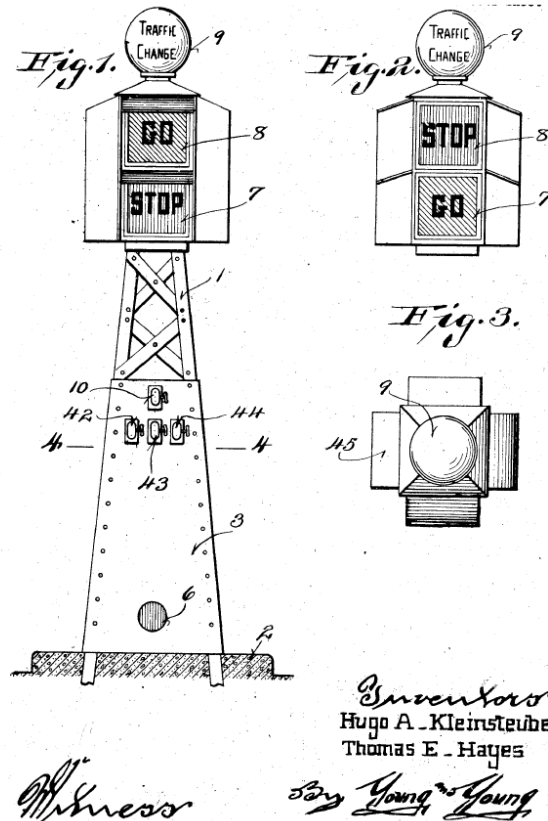


HISTORY CORNER

First automatic traffic signal in the United States

The nation's first automatic traffic signal was invented by Hugo Kleinsteuber and installed in Milwaukee on the corner of 16th St. and Grand Avenue (now West Wisconsin Ave.) on August 12, 1921. Previous traffic signals, both electronic and non-electronic, were manually operated in booths located in the intersection. The complete patent document follows this cover page.



Original patent, 1921

CAPTAIN G. T. DIXON, U.S. Marine Corps, stationed in Salt Lake City, wrote: "Enclosed you will find a clipping from the Salt Lake Telegram which made me sit up and take notice . . . I was born in Milwaukee, educated in Milwaukee, and I left Milwaukee with a heavy heart 10 years ago . . . and I'll return to Milwaukee . . . I was given to understand that a Milwaukeean had invented and installed the first traffic light (in Milwaukee) in this country . . . I ask you, Mr. House, to please inform the author of the enclosed article that he may be wrong about his contention that the traffic light was first installed in either Salt Lake City or Cleveland." (This was done. Mr. Hugo Kleinsteuber of Milwaukee conceived and erected the world's first AUTOMATIC traffic light on the corner of 16th St. and W. Wisconsin Av., on August 12, 1921. A Cleveland man had built a hand-operated traffic light in Cleveland on August 5, 1914.)

