March 22, 1932. F. SHEPHERD 1,850,897

TRAFFIC LIGHT

Filed Oct. 7, 1929 2 Sheets-Sheet 1

Fig. 1.

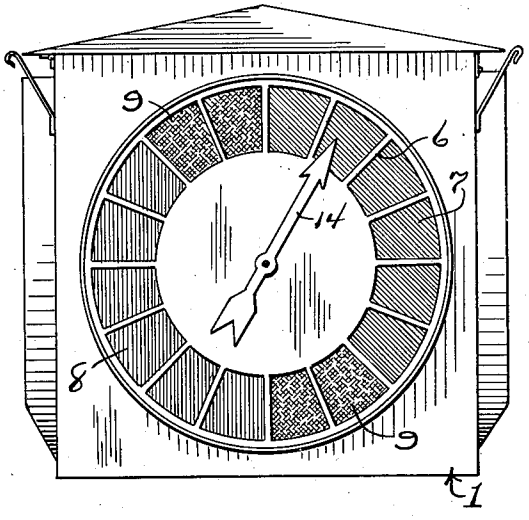
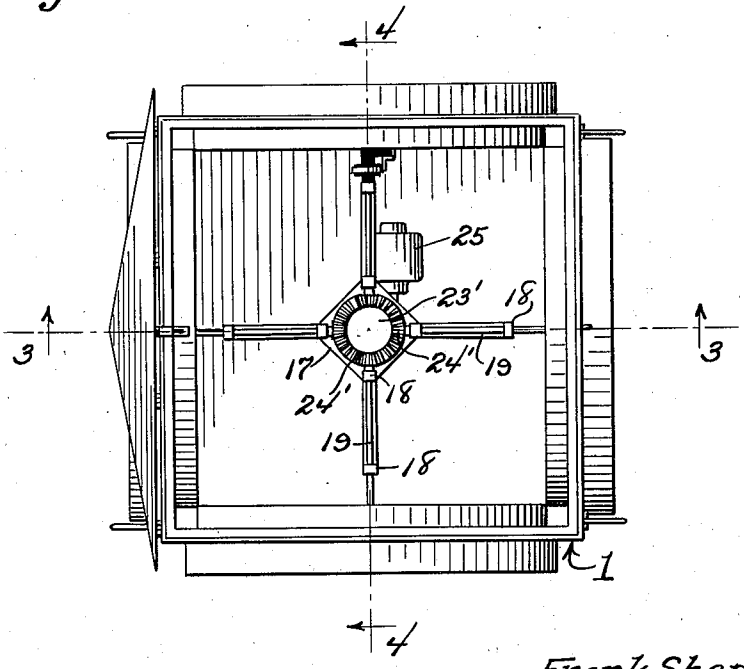


Fig. 2.



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Fig. 3.

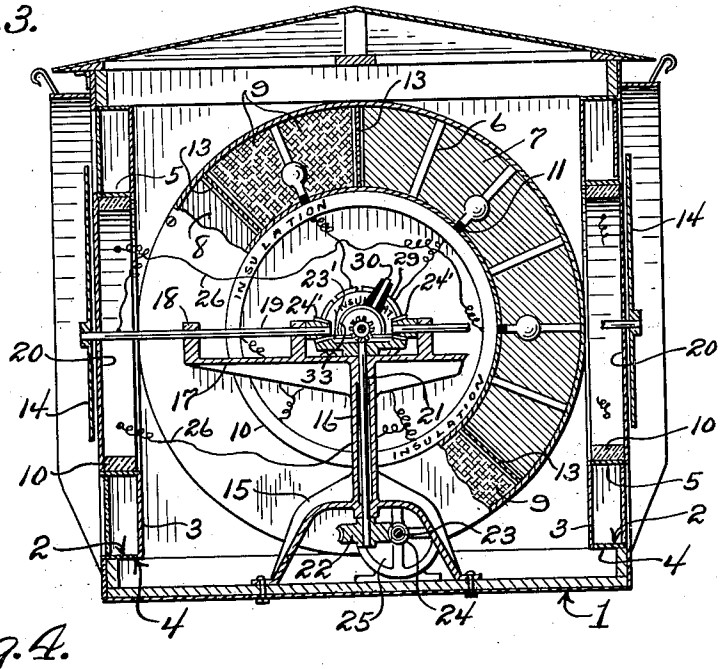
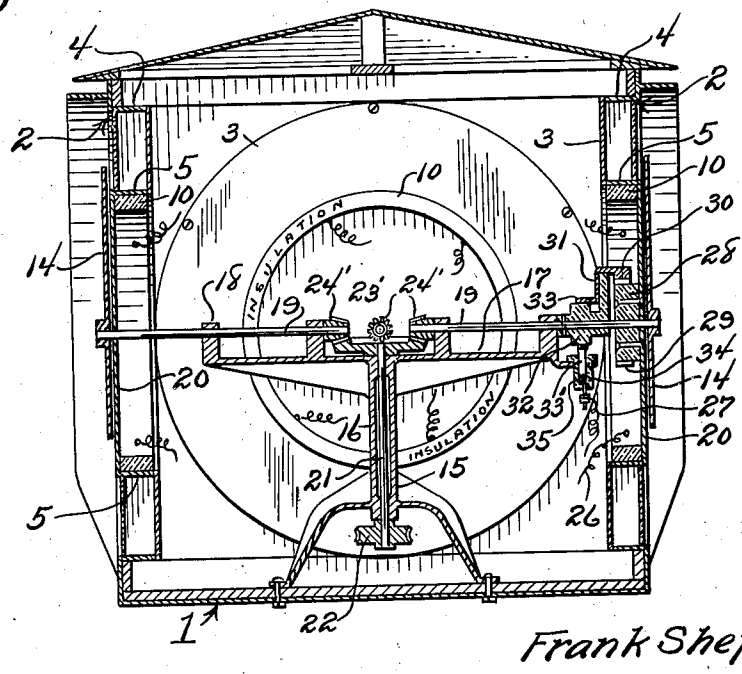


