United States Patent

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[54] **SYSTEMATIC TRAFFIC LANE CONTROL APPARATUS WITH LIGHTS**
6 Claims, 5 Drawing Figs.

[52] U.S. Cl. 340/36
[51] Int. Cl. G08g 1/00
[50] Field of Search 340/36, 37

[56] **References Cited**

FOREIGN PATENTS

992,198	10/1951	France	340/36
992,202	10/1951	France	340/36

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ABSTRACT: A system for controlling the direction of traffic flow in different lanes of a multiple lane road. The lanes of the road are separated by strips selectively illuminated by one or two rows of tubular type light sources which provide either two substantially solid illuminated lines indicating that traffic from adjacent lanes should not cross the strip to an adjacent lane, or which provide a single broken illuminated line to indicate that traffic may cross such a divider strip to an adjacent lane.

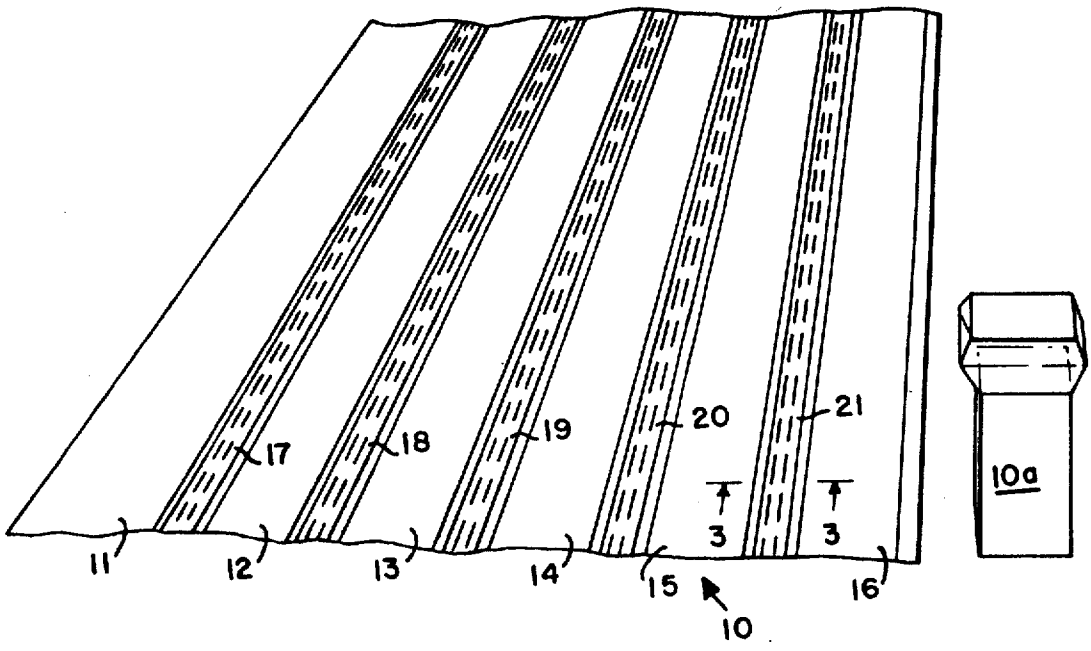


FIG. 1

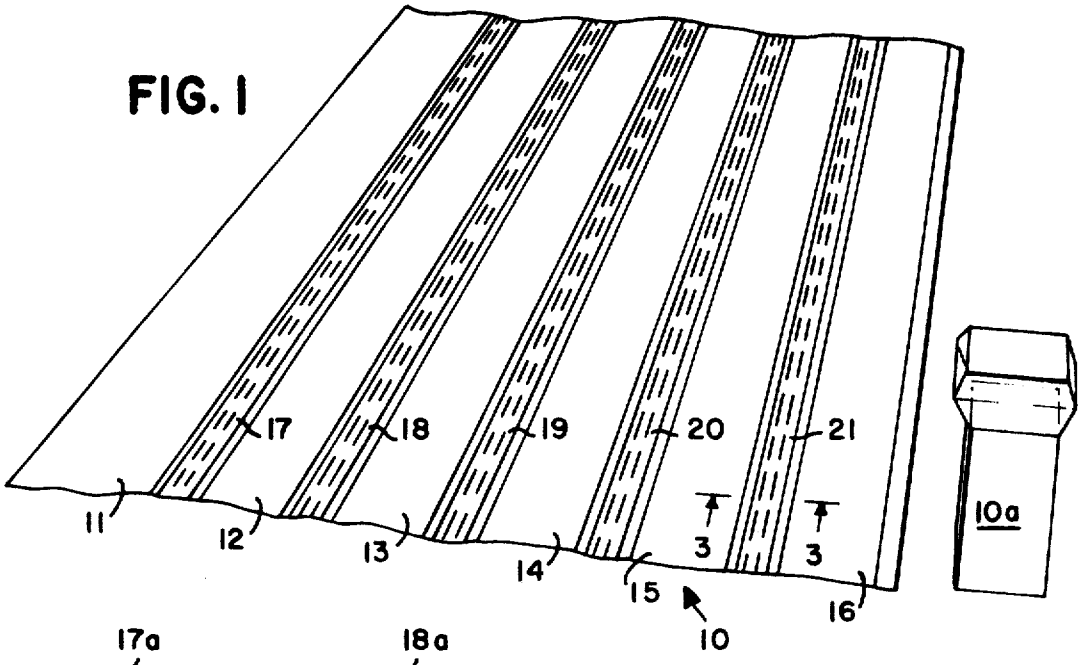
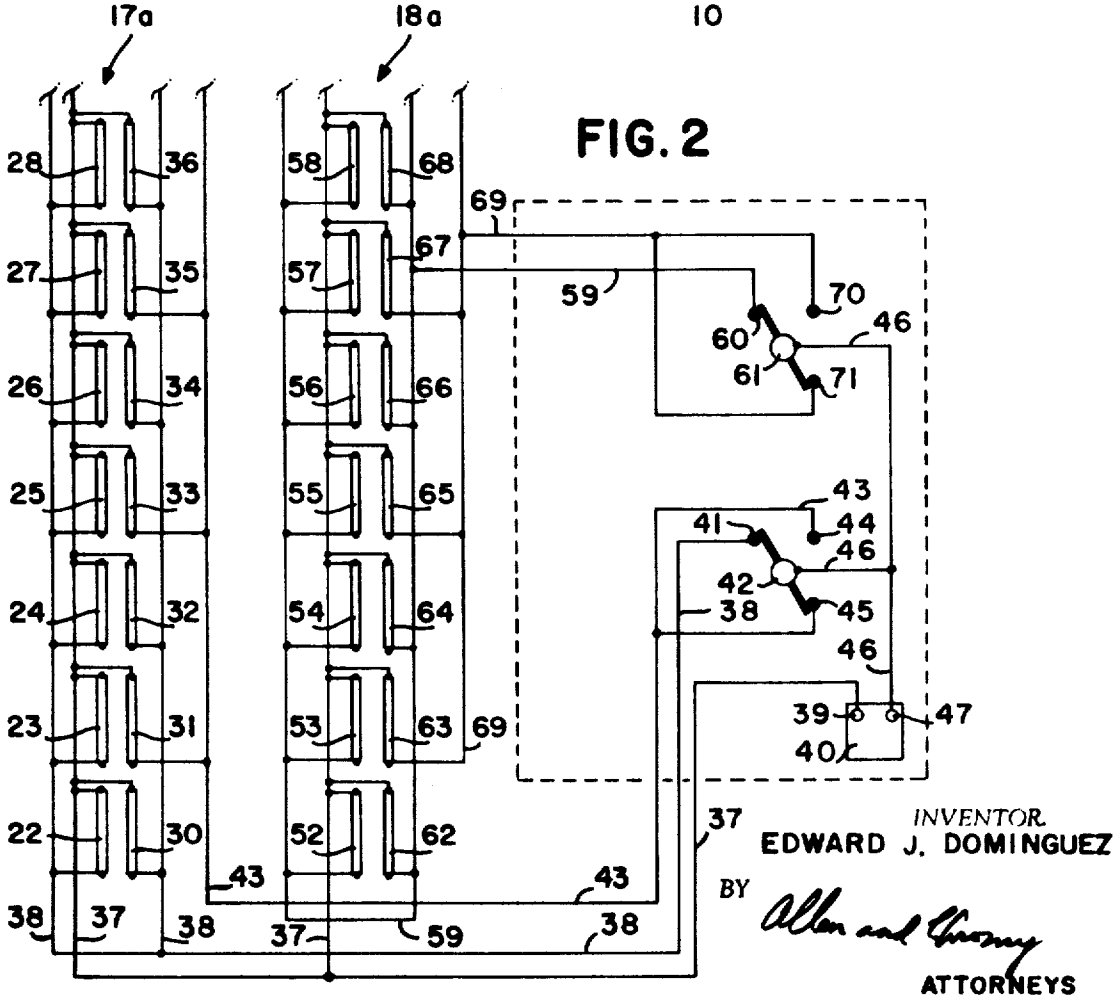


