

Sept. 5, 1961

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2,998,667

MESSAGE CONVEYING APPARATUS

Filed June 5, 1958

2 Sheets-Sheet 1

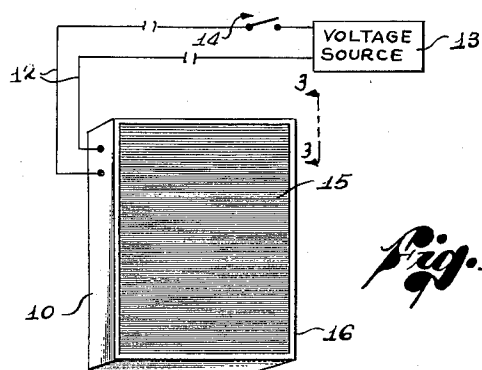


Fig. 1

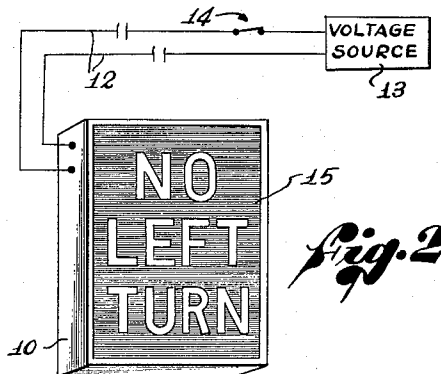


Fig. 2

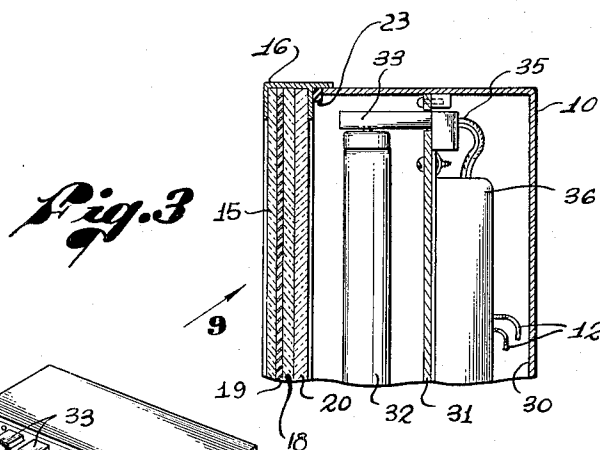


Fig. 3

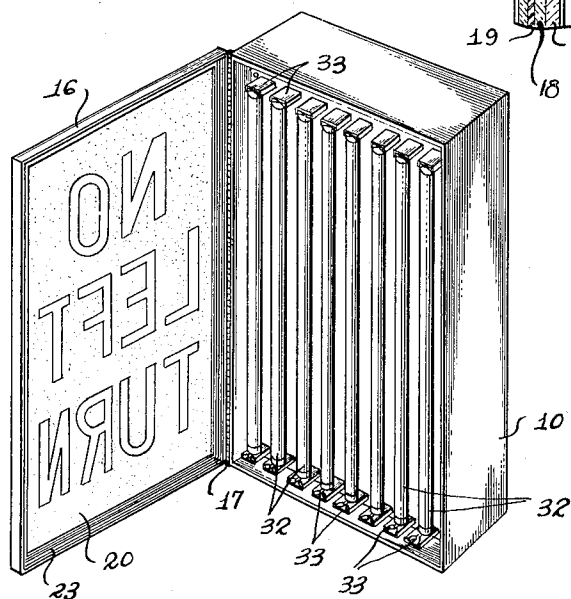


Fig. 4

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2 Sheets-Sheet 2

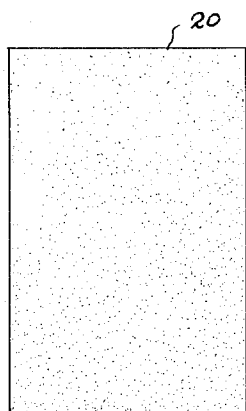


Fig. 5

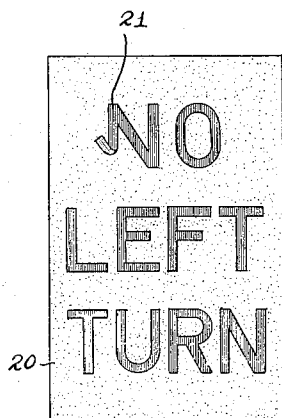


Fig. 6

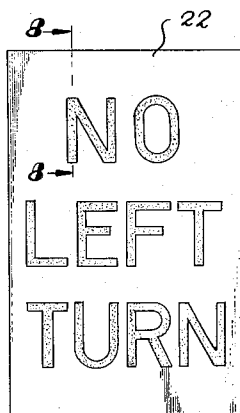


Fig. 7

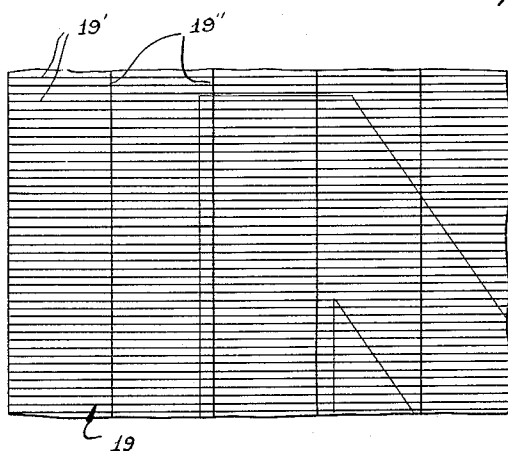
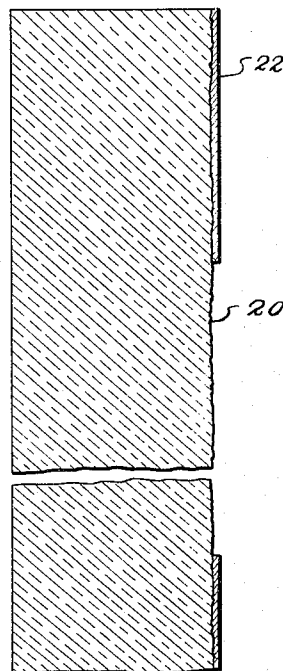


Fig. 9

Fig. 8



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MESSAGE CONVEYING APPARATUS

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4 Claims. (Cl. 40—132)

This invention relates to apparatus for displaying messages, and more particularly to a unique message conveying apparatus and lens system therefor for controlling the visibility of a message.

As is well known, modern traffic control systems utilize many different messages for directing the flow of traffic. For example, signs carrying the message "No Left Turn" are located at hundreds of intersections in congested metropolitan areas. In morning and afternoon rush hours these signs are needed to insure the free flow of traffic. Such signs are often permanently located along main traffic arteries leading to and from the heart of a business district, and in some cases they are needed at almost every intersection.

