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[54] LIGHT SCREEN FOR PEDESTRIAN TRAFFIC SIGNAL

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[63] Continuation-in-part of Ser. No. 253,002, May 15, 1972, abandoned.

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[58] Field of Search 340/382, 103, 107, 84, 340/113; 40/130 E, 130 R, 219, 132 R; 350/276 R

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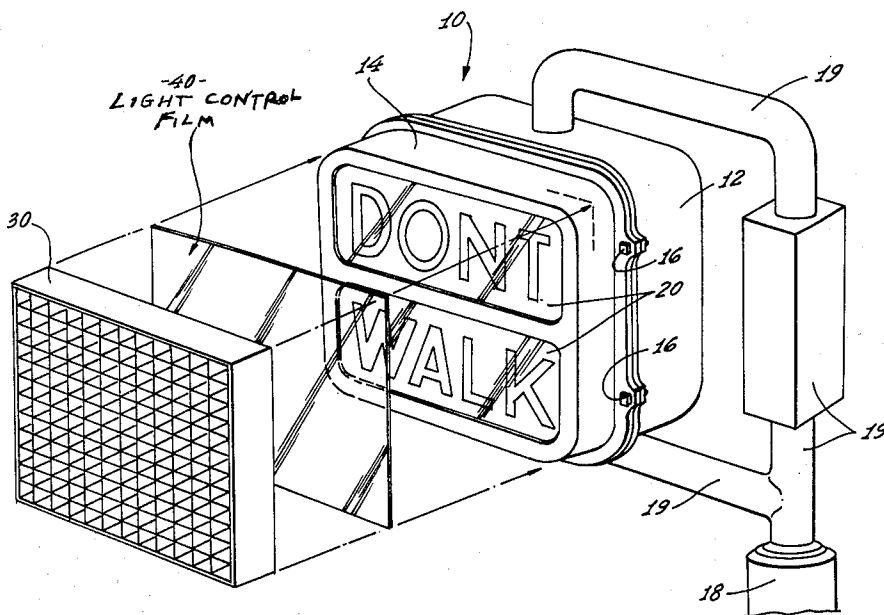
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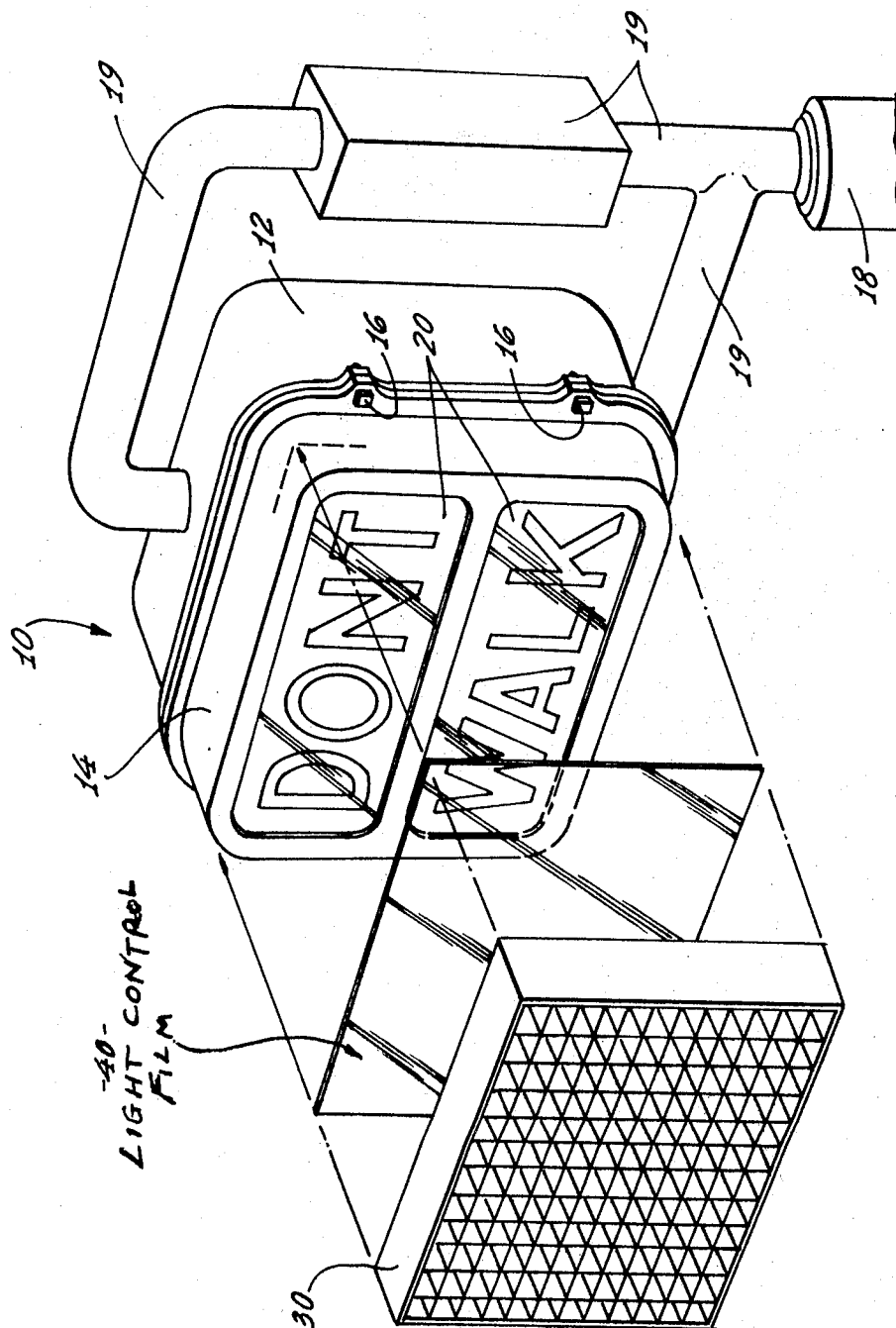
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[57] ABSTRACT

