June 18, 1946. F. T. POWERS 2,402,206

TRAFFIC LIGHT

Filed April 3, 1943

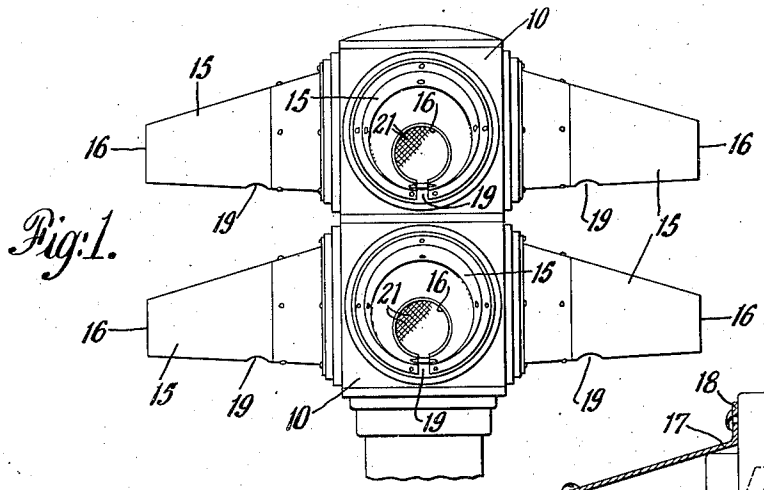


Fig:1.

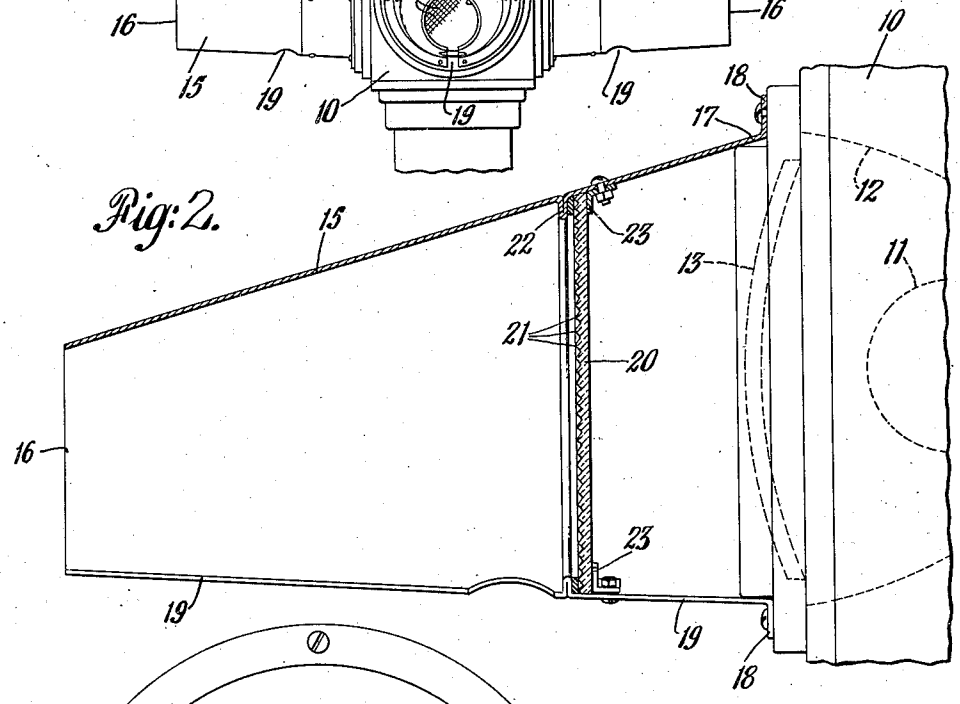


Fig:2.

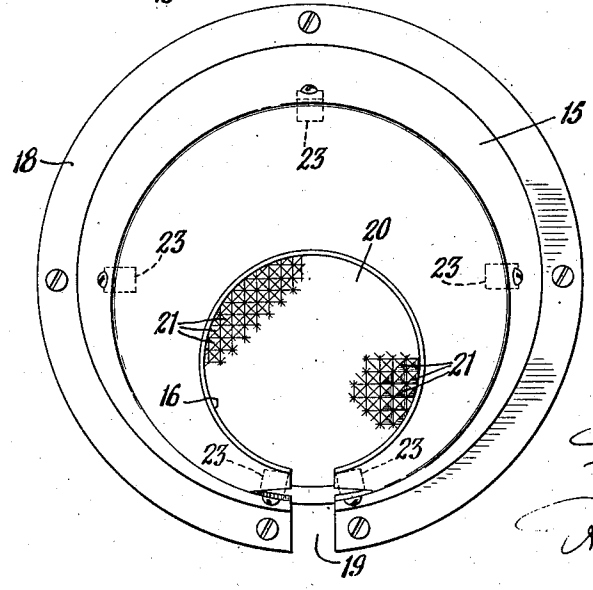


Fig:3.

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TRAFFIC LIGHT

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1 Claim. (Cl. 177—329)

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The present invention relates to new and useful improvements in traffic and other signal lights.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claim.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein and constituting a part hereof, illustrates one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawing:

Figure 1 is a fragmentary perspective view of a traffic light constructed in accordance with the present invention;

Figure 2 is a longitudinal sectional view of a portion of the traffic light shown in Figure 1; and

Figure 3 is a front elevation of the part shown in Figure 2.

The present invention has for its object the provision of a novel and improved signal or traffic light particularly adapted for use in "dim-out" areas, and which may be allowed to remain illuminated even during blackout without increasing noticeably the surrounding illumination. A further object is the provision of an improved traffic light which requires only small wattage lamps, and is more effectively hooded or shielded from sunlight, so that its signals are more readily distinguished even when the sun is shining directly at the light.

