

June 17, 1941.

J. L. KOUBEK ET AL

2,245,790

LAMP BULB

Filed April 24, 1937

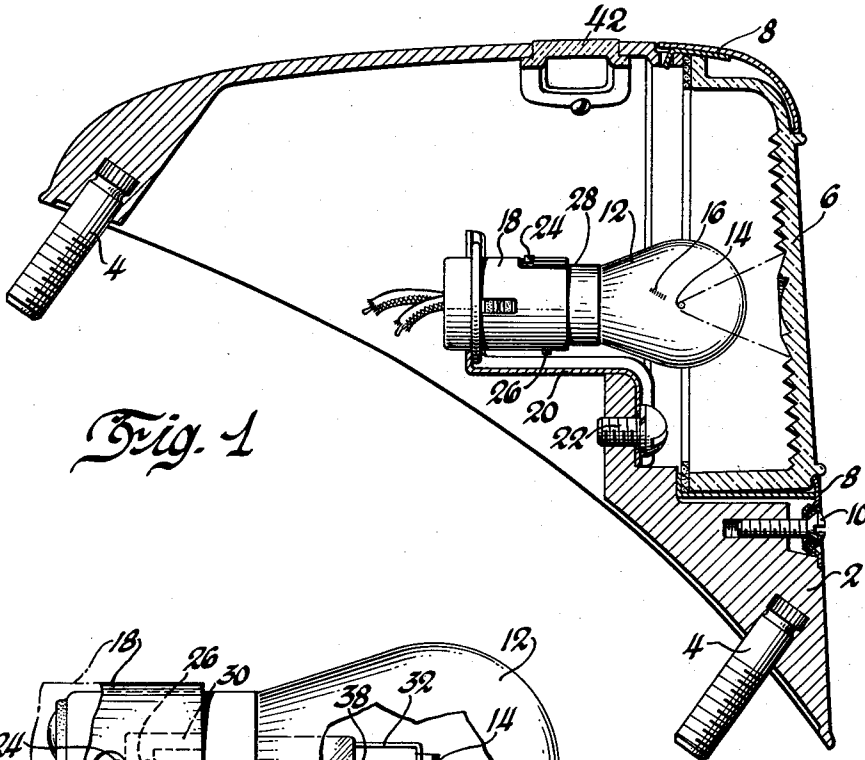


Fig. 1

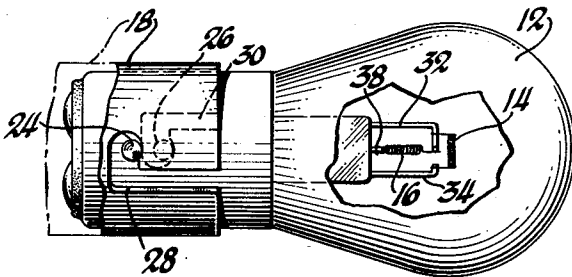


Fig. 2

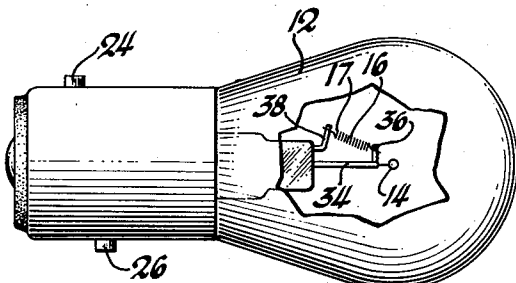


Fig. 3

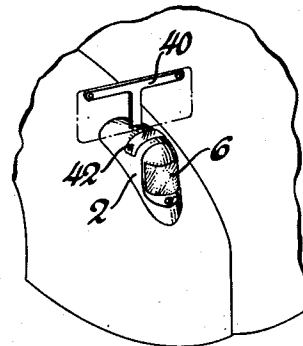


Fig. 4

Inventors
*John L. Koubek &
Howard C. Mead*

Blackmore, Spencer & Fluck
Attorneys

UNITED STATES PATENT OFFICE

2,245,790

LAMP BULB

John L. Koubek and Howard C. Mead, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich., a corporation of Delaware

