

Sept. 4, 1928.

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1,682,753

TRAFFIC SIGNAL

Filed Nov. 2, 1925

2 Sheets-Sheet 1

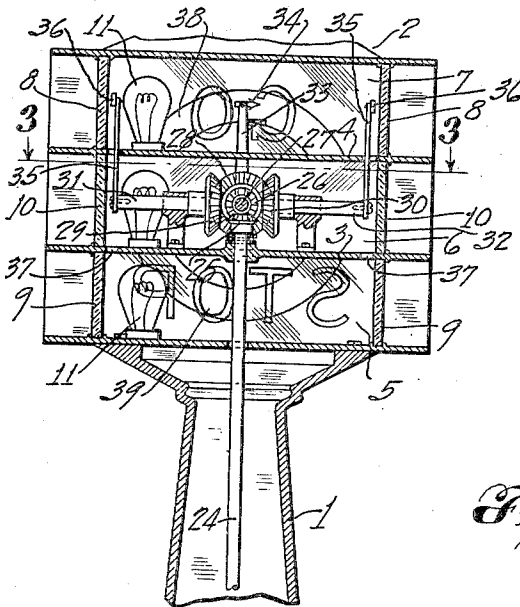


Fig. 2.

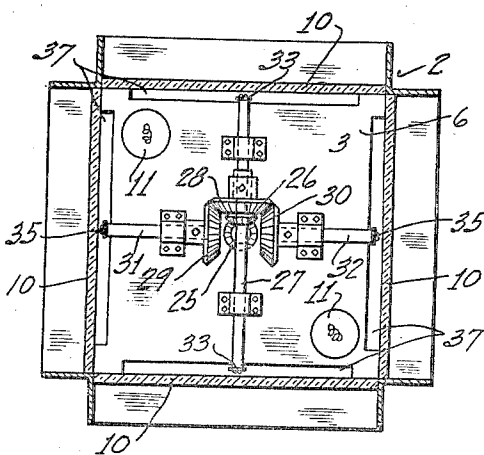
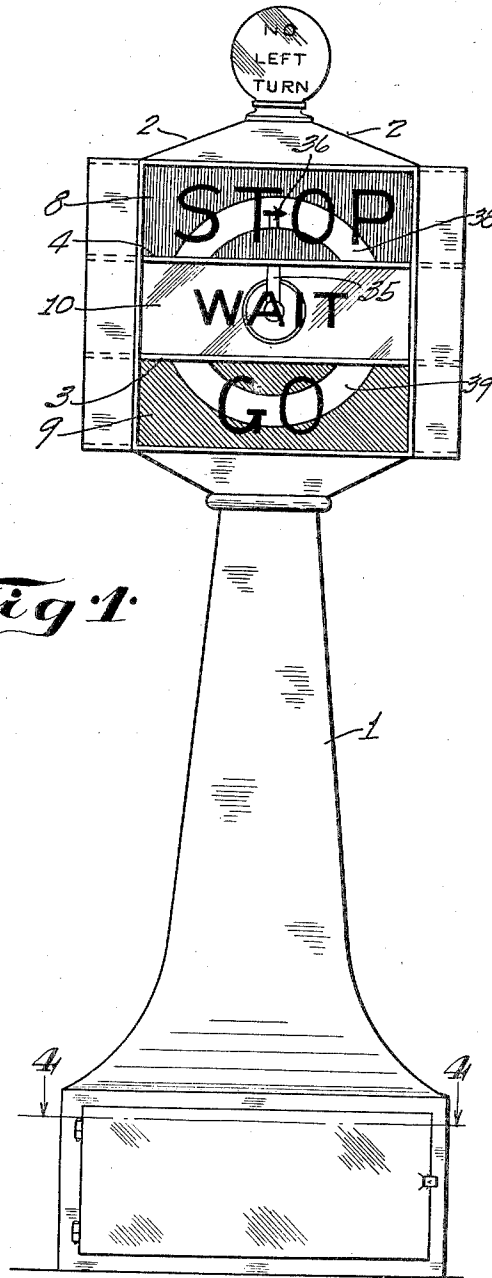


Fig. 3.



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2 Sheets-Sheet 2

Fig. 4.

