My invention relates to combined lamp holders and reflectors of that general type of incandescent lamps employing up to fifteen hundred watts and used for portrait photography, commercial photography, home portraiture, copying, and for any other purpose a lamp of this type may be necessary or desired.

One of the objects of my invention is the shaping of the lamp housing to function as a reflector, thereby doing away with the necessity of providing an additional element to serve as a reflector.

Another object which I have in view is to position the lamp socket in the bottom of the lamp casing with louvres so positioned that there will be a strong current of air at room temperatures in the direction from the socket to and past the lamp, thereby providing an air cooling system for the socket and lamp.

Another of my objects is the provision of doors adjustably positioned to cast a strong and even light on the diffusing material, to protect the eyes of the photographer from the strong light of the lamp and also to prevent the backshining of the light into the lens of the camera.

Another object is the provision of a frame for the support in taut condition of a sheet of diffusing material, the frame being formed for the easy replacement of such material which has been injured in use.

Another of my objects is the provision of a resilient device for supporting a diffusion screen frame under tension, the supporting device being of simple construction and application and being entirely out of the way when not in use.

Still another of my objects is the provision of means for supporting the lamp housing either from the ceiling or on a tripod and arranged for adjustment to reflect the light in any desired direction.

Having in view these objects and others which will be pointed out in the following description, I will now refer to the drawing in which:

Figure 1 is a view in isometric projection of the lamp holder and reflector, portions being torn or broken away to disclose otherwise concealed elements.

Figure 2 is a vertical sectional view in reduced scale of the lamp holder and reflector.

Figure 3 is a plan view of the lamp holder and reflector, a corner of the top being broken away to expose certain hinge connections to be subsequently described.

The lamp holder has a top wall 10 and a bottom wall 11, both of parabolic shape. The top wall 10 and the bottom wall 11 are connected by a curved wall 12. The walls 10, 11, and 12 enclose a lamp chamber which is open at the forward side only, except for the louvres at the top and bottom for establishing a flow of air through the lamp housing. Underneath the bottom wall 11 is a socket 13 for receiving a lamp 14. The socket 13 is mounted in a frame 15 which is spaced from the bottom 11 in order to facilitate the flow of air past the socket 13. The louvre 16 surrounds the lower portion of the lamp 14 but above the lamp a ventilating opening 17 permits the escape of the heated air in the lamp chamber. This construction insures that the lamp socket is air-cooled.

For closing the front opening of the lamp housing, I provide two hinged doors 18 and 19 which are secured to the wall 12 by means of hinges 20. Each of these doors is narrower than the front opening of the lamp housing but they are hinged so as to close the opening by the overlapping of one of the doors on the other. The bottom 11 is provided with a stop member 22 which limits the closing movement of the doors 18 and 19. These doors may be closed during the transportation of the lamp casing in order to protect the lamp against injury. They may be opened into the position shown in Figure 3 in which position they will cut off stray beams of light to give the photographer control over the lighting arrangement. The doors as well as the lamp casing are made from any suitable material such as polished aluminum or "bright" tin.

Diffused light is now employed in nearly all types of photography and especially in portrait photography. This is accomplished by the use of diffusing screens made of tracing cloth, buckram, or the like. These screens are mounted on frames but the diffusion material has a relatively short life under the heat action of the lamp. The effect of the heat is to cause buckling and charring of the diffusing material, resulting in uneven and inadequate illumination of the subject. As a result, frequent replacements become necessary but the prior arrangements are not only costly but difficult to operate. I have, therefore devised a frame to which the diffusing material may be expeditiously applied in tensioned condition and also a frame support on the lamp casing whereby the frame with the diffusing material may be applied and latched in its most effective position relative to the lamp, the application of the frame involving only a single manual movement on the part of the photographer to hold the frame in place under tension.