Fig. 4.



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UNITED STATES PATENT OFFICE

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TRAFFIC LIGHT

Application filed October 7, 1929. Serial No. 398,005.

This invention relates to improvements in traffic signals and has as its general object to provide a signal which will overcome certain disadvantages attending the use of ordinary traffic signals of the type embodying means for successively displaying "stop", "neutral", and "go" signals. Such signals present the disadvantage that the driver of an automobile approaching a street crossing and observing the "go" light has no way of determining whether he can reach and pass the crossing before the "go" signal is cut off, and the neutral and "stop" signals successively displayed. Likewise, pedestrians are unable to determine whether or not they will have ample time to cross the street from one sidewalk to the other before a change in the signals takes place.

The present invention, therefore, contemplates the provision of a traffic signal by which pedestrians or drivers of automobiles and other vehicles may determine with a considerable degree of certainty the period of time which will elapse before the signal is changed.

Another object of the invention is to provide a traffic signal of the type stated and possessing the advantages set forth, which will present the further advantage, namely, that the signal displays the different warnings at all four sides of the casing in which the signal mechanism is arranged, so that the correct signal may be given in each of four directions simultaneously.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claim.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a view in side elevation of a traffic signal embodying the invention.

Figure 2 is a plan view of the signal with the top removed.

Figure 3 is a vertical transverse sectional view taken on the line 3—3 of Figure 2 looking in the direction indicated by the arrows.

Figure 4 is a similar view on the line 4—4 of Figure 2 looking in the direction indicated by the arrows.

The signal embodying the invention may be mounted in any desired manner and comprises a casing, which is indicated in general by the numeral 1 and which is substantially of cubical form except that the top of the casing is preferably pyramidal so as to prevent the accumulation of rain water on the said top. In each side wall of the casing there is formed an opening 2 in which is mounted an annular frame 4 and the inner peripheral flange 5 extending respectively about its outer and inner margins and projecting from the plane of the frame. In mounting the frame 3 within the opening 2 in the respective side wall, the open side of the frame is presented outwardly and the frame is located substantially wholly within the casing. Radial division pieces 6 are arranged to extend between and are supported by the edges of the flanges 4 and 5, and serve, in connection with the edges of the flanges 4 and 5 to support the sign panes of the signal, these panes being arranged in an annular series and certain of the panes, indicated by the numeral 7, as for example, six of the panes, being green in color and the other panes, as for example a series of six, indicated by the numeral 8, being red in color.

Other panes, indicated by the numeral 9 are preferably yellow in color and a pair of these panes is arranged between the relatively adjacent ends of the series of panes 7 and 8 as above shown in Figure 1 of the drawings.

The numeral 10 indicates a ring of insulating material, which is arranged within the bounds of the flange 5 of each frame 3, and mounted within each frame, and at suitable intervals are electric lamp bulb sockets 11, these sockets being preferably mounted in the insulation 10, and of course insulated from the flange 5, by forming openings in the flange of larger diameter than the sockets or by any other suitable means. In the embodiment of the invention shown in the drawings and more particularly in Figure 3, two lamp sockets

are arranged within the frame and equally distantly spaced from one another for the purpose of illuminating the panes and the same number of light bulbs are arranged within the casing for the purpose of illuminating the panes 8, the panes 9 of each two pair being illuminated by a single light bulb. In order to prevent the light rays from the bulbs associated with one series of panes passing to the panes of another group, opaque partitions, preferably of sheet metal, indicated by the numeral 13 are arranged each between the adjacent ends of two relatively adjacent groups of panes, so that in effect the hollow frame 3 is divided into compartments equal in number to the number of groups of panes.