The "No Left Turn" type of message is normally needed only during the busy rush hours. At other times during the day, it is an aid to business to permit motorists—shoppers, carriers of goods, etc.—to make left turns at most intersections. Accordingly, it is desirable during normal business hours to obscure the messages from view.

The typical permanently located traffic message apparatus comprises an opaque panel on which the message is applied, as by painting white letters on a black panel. The panel is housed in a container equipped with shutters adjacent the front thereof. The shutters in an open position permit motorists to view the message, and in a closed position cover the letters and thereby obscure the message from view.

Motor means disposed within the the conventional housing is mechanically coupled to the shutters, as by gearing, to control the positions of the shutters. Remote switch controls are provided for turning the motor in a direction to open or close the shutters.

Illumination at night of the "No Left Turn" type of sign is accomplished by overhead lighting. This means that mast structures with appropriate wiring are needed to position lights above and forward of the sign.

Obvious disadvantages are inherent in the conventional structure above described. Numerous movable parts are necessary for the proper operation of the shutters, all of which contributes materially to the overall cost and weight of the unit. Since the parts are movable, they are subject to constant wear and tear. They must be frequently checked to make certain that they are in satisfactory operating condition, and movable parts must be replaced when necessary. Thus, in addition to the initial cost of such a unit, it presents continuing maintenance problems, all of which represent a considerable expense to the municipality.

