Aug. 2, 1938. E. F. GUTH 2,125,440

ILLUMINATING FIXTURE

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FIG. 1.

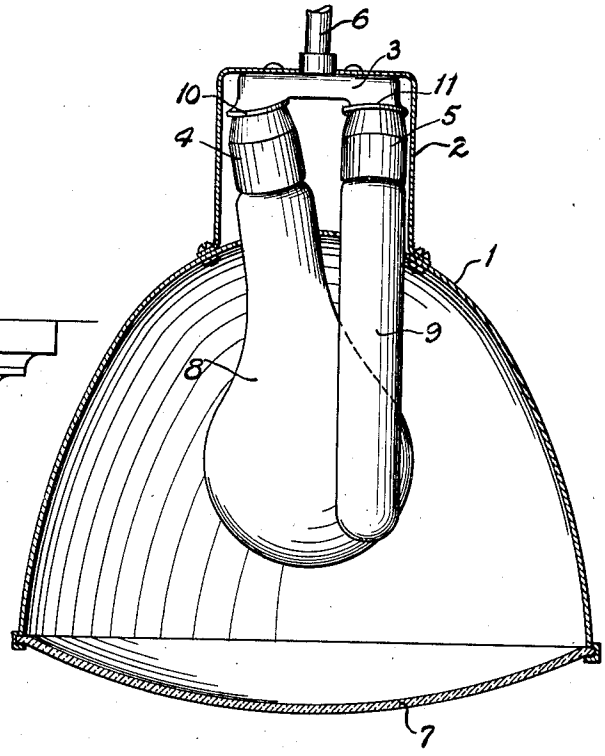

FIG. 2.

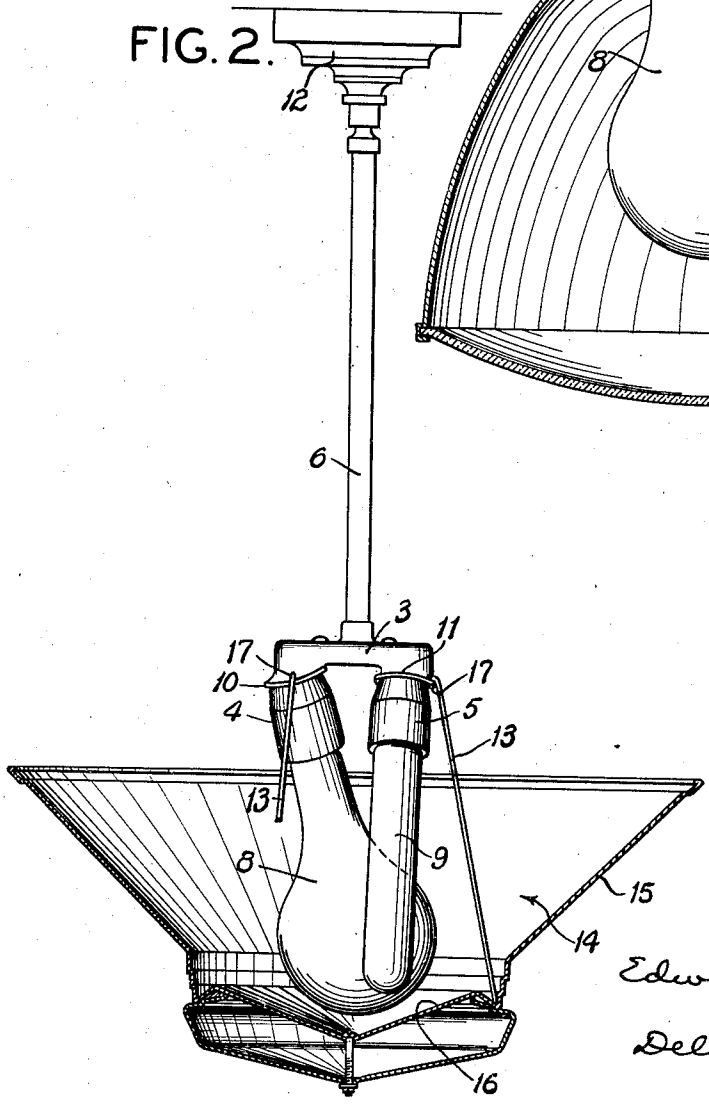

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FIG. 3.