Application April 24, 1937, Serial No. 138,706

1 Claim. (Cl. 177-327)

This invention relates to illuminating means and more particularly to an incandescent electric lamp and lamp bulb having two filaments arranged in a novel manner. The arrangement of filaments of this invention comprises a major bar-like filament of short length perpendicular to the lens axis and having its median portion (which is inherently the most incandescent) disposed substantially at the focus of the lens. If the major bar-like filament be horizontally disposed as shown in Fig. 1 of the accompanying drawing, the resultant beam projected from the lens will be of extreme intensity and of somewhat horizontally-elongate or spread form having substantially uniform intensity over a wide viewing angle. Such a bar-like filament, associated with a dioptric lens, is markedly superior to a conventional V-type filament employed with such a lens for the reason that with the V-type filament the resultant beam is "twinned" in character, yielding two beam portions—one to each side of the lens axis—and each of intensity markedly inferior to that of the single wide-angle beam characterizing the present invention. Located behind the focus of the lens and extending toward the rear of the bulb is a minor filament. The latter is spaced axially from the major filament has its rear end farther from the longitudinal center line of the lens than is the end nearest the major filament.

One important use of the lamp bulb of this invention is in vehicle combination stop and tail lamps utilizing a catadioptric or other type condensing lens. When so used, the minor filament which serves as the source of light for the tail lamp is disposed above and to the rear of the focus of the lens, while the major filament which provides the source of illumination for the stop light is arranged substantially at the focus of the lens. The lamp bulb is mounted also so that the focus of the dioptric section of the lens is arranged at the major filament and thus the minor filament will be out of focus. Light from the minor filament, thus arranged, is directed sharply downward and also is diffused or spread. The result of this construction is an arrangement in which the ratio of brightness between the beams provided by the two filaments is vastly increased over the ratio of the candle power ratings of the filaments. For example, assuming that the major filament has a candle power rating of 21 and the minor filament a rating of 3, the candle power ratio would be 7 to 1. In the embodiment of this invention illustrated in the drawing with major and minor filaments hav-

ing candle power ratings of 21 and 3, respectively, the ratio of intensities is substantially 100 to 1, with the beam of low intensity providing substantially better tail lamp illumination than is obtained from a present tail lamp where the light from the tail lamp bulb is emitted through a parallel glass aperture. Moreover, with the minor filament disposed in a vertical plane and rearwardly-divergent with respect to the lens axis, the light-shielding effect of the cold horizontal major filament on the lens is restricted to an absolute minimum during non-operation of the device as a signal lamp.

Another important advantage of this lamp bulb is in providing a more even distribution of light over the license plate in installations in which the bulb is used to illuminate the license plate in addition to acting as a stop and tail lamp. It is desirable that the ratio of the highest and lowest intensities on the license plate be kept as low as practical. Legal requirements require that the ratio be not greater than 30:1. With certain bulbs used in the past, using the minor filament to illuminate the license plate and as a tail light, it has been difficult as a practical matter to reduce the above ratio much below the legal requirements. The high ratio in the past has been due chiefly to the high foot candle readings on the center bottom of the license plate, which is the part closest to the bulb filament. In using our new and improved bulb to illuminate the license plate the minor filament is placed with a coil end thereof which produces the light of least intensity toward the center bottom of the license plate. This permits the balance of the plate to be illuminated from the portion of the filament that produces the light of the highest intensity. In this way the variation in intensities over the entire plate is reduced.

It is the primary object of our invention to provide a new and improved lamp bulb having one or more of the advantages outlined above. Other objects and advantages of our invention will become more apparent as the description proceeds. Reference is herein made to the drawing forming a portion of this specification in which:

Figure 1 is a longitudinal sectional view of an incandescent electric combination stop and tail lamp having a new two filament bulb mounted therein.

Figure 2 is a plan view with parts broken away, of one embodiment of the lamp bulb of this invention, the socket for the bulb being shown also, partly in dotted lines.

Figure 3 is a view taken at right angles to that of Figure 2.

Figure 4 is a perspective view of the lamp disclosed in Figure 1 and provided with a conventional T-shaped bracket for supporting the usual license plate.