A light screen is provided for pedestrian traffic signals which eliminates the need for sun visors, and the like, such as are used in conjunction with present day units, and yet which provides for a complete blank-out of the legend on the signal when the corresponding light source is not illuminated, even in the presence of bright sunlight. The light screen of the present invention has a configuration in the form of an "egg crate" type of grating composed of intersecting webs which provide a multiplicity of rectangular apertures, and which is mounted over the face of the pedestrian signal, and which also comprises a light control film interposed between the grating and the face of the signal. The light control film has the property of transmitting only light which is essentially perpendicular to its surface.

4 Claims, 1 Drawing Figure





LIGHT SCREEN FOR PEDESTRIAN TRAFFIC SIGNAL

This application is a continuation-in-part of copending application Ser. No. 253,002 which was filed May 15, 1972 now abandoned.

BACKGROUND OF THE INVENTION

Pedestrian traffic signals are presently in widespread use. Most traffic signals are of the type which include a face plate having an upper portion bearing the legend DONT and a lower portion bearing the legend WALK. Other types of such signals have a clear face plate, with the legends being formed internally by suitable configurations of neon tubes. Pedestrian traffic signals are usually located at intersections, and they indicate to the pedestrian that they may cross the intersection when the lower portion of the face plate is illuminated, but that they may not cross the intersection when both the upper and lower portions are illuminated.

It is most important that there be no ambiguities in the pedestrian light signal, since false indications could prove fatal. A persistent problem is that of the legend being rendered visible by incident sunlight, when not illuminated, so that the pedestrians are uncertain as to whether a WALK or a DONT WALK condition prevails.

Attempts have been made in the past to obviate the aforesaid uncertainty in the prior art signals by the provision of sun visors, and by various types of light screens. However, these have not been completely satisfactory since the visors and light screens have been found either to have a tendency to obliterate the legends, even when illuminated, or to be ineffective to blank out the legends in the presence of strong incident light.

For example, a honeycomb material has been employed in the past in front of the message lens of a pedestrian light signal in an attempt to create a blackout effect from external light. However, the honeycomb material is fragile and must be protected by a transparent cover which reduces the light transmitted to the observer. By contrast, the egg crate grating in the combination of the present invention is rugged and does not require such a light-attenuating cover.