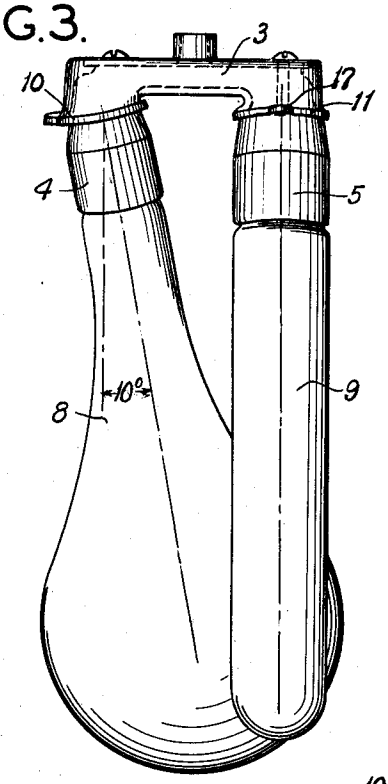


FIG. 4.

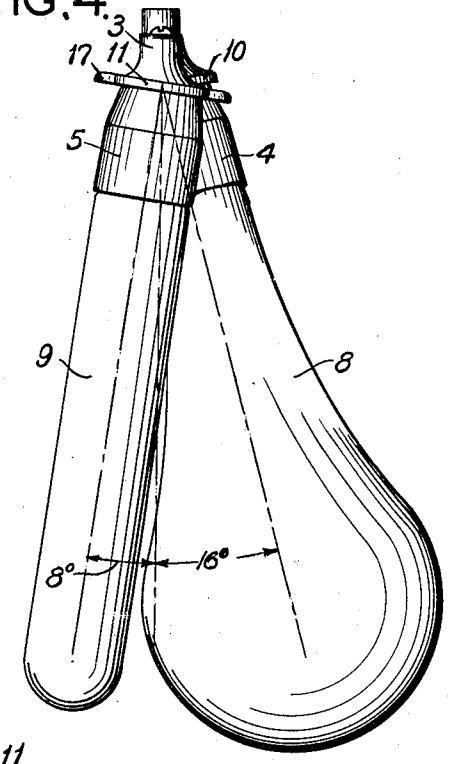
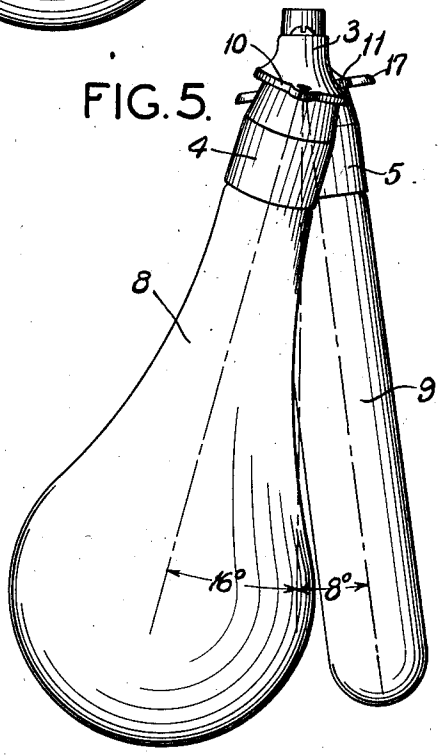


FIG. 5.



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ILLUMINATING FIXTURE

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Application January 27, 1936, Serial No. 60,944

1 Claim. (Cl. 240—78)

This invention relates to illuminating fixtures, and with regard to certain more specific features, to illuminating fixtures for utilizing a combination of several types of light sources.