In the drawing, 2 is the main body casing of a combination tail and stop lamp, having screw means 4, 4 for securing the same to the vehicle body, as, for example, to a fender thereof. A dioptric lens 6 is secured to the rear end of the lamp casing, as by means of retaining band 8 and screw 10. A bulb 12, having a major filament 14 and a minor filament 16, is mounted in a socket member 18 secured to the lamp casing as by means of strap member 20 and screw 22. The bulb is supported so that the major filament is substantially on the lens axis at substantially the focus of the lens, while the minor filament is above the lens axis and behind the focus of the lens.

Offset pins 24 and 26 are adapted to engage in slots 28 and 30, respectively, formed in the socket. To secure the bulb to the socket the bulb is rotated a slight amount after being inserted in proper position in the socket. By providing the offset pin arrangement, it will be impossible to insert the bulb in the wrong position; that is, to use the minor filament for the stop light and the major filament for the tail light. While we prefer the offset pin arrangement, any suitable means may be used to secure the bulb to the socket.

The major bar-like filament 14 is disposed perpendicularly on the lens axis with its median portion located at substantially the focus of the lens. The ends of the bar-shaped filament are secured to leads 32 and 34 which connect with the car wiring to complete the electrical circuit.

The minor filament 16 is secured at its forward end to a raised extension 36 of the lead 32 and at the end nearest the bulb base to another lead 38, the end connected to the lead 38 being spaced a greater distance from the lens axis than is the end secured to the extension 36. It will be seen, therefore, that the minor filament is spaced behind and to one side of the major filament. When mounted in a combination tail and stop light, as illustrated in Figure 1, the minor filament is mounted above the common axis of the bulb and lens.

When the minor filament of the bulb is to serve as a means to illuminate the license plate in addition to serving as the source of illumination for the tail light, the bulb is arranged in such position that the coiled end 17 of the minor filament is nearest the center top or center bottom portion of the license plate. This will be apparent from the diagrammatic showing in Figure 4 when considered with Figures 1 and 3. In this instance the end of the minor filament is arranged so that it is nearest the center bottom of the license plate. In Figure 4, a license plate

bracket 40 supports the license plate midway of its ends. A suitable window 42 is shown in Figure 4 to permit light from the minor filament to illuminate the license plate. The coiled end 17 of the filament produces a light of lesser intensity as compared with that of the other portion thereof. In this way the portion of the license plate nearest the filament is illuminated by the light of lesser intensity and the portions of the license plate farther away from the filament are illuminated by the light of greater intensity. The result is that the ratio of the highest and lowest intensities of light on the license plate is materially reduced as compared with that of bulbs commonly used.

While the bulb has been shown and described in combination with an incandescent electric stop and tail lamp, the bulb has many other uses. For example, the bulb may be used in side lamps of vehicles with the minor filament as a parking light and the major filament adapted for indicating and/or signalling. The bulb also may be used in signal apparatus broadly, as distinguished from signalling means arranged with or on vehicles. However, the several examples given are by way of illustration only and are not to be construed as limiting the use of the bulb to the described combinations. It will be expressly understood that the bulb may be used wherever a two filament bulb is desired.

Various changes and modifications may be made in the described construction and arrangement of parts without departing from the spirit of our invention and we do not desire to limit the patent granted thereon to the specific embodiments of our invention shown and described herein.

We claim:

A combination signal and marker lamp for vehicles comprising: a lamp housing having a light opening therein, a dioptric lens extending across said light opening and having its focus located within said housing, and means for illuminating said dioptric lens to effect widely differentiated radiation therefrom when employed as a signal and when employed as a marking device respectively, said illuminating means consisting of a major bar-like incandescent filament disposed within said lamp housing perpendicular to the lens axis and having its median portion of maximum intensity located at the focus of the lens, and an elongated minor incandescent filament of lesser candlepower disposed within said housing behind the lens focus and having its axis arranged at an acute angle with respect to that portion of the axis of said lens lying behind the lens focus, said minor filament axis lying in a plane disposed at right angles with respect to the plane common to said bar-like major filament and said lens axis.

JOHN L. KOUBEK.
HOWARD C. MEAD.