FIG. 2



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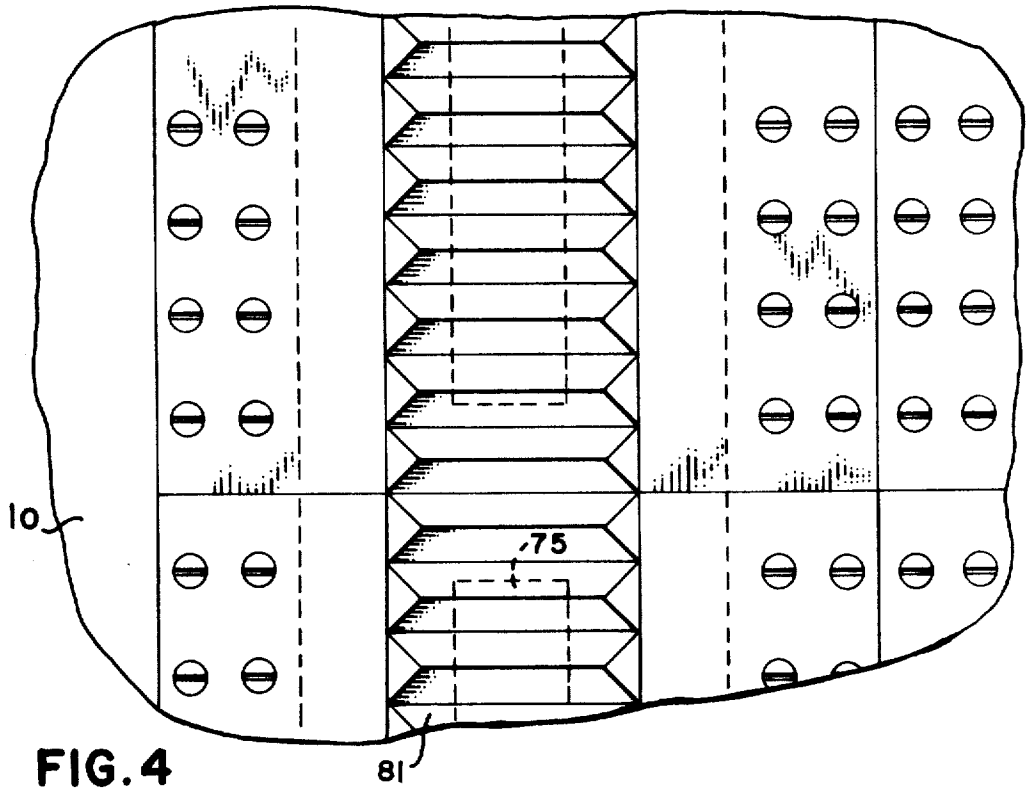


FIG. 4

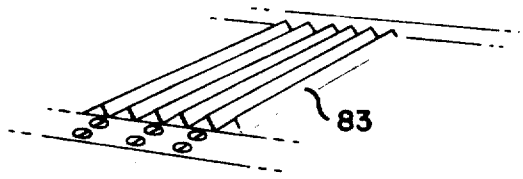


FIG. 5

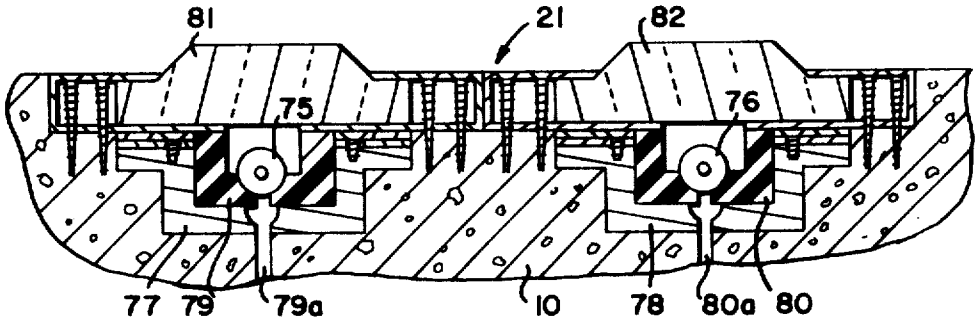


FIG. 3

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SYSTEMATIC TRAFFIC LANE CONTROL APPARATUS WITH LIGHTS

DESCRIPTION OF THE INVENTION

This invention relates to a system for controlling the direction of traffic flow in different lanes of a multiple lane road.

