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E. RAMBUSCH

2,094,670

ILLUMINATING APPARATUS

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Fig. 1.

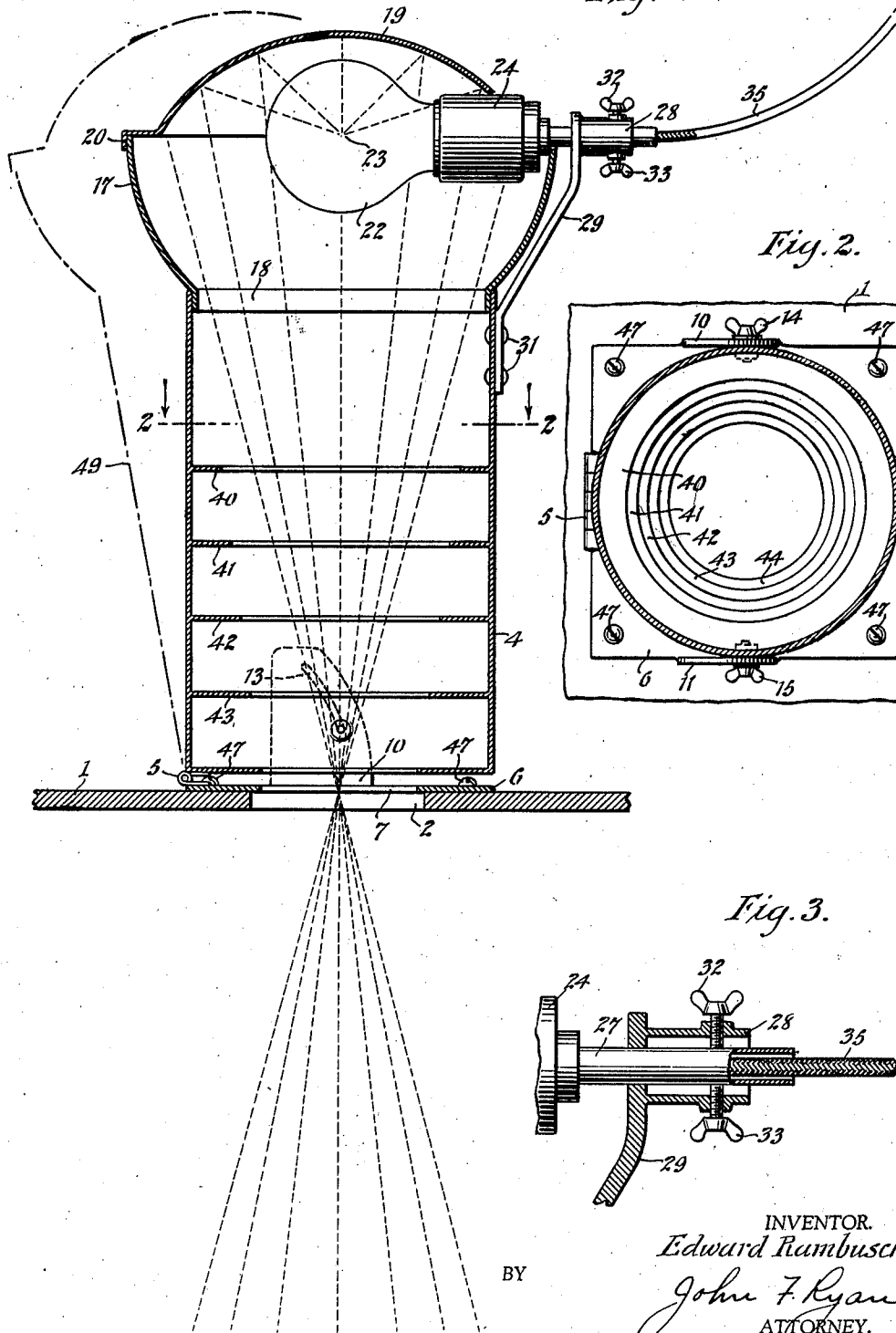


Fig. 2.