In contrast, the egg crate grating of the invention provides a clear bright indication of the signal legends all the way to the outer extremities thereof; as opposed to the honeycomb which provides a drastically darkened display at the extremities.

The grating may be constructed of flat black material which absorbs heat from the signal as well as ambient heat, and which has a self de-icing effect. Moreover, the physical construction of the grating and its proximity to the face of the unit inhibits the build up of snow and ice as compared with the usual prior art visors. For example, the grating extends a maximum distance of the order of 1.5 inches from the face of the unit, while the usual prior art visor extends about 7 inches.

The egg crate grating may be manufactured to have an aspect ratio of the order of 3 (calculated from a depth of 1.5 inches divided by a vertical spacing of the horizontal webs of 0.5 inches). This ratio can be increased by increasing the depth or decreasing the vertical spacing of the webs.

The light screen of the present invention is particularly constructed to incorporate a light control film of a high aspect ratio (approximately 3.6), in conjunction

with an egg crate grating of a similar aspect ratio; the combination functioning when in position on a pedestrian traffic light signal to completely blank out the legends of the signal so long as they are not illuminated by the light sources in the signal, with the grating element serving primarily as a blackout member and secondarily to shield the reflective external surface of the light control film to prevent reflections. When the legends are illuminated by light sources within the signal, they may be viewed clearly, and the traffic signal is unambiguous in its operation, even in the presence of strong external light. The light control film may be of the type of plastic film developed by the 3M Company, and which has the property of passing only incident light which is essentially perpendicular to its surface. Alternatively, the light control film may be a plastic screen, which is also made by the 3M Company and which is reflective on one surface (to reflect external light), but which will pass light from the interior of the unit.

BRIEF DESCRIPTION OF THE DRAWING

The single FIGURE is a perspective representation of a typical pedestrian traffic control signal, and of a light screen constructed in accordance with the present invention, and which is intended to be mounted over the face of the signal.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

The pedestrian traffic control signal illustrated in the accompanying drawing is designated generally as 10. The signal includes a usual housing 12 and a cover member 14 which is hinged to the housing and which may be opened or closed to permit access to the interior of the signal. The cover 14 may be held closed over the front of the housing 12 by means, for example, of bolts 16, or other appropriate fasteners. The pedestrian traffic signal 10 is supported on a usual standard 18 by means of a bracket 19.

As is well known, appropriate light sources are mounted within the housing 12 which are selectively energized, so as to illuminate either the legend WALK on the lower portion of the face plate 20, or both the legends DONT and WALK on the upper and lower portions of the face plate.

In accordance with the present invention, a light control film 40 is mounted over the face plate of the signal 10 in conjunction with a grating 30. It will be appreciated that the film 40 and grating 30 can either be mounted in front of the cover 14, or they may be mounted within the cover and in front of the usual lens plate of the signal, and of the face plate 20 which bears the legends DONT and WALK. The lens plate is a prismatic lens which gathers light from a widespread area in the rear, and concentrates the light into a multiplicity of dots and directs the light ahead parallel to the louvers of the grating 30. The lens plate 30 serves to present a more distinct image of the legends to the observer. The lens plate, however, has an opposite diffusing effect on external light. It is apparent that, to be effective, the film 40 and grating 30 are most effective in front of the lens plate.

The grating 30 is formed by intersecting webs which define a multiplicity of rectangular apertures. For example, the height and width of the grating 30 may correspond to the height and width of the cover 14 of the signal 10. The apertures in the grating 30 may, for ex-

ample, be square, with each side measuring one-half inch. The depth of the grating may, for example, be 1½ inches. The webs of the grating are thin, of the order of 0.020 to 0.040 inches thick, and they are mounted generally parallel to the line of sight of the pedestrian. The foregoing dimensions are provided merely by way of example, and are representative of one embodiment of the invention in which the light screen performs perfectly its intended function of blanking out the legend DONT and WALK when the corresponding light sources are de-energized, with reflections on the external surface of the light control film 40 being minimized, even in the presence of strong incident sunlight; and, on the other hand, of permitting clear and unobstructed vision of the legends when illuminated.