In accordance with the present invention, the traffic light or signal light comprises a conventional light source, such as an electric incandescent lamp, a usual reflector and a colored "lens" or filter, over which is fixed a hood or tapered cone of outwardly diminishing diameter. Between the open end of the cone and the filter or lens, is mounted a sheet of transparent or highly translucent material having its outer surface formed as a reticulated surface, such as a plurality of relatively small outwardly projecting pyramids, which prevent the outer surface of the sheet from reflecting out of the hood any substantial part of the small amount of sunlight which enters through the open end of the cone. At the same time it serves to prevent any

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direct rays of the sun from passing through the lens or filter and being reflected back into the eyes of the observer so as to cause the impression that the lamp is lit. The under side of the cone is preferably apertured so as to permit pedestrians more readily to observe the signal, and at the same time to permit snow, rain, etc., to drain away from the cone, lens and interposed transparent sheet. If desired, the interposed transparent sheet may be made partispherical or curved to lessen, even more, the reflection of the incident light.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in detail to the illustrative embodiment of the invention as shown in the accompanying drawing, there is shown a traffic light for an intersection which may have upper red signals and lower green signals, as is customary. Within the casing 10 are the usual incandescent lamps 11 and reflectors 12 which are covered with the usual colored filters or "lenses" 13 so that the light visible from the exterior is of the desired color when the corresponding lamp is illuminated.

Attached over each of the colored lenses and extending outwardly therefrom is a hood or shielding cone made of substantial, opaque material, tapering from a size sufficient to enclose the colored lens at its base to a relatively small external aperture, approximately one-half of the diameter of the base, the length of the cone being preferably three times the diameter of the exterior opening, from approximately twice to four times the diameter of the external opening. Preferably the cone does not extend with its axis horizontal, but has its axis inclined downwardly so that the upper edge of the external opening is not greatly above the center of the lens, thereby minimizing the angle above the horizontal from which any illuminated portion of the light is visible.

In the drawing, the cone is designated as 15, having its external opening 16 and its base 17, which is provided with a flange 18 by which it may be affixed to the traffic or signal light over the lens. The lower portion of the cone is provided with a long, narrow, longitudinally extending slot or aperture 19 through which the light is visible to the pedestrain from below, also serving to drain rain, snow, etc., away from the cone and the other parts of the light.

Between the lens, and the external opening 16, and preferably closer to the lens than to the

opening, is a diffusing member 20 which may comprise a sheet of glass having its internal surface smooth, while its outer surface is reticulated, forming sharply intersecting surfaces having practically no portions substantially parallel to the back surface of the glass, and is preferably formed as a plurality of pyramids 21 projecting beyond the surface of the glass. Member 20 is held in place between the flange 22 and lugs 23 on the interior of the cone 15. Such a glass may be of the type commercially known as "Factrolite" and the pyramids are preferably from $\frac{1}{32}$ to $\frac{1}{16}$ of an inch across. Other materials may be employed, of different sizes of reticulation, but the material should be transparent or translucent, although it is not capable of transmitting light without refraction. The member 20 acts in a double capacity; it reflects the sun or other light entering the cone through the external aperture to one side or the other, thereby preventing reflection of any substantial part of the incident light back through the external aperture and into the eyes of the observer; also, the material serves to break up the incident rays of light so that they are refracted before they can enter the reflector to be again transmitted through the material.

The member 20 also prevents any direct vision of the filter or lens element, and when viewed by the observer, the material within the hooding cone 15 causes the interior to look gray, rather than red or green, thereby enhancing the contrast between an illuminated and an unilluminated light.

While different forms of the member 20 may be employed, the front surface is recticulated and is in the form of pyramids or other shapes so that only a very small portion of the front surface is parallel to the member itself or normal to the light entering through the front end of the hood or cone 15.

In certain cases, the color filter 13 may be omitted as a separate element and the transparent material of which the member 20 is made may be colored, as claimed, thereby combining its diffusing, non-reflecting and color-filtering functions, and under such conditions the member 20 may be positioned in place of the lens or usual color filter 13.

In actual practice, the external aperture of the cone may be approximately three or four inches, the cone may be from ten to fourteen inches, more or less in length, while the base of the cone will usually be from seven to nine inches in diameter, the transparent diffusing member being positioned two to four inches from the color filter element or lens, and behind the aperture 19 through which pedestrians may view the light. The lugs 23 are provided for holding the member 20 in place, and permit it to be replaced in case of breakage.

In actual tests, the traffic light of the present invention has proved to be more readily visible both in daytime and nighttime using only a 15 watt lamp for the red signal and a 25 watt lamp for the green signal, than the conventional lights using the standard 67 watt lamp and provided with either the usual cross type of shield or the crescent opening at the upper part of the traffic light lens, whether provided with the conventional type of hood or not.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claim without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

A traffic or signal light including a relatively long cone of circular cross section and having open ends, the outer smaller end being approximately half the diameter of the inner larger end, a source of light, and an intermediate diffusing member between the transverse center of the cone and its inner end and the source of light, said diffusing member having its outer surface provided with a multitude of pyramidal projections for intercepting incident light rays entering through the outer end of the cone and refracting the same laterally against the inner surface of the walls of the cone, the upper and lower walls of the cone converging outwardly at different angles and at such angles as to dispose the axial center of the outer end of the cone below the axial center of the inner end of the cone and axial center of the diffusing member, said lower wall of the cone being provided with an observation and drain slot extending longitudinally between the ends thereof.

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