Milwaukee Sentinel, March 19, 1951

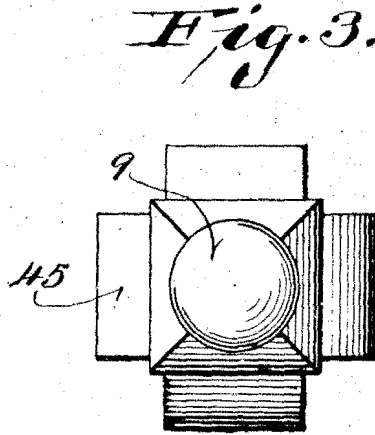
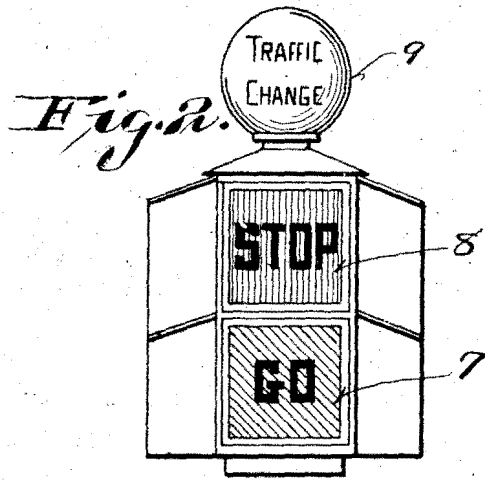
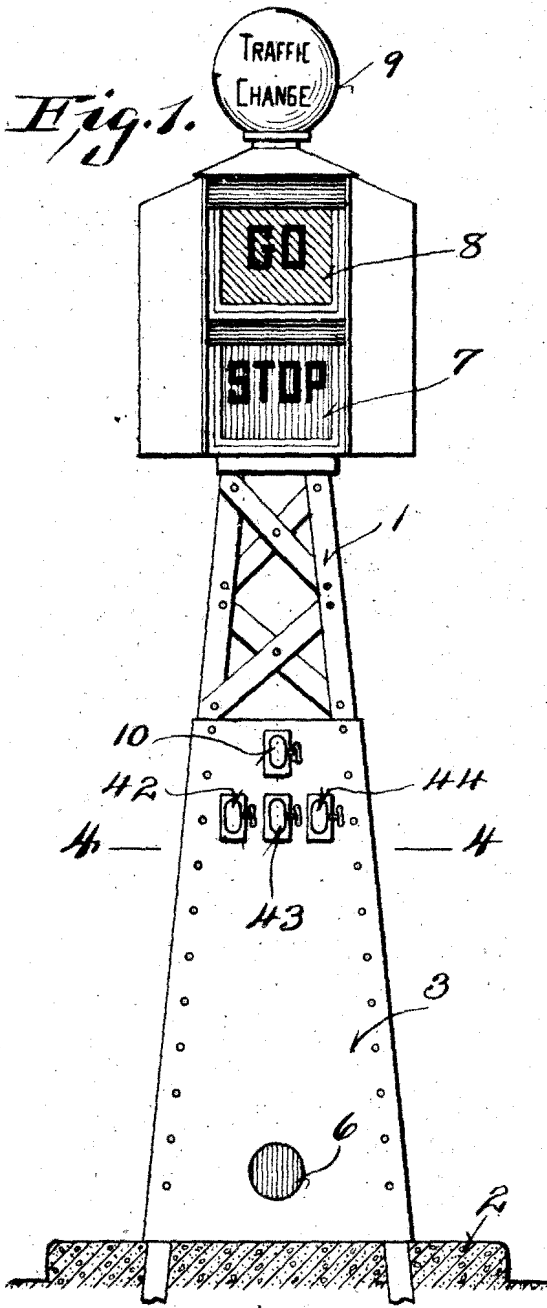
April 15, 1924.

1,490,567

H. A. KLEINSTEUBER ET AL

AUTOMATIC TRAFFIC SIGNAL

Original Filed Sept. 12, 1921 4 Sheets-Sheet 1



Inventors
 Hugo A. Kleinstüber
 Thomas E. Hayes

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By Young & Young
 Attorneys

Fig. 4.