Many streets used by motorists during rush hours are normally subjected only to extremely light traffic. Rather than go to the expense of installing a permanent message unit of the type above described at intersections in these areas, it is a common practice to use portable signs at these locations.

Typical of these portable signs is an arrangement employing a vertical metal rod supported on a heavy circular base. The upper end of the rod is approximately level with the hood of the average car, and rectangular metal plates bearing the "No Left Turn" message are secured to the upper end of the rod. Where traffic coming from opposite directions along one street only is to be prevented from turning left, two opposed plates are secured to the rod, and the unit is placed in the middle of

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the intersection so that the messages face the oncoming traffic.

If no traffic is approaching an intersection is to be allowed to turn left, respective plates bearing the "No Left Turn" message are positioned on the rod so that its message faces oncoming traffic from a respective direction.

These portable units must be manually placed in and removed from intersections. Crews of municipal employees and city-owned trucks are dispersed to various areas a sufficient time ahead of the rush hour traffic to permit them to place the signs at the necessary intersections. After the traffic has dwindled to normal, the crews again canvass these areas to remove the signs from the intersections.

It is apparent that even the use of portable signs involves considerable time, effort and expense on the part of the municipality. Further, these operations require the use of men and equipment which otherwise could be put to work on equally important street maintenance jobs, such as street repairs.

It is an object of this invention to provide a message conveying unit in which a desired message can be made visible or obscured from view at will, and without the use of any moving parts.

It is another object of this invention to provide an improved traffic message apparatus in which illumination of the message is accomplished without the need for overhead lighting.

A further object of this invention is to provide a unique sign unit in which a message bearing unit of light transmitting qualities is illuminated from within a container, and which utilizes a unique lens system for preventing the message on the element from being viewed except during operation of the source of illumination.

A further object of this invention is to provide an improved signalling device utilizing a frosted glass panel containing a desired message on one surface thereof, and a louvered wire screen on said one surface for preventing the message from being viewed except upon illumination of said panel from within the housing.

A still further object of this invention is to provide an improved sign lens system employing a glass panel having frosted glass surface portions which form intelligence characters, said panel being mounted in a light-tight container so that the frosted surface portions function as a plurality of randomly oriented prisms to disperse light arriving thereat from the exterior of the housing, but which aid in enhancing the brightness of light from within the container, whereby to make the intelligence characters visible only when there is illumination from the interior of the container.

Yet another object of this invention is to provide a compact message having a minimum number of component parts of simple design.

The above and other objects and advantages of this invention will become apparent from the following description, taken in conjunction with the accompanying drawing illustrating a preferred embodiment thereof, in which:

FIGURE 1 is a perspective view of a light-tight housing containing the message bearing unit of this invention, wherein the housing contains a source of illumination to be operated from a control switch, and showing the opaque appearance of the front of the housing when the switch is open;

FIGURE 2 is a perspective view, similar to FIGURE 1, to illustrate how the message shows up when the switch is closed;

FIGURE 3 is an enlarged fragmentary, sectional view taken along the line 3—3 of FIGURE 1, showing the placement of louvered wire screening, a frosted

glass paneling which contains the message, and a source of fluorescent light to be controlled by the switch;

FIGURE 4 is a perspective view of the housing with its hinged frame in the open position, to show the placement of the frosted glass panel in the frame together with the louvered screen, and showing the positioning of the fluorescent lamps within the interior of the housing;

FIGURE 5 is an elevation view of a frosted glass panel preparatory to applying a message on the frosted surface thereof in accordance with this invention;

FIGURE 6 is an elevation view of the panel to show the letters of the message formed thereon with masking tape;

FIGURE 7 is an elevation view wherein the portion thereof not covered by the masking tape of FIGURE 6 is covered with a coating of paint, and wherein the masking tape has been removed to show the bodies of the letters formed of the frosted glass;

FIGURE 8 is an enlarged, fragmentary, sectional view taken along the line 8-8 of FIGURE 7, to further illustrate how the paint is applied to the frosted glass; and

FIGURE 9 is an enlarged, fragmentary view in elevation of the front panel of the housing of FIGURE 1, showing a close-up view of a portion of the panel as seen through the louvered wire screen.

