June 8, 1926. 1,588,240

J. S. LEACH

TRAFFIC SIGNAL APPARATUS

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Fig. 1.

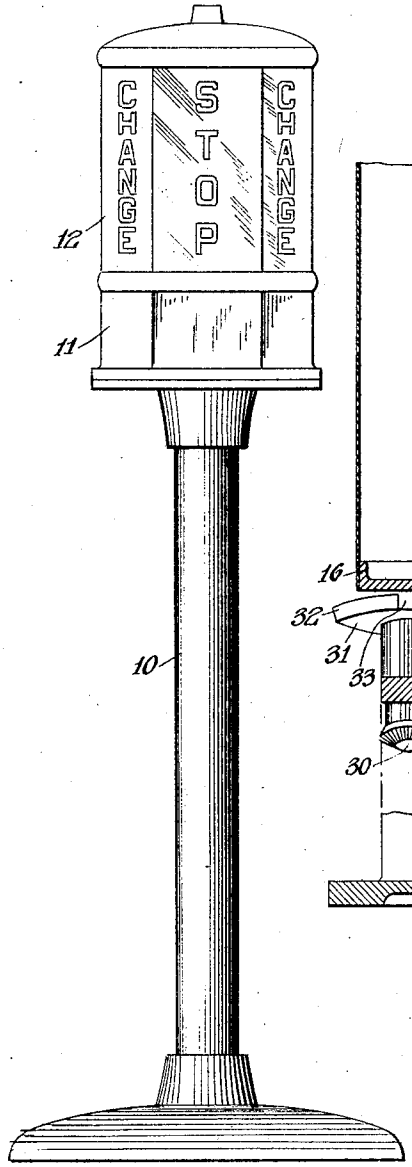
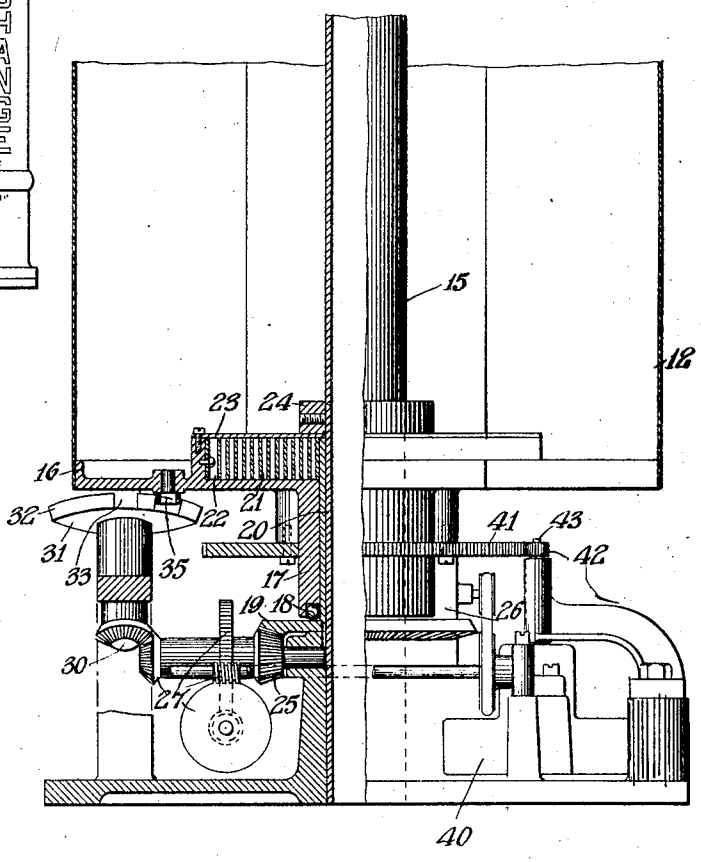


Fig. 2.



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Fig. 3.