An object of this invention is to provide improved illuminated divider strips between adjacent lanes of a multiple lane road and an electric control for controlling the illumination of the divider strip to indicate either that traffic from one lane may cross to an adjacent lane, or that traffic may not cross.

Another object of this invention is to provide an improved traffic lane divider strip and an electric control therefor adapted to be employed between adjacent lanes of a multiple lane road, each said strip being provided with two rows of tubular-type light sources which may be selectively energized to indicate whether or not traffic may cross the divider strips between adjacent lanes.

Still another object of this invention is to provide illuminated divider strips between adjacent lanes of a multiple lane road, said illuminated strips being controlled either manually or automatically from a central control station or tower so that the direction of traffic flow on different lanes of the multiple lane road may be controlled, as required by the density and direction of the traffic.

Still another object of this invention is to provide illuminated divider strips between adjacent lanes of a multiple lane road, the light sources for the illuminated strips being adapted to be positioned in the road bed beneath the surface thereof, said divider strips being made of transparent or translucent covering material through which the light from the light sources is adapted to pass to illuminate the strip in accordance with the control of the light sources which is adapted to be either manual or automatic.

Other and further objects of this invention will be apparent to those skilled in the art to which it relates from the following specification, claims and drawing.

In accordance with this invention there is provided a system of illuminated divider strips adapted to be positioned between the lanes of a multiple lane road. These divider strips are provided with transparent or translucent covers through which light provided by two rows of light sources positioned therein is adapted to pass to be viewed by motor vehicle operators employing the lanes of the road. Each divider strip is provided with two rows of tubular-type light sources which are adapted to be energized in accordance with controls that are operated either manually or automatically. The controls are positioned in a tower which is also adapted to be occupied by an observer viewing the traffic conditions on the roadway so that he can select how many of the lanes of the multiple lane road are to be used by incoming and outgoing traffic. In case the illumination of the divider strips is to be automatically controlled, then the flow of traffic on the different lanes may be controlled by an automatic timing mechanism of conventional construction. Each of the divider strips is provided with two rows of tubular light sources and both of these rows are adapted to be energized to provide substantially parallel lines of illumination indicating that vehicles from adjacent lanes are not to pass across the divider strip. On the other hand, only one of the rows of light sources may be energized in such fashion as to provide an interrupted line of illumination indicating that traffic may pass thereacross from adjacent lanes.

Other and further objects of this invention and further details thereof will be apparent to those skilled in the art to which it relates from the following specification, claims and drawing in which, briefly:

FIG. 1 is a fragmentary view showing a multiple lane roadway with the lanes thereof separated by divider strips and also showing a control tower positioned alongside thereof for control of the illuminated divider strips;

FIG. 2 is a schematic wiring diagram of portions of two of the illuminated divider strips provided between lanes of the road shown in FIG. 1, said strips being provided with rows of light sources which are adapted to be selectively energized by the control circuits connected thereto;

FIG. 3 is a sectional view of one of the divider strips taken along the line 3–3 of FIG. 1;

FIG. 4 is a fragmentary plan view of one of the translucent or transparent cover arrangements for one of the divider strips; and

FIG. 5 is a fragmentary view of another translucent or transparent cover which is adapted to be employed over two rows of light sources forming one divider strip.

Referring to the drawing in detail, reference numeral 10 designates a road bed having six lanes 11, 12, 13, 14, 15 and 16 which may be a conventional multiple lane freeway, bridge or the like. The lanes are separated by marking strips 17, 18, 19, 20 and 21, as shown in FIG. 1, and each of these divider strips is provided with two rows of tubular light sources, as shown in FIG. 2. The vertical rows of light sources 17*a* and 18*a* illustrates portions of the light sources provided to divider strips 17 and 18, respectively, and the other divider strips 19, 20 and 21 are provided with similar light source arrangements connected as shown in FIG. 2. These rows of light sources each are made up of a great many tubular light sources of the fluorescent, gaseous discharge or incandescent type.