Referring to FIGURES 1 and 2, the message conveying apparatus of this invention comprises a light-tight housing 10 having connections, indicated at 12, to a voltage source 13 through a switch 14. Closing of the switch 14, as in FIGURE 2, causes a sign message, herein indicated as "No Left Turn," to be visible.

Referring to FIGURES 3 and 4, the front of the housing 10 is formed of a panel 15 of transparent material, which may be glass or a clear, transparent plastic. The panel 15 is mounted in a frame 16 which is hinged to the housing as at 17.

Another transparent panel 18, similar to the panel 15, is also mounted in the frame 16. Sandwiched between the panels 15, 18 is a black louvered screen 19 having fixed louvers 19'. As shown, the louvers 19' are included so that the lower edges thereof are in abutment with the front panel 15.

Abutting the transparent sheet 18 is a glass panel 20 which contains the desired message. The glass panel 20 is of the type known as frosted glass, wherein one surface thereof (the front surface in this case) is subjected to a sandblasting process so as to provide a rough-textured surface.

The procedure for preparing the panel 20 with the desired message is illustrated in FIGURES 5-7. FIGURE 5 illustrates the rough-textured appearance of the front surface of the panel 20 after it has been subjected to the sandblasting process. Next, the letters forming the desired message are outlined on the frosted surface (see FIGURE 6) as by masking tape 21 cut into lengths of the desired shape and size.

After the letters are formed, the surface is coated 22 with a non-reflective material. Where the message is used for traffic signalling purposes, it has been found best to use a coating of flat medium grey paint. When the paint has dried, the masking tape 21 is removed, whereby (see FIGURES 7 and 8) the front surface of the panel 20 is presented as frosted glass letters in a grey background.

Although masking tape is here illustrated for shaping the characters comprising the desired message, it will be readily apparent that there are numerous ways in which to form or outline the characters, e.g., silk-screening, spraying, stenciling, etc. Therefore, this invention is not limited to any particular means for so doing.

For the purpose of making the housing 10 light-tight, a gasket or seal 23 is secured to the frame 16 and to the edges of the panel 20 at the rear surface thereof.

When the frame 16 is closed, and the switch 14 is

open, the characters on the front surface of the panel 20 are not visible. Instead, the entire surface of the panel 15 appears to be substantially black. The reasons for this reside in the combination of the louvered screen 19, the grey coating 22, the frosted glass lettering, and the pitch-dark interior of the housing 10.

It will be recognized that the frosted letters on the panel 20 are also grey in color. Further, the rough-textured surfacing prevents objects from being viewed therethrough.

When the interior of the housing is pitch black, the panel 20 appears almost black. Still further, the louvers of the screen 19 function to disperse the light arriving thereat through the transparent panel 15. Thus, since light arriving entering the front panel 15 cannot penetrate the interior of the housing 10, the front surface of the panel 20 appears to the eye as an essentially black element.

A commercially available structure for the screen 19, which has been found suitable for the purpose of this invention in many traffic sign applications, is one in which the louvers are approximately $\frac{1}{16}$ inch wide, inclined downwardly and forwardly at an angle of approximately 17° from the horizontal, and in which there are twenty-two or twenty-three louvers to the inch supported by vertical ribs 19" (see FIGURE 9) which are spaced approximately one-half inch apart.

Secured between the back wall 30 of the housing 10 and the panel 20 is a support panel 31 for a plurality of fluorescent lights 32. The bulbs 32 are supported in receptacles 33 which are fixed adjacent the upper and lower edges of the support panel 31. Electrical connections 35 extend through the receptacles 33 to a housing 36 mounted on the back of the support panel 31, through which conventional starter and ballast connections are made through the leads 12 to the switch 14 and voltage source 13 of FIGURE 1.

