

June 21, 1938.

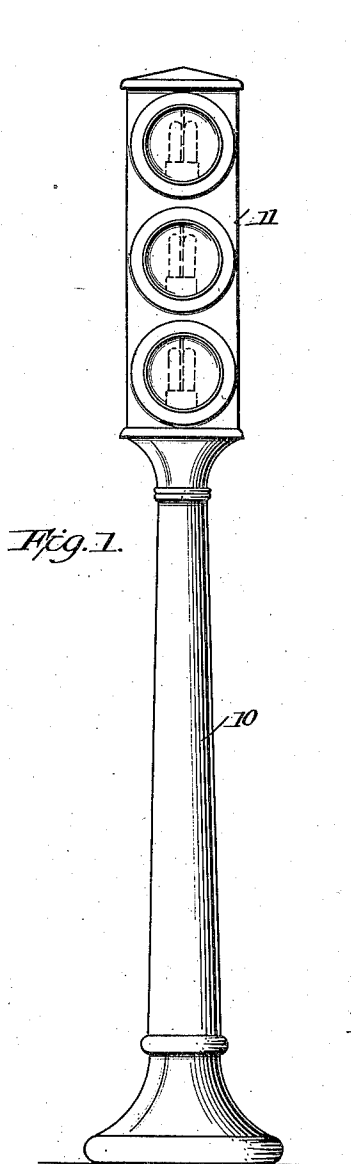
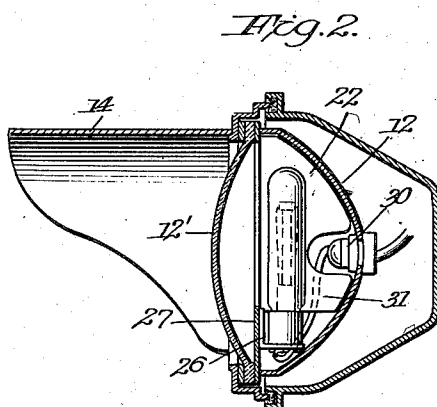
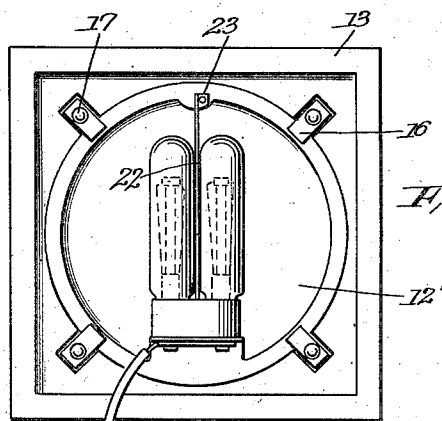
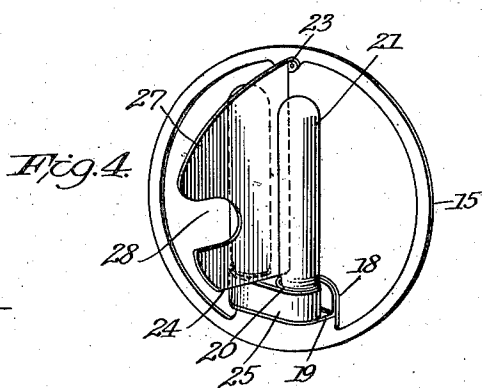
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2,121,276

SIGNAL

Original Filed June 1, 1932

2 Sheets-Sheet 1



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Fig. 5.

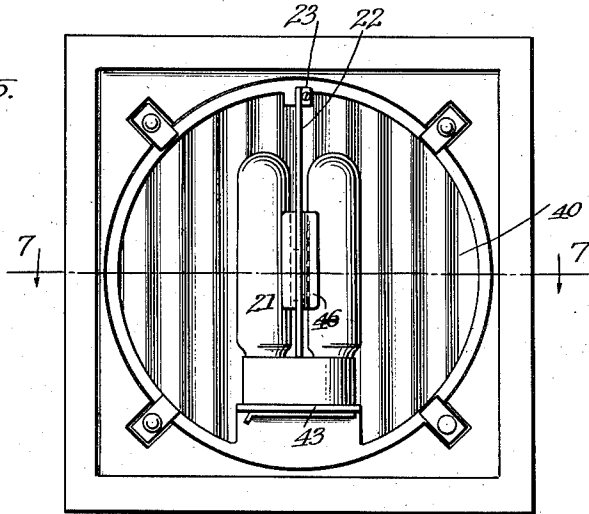


Fig. 6.

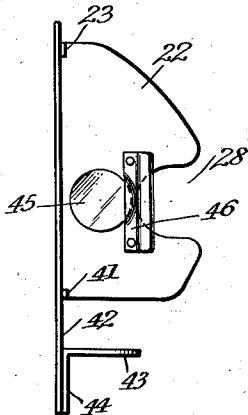
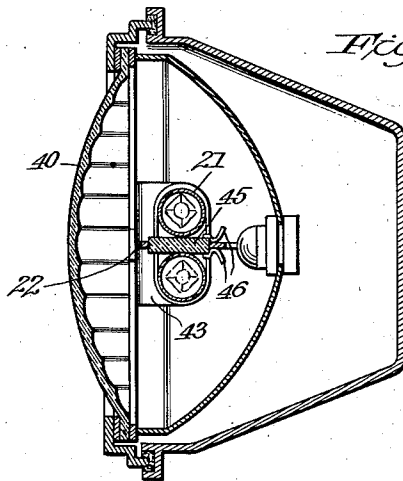


Fig. 7.



