J. G. R. O'HARA.

PROJECTING LAMP.

APPLICATION FILED JUNE 22, 1916.

1,272,505. Patented July 16, 1918.

Fig. 1

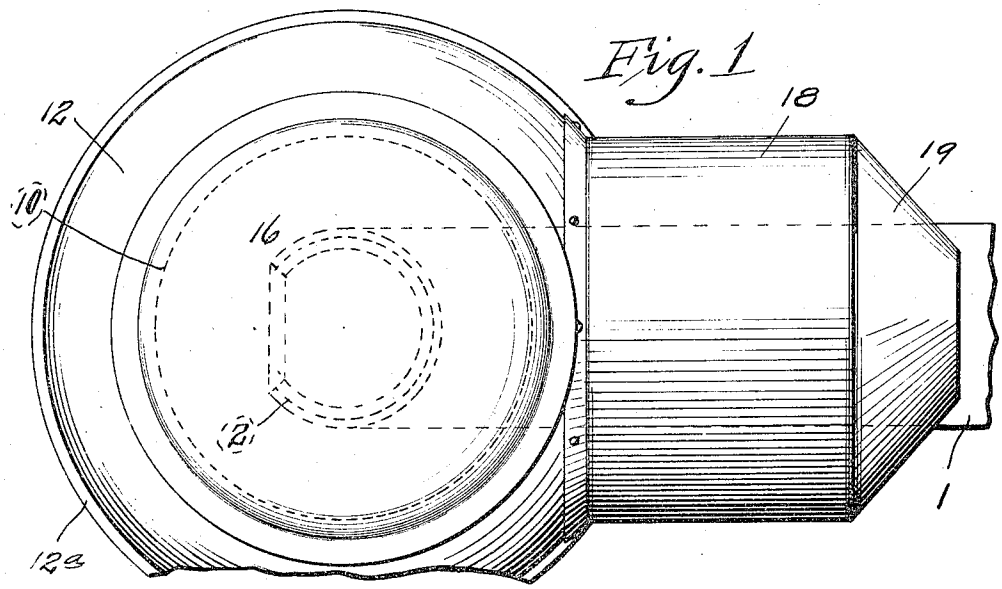
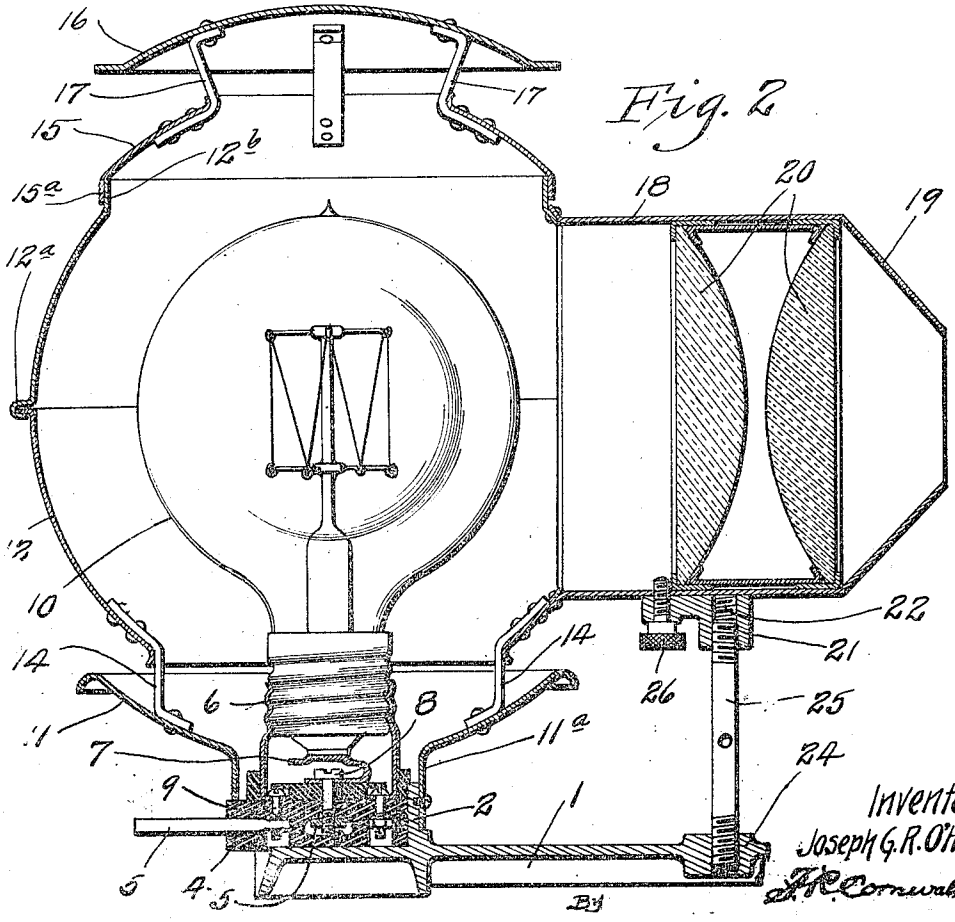