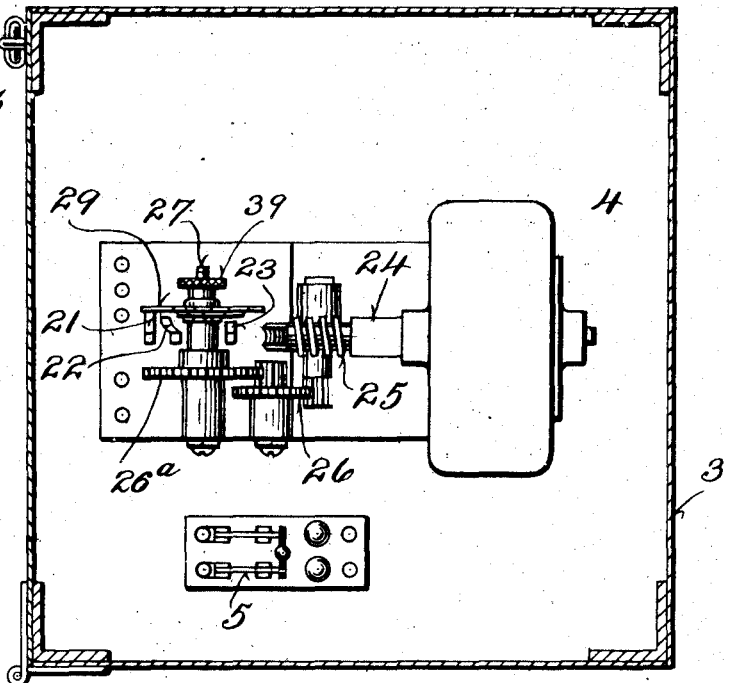


Fig. 5.

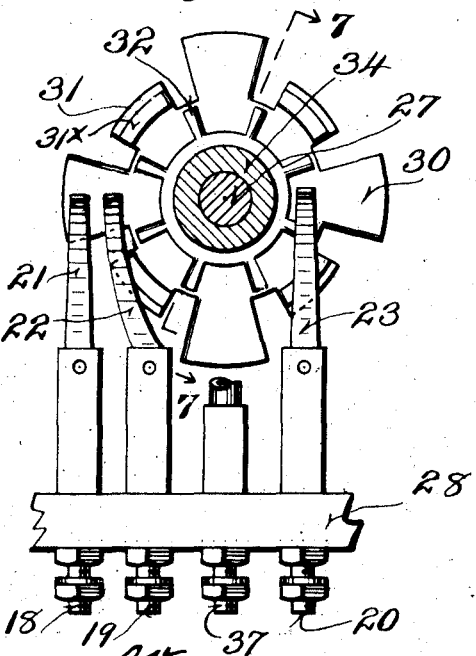
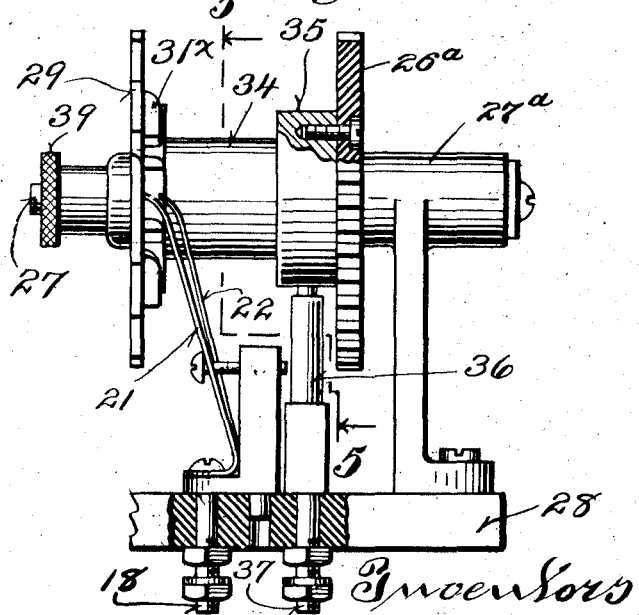


Fig. 6.



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AUTOMATIC TRAFFIC SIGNAL

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Fig. 7.

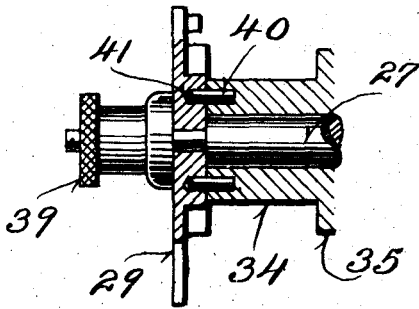


Fig. 8.