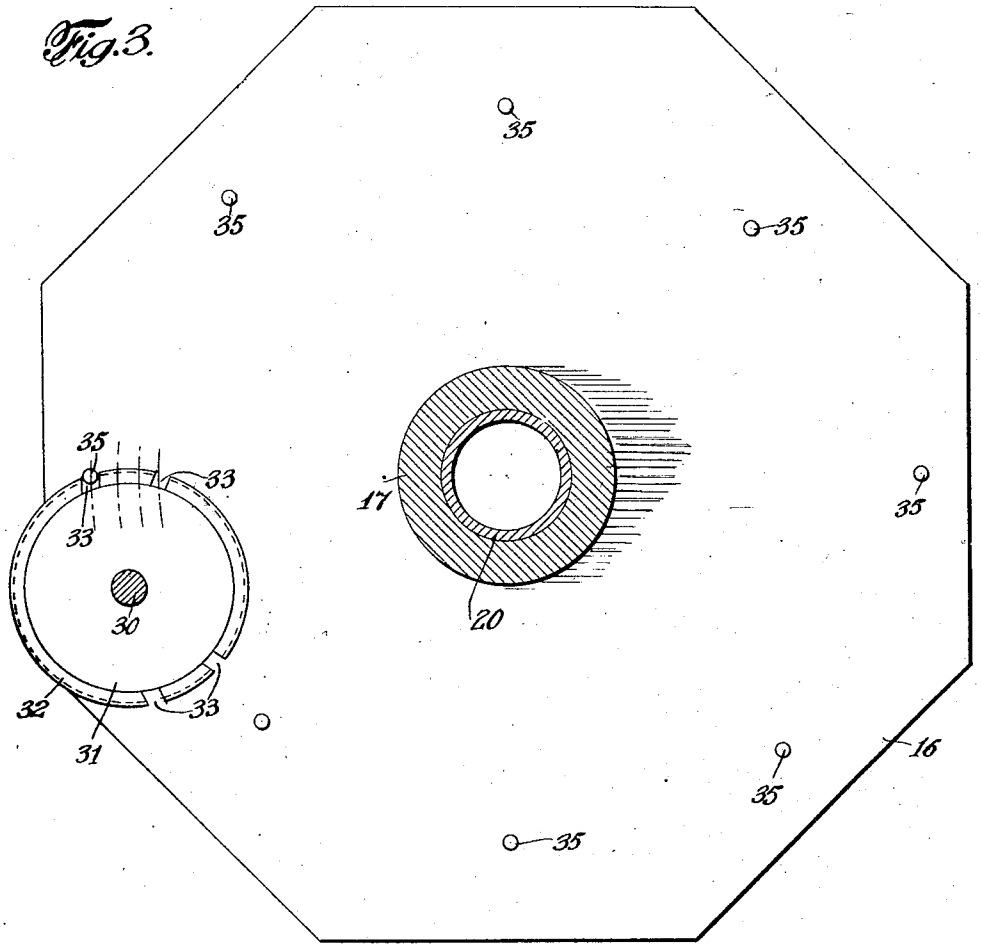


Fig. 4.

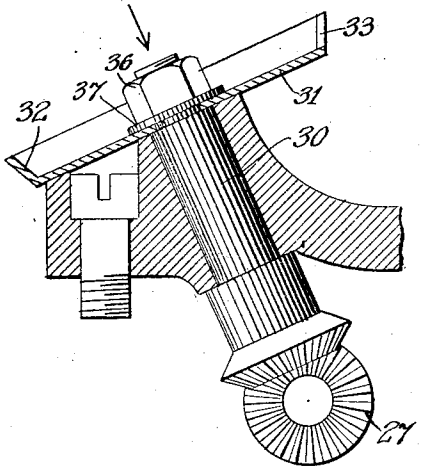
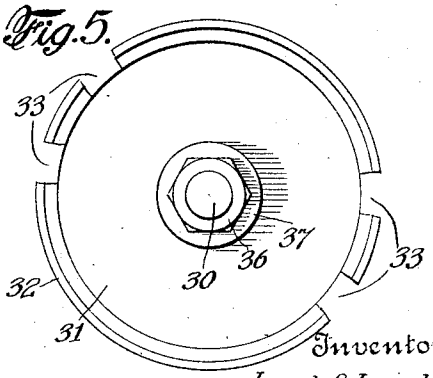


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH S. LEACH, OF BROOKLYN, NEW YORK.