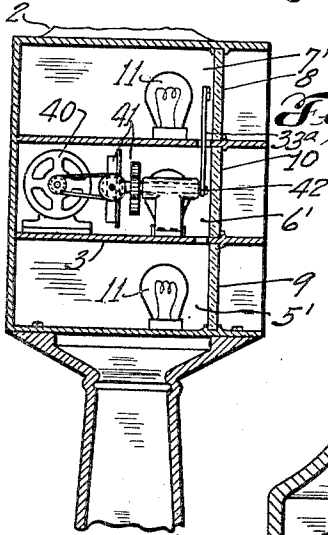
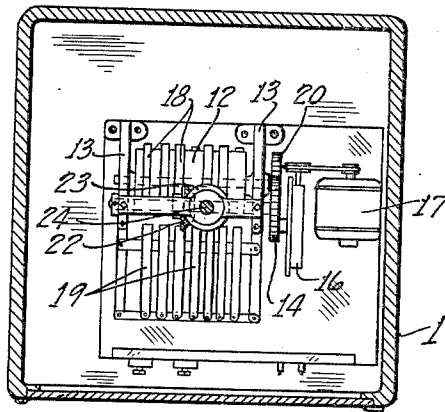


Fig. 6.

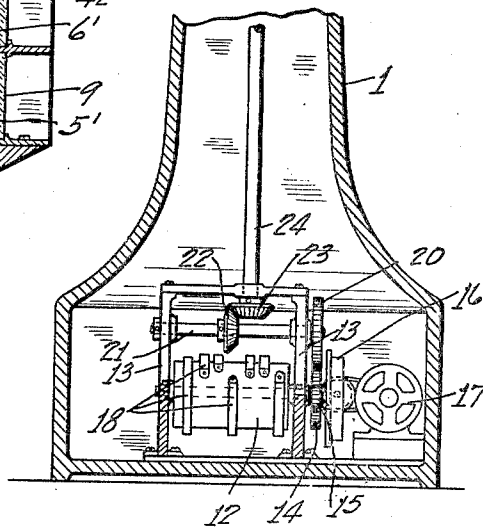


Fig. 5.

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TRAFFIC SIGNAL.

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This invention relates generally to signaling devices and, more particularly, to a certain new and useful improvement in signaling devices especially of the type designed for regulating or controlling street or thoroughfare traffic.

Signaling devices of the type mentioned are now generally located at street-crossings and usually comprise, as far as I am aware, "stop," "wait," and "go" signs that automatically are intermittently and sequentially illuminated, the respective indications being in effective visual display during predetermined and regulated periods of time. As a matter of safety, it is important that the signal indications or signs be observed promptly upon the display thereof and throughout the full effective display period. At street intersections or crossings, especially where traffic is relatively heavy, it is particularly necessary, in the avoidance of collisions and accidents, that the duration of the effective display periods of the traffic indications be carefully observed and obeyed, for when it is time to change movement of traffic from one thoroughfare to the other, traffic on the one thoroughfare should be stopped promptly, while traffic on the cross thoroughfare should be as promptly started, and vice versa; and there should be a slight pause between the "stop" and "go" periods by the observance of the "wait" or "traffic change" indication to clear the crossing of vehicles that may have passed the signal on the then displayed "go" indication and just before the "stop" indication is displayed against traffic in that particular direction and also before the display period of the "stop" indication then set against traffic in the cross direction is ended.

The present invention has for its principal object the provision in connection with a signaling-structure of the type mentioned of an indicator correlated to and operating synchronously with the respective signal-indications so that the timing and sequential gradual expiration of the respective display periods may be visually signalled to approaching or stationary traffic, whereby the possibility of error in observance of the respective indications is greatly minimized and the efficiency and effectiveness of the signal as a whole greatly increased.

And with the above and other objects in view, my invention resides in the novel fea-

tures of form, construction, arrangement, and combination of parts hereinafter described and pointed out in the claim.

In the accompanying drawings,—

Figure 1 is an elevational view of a street-crossing traffic-signal equipped with and embodying my present invention;

Figure 2 is a fragmentary vertical sectional view of the upper portion of the signal-structure;

Figure 3 is a horizontal sectional view taken approximately on the line 3—3, Figure 2.

