Dec. 17, 1940. G. A. WERLING 2,225,577

TIME PERIOD INDICATING TRAFFIC SIGNALING APPARATUS

Filed Sept. 28, 1939 3 Sheets-Sheet 1

Fig. 1.

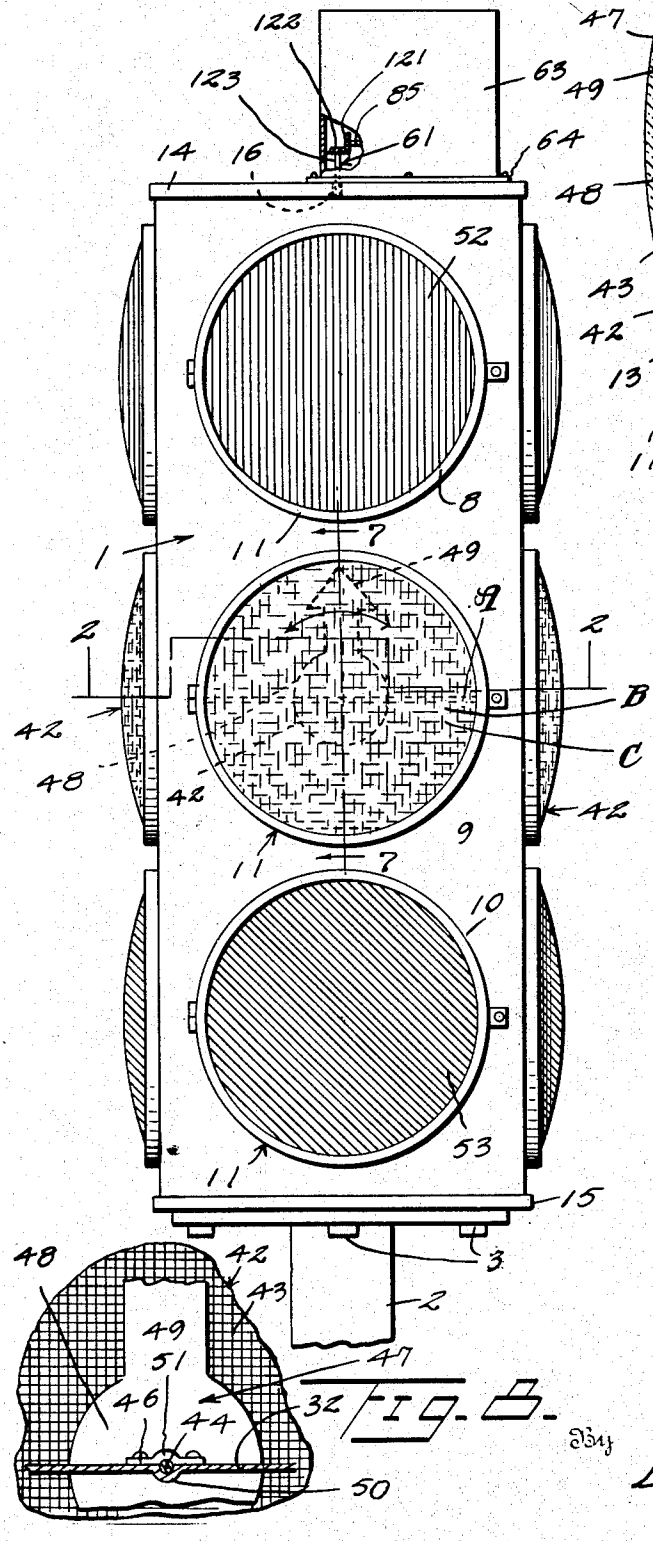


Fig. 7.