TRAFFIC-SIGNAL APPARATUS.

Application filed January 18, 1924. Serial No. 687,142.

The invention relates to signal apparatus for use in connection with the regulation of vehicular traffic, particularly at street crossing inter-sections; and it has for its object a device of this character which may be caused to operate automatically or under manual control as may be desired, and wherein the particular period that a signal is displayed is predetermined to suit the conditions of traffic movement. A further object of the invention consists in the provision of means for affording a preliminary signal to indicate a change in traffic movement. A still further object of the invention consists in a device of this character which shall be of simple and substantial construction, and wherein the control of the intermittent movement effecting the changing of the signals is obtained thru a member operated preferably from a continuously running motor, the arrangement being such, furthermore, that various timings may be obtained for the different displays by substituting a corresponding control member, the substitution being readily effected and without requiring any particular skill.

The nature of the invention, however, will best be understood when described in connection with the accompanying drawings, in which—

Fig. 1 is an elevation of the improved signal apparatus as embodied in a tower.

Fig. 2 is a detail vertical section and part elevation of the operating mechanism.

Fig. 3 is an underneath view of the display member table with a portion of the control member in section and turned into a plane parallel therewith.

Fig. 4 is a fragmentary detail view illustrating the control arrangement for stopping and releasing the movement of the table.

Fig. 5 is a detail plan view of the control member looking in the direction of the arrow, Fig. 4.

Similar characters of reference designate corresponding parts thruout the several views.

Referring to the drawings, the apparatus is illustrated as mounted upon a suitable post or standard 10, the operating mechanism being enclosed in a housing 11 and the actual signal portion 12 rotatably mounted above said housing, as hereinafter more fully set forth. The signal portion or display member 12 is of octagonal formation, being provided with glass or like faces upon which the respective traffic legends are printed, as will be readily understood. For example, two diametrically opposite faces are marked "Go" and the pair of diametrically opposite faces at right angles thereto may be marked "Stop". A quarter turn, therefore, of the display member will serve to bring one or the other into view. The intermediate faces are intended to give a preliminary signal as to indicate a change in traffic movement, and to this end may, for example, be marked "Change". If desired, the interior of the display member may be suitably illuminated, but this feature forms no particular part of the invention, which consists essentially in the mechanism for affording intermittent movement to the said display member.

For this purpose, the latter is mounted to be rotatable about a tubular member 15 contained with the support 10, said display member comprising a table 16 carrying the glass plates which bear the various aforesaid legends and the said plates being held thereto in any well-known or special manner. The table is provided with a downwardly directed tubular extension or sleeve 17 fitting over the upper end of the tube 15 and resting, thru an intermediate ball bearing 18, with its lowermost end upon the upper surface of a bevel gear 19. The latter is secured to a sleeve 20, also mounted about the tube 15 and within the sleeve 17, and has secured thereto the one end of a coil spring 21 which is mounted in an annular recess or pocket 22 provided in the upper surface of the table. The other end of the coil spring is secured to the wall of this pocket, and the said pocket is preferably closed at the top by a plate 23, thus entirely enclosing the spring. The table is held to the bearing 18 by means of a ring 24 secured to the tubular member 15 above the said top plate 23, and the spring in its pocket 22 is given sufficient initial tension to effect at least one complete rotation of the table. It will, therefore, cause the table to be rotated in a predetermined direction; and a bevel gear 25 is arranged to mesh with the bevel gear 19 to rewind this spring in

amount corresponding to the degree unwound by the rotational movement of the table and thus maintain its tension. Power for driving the gear wheel 25 is obtained from any suitable source such as the continuously operating electric motor 26 to which current is supplied from any suitable source (not shown). The rotational movement of the table, under the influence of the spring, is to be so controlled that the various legends will be displayed for predetermined periods of time and in accordance with the traffic movements desired. For example, in one direction of traffic it may be desired to display the word "Go" for a longer period than the word "Stop" as in instances where there is greater traffic in one direction than in the cross direction. It is desirable, also to display a warning previous to the change from "Go" to "Stop" and vice versa; and this period is, of course, to be considerably shorter than for the regular traffic periods. The word "Change" or designations of similar import are therefore to be displayed for a brief period only.