The left-hand row of tubular light sources 22 to 28, inclusive, provided to the light source strip 17*a* are all connected in parallel to the lines 37 and 38 which lead to terminal 39 of current supply source 40 and contact 41 of the switch 42, respectively. Tubular light sources 30 to 36, inclusive, of the second row in light source strip 17*a* are divided into two groups. The light sources in one group alternate with light sources in the other group, thus, light sources 30, 32, 34 and 36 comprise one group and these light sources are connected in parallel to lines 37 and 38. Line 37 as previously described leads to terminal 39 of current supply source 40 and line 38 leads to contact 41 of the switch 42. Thus the tubular lamps 30, 32, 34 and 36 in this group are connected in parallel with the tubular lamps 22 to 28, inclusive.

Alternate lamps 31, 33, and 35 form the other group in the right hand row of light sources in strip 17*a* and these light sources are connected in parallel to lines 37 and 43. Line 43 leads to contacts 44 and 45 of the switch 42. Switch 42 is provided with two blades as shown in FIG. 2 and both of these blades are adapted to be controlled by a manual knob or they may be controlled by a conventional clock operated timer or control (not shown). The blades of switch 42 are connected by a line 46 to the other terminal 47 of the source of current supply 40.

It will be observed that when the switch 42 is turned so that the upper blade thereof contacts the terminal or contact 44 that contacts 41 and 45 of the switch are open. Line 43 is connected to contact 44 and switch 42 is connected to line 46 leading to the terminal 47 of the current supply source 40. Thus, with this switch 42 on contact 44 the alternate tubular light sources 31, 33 and 35 are energized and illuminate divider strip 17 so that it simulates a broken line indicating that motor vehicles traveling in lanes 11 and 12 may cross from either of these lanes into the other.

On the other hand when switch 42 is positioned as shown in FIG. 2 with the upper blade thereof making contact with the upper contact 42 and the lower blade thereof making contact with the lower contact 45, then all of the tubular light sources 22 to 28, inclusive, of the left hand column in strip 17*a* and light sources 30 to 36, inclusive, of the right hand column of the strip 17*a* are illuminated. The illumination of both rows simulates parallel continuous strips as seen by motor vehicle operators proceeding in lines 11 and 12. This indicates that motor vehicles in these lanes may not pass across divider strip 17 from one lane to the other.

The arrangement of tubular light sources in strip 18*a* is the same as that in strip 17*a* and the left hand row of light sources

includes sources 52 to 58, inclusive, which are connected in parallel to lines 37 and 59. Line 37 goes to terminal 39 of current supply source 40 as previously described, and line 59 goes to terminal 60 of switch 61. The right hand column of tubular lights in strip 18*a* includes light sources 62 to 68, inclusive, and alternate ones of these including sources 62, 64, 66 and 68 are connected in parallel to lines 37 and 59. Alternate light sources 63, 65, 67 are, on the other hand, connected to lines 37 and 69. Line 69 leads to contacts 70 and 71 of switch 61. Switch 61 is also connected to line 46 which leads to terminal 47 of the current supply source 40. Thus, when switch 61 is positioned with the upper blade thereof contacting with contact 70 the alternate tubular lights 63, 65 and 67 are energized and provide a broken line of illumination in the divider strip 18, which is positioned between the lanes 12 and 13. Such a broken line of illumination indicates that motor vehicles passing along lanes 12 and 13 may cross divider strip 18 from one lane to the other. On the other hand, when switch 61 is positioned with the upper blade thereof contacting contact 60 and the lower blade thereof contacting contact 71, then all of the lights 52 to 58, inclusive, and 62 to 68, inclusive, of both the left hand and right hand rows in strip 18*a* are illuminated, thus, providing two substantially continuous lines of illumination in this strip which indicates that vehicles proceeding along lanes 12 and 13 may not cross divider strip 18 from one lane to the other.