Among the several objects of the invention may be noted the provision of an illuminating fixture of the class described which successfully combines a mercury vapor-type source with an incandescent body-type source, each of which sources is contained in a separate glass envelope, in such manner that the light emanating from the combined sources is of substantially uniform color characteristics, representing a blend of the color spectra of the separate sources; the provision of a combination illuminating fixture of the class described wherein the two light sources are so arranged that neither source casts a shadow as a result of light coming from the other source; the provision of a combination fixture of the class described wherein the two light sources may be matched, lumen for lumen, in the intensity of light thereby produced, and the provision of a fixture of the class described which is simple and economical in construction. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claim.

In the accompanying drawings, in which are illustrated several of various possible embodiments of the invention,

Fig. 1 is a vertical section of a direct illuminating fixture embodying the present invention;

Fig. 2 is a vertical section of an indirect illuminating fixture embodying the present invention;

Fig. 3 is a front elevation of the combination illuminating unit of the fixture of Fig. 1;

Fig. 4 is a right-end elevation of the unit of Fig. 3; and,

Fig. 5 is a left-end elevation of the unit of Fig. 3.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

It has long been known that a particularly valuable type of illumination, from the standpoint of the color of the light produced, is that provided by combining the light from a mercury vapor illuminating unit with the light from an incandescent metallic filament. The mercury vapor unit produces a light rich in the blue and blue-green wave lengths, while the filament unit produces a light rich in yellow and red wave lengths. The combination of these two lights closely approximates daylight in color value, and is thus advantageous for many illuminating purposes.

However, considerable difficulty has heretofore been experienced in obtaining a fixture which combines the two light sources mentioned in such a manner that their respective light rays are blended thoroughly, without introducing disadvantageous factors such as casting shadows from one light source by the other. In order to obtain the quality of light desired, it is necessary to match the light output of the two sources in substantially a lumen-for-lumen ratio, and the mechanical problem incident to such an arrangement is complicated by the fact that the filament source is usually considerably larger than the mercury vapor source.

The present invention provides a construction whereby all of the foregoing advantages are achieved, and the disadvantages overcome. Referring now more particularly to Fig. 1, numeral 1 indicates a parabolic or like reflector to which is attached, at the base, a cup-shaped housing 2. In the base of the housing 2 there is mounted a bracket 3, which carries a pair of sockets 4 and 5. A customary conduit 6 leads from the bracket 3, and encloses the wires for supplying current to the sockets 4 and 5.

The front end of the parabolic reflector 1 is closed by a lens 7 in the embodiment shown, although this lens may be dispensed if desired.

Bracket 4 receives a pear-shaped bulb 8 which is of the incandescent filament type. For example, it may be a 750-watt "Mazda" bulb. The light source of such a bulb is established in commercial practice as a cylindrically wound filament about ¾" long and 1" in diameter.

The bracket 5 receives a tubular mercury vapor lamp indicated by numeral 9, which is, for example, of the type designated as a "high intensity mercury vapor lamp" by the manufacturer, the General Electric Company. The lamp illustrated is the 400-watt type, and the illumination proceeds from an arc about ¼" in diameter and 3" long.

The lumen output of the filament bulb 8 and the mercury vapor bulb 9, in the sizes heretofore indicated, is practically the same. Therefore, if they are combined in such a manner as to blend their respective light outputs, they will satisfy the conditions heretofore described.

The manner in which the two bulbs 8 and 9 are mounted with respect to each other forms one

of the principal features of the present invention. Broadly, it may be said that the mounting is such that the two bulbs are in a diagonal relationship, whereby the two light sources are brought as closely together as possible and in such a manner that the filament source apparently envelopes the mercury vapor source with its light rays. Figures 3, 4, and 5, show in greater detail the manner of mounting.