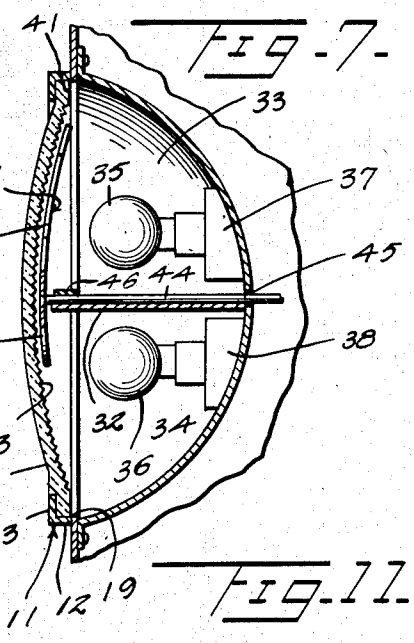
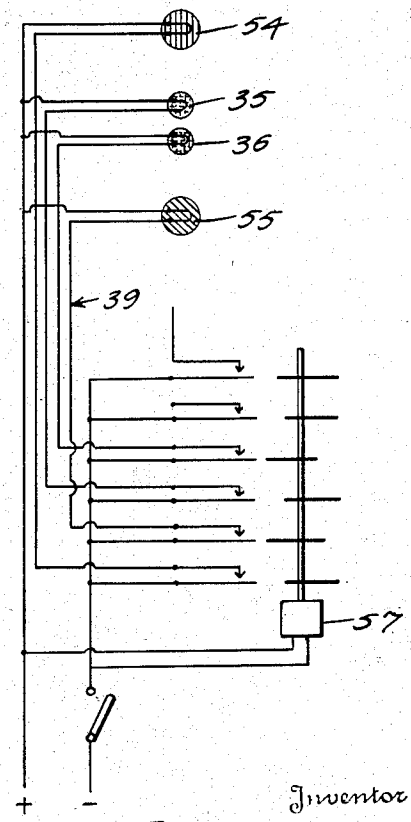


Fig. 11.



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TIME PERIOD INDICATING TRAFFIC SIGNALING APPARATUS

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Fig. 2.

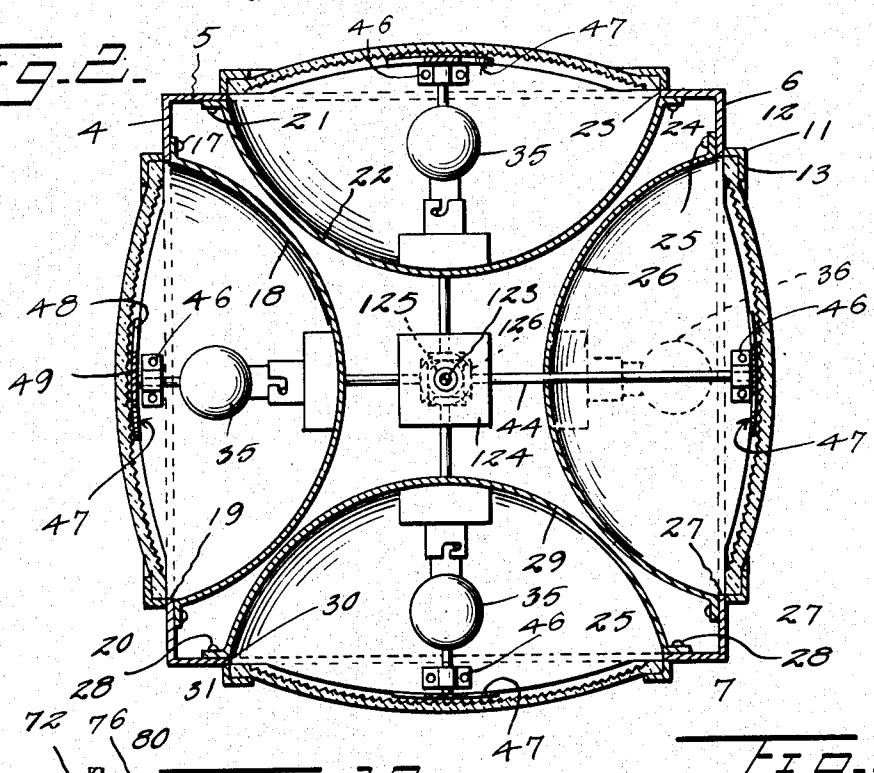


Fig. 10

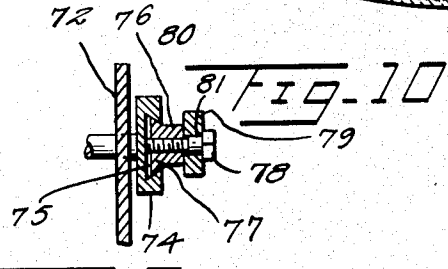


Fig. 5.