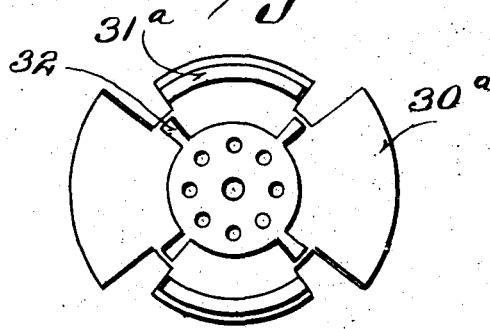
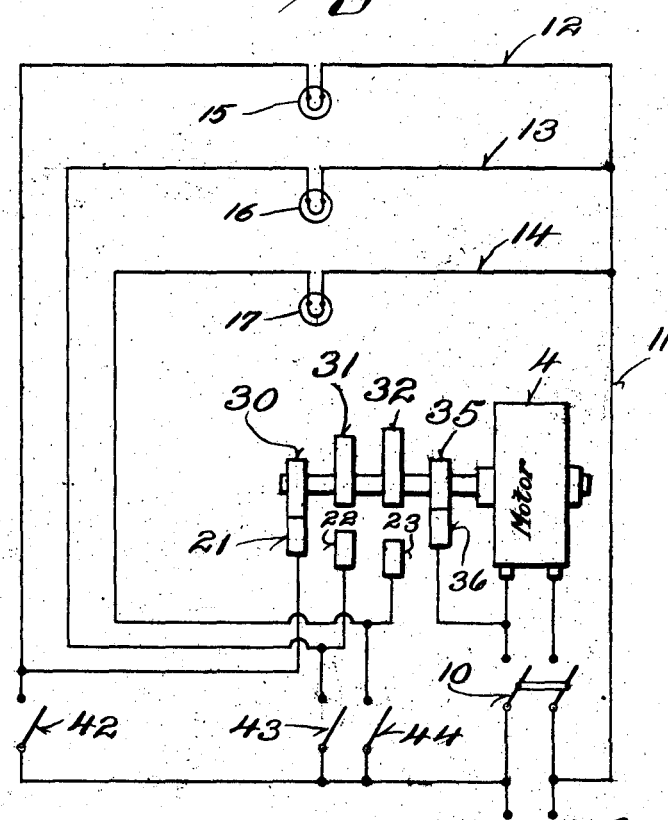


Fig. 9.



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AUTOMATIC TRAFFIC SIGNAL

Original Filed Sept. 12, 1921

4 Sheets-Sheet 4

Fig. 10.

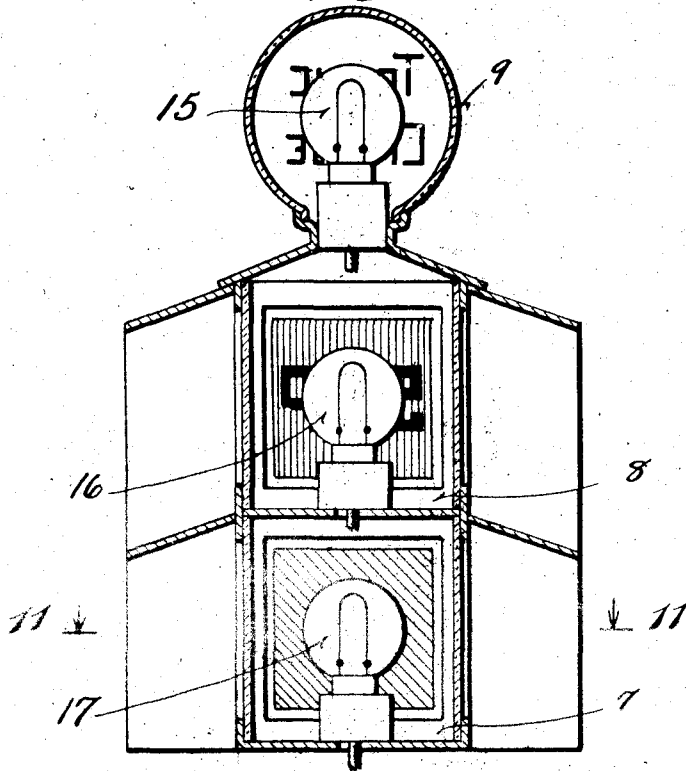
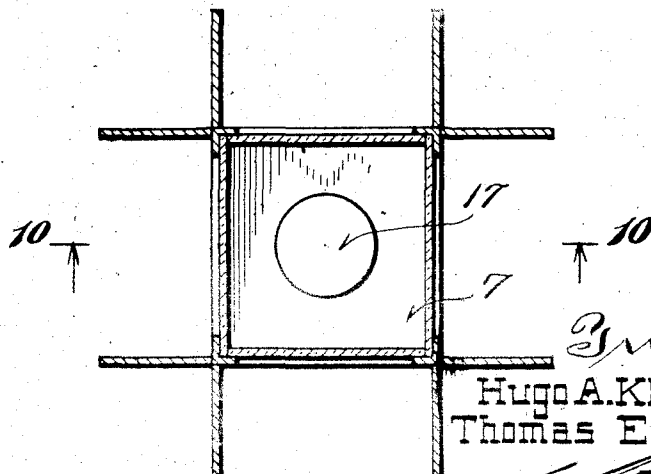