A condition for successful operation of the mercury vapor bulb 9 of the type selected is that it should ordinarily be mounted with its base portion up, and should not tilt at more than 10° from a vertical position in any direction. On the other hand, the filamentary bulb 8 may be operated in substantially any angular position.

Referring more particularly to Figures 3, 4, and 5, it will be seen that the bracket 3 is provided with two circular surfaces 10 and 11, on which are mounted the sockets 4 and 5, respectively. The slope of the surfaces 10 and 11 determines the angle at which the bulbs 8 and 9 will be positioned. By the aforesaid condition of operation of the mercury vapor lamp 9, it will be seen that the surface 11 must not slope more than 10° from a truly horizontal position in any direction. In the embodiment shown, the surface 10 slopes at an angle of approximately 8° from the horizontal in a vertical plane at right angles to the length of the bracket 3. The surface 11, in the embodiment shown, has no slope whatsoever, (e. g., is perfectly horizontal) in the plane which includes the bracket 3.

The surface 10, on the other hand, is so sloped that it makes an angle of approximately 16° to the horizontal in a vertical plane at right angles to the length of the bracket 3, and is further sloped so that it makes an angle of approximately 10° in a vertical plane including the bracket 3.

The sockets 4 and 5, being mounted tightly on the surfaces 10 and 11, are therefore so positioned that the bulbs 8 and 9 have a diagonal relationship with respect to each other. For example, the bulb 9 has its axis at an angle of approximately 8° to the vertical in a vertical plane at right angles to the length of the bracket 3. On the other hand, the axis of the bulb 8 is at an angle of 16° to a vertical plane at right angles to the length of the bracket 3, and at an angle of approximately 10° to a vertical plane including the bracket 3.

By the recited angular relationship, the tubular bulb 9 is positioned very close to the pear-shaped bulb 8, extending across the sloping neck or throat portion of the bulb 8 behind its bulbous end portion. This means that the light sources of the bulbs 8 and 9 are close to true juxtaposition, that is, as close as true juxtaposition as is possible with regard to the shape and size of the available bulbs. In the arrangement shown, the light emitted from filament of the bulb 8 appears to envelope the light emitted from the bulb 9, and there is thus a blending of the spectra of the two lights at their sources.

It will be understood that the specific angles referred to heretofore, and shown in the embodiment illustrated in the drawings, are by way of example only, and that other angles may be used with success. The requirement is that the tubular mercury vapor bulb 9 be at a diagonal to the filament bulb 8 in two planes, therefore providing for the positioning of said bulb 9 substantially along the tapering or throat portion of the pear-shaped bulb 8.

By suitable adjustment of the angles of the bulb 8, it will be seen that the same angular relationship between the bulbs 8 and 9 can be maintained if the bulb 9 is made truly vertical in all planes.

The use of the invention is not limited to the direct lighting fixture shown in Fig. 1. Fig. 2, for example, shows how the same bracket, sockets and bulbs unit may be used in an indirect lighting fixture. Referring to Fig. 2, it will be seen that the conduit 6 is extended and is secured to the ceiling, for example, by a ceiling mounting fixture 12. Suspended from the bracket 3 by means of wires 13 is an indirect reflector assembly indicated generally by numeral 14, comprising a flared portion 15, and a bottom closure 16. The particular construction of the reflector 14 is of no moment to the present invention, and is by way of illustration only. The bracket 3 (see Figures 3, 4 and 5) is provided with ears 17 for receiving and supporting the ends of the wires 13.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

In an illuminating fixture, a mercury vapor lamp of approximately tubular shape, and an incandescent filament lamp of approximately pear-shape, and means supporting said two lamps in such manner that they are closely juxtaposed, the axes of the two lamps being in diagonal relationship, the tubular mercury vapor lamp occupying a position extending across the tapered throat of the pear-shaped incandescent filament lamp, the axis of the mercury vapor lamp being not more than the order of 10° from true vertical in any plane.

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