Figure 4 is a horizontal sectional view through the base portion of the signal-standard, taken approximately on the line 4—4, Figure 1;

Figure 5 is a fragmentary vertical sectional view through the base portion of the signal standard; and

Figure 6 is a fragmentary vertical sectional view through the upper portion of a slightly modified signal-structure also equipped with and embodying a modification of my invention.

Referring now more in detail and by reference characters to the drawings, which illustrate practical embodiments of my invention, 1 designates a hollow post of standard signal-structure type usually located centrally at the intersection of crossing thoroughfares or streets. At and upon the top of the post or standard 1, is a housing 2 divided by horizontally disposed partitions 3 and 4 to comprise in superposed relation compartments 5, 6, and 7, respectively, at the four sides of which compartments are translucent panels of glass or other suitable material.

I might here state that the particular structure described is for a four-way signal, that is to say, the signal is adapted for use at the intersection of two cross thoroughfares on each of which traffic moves in opposite directions, or, in other words, such thoroughfares are two-way as distinguished from one-way thoroughfares. Consequently, the end panels or walls 8 upon two adjacent sides of the top or uppermost compartment 7 are preferably red in color and have painted or otherwise visually exposed thereon the signal word or indication "stop", while the end panels or walls 8 of the other two adjacent sides of the compartment 7 are preferably of green or other contrasting

color and have painted or otherwise visually exposed thereon the signal word or indication "go". In a similar manner, the end panels or walls 9 of the bottom or lower-most compartment 5 are also of contrasting color and have in like manner visually exposed thereon the respective signal words or indication "stop" and "go", the end panels or walls 10 of the intermediate or middle compartment 6 being all preferably white in color and displaying the signal-word or indication "wait", all as best seen in Figure 1. Obviously, the signal words or indication "traffic change" or any equivalent wording or legend may be used in place of the indication "wait" on the panels 10, and the coloring of the panels of the several compartments may be varied as desired, but, in any sense, the panels of the respective compartments should preferably be in distinguishing colors.

The illumination of the respective panels 8, 9, and 10 is regulated and controlled automatically in timed relation by a drum 12 mounted for rotation upon bearing-standards 13 and whose usually horizontally disposed shaft is provided with a gear 14 having meshing driven engagement with a pinion 15 suitably driven through reduction-box mechanism 16 by an electric or other suitable motor 17. Disposed on drum 12, is a suitable arrangement of electrical contact elements 18, which co-operate with terminal contact elements 19 for the respective circuits of the lights 11. The particular means for making and breaking the electrical circuits is quite obvious in a signal device of the character described, and inasmuch as the same does not enter into the present invention, except in a general way, such means is only shown conventionally in the drawings.

So far as the present invention is concerned, constructions and arrangements of signal devices other than that specifically shown and described can be as well embodied therewith, but, for illustration, the structural features of my invention will now be explained in connection with the described structure. Meshing with the gear 14, is a similar gear 20 fixed on a shaft 21 mounted on the standards 13 for rotation above the drum 12. On the shaft 21, is a miter-gear 22 meshing with another like gear 23 on the lower end-portion of a vertically disposed shaft 24 extending up through the hollow post 1.

At the upper end of the shaft 24, which terminates preferably in the middle compartment 6, is a relatively small miter-gear 25, which meshes with a like gear 26 on a cross-shaft 27. On the shaft 27, adjacent the gear 26, is a larger miter-gear 28, which meshes with two similar gears 29, 30, on the inner ends, respectively, of two cross stub-

shafts 31, 32, extending in axial alignment with each other and at right angles to the shaft 27.

On the ends of the shaft 27 are two arms 33 each having an arrow-head or other suitable indicating device 34 at their free ends. On the outer ends of the stub-shafts 31, 32, are similar arms 35 each having on their ends an arrow-head or other device 36.

The arms 33 and 35 are located near the inner faces of the panels 8, 9, and 10, and to permit rotation thereof, as will be presently set forth, slots 37 are provided in the horizontal partitions 3 and 4.