Preferably, the bulbs 32 are of the type which give off a white light when they are energized. Thus, when the switch 14 is closed, the interior of the housing 10 is brightly illuminated. Since all the front surface of the panel 20 is opaque except for the frosted grey letters, the bright illumination behind the panel 20 causes the letters to be made visible through the front panel 15.

The housing 10 is mounted above the highway so that, when there is illumination behind the panel 20, motorists can easily see through the louvers of the screen 19 to read the message.

The explanation for the visibility of the message resides in the fact that when the lamps 32 are lit, there is greater illumination behind the panel 20 than in front of it, and that the frosted glass of the letters function as a plurality of randomly oriented light-directing prisms. The action is one which may be described as the transmission of light through a multi-focal optical lens.

Thus, although the frosted glass is a surface through which one cannot see to the opposite side of the panel, there is a prismatic effect whereby the bright light emanating from such opposite side is presented to the viewer.

As previously stated, the message appears as white letters on a black background. If desired, however, the panel 20 could be arranged so that the message appears as black letters on a white background. This is accomplished by painting the letters on the frosted surface with the grey paint, and leaving the rest of the frosted surface unchanged. Thus the bright light shines through the frosted surface, but not the painted letters.

Although the invention has been described as using the louvered screen 19 sandwiched between the two transparent panels 15, 18, the use of these panels is not necessary. The system works effectively with only the louvered screen placed in front of the glass panel 20.

It is preferable, however, that at least the front panel 15 be used; where this panel is made of glass, it is desirable that it be safety glass, to afford maximum protection of the apparatus from vandalism.

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Instead of the two panels 15, 18, a single transparent plastic panel may be used, in which the louvered screen is embedded.

Although the apparatus has been described for providing a "No Left Turn" message, it will be apparent that many traffic messages may be selectively conveyed by this invention. Examples of such messages include "Right Turn Only," together with an arrow pointing to the right; "Walk" and "Don't Walk"; "Train Approaching"; etc.

Switching the particular message on and off can be effected by timer mechanisms conventionally employed for such purposes. Therefore, this invention embraces any suitable means for connecting the source of illumination to a voltage source.

It will be apparent that this invention is readily adaptable for advertising purposes, as well as for traffic purposes. Further, the characters forming a message, and also the background, can be presented in a variety of colors. To this end, the panel 20 may be provided with coatings (paint, tinted paper or cellophane, etc.) of colors which the interior source of illumination will reveal in desired color intensities.

To convey messages in color, the spacing between the louvered screen 19 and the panel 20 is chosen so as to insure that none of the intelligence on the panel is visible until the light source within the housing 10 is illuminated.

While the invention as hereinabove described is fully capable of achieving the objects and providing the advantages hereinbefore stated, it will be realized that further modification can be effected without departing from the spirit of the invention. For this reason, we do not intend to be limited to the form shown and described herein, except as defined in the appended claims.

We claim:

1. Sign display apparatus comprising a light-tight housing having an open front wall, a source of illumination in said housing adapted to be selectively operated, a screen mounted in said open front wall having a plurality of ap-

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proximately horizontal louvers inclined downwardly and forwardly at an angle of at least approximately 17° from the horizontal, and a light transmitting panel fixed in said housing between said screen and said source, said panel having translucent and opaque portions co-operating to define a sign and to contrast sharply with each other when said source of illumination is operative, said translucent and opaque portions being substantially non-contrasting when said source of illumination is non-operative.

2. An apparatus as recited in claim 1 wherein said translucent portion is frosted and said opaque portion comprises a coating having substantially the same color as said frosted portion.

3. An apparatus as recited in claim 2 wherein said frosted portion and said opaque coating are grey in color.

4. Sign display apparatus comprising a light-tight housing having an open front wall, a source of illumination in said housing adapted to be selectively operated, a screen mounted in said open front wall having a plurality of approximately horizontal louvers inclined downwardly and forwardly at an angle of approximately 17° from the horizontal, and a light transmitting panel fixed in said housing between said screen and said source, said panel having translucent and opaque portions cooperating to define a sign and to contrast sharply with each other when said source of illumination is operative, said translucent and opaque portions being substantially non-contrasting when said source of illumination is non-operative.

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