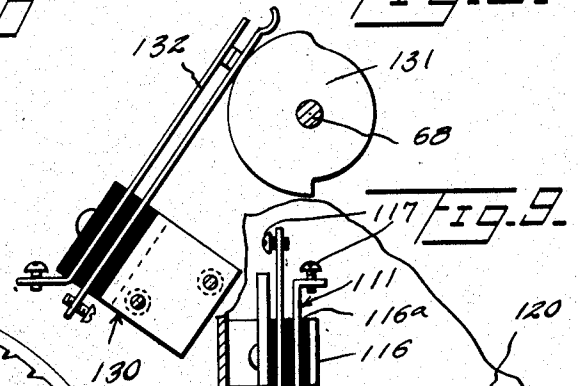


Fig. 6.

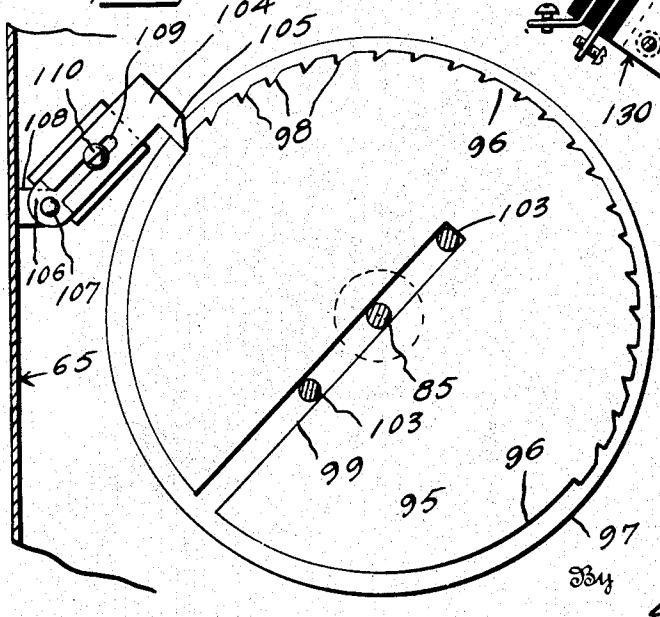
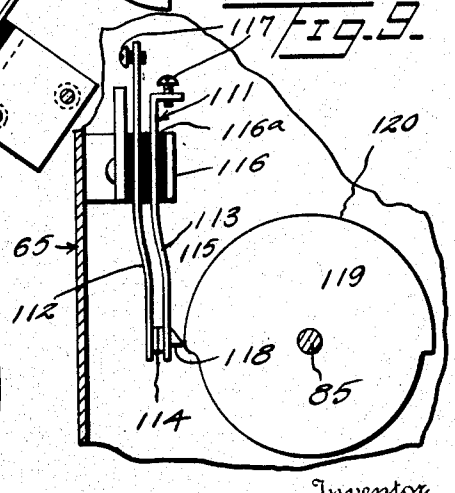


Fig. 9.



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Fig. 4.

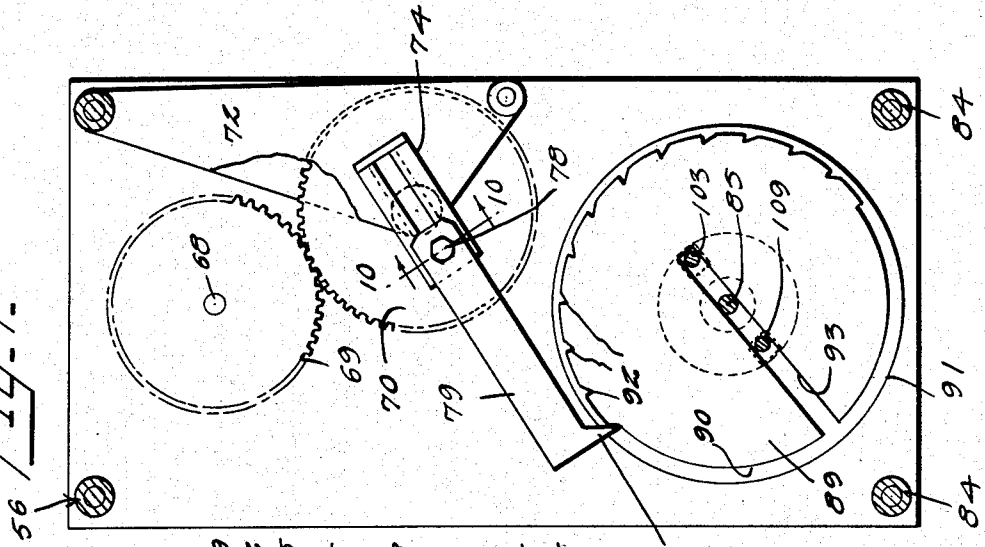


Fig. 3.