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UNITED STATES PATENT OFFICE

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SIGNAL

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1 Claim. (Cl. 177—329)

My invention relates to traffic signals, and has particularly in mind incorporation of a safety factor in such devices.

At the present time, there exists a very dangerous hazard, in that, not infrequently, the red light of the usual traffic signal system burns out, and since no visible signal is then presented, a motorist will overrun the intersecting road to which a green light is displayed, thereby resulting in collisions with traffic having the right of way.

To eliminate such a danger and to do it in a simple and economical manner is the primary purpose of the present invention.

Another important object of the invention is to provide a construction wherein the lamps, i. e., the filaments thereof, are electrically connected in parallel so that normally both filaments are incandescent, to fully illuminate the signal area, and should a filament burn out, means in the form of a screen, are provided which are co-operable with the remaining incandescent filament to produce on the signal area a definite signal of similar appearance, but of contrasting contour from the normal signal indication, and a simultaneous and definite notification of the failure of the other filament, in the form of a dark area or spot of contrasting appearance and contour.

Fundamentally, I employ a plurality of lamps electrically connected in parallel which are positioned in a signal housing, and when both lamps are illuminated, the usual signal is displayed. However, should one lamp burn out, the signal area defined by the cover glass or lens will have visibly presented upon it a bright area producing an adequate signal and a darker area forming an observable notification of the failure.

A feature of the invention resides in positioning the lamps so that they are substantially at the focal point of the optical system, whereby when both lamps are incandescent, the full value of the optical arrangement is obtained, and when one of the lamps burns out, the remaining lamp will cooperate with the optical system to give the desired signal effect and notification of failure.

Referring to the drawings:

Figure 1 is a front elevation of the usual traffic signal which comprises red, yellow and green cover glasses.

Figure 2 is a sectional view.

Figure 3 is an elevation of the inside of the cover of the signal housing.

Figure 4 is a detail perspective view of the attachment which I utilize.

Figure 5 is a plan view looking at the inside of

the cover of the signal housing and showing a modification.

Figure 6 is a side elevation of the modified adapter shown in Figure 5.

Figure 7 is a sectional view through the lamp housing of Figure 5.

The numeral 10 indicates the usual traffic signal standard on which is mounted the housing 11. This housing carries one or more compartments, each consisting of a parabolic reflector 12 and a colored cover glass or lens 12' which defines the visible signal area. A suitable door 13 is hinged to the housing and detachably carries the cover glass. In connection with signals of this character, it is customary to employ a shield 14 of conventional design. The door 13 supports the attachment 15 which is in the form of a ring member connected to the door by means of tabs 16 which are detachably held in position by means of screws 17.

The ring member or adapter is provided with an inwardly extending portion 18, to which is connected a bracket 19, by soldering or in any suitable manner. This bracket 19 carries a plurality of lamp sockets 20 and electrical connectors therefor, and suitable lamps 21 are positioned in the said sockets.

I find that by using lamps having elongated filaments, that the present invention is rendered very effective.

Supported by the ring is a screen 22 preferably of highly polished heat resistant material, such as metal, which has its upper end bent over and connected to the ring as at 23 with its lower straight edge 24 resting on the housing 25 for the sockets 20, which housing is in the form of a confining band resting upon the upper surface of the bracket 19, as shown. The lower edge 24 of the shield or screen is soldered to the upper edge of the portion 18 and to the upper edge of the band 25, although it may be secured thereto in any other suitable manner.

The screen 22 is preferably connected to the ring so as to extend across its diameter and divide the ring into equal segments, the screen extending laterally from the ring between the lamps.

This shield is of a contour such that its rear edge substantially conforms to the contour of the parabolic reflector and extends substantially in contact with the wall of the reflector. The rear edge of the screen has a recess 28 to receive the usual socket connection 30 having wires 31, which are connected to the lamp sockets 20 to establish the electrical circuit.

The electrical circuit is arranged with the

lamps connected in parallel, so that should one lamp burn out the other will remain illuminated.

The filaments of the respective lamps will preferably be of equal resistance, since it is a well known fact that the filaments of any two lamps will not burn out at the same time. If desired, however, the filaments may be of varying resistance, although this is not essential.

It is to be noted, upon reference to Figure 1, that the front edge of the screen 22 terminates short of the concave glass, and that the provision of the bracket 19 and inwardly extending portion 18 will form an effective continuation of the screen or shield.

Referring to Figures 5 and 6, instead of a usual colored cover glass 12', I employ a spread-light lens 40, in which the corrugations are arranged vertically or parallel with the lamps 21.