In conjunction with the circular series of sign panes and their respective sources of illumination, the invention contemplates the employment of a rotary pointer, which is indicated by the numeral 14 and to which rotary motion is continuously imparted, the pointer being mounted axially with respect to the annular series of panes and its indicating point slightly overlapping the panes in the rotative movement of the pointer as shown in Figure 1.

In order that rotary motion may be imparted simultaneously in uniformly timed relation, to the pointers 14, at all four sides of the casing and likewise in order that the electric supply current may be successively closed thru the light bulbs in the several compartments of the frame 3, and likewise in order that the indicator pointers 14 may be simultaneously operated, means is provided which will now be described. The numeral 15 indicates a supporting structure which is mounted within the casing upon the bottom thereof and includes a vertically disposed tubular upright or standard 16, supporting a circular plate 17 which constitutes a supporting base for the greater part of the mechanism. The numeral 18 indicates bearings, which are formed upon or mounted upon the base plate 17 and these bearings are arranged in pairs and substantially in alignment with the center of each side of the casing, one of the bearings of each pair being located substantially at the rim of the base plate 17 and the other in spaced relation to the center of the plate.

A shaft 19 is mounted for rotation in each pair of bearings 18 and an indicator hand 14 is fixed upon the outer end of each shaft, the outer ends of the shafts passing thru openings at the centers of circular plates 20, which are mounted within the bounds of the flanges 5. The shaft 21 is journalled for rotation in the standard 16 and has fixed to its lower end a worm gear 22, which is in mesh with a worm 23 upon the shaft 24 of an electric motor 25, arranged within the casing upon the bottom thereof, rotary motion being in this manner imparted to the shaft 21 at a slow rate of speed and at such rate as to effect movement of the pointers to complete their circles of rotation for the successive display of the different signals, within the time required by the traffic regulations, a bevel gear 23 is fixed upon the upper end of the shaft 21 and pinions 24 are fixed upon the inner ends of the shafts 19 and the pointers carried thereby are rotated at a uniform rate of speed and in unison with one another.

The supply of current to the light bulb sockets 11 is governed by a means which will now be described. The numeral 26 indicates conductor wires which are connected to one terminal of the source of current supply and these wires are lead thru the insulation 10 to the bulb sockets in all of the groups of bulbs.

From the other terminal of the source of supply there are led conductor wires 27, each of which is led to the brush of a commutator switch associated with a respective one of the pointer shafts 19, and this switch comprises a circular body 28 of insulating material which is mounted upon each of the plates 20 concentric to the respective shaft 19, and each shaft 19 is therefore rotatable with respect to a respective one of the said disks 28. Contact blocks 29 are mounted upon or in the periphery of each disk 28 at equally distantly spaced points in the circumference and a contact point 30 is supported, in the path of movement of the contacts 29, on the end of a resilient finger 31, extending radially from a metal ring 33 mounted upon a sleeve 32 of insulating material, in turn fixedly mounted upon the shaft 19 for rotation therewith. A contact point 33′ is mounted in a socket 34 of insulating material, supported by an extension of the base plate 17, and is held in engagement with the ring by a spring 35 arranged in the socket beneath the pin, the conductor wire 27 being connected to a small stem extending from said contact point.

It will now be understood that the parts are so arranged that when the pointer 14 at one side of the casing is passing the red signal panes, the pointer at the opposite side will be passing the green signal panes, and the panes will be so arranged and grouped that the correct signals will be displayed to traffic approaching the crossing from any direction.

In order that the pointers 14 may be clearly visible in themselves, aside from the light rays illuminating them in passing through the panes 7, 8, and 9, the said pointers are preferably of such material or so constructed as to be in themselves illuminous.

What I claim is:—

A traffic signal including a casing having an opening in one side, a support in the casing, a shaft journaled therein, means for slowly rotating said shaft, a circular frame mounted in the opening and having a bearing portion at its center with the shaft extending

therethrough, a solid annular portion around said bearing and compartments around said annular portion, panels of different colors, means mounting the panels as front portions of said compartments, a different color for each compartment, a pointer, means mounting said pointer on the end of said shaft movable over the front of said compartments, lamps in each compartment to the rear of the panels and electrically connected to one terminal of an electric source, an insulator secured to the solid portion of the frame and having the shaft extending therethrough, contacts on the insulator corresponding to the number of compartments and each contact connected to the lamps in the corresponding compartment, an insulating member secured to the shaft, a conductor band secured to the insulator member, a brush carried by the support and engaging the band and electrically connected to the other terminal of the electrical source, and a contacting member carried by the band and engaging with the contact connected to the lamps in the compartment to which the said pointer points during the rotation of the shaft.

In testimony whereof I affix my signature.

FRANK SHEPHERD.