The frame includes a pair of side rails 23, a top rail 24, and a bottom rail 25 arranged in rectangular relation. The sheet 26 of the diffusing material may be lapped over these rails and secured thereto under tension by means of paper fasteners 27 or by any other suitable means. The top and bottom rails are extended at the ends beyond the side rails 23, and connecting their free ends are rails 28. Each pair of rails 23 and 28 is connected together by a bar 29.
providing an opening 30 at the outer side of the frame and between the bar 29 and the rail 24. The frame may be formed from wire or a rod by bending and welding the rails 23, 24 and 25 and the bar 29. The open space 30 is adapted for the reception of a door 18, the length of the opening space being slightly more than the height of the door. Secured to the rail 24 is an inverted U-shaped bracket 31, the ends of which are secured to the top rail 24. The bracket 31 is longer than the rail 24 as shown in Figure 1. Two latches 32 are pivotally secured at 33 to the inner side of the lamp casing. These latches are in the form shown in Figure 1 and they terminate in hooks at their free extremities. In their inoperative position they hang suspended as shown at the left in Figure 1, but in their operative position they project outwardly and upwardly from the open side of the lamp casing. In the path of movement of the latches there are pins 34, one for each of the latches 32. The latches 32 are made of resilient material so that they may be easily manipulated over the pins 34 in the movement to either operative or inoperative position. The hooks on the latches 32 engage the bracket 31 at the corners.

To apply the frame with the diffusion material to the lamp housing it is only necessary to position the frame with the doors 18 and 19 projecting through the openings 30 and then to raise the frame and to spring the latches 32 into place. The frame is held in tensioned relation by the engagement of the bar 29 with the lower edges of the doors 18 and 19 by the tension exerted by the resilient latch 32 to hold the frame in place. The tension in the latches 32 may be adjusted by simply bending the latches at their bends so as to either increase or decrease the tension on the frame. The application of the frame with the diffusion material is a very simple operation requiring the minimum of time and effort. When it becomes necessary to replace the diffusion material this also can be done in a very short time and with almost no effort. Owing to the low cost of the frames, however, it is advisable to keep a number of frames on hand and supplied with diffusion screens so that no time need be lost at busy periods.

The lamp with its lamp casing may be supported on a tripod or suspended from the ceiling, in either case being adjustable to throw the light in any desired direction. For suspending the casing from the ceiling, there may be provided a number of hooks 35 or other suitable devices for the application of chains which may be individually adjusted in length to give the casing any desired tilt. For use with a tripod one or more socket members 36 are provided with inclined sockets for connection to any standards tripod. The sockets being inclined for the purpose of supporting the lamp casing and reflector in inclined position. Set screws 38 enter the socket members 36 for making the connection rigid. The lamp holder may be vertically adjusted through the adjustment of the tripod but the adjustment in inclination of the lamp holder may be obtained by the use of two or more socket members having sockets of different inclinations. In the usual gallery practice, however, only two inclined positions are employed.

From the foregoing description as read on my drawing it will be seen that I have provided a lamp holder and reflector which is superior in a number of respects to the prior lamp holders and reflectors and especially to those at present in commercial use. The lamping of the rear of the lamp housing to serve as a reflector eliminates the necessity of a special reflector, thus reducing the cost of construction and the weight. Since the socket is air cooled, the longevity of the lighting element is increased. Most of the prior lamp holders have the socket above the lamp where it is subjected to the heat from the lamp and the hot air currents flowing through the casing. The arrangement of the lamp socket in the bottom of the casing eliminates the objection to top-heaviness usually present in most lamps of this type and it also gives the device a streamlined appearance. The apparatus is very light in weight, compact, portable, and simple in construction. The doors of the lamp housing, which may be made of material similar to that of the housing, shade the strong light cast on the diffusing material on the frame and especially because of the ease with which the frames may be positioned with the expenditure of the least effort and time.

I have herein shown and described what I have found in practice to be a thoroughly practical and workable embodiment of the invention herein presented, but it is self-evident that variations and modifications in respect to detail features such as ventilation opening and the addition of a dished parabolic reflector in some models may be made without departing from the principles involved or sacrificing any of the advantages secured. Hence I do not limit the invention to the particular construction shown and described but reserve all such modifications as fairly fall within the scope and purview of the appended claims.

Having thus described my invention in such full, clear, and exact terms that its construction and operation will be readily understood by others skilled in the art to which it pertains, what I claim as new and desire to secure by Letters Patent of the United States is:

A lamp casing having an open forward side and having a parabolic rear reflecting wall, a lamp socket in the bottom of the wall of said casing and positioned between said rear wall and the open side of said casing, a pair of doors hingedly secured to said casing at the opposite sides of the opening of said casing, said doors when in their closing position being in overlapping relation to each other and in divergent relation when in their open position, a frame supporting a sheet of diffusion material in a taut position thereon, said frame being provided with an elongated opening at each side thereof for the reception of said doors, and resilient arms pivotally secured to said casing and having hooks at the free extremities thereof for engaging said frame to maintain said frame under tension on said doors.

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