The effective dimensions of the grating 30 effectuate a compromise between complete masking of the reflective surface of the light control film 40 from external light and acceptable display through the screen when the legends are illuminated. For example, in a situation in which a single visor is used extending horizontally over the top of the display surface, the sun angle can reach a value at which the lower half of the display surface is flooded with sunlight and the upper half is shaded. Thus, in a typical signal, the WALK legend would be completely in sunlight and the DONT legend would be shaded. In such a case, it is impossible for the observer to determine whether or not the WALK legend is purposely illuminated from inside the unit, or merely by reflected external light.

Should the single visor be replaced by a grating which defines cell measuring, for example, one-half inch by one-half inch, under the same sunlight conditions, the desired information is communicated to the observer by the selective illuminating of DONT and WALK, since the grating serves to shield the reflective surface of the light control film 40 from the incident sunlight. The grating has the advantage in that a minimum of the display surface is covered by material, so that an optimum amount of original light is transmitted to the observer.

It is preferable that the vertical webs of the grating 30 be positioned to be on either side of the vertical strokes of the legends DONT and WALK, and especially in the case of the DONT, since for non-ambiguous display, it is most important for the DONT to be blanked out when it is not illuminated. Although the color of the webs of the grating is not too significant to the concept of the invention, it has been found that a flat lusterless black surface is most effective.

A constructed embodiment of the grating has 15 vertical webs and 26 horizontal webs. The vertical spacing of the horizontal webs is one-half inch, starting approximately one-quarter inches above the DONT and WALK legends respectively, and ending approximately one-quarter inches below the DONT and WALK legends respectively. The horizontal spacing between the vertical webs corresponds to the areas immediately adjacent to all vertical strokes of the DONT legend. The grating is 1½ inches deep.

The materials used in the construction of the grating are 0.020 inch thick strips of aluminum or polycarbonate. The grating is enclosed in a mounting frame constructed of 0.040 inch aluminum or polycarbonate strips. The frame is 1½ inches deep. The light control

film 40, instead of being a separate element, may be incorporated into the lens plate of the signal itself, by making the face lens plate of appropriate material.

Insofar as the color of the grating is concerned, and as pointed out above, it has been found that a flat lusterless black surface is best for optimum performance under all conditions. However, other colors such as yellow or orange, for example, are often preferable for particular conditions. For the message lens, or face plate, a dull black background with clear letters is usually preferred. However, for the WALK section, a grey background is a good substitute for some conditions. If the DONT section when the indication is an orange or red, a translucent paint may be applied over the entire area with very little effect on the message when illuminated. The color of the translucent paint may be yellow, orange or red, depending on the degree of color change the message will accept. This coating of translucent paint, like the film 40, provides an excellent blank-out effect.

The invention, therefore, provides an improved light screen for use in conjunction with pedestrian traffic signals, and which provides complete blank-out for the legends on the signals when they are de-energized, and in the presence of strong incident light, and yet which does not obstruct in any way the clear observance of the legends when they are illuminated.

While a particular embodiment of the invention has been shown and described, modifications may be made. It is intended in the following claims to cover all modifications which come within the true spirit and scope of the invention.

What is claimed is:

1. In combination with a pedestrian traffic signal of the type having legends selectively illuminated by light sources within the signal and a vertically disposed face plate on which the legends appear, a light screen mounted on the signal in front of the face plate for shielding the legends from ambient light and for blanking out the legends when the light sources within the signal are not illuminated, said light screen comprising a grating composed of a multiplicity of intersecting webs forming a plurality of rectangular apertures therein and through which the aforesaid legends are exposed when illuminated by the light sources within the signal, said webs being in the form of rectangular strips, a first plurality of said strips being positioned horizontally in spaced and parallel relationship, and a second plurality of said strips being positioned vertically in spaced and parallel relationship perpendicular to the strips of said first plurality.

2. The combination defined in claim 1, and which includes a light control film interposed between the grating and the face plate, said film passing only light from the interior of the signal to transmit light from the illuminated legends and to blank out the legends from external light.

3. The combination defined in claim 2, in which said light control film passes only incident light which is essentially perpendicular to its surface.

4. The combination defined in claim 2, in which said light control film is reflective on its external surface but is transparent to light from the interior of the signal.

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