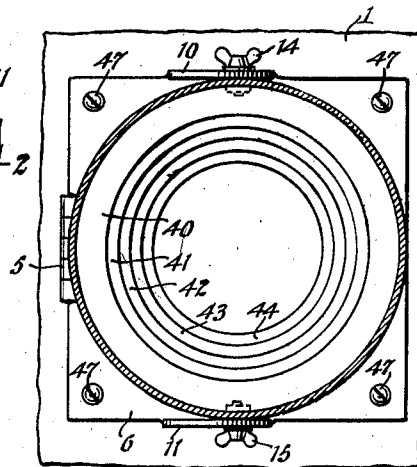
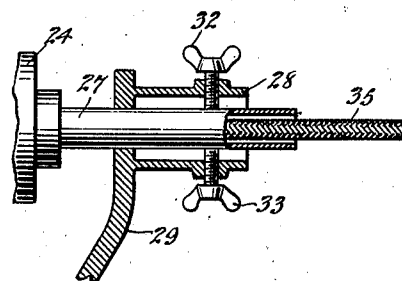


Fig. 3.



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ILLUMINATING APPARATUS

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2 Claims. (Cl. 240—78)

The present invention relates to a lighting apparatus so designed that the light rays emitted from a suitable source of light are focused at a point near the bottom of the device where the light rays emerge. The invention is especially applicable to lighting fixtures which are placed in the space above the ceiling of the room to be lighted and wherein the light rays pass through a small opening in the ceiling or in the fixture itself. The invention may be incorporated in a structure which may be wholly or only partly hidden above the ceiling depending upon the space available.

Among the objects of the invention is to provide a novel construction designed so that the source of light cannot be seen by an occupant of the space to be illuminated except when viewed from a circle of illumination nearly directly under the fixture, and yet, the light rays pass directly from the light source and reflector through the opening in the ceiling or fixture to the space to be illuminated without the loss attendant upon multiple reflection and the passage of light rays through refracting and diffusing glass or the like.

An advantage of the invention is that the reflector behind the source of light is inverted and looks downwardly and the fixture is closed at the top so that it will not collect dust or dirt as it would if it were open and the reflecting surface faced upward.

Still another object of this invention is to provide a fixture which is wholly or partly hidden above the ceiling with only a very small opening in the ceiling to allow the light rays to pass through. This makes an economical installation because the fixture does not have to be elaborately constructed, being invisible.

Yet another advantage of the device described herein is that it may be wholly or partially hidden in the space above the ceiling thus permitting a room to be lighted with a wholly or partially invisible lighting fixture and thus it lends itself to a decorative effect impossible to achieve with the common type of visible fixture now used.

In the drawing illustrating a preferred form of the invention:—

Fig. 1 is a side elevation in section of one embodiment of the invention.

Fig. 2 is a section through 2—2 of Fig. 1.

Fig. 3 is a side elevation in section illustrating the construction of the adjustable supporting device for the lamp socket.

Looking at Fig. 1 the light fixture is illustrated as supported upon the top of the ceiling of the room to be illuminated. The ceiling shown

at 1 has a circular aperture therethrough illustrated at 2. The fixture comprises a substantially cylindrical body portion 4 hinged at 5 to a supporting plate 6 which is adapted to rest on the top side of the ceiling 1 immediately above the aperture 2 and has a circular hole 7 through the middle thereof so designed as to coincide with the hole 2 when the fixture is in place.

The plate 6 is equipped with a pair of vertically disposed slotted ears or side members illustrated at 10 and 11. These may be conveniently formed by stamping them as an integral part of plate 6 and then turning them up into the position shown. Adjusting means comprising a bolt and wing nut is attached to the side of the body portion 4 so as to cooperate with the arcuate slots in the members 10 and 11 to allow the fixture to be clamped in any position within the limits of the slots to provide for angular adjustment of the light rays as will be more fully discussed hereafter.

The arcuate slot in the member 10 is shown at 13 and the corresponding adjusting wing nut and bolt at 14. The wing nut and bolt for the member 11 is shown at 15.