To control the respective periods of time for the different displays, the motor 26, thru an intermediate gear train 27, is arranged to drive a shaft 30 which is mounted at an angle to the plane of the table and imparts to said shaft continuous rotational movement. The shaft 30 at its outer end carries a control member preferably in the form of a dished member 31 for rotation therewith, the rim 32 of this member being slotted at various portions with the walls of the slots 33 as arcs of circles of different radii for the purpose hereinafter set forth. When a dished type of control member is employed, the same is inclined to the table and the rim thereof in its highest position is designed to extend immediately below the lower surface of the said table. From the latter there is arranged to extend normally to the table a plurality of pins or preferably rollers 35, circularly provided over the undersurface of said table, being equidistantly spaced thereon angularly but arranged in series of different radii. The upper portion of the rim of the dished member is arranged to be substantially at right angles to and adapted to contact with a roller of the table to prevent thereby rotational movement of said table and until the rotation of the dished member has brought a slot thereof in registry with the said coacting roller. When this occurs, the roller will slide thru the slot and out of contact with the dished member, as the latter is inclined to the plane of the table sufficiently to allow of the roller clearing the entire dished member as soon as it has passed thru a slot. The table will, therefore, rotate a definite distance, that is to say until a succeeding pin arrives to contact with the upper rim portion; and it will then remain stationary again until a further registry has been effected between the roller and a succeeding slot of the rim.

In the illustration, Fig. 3, the one roller 35 is in position to effect a change from the position, for example "Go"; and as soon as this roller has passed thru the corresponding slot, the table will rotate sufficiently to bring the next face, with "Change" designation, of the octagonal display member into position, the roller corresponding to this position having in the meantime made contact with the rim. Owing to the different radial positions of the various rollers, there is no danger of a succeeding roller passing thru a rim slot just cleared and will hold the display member at rest until a succeeding slot registers with said roller. Moreover, the walls of the respective slots being substantially as arcs of the particular radius, a roller will not be impeded in its passage thru the slots even if the rim be of appreciable thickness. When the period of warning designation has elapsed, the dished member will have been rotated sufficiently to cause the corresponding slot to have reached a position to register with the table holding roller and again release the table for the change to the "Stop" position. The same mode of operation will then be repeated, but the period in which this designation is displayed will be longer than the change or warning periods. This is followed again by a change to the warning period equal in time to the previous warning period, whereupon the change to the "Go" period takes place; and in the embodiment shown, is the longest period of display. It will readily be appreciated, that if different periods are desired for the respective designations, it is necessary only to change the position of the respective slots. This is best accomplished by substituting for the dished member a different one correctly slotted for the timing desired. By the arrangement shown, this is conveniently effected by removing the nut 36 and washer 37 from the squared end of the shaft, and which serve to hold the timing member 31 thereto, and replacing same after substituting the new member.

In order to damp the rotational movement of the table, it is desirable to provide suitable means which will slow down the effective movement of the spring, for example as a vaned member 40 which may be geared to the sleeve 17 of the table thru a spur gear 41 secured to the said sleeve, said gear having a pinion 42 meshing therewith and which is secured to the shaft 43 of the vaned member.

I claim:—

In traffic signal apparatus: a rotatable display member; means for rotating same; and control means, comprising a continuously running motor, a shaft rotated thereby, an

inclined dished member mounted at one end of the shaft and having slots disposed about its rim, and rollers mounted on the under side of the display member and adapted to engage the rim to prevent rotation of said display member and to register with the slots of said rim to pass therethru, clear the dished member and permit of a limited rotational movement of the said display member.

Signed at New York in the county of New York and State of New York this 12th day of January, A. D. 1924.

JOSEPH S. LEACH.