in which:

Figure 1 is a side view showing a lamp reflector mounting embodying the invention;

Figure 2 is a rear view of the structure shown in Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1 showing the friction adjusting structure;

Figure 4 is a sectional view taken on the line 4—4 of Figure 2 showing additional details; and

Figure 5 is a view of the upper end of the mounting arm.

The reflector and its mounting, as shown, is designed for use as a part of photo-flash equipment for cameras, and particularly for mounting a reflector on an end of a so-called flash gun. This flash gun 10, partially illustrated in dashed lines in Figures 1 and 2, contains batteries, a switch mechanism and a socket at its upper end in which is mounted the flash lamp or bulb 11. As shown, there is a switch button 12 on the outside of the flash gun and an ejector control button 13 for quickly ejecting the lamp after it is flashed.

The reflector and its mounting comprises a mounting collar 14 which can be slipped over the socket end of the flash gun and clamped thereto by a set screw 15. The collar has secured thereto an upstanding arm 16 which has a lower portion 17 extending outwardly and upwardly from the collar and an upper portion 18 in parallel relation to the axis of the flash gun and the lamp socket. The arm has a concavo-convex cross section and in its upper end is provided with a longitudinally extending slot 19, best shown in Figure 5.

2

The reflector 20 to be adjustably mounted on the arm is of the usual type, being cup-shaped to partially surround the lamp when mounted in the socket and thereby direct light rays in one general direction from the lamp and thereby concentrate the rays on the object to be photographed. On the rear side of the reflector at its center is secured a hub 21, also cup-shaped as best shown in Figures 3 and 4. The inside of this hub has a lug 22 into which a screw 23 can be threaded to attach the hub to the reflector.

The hub 21 of the reflector, in its lower and upper side walls, is provided with aligned slots 24 and 25 through which extends the upper portion 18 of the arm. The arm is inserted through the slots of the hub with the screw 23 removed. After the arm is inserted, the reflector is then attached to the hub by the screw with the screw extending through the longitudinal slot 19 in the arm. Thus the screw and slot 19 relationship will maintain the reflector on the arm. The arrangement also has the additional function of limiting the extent of sliding movement of the reflector on the arm in longitudinal directions, the limits being determined by the ends of slot 19 which act is abutments.

In order that the reflector and hub can be maintained in any position on the arm to which it may be slid and yet permit the reflector and hub to be slid on the arm by a manual force, a leaf spring 26 is mounted in the hub. This spring is U-shaped in cross section, as best shown in Figure 3, and in its base portion is provided an opening 27. This will permit the spring to be placed in the hub so that the screw attaching lug 22 will be received in the opening 27, the base of the spring will be against the inside bottom of the hub and the leg portions of the spring will be in engagement with the back of the arm adjacent its two longitudinal edges. The spring is so formed that when in operative position, as shown in Figures 3 and 4 with the arm extending through slots 24 and 25 of the hub, the legs of the spring will be flexed and apply such pressure between the bottom of the hub and the arm that the front longitudinal marginal portions of the arm will have

frictional engagement with the surfaces of slots **24** and **25**. This frictional engagement will be so arranged by proper spring form that the reflector and hub can be quite easily shifted by hand applied force on the hub or reflector, either upwardly or downwardly, and yet when the force is removed the reflector will be firmly held on the arm at the position to which the hub is shifted.

With this frictional connection between the reflector and arm, the reflector can be easily and quickly moved up or down with respect to the lamp socket and thereby place the reflector in the proper place to efficiently reflect light rays from different size flash lamps which may be mounted in the flash gun socket. To prevent the reflector from being interfered with by the collar **14** during shifting, the bottom of the reflector can be provided with a cut-out **28** as shown.

It will be noted that my improved adjustable reflector mounting shown and described is simple in construction, easily assembled and can be manufactured at a low cost. There is no possibility of disconnecting the reflector from the arm during any adjusting operation. No set screws need be operated to make a reflector adjustment. Adjustment is accomplished by one hand, with either a push or pull force.

Being aware of the possibility of modification in the mounting structure described without departing from the fundamental principles of my invention, I desire it to be understood that the invention is not to be limited in any manner except in accordance with the appended claims.

What is claimed is:

1. A reflector mounting structure comprising a bracket for attachment to a light bulb socket and being provided with an arm having a concavo-convex cross section, a reflector provided with a hub having a slot for receiving the arm, and a separate leaf spring carried by and within the hub and having a curvature in a direction transverse to the longitudinal axis of the arm for acting between the hub and the arm to bias the edge portions only of the arm and one side of the slot into frictional engagement, said frictional engagement being such as to automatically hold the hub from movement on the arm unless a predetermined sliding force is applied to the reflector.

2. A reflector mounting structure comprising a bracket for attachment to a light bulb socket and being provided with an arm having a concavo-convex cross section, a reflector provided with a separate hub having a slot for receiving the arm, a separate leaf spring carried by the hub for acting between the hub and the arm to bias the edge portions only of the arm and one side of the slot into frictional engagement, said frictional engagement being such as to automatically hold the hub from movement on the arm unless a predetermined sliding force is applied to the reflector, and means for limiting the extent of sliding movement of the hub on the arm comprising a bolt for connecting the hub to the reflector and a longitudinal slot in the arm through which the bolt passes.

3. In reflector mounting structure, a mounting arm having a longitudinal slot, a hub for the reflector provided with a slot for receiving the arm, means for attaching the hub to the reflector including a bolt passing through the hub slot and the slot in the arm, and spring means for so biasing the arm and hub that the arm will frictionally engage the surface of the hub slot, said frictional engagement being such that the hub and reflector can be slid manually on the arm as limited by the arm slot and yet be maintained in any position to which it may be slid.

4. In combination, a reflector, a hollow member for mounting on the rear side of the reflector and being provided with side walls and with an integral lug projecting inwardly from the inner side of the rear wall, said hollow member also having opposed openings in its side walls, a mounting arm having a longitudinal slot therein and arranged to extend through the openings, a screw for mounting the member on the reflector, said screw extending from the inside of the reflector through the arm slot and being threaded into the lug, and a spring member mounted on the lug and acting between the rear wall of the member and the arm to cause the arm to have frictional engagement with walls of the openings in the member which are closest to the reflector.

GEORGE A. HARADEN.

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