When the drum 12 is rotated, the shaft 24 through the intermediary of the gearing between it and the shaft of the drum, is rotated therewith. The shafts 27, 31, and 32, are, of course, rotated in turn from the shaft 24 by the arrangements of gearing which co-operates with the miter-gear 25 at the upper end of the shaft 24. Consequently, the arms 33 and 35 are accordingly rotatably swung with their respective shafts, and the arrow-heads 34 and 36 caused to travel in a circular orbit or path just inside of the glass panels of the respective compartments 5, 6, and 7.

Coincident with the paths of the arrow-heads 34 and 36, the colored panels 8 and 9 are provided with arcuate portions 38 and 39, respectively, which are uncolored, or at least of a distinguishing color from that of the panels, and such arcuate portions are preferably translucent or transparent to visually expose arrow-heads 34 and 36 there-through.

By proportioning the gearing, the movement of the arrow-heads 34 and 36 is obviously synchronized with the timing of the illumination of the respective signal indications. Thus, for example, assume the arrow-head 36 displayed upon one side of the standard or post travels clock-wise, it appears to view at the lower left-hand side of the upper panel 8 on which the indication "stop" is displayed just at the moment that particular indication is flashed or signalled. It then travels through the arc of the portion 38 during the period of display, and passes therefrom at the termination of the period. By observing this arrow, the driver of a vehicle stopped by the signal is enabled to note just how long the particular indication has been in effect, and it is particularly advantageous to him should he arrive at the signal just about the moment the display period is ending, for he may prepare for the starting of his vehicle and make a prompt "get-away" after the termination of the "wait" period which is sequentially flashed and is of relatively shorter duration than the "stop" and "go" periods. The same advantage obtains when the driver is approaching the signal and it is set for "go", for the timing and gradual expiration

of the period is indicated and visually signalled by the arrow, and should he arrive at the signal just about the time the arrow is passing from the arcuate portion 39 to the middle panel, he has ample warning that the "go" period is ending and that he only has the relatively shorter interval of the following "wait" period in which to clear the crossing; or, if he is a careful driver and observes that he is liable to be blocked or delayed from any cause in making the crossing before the "go" indication is set for the cross-direction, he will come to a stop and await the termination of the following "stop" indication in his direction.

In cases of one-way thoroughfares or on two-way thoroughfare where it is desirable to place signals on the corners instead of the center of the intersections, the structure may be suitably modified. Such a modification is illustrated in Figure 6, wherein the housing 2 on the post or standard 1 has three compartments 5', 6' and 7', in only one wall of which are provided the translucent panels 8, 9, and 10. In the case of one-way traffic, there will, of course, be only two signal stands, one at each of the two near right-hand corners for traffic approaching the intersection, while in the case of two-way traffic there will be four of the signal stands, one at each of the four near right-hand corners. In these instances, the rotating indicator of the present invention may be operated mechanically in synchronism with the electrical illumination control as described, but to minimize cost of installation and maintenance, or where it is not convenient to so equip the structure, the rotating indicator may be electrically operated, and in such cases a separate electrical or other motor 40 may be employed as shown in Figure 6, the gearing 41 between the motor and the shaft 42 on which the arm 33^a, corresponding to the described arm

33, is mounted, is proportioned and timed so as to be in synchronism with the controlling devices for illuminating the respective signal indications of "stop", "go", "wait", and the like.

The invention contemplates the utilization of either mechanical or electrical operation of the device, either partially or as a whole, and it is obvious that changes in the construction and arrangements of the devices may be made in many respects without in the least departing from the spirit of the invention as defined in the appended claim.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

In a traffic-signal, in combination, a housing, transverse partitions within the housing dividing the housing into a plurality of superposed compartments, said partitions being slotted for communication one with another, traffic indications upon an end wall of said compartments, electrical means including a rotating contact-drum for illuminating said indications in sequential periods of predetermined duration, an indicator having its axis of rotation located within the central compartment and adapted for travel in a circular path consecutively through said communicating slots and over the traffic indicating end walls of all said compartments, and means comprising shafts and gearing intermediate the indicator and the drum for effecting synchronized rotary movement of the indicator with the rotary illuminating movement of the drum for visually signalling the effective duration and gradual expiration of the respective periods.

In testimony whereof, I have signed my name to this specification.

GUSTAV L. HARRIS.