Fig. 2



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UNITED STATES PATENT OFFICE.

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PROJECTING-LAMP.

1,272,505. Specification of Letters Patent. Patented July 16, 1918.

Application filed June 22, 1916. Serial No. 105,241.

To all whom it may concern:

Be it known that I, JOSEPH G. R. O'HARA, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Projecting-Lamps, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a form of projecting lantern designed particularly for use in projecting moving pictures from a film of the sort customarily employed.

In the projecting apparatus now commonly used for the projection of motion pictures, an electric arc furnishes the source of light, and in conjunction with the use of such a luminant, it is necessary to employ a fire shutter which is automatically interposed between the source of light and the film when the latter becomes stationary for a length of time exceeding the normal exposure period.

It is the purpose of my invention, for one thing, to provide a form of projecting lantern which may be used effectively in the projection of motion pictures, but which renders unnecessary the use of the shutter now commonly employed.

A further use is to provide a lantern for the purpose described which is designed particularly for a portable apparatus which finds great usefulness in private exhibition work, such as class room or lecture work, or the demonstration of the operation of machinery or the like for commercial purposes.

Other objects will be pointed out hereinafter or will become obvious as the description of the device develops.

In the accompanying drawings, I illustrate the lamp or lantern of my improved construction—

Figure 1 being a top view; and

Fig. 2 a longitudinal vertical section.

Referring to the various parts of the device, by means of the reference numerals applied, it will be understood that numeral 1 indicates a base which is designed to be suitably supported on a tripod or other portable support, and which is formed with an upwardly extending arcuate flange 2 forming a seat. Within this seat is disposed a block 4 of insulating material which extends out of the seat at the rear thereof, and in which insulating block are seated the contact terminals 5 for the electrical connections. Block 4 forms the support for the lamp socket 6 and the parts carried thereby, the same including the contact spring 7 secured to one of the terminals by the screw 8, and the screw 9 which forms an electrical connection between the other terminal and the metallic socket portion 6 into which the incandescent lamp 10 is screwed in the customary fashion.

Supported on the base 1 is a lower housing portion in the form of a guard 11 having a depending annular flange 11^a which embraces the arcuate flange 2 and rests in part upon the base 1 and in part upon the insulating block 4 where the latter projects from the seat formed by the flange 2. The guard 11 is round, and concave with the concave face directed upwardly.

Supported on the guard or lower housing portion 11 is a main housing portion 12 which is of a light pressed metal and of general globular form with openings at its bottom, top and front portions. This main housing portion is made up of two sections, upper and lower, which are joined on the horizontal median line by a flanged joint 12^a, the portions forming which are struck outwardly, and which provides an annular stiffening member about the girth portion of the housing. This intermediate housing portion 12 is supported on the lower housing portion 11 by means of small brackets 14 which hold the intermediate housing portion spaced apart slightly from the lower housing portion 11 to provide a ventilative opening.