Fig. 11.



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UNITED STATES PATENT OFFICE.

HUGO A. KLEINSTEUBER AND THOMAS E. HAYES, OF MILWAUKEE, WISCONSIN, ASSIGNORS OF ONE-THIRD TO WILLIAM A. CALLAHAN, OF MILWAUKEE, WISCONSIN.

AUTOMATIC TRAFFIC SIGNAL.

Application filed September 12, 1921, Serial No. 499,893. Renewed March 10, 1924.

To all whom it may concern:

Be it known that we, HUGO A. KLEINSTEUBER and THOMAS E. HAYES, both citizens of the United States, and residents of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Automatic Traffic Signals; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention relates to a new and improved automatic traffic signal which is adapted to be placed at the center of a street crossing and to indicate in which direction the traffic shall move.

The object of the invention is, broadly, to provide a device of this kind which will be entirely automatic in its nature so that the successive signals directing the traffic will be displayed in the required succession and at proper intervals of time without the intervention of any human agency. It frequently happens when traffic policemen are stationed at crossings that they are called away from their post to perform other duties. With the present invention it is not generally necessary to have any traffic policeman at the crossing and in case one is stationed there he is able to devote his entire attention to watching the traffic without having his attention distracted by manipulating the signals.

A further object of the invention is to provide means by which the intervals of time during which the various signals are displayed may be varied in proportion to the density of traffic in the different directions.

A still further object of the invention is to provide a signal, warning the drivers in advance when a change in the traffic is to be made in order that the way may be cleared in preparation for the change.

The invention consists further in certain structural details and combinations of parts which are hereinafter fully described and set forth in the appended claims.

In the accompanying drawings:—

Figure 1 is a front elevation of the device which comprises our invention.

Figure 2 is a side elevation of the upper portion of the same.

Figure 3 is a plan view of the same.

Figure 4 is a sectional plan view on the line 4—4 of Figure 1.

Figure 5 is a vertical sectional view showing the structure of the automatic switch by which the lamps for the various signals are energized, the same being taken on the line 5—5 of Figure 6.

Figure 6 is a front elevation of the automatic switch.

Figure 7 is a sectional view on the line 7—7 of Figure 5.

Figure 8 is a detail view of one of the discs which forms a part of the switch.

Figure 9 is a diagrammatic view of the wiring of our invention.

Figure 10 is a vertical sectional view thru the signal casings substantially on the plane indicated by the line 10—10 of Figure 11, and Figure 11 is a sectional plan view on the plane indicated by the line 11—11 of Figure 10.

