

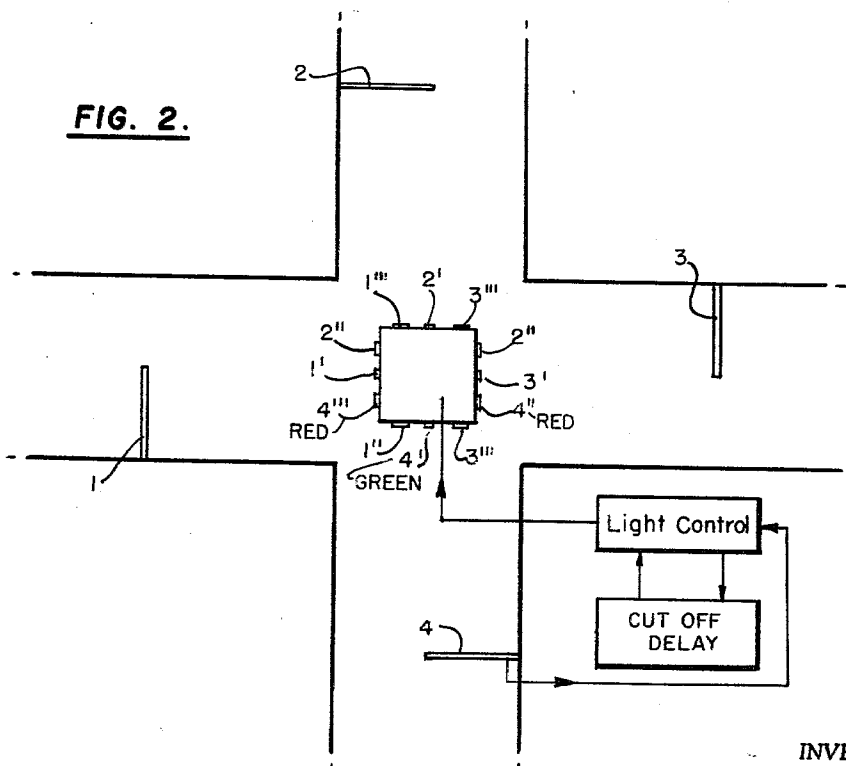
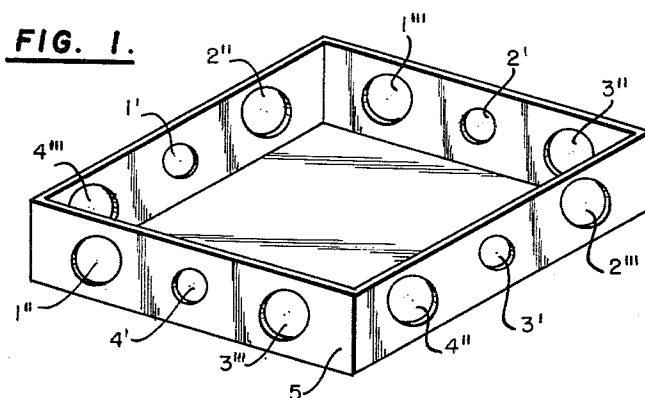
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B. ROSSI ET AL

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AUTOMATIC TRAFFIC REGULATING SYSTEM FOR STREET INTERSECTIONS

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3,196,386 AUTOMATIC TRAFFIC REGULATING SYSTEM FOR STREET INTERSECTIONS

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The present invention has as its object an automatic traffic regulating system of the type whose signals are subject to control by the traffic at road intersections, at blind curves whereby vehicles crossing the intersection are warned to stop or slow down and thereby prevent accidents and at stop signs.

The automatic traffic regulating system of the invention comprises, in combination, vehicle-activated signaling means along each of the streets of the intersection for closing one or more electrical circuits by passage of the vehicle over said means along the street route, an electronic switching mechanism capable upon interruption by vehicular traffic of the vehicle actuated signaling means to energize the circuits and operate one or more visible signals and the visible signaling means which indicate to the driver whether the route is free from vehicular traffic, along a direction which the driver cannot perceive, thereby providing the necessary traffic information to the driver to enable him to proceed with complete safety.

The automatic traffic regulating and signaling system of the invention provides sufficient and timely warning to vehicular traffic of intersection, main highway, dangerous, curve and road under construction ahead and avoids serious collision with faster moving main highway traffic for vehicles turning into or crossing main highways from a side street, and for vehicles coming into hidden curves and unseen road construction.

It is an important characteristic of the traffic signaling system of the invention that the visible signaling system is actuated by but a single vehicle.