Removably supported on the intermediate housing portion 12 is an upper housing portion made up of the annular cover portion 15 and the cap portion 16. The annular cover portion is flanged downwardly at 15^a to provide an annular portion which embraces an upwardly flanged portion 12^b of the intermediate housing portion. The annular cover portion 15 has a central aperture, above which is supported the cap portion 16 by means of brackets 17. The cap portion 16 extends some distance beyond the perimeter of said central aperture, but is held

spaced apart from the annular cover portion 15 by the brackets 17 to provide an upper ventilative opening.

About the lateral aperture of the intermediate housing portion is supported a lens barrel 18, which is riveted to the intermediate housing portion 12. The barrel portion 18 is of cylindrical form, and its forward extremity carries a diaphragm 19 which has an axial opening of considerably less diameter than the diameter of the barrel portion 18. Within the barrel portion 18 are supported the condensing lenses 20.

The relative diameters of the bulb 10 and the housing are such that the bulb may be interposed through the top aperture when the upper housing portion is removed, and when screwed into a socket 6 will be spaced apart from the enveloping housing portions a substantial distance, which for the most part, is practically uniform. Inasmuch as the types of incandescent bulbs which give the most intense light also radiate the greatest amount of heat, the design of the lamp housing for the purpose of dissipating the heat from the bulb is of great importance, as, if the heat is retained about the bulb, the housing will become heated to a dangerous degree, and the bulb itself will be melted down. In my improved apparatus the portions of the housing which are in closest juxtaposition to the bulb are the portions of the globular intermediate housing portion 12, and said portions are substantially a uniform distance from the bulb at all points. Inasmuch as the amount of heat retained within the housing will vary according to the distance of the housing from the bulb, it will be obvious that by virtue of this uniform spacing of the housing from the bulb, there will be no great divergence in the temperatures at different points about the surface of the bulb, and hence the danger of the bulb being melted down at an excessively heated point, or destroyed by internal strains due to radical difference in temperature between the various portions, is obviated. The arrangement of the intermediate housing portion relative to the lower housing portion and to the cap member 16 provides uniform ventilative inlet and outlet spaces entirely about the lamp. Of course, as the air within the housing becomes heated, it will rise and pass out of the upper ventilative opening, admitting cool air through the lower ventilative opening. Inasmuch as the latter is continuous about the entire circumference of the lamp, this cool air will be taken in on all sides and will pass up about the entire periphery of the bulb, thereby exercising a uniform cooling effect. At the same time the lower housing 11 and the cap 16 shield the ventilative apertures and prevent the projection of the light therethrough to the floor and ceiling.

The relationship of the lamp socket and the housing portions is such that when the lamp is in place, the neck portion, where the bulb joins the metallic ferrule, is adjacent to and above the lower ventilative aperture. This is highly important, as it is at this point that the bulb is most susceptible to melting down, and the disposal of the lamp in the position specified places the neck portion where it receives the incoming cool air from the lower ventilative aperture.

In order that the condensing lenses may be disposed in the proper relationship to the source of light, and in order that they may receive as many of the direct and reflected rays as possible, I make the barrel portion 18 practically as large in diameter as the bulb, as by so doing, I am enabled to reduce the major portion of the housing to the minimum practical size. This relationship between the diameter of the barrel portion and the diameter of the bulb permits my placing the condensing lenses sufficiently close to the latter without bringing the portions of the housing to which the barrel portion is conjoined too close to the bulb and consequently, this relationship enables me to maintain the ventilative space between the bulb and the front portions of the lantern.

As a means for providing a second point of support for the housing upon the base 1, I provide on the face of the barrel 18 a bracket 21 formed with a boss having a female thread 22. Opposite the bracket 21 the base 1 is provided with a boss 24 also having a female thread but of opposite pitch to the thread 22. A post 25 having threaded ends which engage the threads in the bracket 21 and the boss 24, forms an adjustable support whereby the housing is held upon and properly spaced relative to the base 1. A screw 26 seated in bracket 21 passes through the wall of the barrel 18 at the proper point to engage the holder of the condensing lenses to retain the lenses in the proper position in the barrel. Slight vertical adjustments of the housing may be made by manipulation of the post 25.