Referring specifically to the drawings, the numeral 1 indicates a framework on which our invention is mounted and which is preferably embedded in a concrete base 2. The lower part of the framework is provided with a housing 3 within which is an electric motor 4. The numeral 5 indicates a switch for controlling the main circuit from which the current is supplied and 6 indicates a transparent lens through which a light may be displayed for indicating the location of the base. At the upper portion of the framework a plurality of compartments 7, 8, and 9, are provided and the walls of these compartments are suitably marked so as to indicate to approaching drivers the direction in which traffic is permitted to move. A switch 10 is provided for controlling the current through the motor. A main feed wire 11 branches off from the wire which supplies the motor and has parallel branches 12, 13 and 14, which lead to the lamps 15, 16 and 17, which are located in the compartments 7, 8, and 9, respectively. The return wires from the lamps are connected with the binding posts 18, 19 and 20, from which the current is carried to the brushes 21, 22 and 23, respectively.

The motor 4 is running continuously when the switch 10 is closed and the motor shaft 24 carries a worm 25 which through the reducing gearing 26 slowly drives the shaft 27. The last named shaft is journaled in a suitable bearing 27^a, which is supported on an insulating base 28, and the spur gear

26^a, of non-conducting material, so that the shaft is completely insulated. The shaft 27 carries a disk 29, which is provided with the several sets of sectors 30, 31, and 32, which are adapted to form successive contacts at the proper time with brushes 21, 22 and 23, respectively. These sectors and brushes may conveniently be arranged in the manner shown in Figures 5 and 6, in which the sectors 30 are of greatest radius and adapted to form contact with the brush 21, as the disk rotates. The sectors 31 are formed with arcuate ribs 31^a, which form contact with the brush 22, the latter being spaced from the disk so as not to contact with the sectors 30. The small sectors 32 are also offset, as is the brush 23, so that the latter may form a contact therewith, but may not contact with the remaining portions of the disk. The shaft 27 also carries another disc or collar 35 which forms a constant contact with a brush 36 which is connected with the terminal 37.

It will be seen therefore that as the motor shaft rotates, first one and then another of the sectors will form a contact with its respective brush and current will pass through the corresponding lamp to visualize the corresponding traffic signal whereby the approaching drivers are notified whether to stop or continue past the crossing. It will be understood also that at some crossings the traffic in one direction is more dense than in the transverse direction. I have therefore made the disk 29 removable in order that a number of interchangeable discs may be provided so that a disc may be used which will provide the proper proportion of time for the traffic in each direction. A modified form of disc is shown in Figure 6 in which the sectors 30^a and ribs 31^a form the contacts for the traffic and the small sectors 32^a form the contact for denoting that there is to be a traffic change.

These discs 29 are removably secured to the shaft 27 by the lock nut 39 and in order to secure the same so as to rotate with the sleeve 34, the latter is provided with pins 40 which are received in the recesses 41 of the disc.

When my device is in operation the approaching driver will see the sign "Go" or "Stop" whichever is lighted at that time. After a predetermined interval the lamp which is lighted becomes extinguished and at the same time the light is displayed for a short time in the compartment 9 indicating that there is to be a change in the signal. The other signal is then displayed for a predetermined interval followed by a traffic change signal. This cycle is repeated continuously as long as the switch 10 remains closed.

In view of the fact that the signal will be operated in the daytime as well as at night

a hood 45 is preferably provided on each side of each signal in order to prevent the reflection of light from the outside of the compartment casing and thereby render the signal more clearly visible.

In the event that it is desired to discontinue the operation of the automatic means, switches 42, 43 and 44, may also be provided which may be controlled by hand to operate the various signals, the switch 10 of course at this time is left open.

From the foregoing description it will be seen that I have provided an automatic signal which will regulate traffic without the presence of a traffic policeman and by means of the various discs which will be provided the same may be regulated from time to time so that the time during which each signal is displayed will be almost exactly proportional to the density of traffic.

We claim as our invention:—

1. In a traffic crossing signal a casing divided in separate compartments, one above the other, each compartment having a plurality of side panels, certain of said panels having means for conveying "traffic stop" information and other panels having means for conveying "traffic go" information, an additional casing having means for conveying "traffic change" information in cooperation with the first casing, separate lamps in each compartment and in the additional casing, and means for alternately illuminating the lamps in the compartments and illuminating the lamp in the additional casing between the alternate illumination of the other lamps.