A control mechanism employing switches such as the switches 42 and 61 shown in FIG. 2 may be positioned in the control tower 10*a* shown in FIG. 1 which is positioned alongside of the multiple lane road 10. Switches similar to 42 and 61 which control the light sources in divider strips 17 and 18 are also provided to control the light sources in divider strips 19, 20 and 21 and all of these controls together, with the source of current supply, may be positioned in the control tower 10*a* so that the observer who is to control the direction of traffic flow in the different lanes 11 to 16, inclusive, may control these switches and thus control the number of lanes to be used for traffic flowing in the different directions, in accordance with the traffic requirements.

On the other hand, the switches controlling the light sources in the different divider strips may be mechanically coupled to a suitable clock mechanism of conventional design so that the system will set a certain number of lanes for incoming traffic and a certain number of lanes for outgoing traffic, depending upon the time of day. Such automatic control may be used where traffic is heavy in one direction in the morning and light in the opposite direction, and where the opposite conditions prevail in the evening traffic, for example.

Light sources employed in the divider strips may be housed in arrangements such as shown in FIGS. 3, 4 and 5. FIG. 3 shows a cross section of the divider strip 21 provided to the road 10 and the two rows of light sources 75 and 76 are housed in suitable channel-shaped housings 77 and 78, respectively, which are provided with transparent or translucent covers 81 and 82, respectively. These covers may be provided with angularly shaped tops which are adapted to refract and reflect light to increase the visibility thereof particularly in rainy or in foggy weather.

The tubular light sources 75 and 76 are positioned on suitable supports 79 and 80, respectively, which may be made of plastic or other suitable insulation material, and which are provided with suitable drainage ports 79*a* and 80*a*, respectively, to prevent accumulation of water condensation and the like therein. The covers 81 and 82 are attached to the roadway by suitable screws or other fastening means so that these covers may be removed to permit replacement of the light sources, as needed. Also, these covers may be made of lengths corresponding to the lengths of the tubular light sources that are positioned therebeneath so that when a light source becomes defective, the corresponding cover section only need be removed. Furthermore, both covers 81 and 82 may be made as a unit 83, shown in FIG. 5. Such an arrangement permits the placing of the tubular light sources 75 and 76 closer together so that the divider strip may be made narrower, if desired.

The current supply source 40 may be either a direct current supply or an alternating current supply where the light sources are of the ionized gas type requiring a higher voltage than is ordinarily supplied to electric lights then the source 40 may be provided with suitable transformers for stepping up the voltage of the alternating current.

While I have shown a preferred form of the invention, it will be understood that the invention is capable of variation and modification from the form shown so that the scope thereof should be limited only by the proper scope of the claims appended hereto.

I claim:

1. In a system for controlling the direction of traffic flow in different lanes of a multiple lane road, the combination of means positioned in the road bed dividing the road into a plurality of lanes, each of said dividing means comprising two rows of light-emitting members positioned in said road bed and arranged to be visible to an operator of a motor vehicle proceeding over said road, a source of electric current energizing said light-emitting members, and means selectively connecting said source of electric current to said light-emitting members in each of said dividing means so that light emitted from members in a selected one of said dividing means forms a substantially continuous luminous double line when said connecting means is in a predetermined position to designate the dividing means separating traffic traveling in opposite directions, and selected ones of said light-emitting members in the others of said dividing means being connected by said connecting means to produce broken luminous lines.

2. In a system for controlling the direction of traffic flow in different lanes of a multiple lane road, the combination as set forth in claim 1, further characterized in that said light-emitting members comprise a plurality of elongated tubular light sources adapted to be arranged end-to-end in said dividing means.

3. In a system for controlling the direction of traffic flow in different lanes of a multiple lane road, the combination as set forth in claim 2, further characterized in that said light sources are positioned in channels formed in said road bed.

4. In a system for controlling the direction of traffic flow in different lanes of a multiple lane road, the combination as set forth in claim 3, further characterized in that said channels are provided with translucent cover means.

5. In a system for controlling the direction of traffic flow in different lanes of a multiple lane road, the combination as set forth in claim 1, further characterized in that said selective connecting means comprises manually controlled switches located in an observation tower from which a predetermined section of said road may be observed.

6. In a system for controlling the direction of traffic flow in different lanes of a multiple lane road, the combination as set forth in claim 2, further characterized in that said plurality of elongated tubular light sources are arranged in two rows in each of said land dividing means and said light sources in one of said rows and alternate ones of said light sources in the other of said rows are connected in parallel to said electric current source by said connecting means.