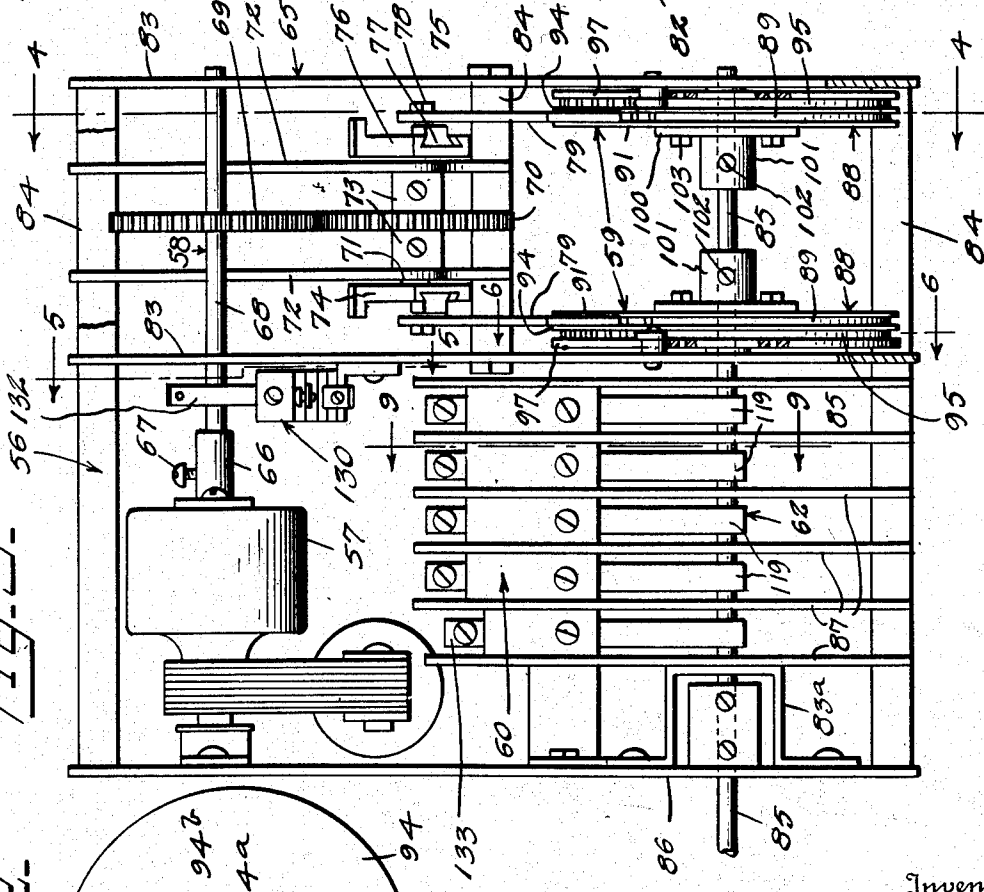
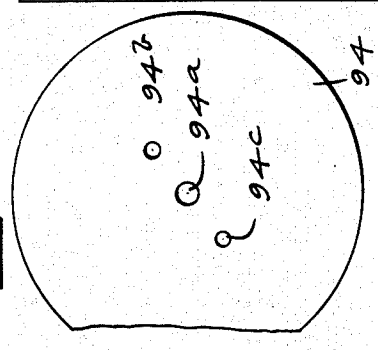


Fig. 12.



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Patented Dec. 17, 1940 2,225,577

UNITED STATES PATENT OFFICE

2,225,577

TIME PERIOD INDICATING TRAFFIC SIGNALING APPARATUS

George A. Werling, Elkhart, Ind.

Application September 28, 1939, Serial No. 297,000

5 Claims. (Cl. 177—329)

This invention relates to a time period indicating traffic signaling apparatus.

The invention aims to provide, in a manner as hereinafter set forth, a traffic signal that constantly indicates to a motorist, at a glance, the time or period remaining before the change from the "stop" (red) indicating signal to the "go" (green) indicating signal, or the time or period remaining before the change from the "go" (green) indicating signal to the "stop" (red) indicating signal, thereby relieving nerve strain on the motorist and resulting in an increase of traffic movement with a greater degree of safety.

The invention further aims to provide a traffic signal so constructed, arranged and operated in a manner whereby the blocking of cross traffic at intersections is prevented when the signals or lights change thereby making it possible of materially increasing traffic movement with greater safety.