Mounted on the top of the body portion 4 are the light source and reflectors of the device. One of the latter is an annular spherical reflector 17 which is equipped with a collar 18 adapted to fit snugly inside the top of the body portion 4 so that the reflector 17 may be supported thereon. A substantially elliptical reflector 19 is designed to engage the upper edge of the reflector 17 by means of the annular sleeve 20. It is advantageous to make a close fit between the collar 18 and the inside of the body portion 4 and between the sleeve 20 and the reflector 17 so as to exclude dust and dirt but at the same time provide for a convenient method of disassembling the fixture to permit it to be cleaned and adjusted or to replace a lamp.

The source of light is an electric lamp shown at 22 with a filament shown at 23. The lamp is carried by a lamp socket 24 which in turn is supported on a hollow rod or tube 27 which is adapted to slide longitudinally in a cylindrical member 28 which is supported on arm 29 riveted to body member 4 at 31. The cylindrical member 28 is equipped with wing nut bolts 32 and 33 which are adapted to engage the tube 27 to hold it in position. The location of the lamp filament in relation to the reflectors may thus be adjusted to provide for proper focus. The lamp cord or wire is illustrated at 35.

The interior of the body portion 4 is equipped

with a number of annular baffle plates one disposed above the other as illustrated at 40, 41, 42 and 43 and the bottom of the body portion 4 illustrated at 44 cooperates with these baffles and acts like another baffle. The baffle 40 which is the topmost one, has the largest hole there-through and each succeeding baffle down to the bottom portion 44 has a progressively smaller hole because the light rays from the filament 23 will be focused in the plane of the ceiling 1 in the aperture 2. The lighting fixture may be conveniently attached to the upper side of the ceiling by screws such as those illustrated at 47 which are adapted to fit in holes drilled through plate 6.

The light emitted by the filament 23 may pass directly downwardly through the opening 7 in the plate 6 and the opening 2 in the ceiling 1. Rays which pass downwardly to the right and left as viewed in Fig. 1 will be reflected back by the spherical reflector 17 to the elliptical reflector 19 and thence downwardly to a focal point in the opening 2. Similarly, rays which pass upwardly from the filament 23 will strike the reflector 19 and be reflected downwardly and focused at the same point as indicated by the dotted lines.

From the plane of the ceiling the light will diverge into a cone of illumination to light the room below. The baffles prevent the interior of the body portion 4 from appearing brightly illuminated when viewed from below through the aperture 2 because they arrest reflected light. If they were not present the whole interior of the body portion of the fixture would be brightly illuminated and an occupant of the room below looking through the aperture 2 at an angle with the vertical would see the interior of the fixture whereas with the baffles in position the undersides thereof and the adjacent side walls of the body portion 4 are in shadow and will not be visible from below.

The adjustable supporting means for the lamp socket is not claimed as my invention and is well known in the art so I do not desire to be limited to the particular construction illustrated in Fig.

3. This is utilized merely to illustrate that it is advantageous to make the socket adjustable to compensate for a difference in the dimensions of lamps made by different manufacturers or a difference in dimensions of lamps of different size and wattage.

It is of course understood that the specific description of structure set forth above may be departed from without departing from the spirit of my invention as set forth in this specification and the appended claims.

I claim:

1. In a device of the character described, a body portion adapted to be positioned above the ceiling of the room to be illuminated, a light source near the top of said body portion, a reflector above said source adapted to focus the light rays emitted therefrom at a short distance below said source, an opening in the bottom of said body portion so positioned in relation to the reflector and source of light that reflected light rays will be focused substantially in said opening and pass therethrough to the room to be illuminated, means for adjustably positioning the longitudinal axis of said body portion to direct the light rays in a predetermined direction, said means including a hinge adapted to permit the body portion to be moved from a vertical axis to an axis disposed at an angle to the vertical so that the direction of the light rays may be adjusted.

2. In a device of the character described, a body portion, a light source, an opening in the bottom of said body portion, a reflector above said light source adapted to focus the reflected light rays in said opening as they pass there-through, annular baffle plates axially disposed along the interior sides of said body portion, and a hinge to enable said body portion to be moved so that its longitudinal axis will be angularly disposed to the vertical so as to permit the direction of the light rays emitted by the illuminating device to be adjusted.

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