Another advantage of the automatic signaling system of the invention is the assurance that a vehicle coming in any direction into the dangerous area on the highway will positively actuate the visible signaling system to provide warning to oncoming traffic from a different direction.

The foregoing objects and advantages of the invention will be better understood by referring to the accompanying drawings which are for the purpose of illustrating preferred embodiments of the invention and are not intended to limit the scope or spirit of the invention, since many changes in form and detail lying within the scope of the invention defined in the claim will be apparent to those skilled in the art.

In the drawings,

FIG. 1 shows a perspective view in diagrammatic form of the visible signaling means employed in the invention; and

FIG. 2 shows a plan view in diagrammatic form, the placement of the signaling means of FIG. 1 at a through intersection.

The circuitry in the boxes shown in FIG. 2 including relays and timing elements which are ordinarily used are as disclosed in the United States Patent to Horni, No. 2,049,651. However, these details of Horni do not form any part of the present invention, being known to the art and the invention differs in the manner in which the lighting device of FIG. 1 herein is operated.

Upon approaching the intersection and mechanically actuating the speed contact the signal lighting device of the invention is adapted to locate on the hanging box 5 the position of the car which has approached the light along the cross route. A specific illustration will be seen,

referring to FIG. 2 of the drawing and taking the case of a vehicle which actuates speed contact 4 traveling from bottom to top on the main highway shown in the vertical direction. The contact 4 actuates signal light 4' (green) and this in turn provides an actuation of signal lights 4'' and 4''' in box 5. These locations of actuation on the box provide complete information to a vehicle which approaches on the secondary highway traveling in the counter direction, diagrammatically downwardly or upwardly on the secondary road or a vehicle traveling in the opposite direction on the main road.

Accordingly, it is seen that for each of the street contacts 1, 2, 3 and 4 which are actuated by vehicles approaching the intersection from the four directions to the intersection, there is a signal flashing to locate the position of each vehicle and to inform the driver of each vehicle concerning the position of every other vehicle approaching the intersection. In effect, the novel signaling device provides an extension for the view of the driver of each vehicle approaching the intersection to cover areas of approach ordinarily locked from his view.

It can readily be understood that the lighting color system used for this traffic identification function of the novel signaling device can be varied to suit local and national highway standards and regulations. For example, the approach of vehicles on secondary roads will actuate the warning signal and the color of red, amber, orange or yellow might be used on the main highway as well as on the secondary highway to permit an effective warning within the experience under local highway regulations.

The circuit which is actuated by the closing of the street contact to provide the illuminated signal warning differs from the circuit which is employed in patent to Horni, U.S. No. 2,049,651.

As shown in FIG. 2, the automatic traffic regulating system of the present invention will operate on any one of the treadles 1, 2, 3 and 4 in the locations which are shown at the street intersection. It is only for treadle 4 that the diagrammatic circuit comprising the time delay means and the light switch control is shown in the drawing. The time delay and light switch control is also present for each of treadles 1, 2 and 3 and the operation is essentially the same. A car approaching the traffic signal at the intersection depresses treadle 4. Light 4', which is the center light in the set facing the treadle approached and actuated by the car, is a green light and as a result of the actuation of the light control switch diagrammatically shown, lights 4'' and 4''' are illuminated as red lights.

In the combination of electric lamps in the traffic signal box represented by the series of lights 4', 4'' and 4''', the illustrative case of FIG. 2 assumes that traffic in the transverse direction on the highway between treadles 1 and 3 represents the stream of traffic on the cross street; while the traffic at right angles thereto between treadles 4 and 2 represents traffic on the main highway. The car under consideration is approaching the intersection after passing over treadle 4.

As a result of the actuation of treadle 4, the cars on the cross street are warned by the illumination of the red lights 4'' and 4''' that a car is approaching from the direction of treadle 4.

In the embodiment of FIG. 2, the location of illuminated red light 4''' warns a car approaching the signal box on the cross street from the direction of treadle 1 that a car in cross traffic approaches from the right. The location of illuminated red light 4'' at the left of the box, when viewed by a driver approaching the main highway from the direction of treadle 3, conveys to this driver

the information that the car which approaches and illuminated the box is now approaching from the left.

The distance of setback of street contacts 1, 2, 3 or 4 from the intersection varies in accordance with the average rate of speed or speed limit control for main and secondary highways.

The street contacts 1, 2, 3 and 4 are a preferred example of vehicle actuated signaling means. It is preferred that the invention use a treadle of the mechanical type because of its simplicity, easy construction, easy maintenance and economy.