In this modified construction, the screen 22 is connected to the ring at 23 in the same manner as heretofore described, and at its lower edge it is provided with a similar bent over portion 41, which is secured to an inward extension 42 on the ring as by soldering or by means of screws. A bracket 43 is suitably connected to the lower portion of the extension 42, as shown at 44, by soldering or by means of screws, and carries the lamp sockets and electrical connections and housing, as described in connection with Figure 4.

The screen 22 has disposed substantially centrally thereof a glass roundel 45 of a suitable color, such as blue or purple. This roundel will be sufficiently transparent, so that should one lamp burn out, light from the remaining lamp may pass through the roundel and be transmitted to the lens to thereby produce a visible area of a different or darker color from that produced by the remaining lamp.

Connected to the screen 22 upon opposite sides thereof are light shields 46 of polished metal which may be also used in connection with the construction shown in Figures 2, 3 and 4 and serve to prevent light from being projected through the opening 28 to the reflector from either lamp.

By reason of the several forms of structures embodying the present invention herein described, when either one of the two lamps burns out, there will be presented on the lens or cover glass a segmental portion only of the normal signal indication, but this portion will be clear and definite and will be visible over an area of the lens substantially equal to one-half of the normal signal area displayed when both lamps are illuminated. The other segmental portions of the signal indication of the lens (with one lamp burned out) however, will be contrasting and will be darker, and in the case of the construction illustrated in Figures 2, 3 and 4, will be almost black, while in the construction shown in Figures 5, 6 and 7, said other segmental portions of the signal indication will be of a decidedly contrasting color, dependent upon the color of the lens or cover glass plus the color of the roundel 45 associated with the screen.

The screen 22 is at the focal point of the reflector and, it will be observed, substantially divides the area between the reflector and cover glass into halves when the screen is disposed in a plane crossing the axis of the reflector and between the lamps. In this manner, the lamps, while not exactly at the focal point of the reflector, are of elongated construction which enables their filaments to be brought to the focal

point and give a maximum illuminating effect. Thus, should one lamp burn out, the remaining lamp will still be substantially in focus.

While the use of the roundel 45 is arbitrary, I find it useful, in some cases, to present on the signal area not only a definite segment of the same color as the normal signal indication, but as well, a spot adjacent thereto which will be illuminated by reflection of light passing through the roundel and of a different, observable and contrasting color.

In accordance with the present invention, wherein the screen 22 effectively sub-divides the housing, the cover glass or lens, as the case may be, is fully illuminated when both lamps are incandescent, but should one lamp burn out, the definite bright and darker areas will be produced, which, as stated, are observable to give an adequate signal, as well as an observable spot or notification of the failure of one lamp.

While I have illustrated the shield as extending vertically with the elongated lamps extending vertically on each side thereof, it will be understood that the screen may extend horizontally with the lamps extending in a similar plane on opposite sides thereof.

The lamps are preferably disposed in parallel planes to each other and to the screen, and by mounting the lamps as close to the screen as possible, they will be arranged substantially at the focal point of the reflector.

It is to be observed that the screen has its rear edge substantially conforming to the wall of the reflector and is of a width so that its front edge ends in the plane of the major diameter of the reflector. A space is, therefore, formed between the front edge of the screen and the concave cover glass or lens. By reason of this space, when both lamps are incandescent, the light from each lamp will merge and illuminate the signal area completely. In other words, when both lamps are incandescent, the screen exercises no effect. However, when the lamp on one side of the screen burns out, the light from the lamp on the opposite side of the screen will be transmitted across the front of the screen in the space between the same and the lens or cover glass, so that the illuminated segment will be slightly larger in area than that of the adjacent darker portion which gives notification of the failure of one lamp.

By reason of this construction, the signal indication or spot will be very substantial, while at the same time the darker area or spot will be immediately observable by an inspector, i. e. it will be of a sufficient area as to be easily perceived and the difficulty corrected.

By reason of the construction shown wherein a reflector and a cover glass or lens of suitable color are employed to form a visible signal area of definite contour with which is incorporated the adapter construction of this invention, I am enabled to provide a safety factor, such that when one of the lamps burns out, the other lamp will give a substantial indicating spot on the signal area and likewise present an observable notification of the failure of one lamp.

It is further to be noted, upon reference to the drawings, that the screen is of an area such that the lamps, upon the respective sides thereof, are disposed within the confines of the screen. In this manner, light from an incandescent filament at one side of the screen is effectively screened from that part of the reflector at the opposite side of the screen where the lamp has burned out.

Hence, a signal of light and darker areas will be produced when a filament is extinguished.

5 While I have shown and described the screen as carried by the support or adapter, it will be understood that the screen may be made a part of the reflector, or the screen may be carried by the adapter and the lamps suitably positioned within the reflector and separate from the adapter.

10 I claim:

A signal comprising a housing having a door, a cover glass constituting a signal area carried

by said door, a ring member detachably carried by said door on the inner side of said cover glass, a reflector having its open end adjacent to said ring, a screen attached to the latter and extending toward the reflector with its free edge adjacent thereto, means on the ring for permitting the support of an elongated filament tubular lamp on each side of the screen and adjacent and substantially parallel thereto, said means also permitting the connection of the lamps in parallel. 10

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