A lantern constructed in the manner above described is particularly simple, yet very efficient for the purpose intended. It requires no nice adjustments or careful watching in operation, as the operator has simply to make the proper connection to the contacts 5, and turn on the current. When a nitrogen lamp is used, the heat is rapidly dissipated and a light of excellent quality and adequate power for the projection of motion pictures is furnished, by virtue of the lantern construction. Moreover, it is unnecessary to employ in conjunction with this form of lantern any sort of fire shutter on the projecting machine, as the relative arrangement of the lamp, housing, lenses,

and diaphragm 19 is such as to eliminate the heat conveying portions of the condensed rays, while projecting an intensely bright beam upon the film. The lamp, of course, is readily removable and insertible upon removal of the upper housing portion, and when in place in the socket 6, it is rigidly supported, and protected, so that it is not necessary to remove the lamp from the housing when it is desired to transport the apparatus. As one of the most desirable features of a portable apparatus, it will be observed that the construction provides a very light and at the same time very strong lantern, which occupies a minimum amount of space, and is not easily susceptible of disarrangement.

I am aware that the device is susceptible of various changes and modifications not herein specifically illustrated or described, but comprehended within the scope of the invention.

What I claim is:

1. A lantern including means for supporting an incandescent bulb, a lower housing portion, an intermediate housing portion, and an upper housing portion arranged to encompass a bulb supported on said means and spaced apart from one another to provide vertically spaced apart ventilative openings about the circumference of such bulb.

2. A lantern including a main housing portion and upper and lower housing portions overlapping said main housing portion and spaced apart therefrom to provide ventilative openings which are spaced apart vertically, said housing portions coöperating to form a globular inclosure, and a light producing bulb housed within said inclosure and disposed intermediate said ventilative openings.

3. A lantern including a globe-shaped main housing portion having apertures at its upper and lower portions, a concave lower housing portion spaced apart from said main housing portion and covering the lower one of said apertures, an upper housing portion covering the upper one of said apertures and provided with a circumferential ventilative opening, said housing portions coöperating to form a housing having vertically spaced apart circumferential ventilative openings and a lateral light-emitting opening, a barrel portion encompassing said light-emitting opening, and means for supporting a light-producing bulb within the housing.

4. A lantern including a supporting base, a lamp socket mounted on said base, a lamp housing mounted on said base and encompassing said socket, said lamp housing having a removable portion disposed diametrically opposite to said socket and an aperture at one side of said socket, and a cylindrical barrel portion encompassing said aperture and extending laterally from the housing.

5. A housing for a lamp including a supporting base, means for supporting the lamp thereon, a housing supported on the base in position to inclose said means, said housing being provided with a lateral aperture, a barrel portion encircling said aperture and extending laterally from the housing, and a post connecting said barrel and said base.

6. In a lamp of the class described, the combination of a base, a housing supported thereon and provided with a lower circumferential ventilative opening and an upper ventilative opening, a lamp socket supported within the housing adjacent the lower ventilative opening, and a light-producing bulb supported by said socket within the housing with its neck portion above the lower ventilative opening.

7. A lantern including a housing portion, a lamp support disposed in the lower portion of said housing, a light producing bulb supported on said lamp support and with its body portion spaced apart from the walls of the housing; said housing including a portion removable to permit the removal of the bulb from the lamp support and having a lower ventilative opening below the neck of the bulb and an upper ventilative opening adjacent the upper extremity of the bulb, the portion of the housing intermediate said ventilative openings being imperforate and including a transparent portion for the passage of light from the bulb.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 16th day of June, 1916.

J. G. R. O'HARA.

Witnesses:
M. P. SMITH,
M. A. HANDEL.