From the foregoing explanation, it will be seen that the signaling is automatic and can be controlled for time delay upon actuation of the vehicle actuated means on the street remote from the highway intersection.

From the foregoing detailed description of the preferred embodiments of visible signaling box device 5 in FIGS. 1 and 2 for traffic control at intersections, it is seen that the novel arrangement of the invention differs from those conventionally used in that each traveling vehicle, regardless of direction, actuates the traffic actuated signaling means for all traffic locations with the requirement that such actuation will, by closing a conventional type of light switch and time delay circuit, cause the lighting of two signals along the cross line of traffic which is transverse to the line in which the vehicle is being driven and a third signal in the main direction to indicate that the signal is operating these signals being arranged geometrically to locate the true position on the cross-highway of the car which actuates the vehicle signaling means and thereby providing warnings in both directions on the main line of traffic and, at the same time, giving a warning in the one transverse direction to the right or left of the signaling vehicle at the intersection.

The circuitry means used to post by traffic light signaling both position and direction at an intersection or at a curve for all cars coming in every direction differs from conventional circuitry by being directly connected to a position light on the traffic signaling means. At the center of the box device 5 used in the array of lights shown in FIGS. 1 and 2, the box device comprises a light for driver's position, two lights for approaching vehicles position from both directions of cross traffic at the intersection. The car coming in cross traffic from the right makes a visible signal in the array of three lights at the right side and a car coming from the left makes a visible signal at the left side of the array of three lights. Each of the four sides are arranged with these three lights operating in identical sense. Thereby each vehicle upon approaching the intersection posts its central light and is warned by specific location of lights, right or left, actuated by vehicles in the same relative positions, right or left, when crossing the intersection.

It is a critical feature of the invention that the automatic operation of the traffic signaling means employs means for cutting off the traffic signal means after the vehicles have gone beyond the traffic signal. For this purpose, there may be used time delay devices of the conventional types, and a specific illustration of a cutoff device may employ a motor in the circuit diagram shown in FIG. 2 of U.S. Patent to Neill, No. 2,015,435, this motor operating by reverse rotation and being actuated by a second detector. Or if desired, a more complex electronic timing circuit of the type described in Barker, U.S. Patent No. 2,883,644 may be employed. Any cutoff mechanism can be used and the details of the cutoff mechanism whether of the motor type as in Neill or the electronic type in Barker are not part of the present invention, these details being known in the art. It is

obviously preferred to use simpler mechanisms of the known motor or clock type.

It will therefore be seen that the new operation of the system of the invention comprises a specific type of self-posting actuation by the first vehicle approaching to register the operation of the traffic signaling means by lighting a light of smaller aperture therein, this first lighting indicating posting of the approaching vehicle simultaneously registering one or more lights of larger aperture in the signaling device facing the cross direction whereby approaching cross traffic is immediately warned by the first vehicle, the warning made more effective by the larger aperture and the location being simultaneously registered to the second or later approaching vehicle or vehicles by locating the larger lighting aperture for cross traffic on the same side as that from which the first vehicle approaches the intersection or curve. On all sides, at curve or intersection, all vehicles are warned of approach and location of all crossing vehicles which are normally outside of the view of any driver.

Having thus disclosed the invention, what is claimed is:

An automatic traffic regulating system to control through traffic at main traffic intersections and to provide traffic light illuminating indicating the location and direction of cross traffic at the intersection; said system consisting of vehicle actuated treadle switching means including a single element treadle occupying only one-half the width of the road located along each of the streets of the intersection for lighting a traffic signal; a traffic signal in the form of a box furnished with three lights on each side of the box, each side facing a street of the intersection; said box being placed overhead at the intersection to be visible approaching the intersection from all directions; said three lights on each side of the box consisting of a center light and two outer lights, said center light indicating free passage and being smaller in diameter than said outer lights, while said outer lights warn the approach of cross traffic; light switching means connecting to and lying between each of said treadles and said box signal which are energized by the movement of the vehicle over the treadle as the vehicle approaches the intersection, and time delay means connected to said light switching means, said delay means maintaining the traffic signal in lit condition for a predetermined time after actuation, the larger lights which are lit on the side of the box representing the side of the street from which the vehicle approaches and the larger outer light being simultaneously lit on the opposite side of the box as a warning light to provide warning on each of the sides of the box facing the cross traffic, and to a later vehicle in cross traffic that an earlier vehicle was passing through the intersection.

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