2. In a traffic crossing signal a casing divided in separate compartments, one above the other, each compartment having a plurality of side panels, certain of said panels having means for conveying "traffic stop" information and other panels having means for conveying "traffic go" information, the "traffic stop" panels in each compartment alternating with the "go" panels in the same compartment, the panels in one compartment being dissimilar to the corresponding panels in the other compartment, an additional casing having means for conveying "traffic change" information in cooperation with the first casing, separate lamps in each compartment and in the additional casing, and means for alternately illuminating the lamps in the compartments and illuminating the lamp in the additional casing between the alternate illumination of the other lamps.

3. In a traffic crossing signal a casing divided in separate compartments having panels, certain of said panels having means for conveying "traffic stop" information and other panels having means for conveying "traffic go" information, an additional casing having means for conveying "traffic change" information in cooperation with

the first casing, separate lamps in each compartment and in the additional casing, and means for alternately illuminating the lamps in the compartments and illuminating the lamp in the additional casing between the alternate illumination of the other lamps.

4. In a traffic crossing signal, a casing having a plurality of compartments provided with panels, certain of said panels conveying "traffic go" information and other of said panels conveying "traffic stop" information, an additional compartment having means for conveying "traffic change" information in cooperation with the compartments conveying "traffic go" and "traffic stop" information, lamps in each of said compartments, and automatic means for alternately illuminating the lamps in the compartments indicating "traffic go" and "traffic stop" information and illuminating the lamp in the "traffic change" compartment between the alternate illumination of the lamps in the other compartments.

5. In a traffic crossing signal, a casing having a plurality of compartments provided with panels, certain of said panels conveying "traffic go" information and other of said panels conveying "traffic stop" information, an additional compartment having means for conveying "traffic change" information in cooperation with the compartments conveying "traffic go" and "traffic stop" information, lamps in each of said compartments, and automatic time controlled means for alternately illuminating the lamps in the compartments indicating "traffic go" and "traffic stop" information and illuminating the lamp in the "traffic change" compartment between the alternate illumination of the lamps in the other compartments.

6. A traffic crossing signal comprising a plurality of compartments including means for conveying "traffic stop" and "traffic go" information, another compartment including means for conveying "traffic change" information, and means for alternately illuminating the "Stop" and "Go" compartments and for illuminating the "Change" compartment after each illumination of the "Stop" and "Go" compartments.

7. In a device of the class described, the combination of a set of signal devices arranged to simultaneously permit traffic to proceed on one street and restrain traffic on an intersecting street, a second set of signal devices reversely arranged, means for alternately displaying the sets of signal devices to change the flow of traffic, a traffic change signal visible in opposite directions along each street, and means for illuminating the traffic change signal in advance of each change of the traffic signals.

8. In a device of the class described, the combination of a set of signal devices arranged to simultaneously permit traffic to proceed on one street and restrain traffic on an intersecting street, a second set of signal devices reversely arranged, means for alternately illuminating the signal devices, including a lamp for each set, a traffic change signal visible in opposite directions along each street, and means for illuminating the traffic change signal in advance of the illumination of each of the other signals.

9. In a device of the class described, the combination of a pair of reversely arranged signal devices adapted to alternately and simultaneously permit traffic to proceed on one street and restrain traffic on an intersecting street, means for alternately displaying each of said pair, a traffic change signal visible in all directions, and means for illuminating said traffic change signal between the illumination of said signal devices.

10. In a device of the class described, the combination of a pair of reversely arranged signal devices adapted to alternately and simultaneously permit traffic to proceed on one street and restrain traffic on an intersecting street, means for alternately illuminating each of said signal devices after the lapse of a time interval, a traffic change signal, and means for illuminating said traffic change signal during said time interval.

In testimony that we claim the foregoing we have hereunto set our hands at Milwaukee, in the county of Milwaukee and State of Wisconsin.

HUGO A. KLEINSTEUBER.
THOMAS E. HAYES.