The invention further aims to provide, in a manner as hereinafter set forth, a time period indicating traffic signal which is comparatively simple in its construction and arrangement, strong, durable, readily assembled, thoroughly efficient in use for the purpose intended thereby, automatic in its action, readily discernible by motorists, and comparatively inexpensive to manufacture.

Embodying the aims aforesaid and others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawings wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:

Figure 1 is a side elevational view, partly broken away, of the time period indicating traffic signaling apparatus, in accordance with this invention,

Figure 2 is a section on line 2—2 Figure 1,

Figure 3 is a front elevation of a controlling structure forming an element of the apparatus,

Figure 4 is a section on line 4—4 Figure 3,

Figure 5 is a section on line 5—5 Figure 3,

Figu e 6 is a section on line 6—6 Figure 3,

Figure 7 is a fragmentary view in section on line 7—7 Figure 1,

Figure 8 is a fragmentary detail, partly in section and rear elevation,

Figure 9 is a section on line 9—9 Figure 3,

Figure 10 is a section on line 10—10 Figure 4,

Figure 11 is a diagrammatic view of the circuit arrangement for a time period indicator and the signals correlated with said indicator, and

Figure 12 is an elevation of the form of separator disc employed.

The apparatus includes a housing 1, which may be suspended from or anchored stationary to a suitable support and by way of example housing 1 is illustrated as being mounted at its bottom on and fixed to a support 2 by the holdfast means 3. The housing 1 is rectangular in contour and it is formed with four vertical walls, indicated at 4, 5, 6 and 7 disposed in right angular relation. The said walls are of like form and each is provided with an upper, an intermediate and a lower circular cutout or opening 8, 9 and 10 respectively. The openings of the wall 4 align with the openings in the wall 6. The openings in the wall 5 align with the openings in the wall 7. The circular cutouts of each wall are intersected at their axes by the longitudinal median of the wall.

There is arranged against each of the aforesaid walls upper, intermediate and lower annular lens holders 11 of like form and each of which in transverse cross section includes a horizontal and a vertical leg 12, 13 respectively. The leg 13 is at the outer end of leg 12. These holders are of known form and are hinged at one side to the housing walls and at their opposite sides detachably connected to said walls. When the holders 11 have the opposite sides thereof detachably connected to the aforesaid walls, the inner faces of the legs 12 of holder 11 are flush with the edges of the circular openings. The holders 11 are disposed in circumferential relation with the openings in the said walls.

The housing 1 also includes a top wall 14, and a bottom wall 15. The wall 14 is provided at its axis thereof with an opening 16, for a purpose to be referred to. Secured to the inner face of the wall 4 by the holdfast means 17 is a concave reflector 18 having its reflecting surface flush with the edge 19 of the opening 9. The reflector 18 has an outwardly directed annular flange 20 which abuts against the inner face of and is secured to wall 4 by the holdfast means 17. Secured to the inner face of the wall 5 by the holdfast means 21 is a concave reflector 22 having its reflecting surface flush with the edge portion 23 of the wall 5. The reflector 22 has an outwardly directed annular flange 24 which abuts against the inner face of and is secured to

wall 5 by the holdfast means 21. Secured to the inner face of the wall 6 by the holdfast means 25 is a concave reflector 26 having its reflecting surface flush with the edge portion 27 of the wall 6. The reflector 26 has an outwardly directed annular flange 27 which abuts against the inner face of and is secured to wall 6 by the holdfast means 25.

Secured to the inner face of the wall 7 by the holdfast means 28 is a concave reflector 29 having its reflecting surface flush with the edge portion 30 of the wall 7. The reflector 29 has an outwardly directed annular flange 31 which abuts against the inner face of and is secured to wall 7 by the holdfast means 28.

The reflectors 18, 26 align. The reflectors 22, 29 align. The reflectors 18, 22, 26 and 29 are disposed in angular relation with respect to each other.

Each of the aforesaid reflectors has arranged therein on its horizontal median, as well as being secured against its reflecting surface a horizontal opaque partition 32 of a width to project from the front of the reflector to an extent to align with the leg 13 of a lens holder 11 which is correlated with an intermediate opening 9 in a housing wall. The partition 32, in connection with its correlated reflector and with means to be referred to, provides upper and lower chambers 33, 34 respectively in which are arranged illuminable electric lamps 35, 36 respectively capable of being selectively made active for purposes to be referred to. The lamps 35, 36 are connected to supports 37, 38 respectively (Figure 7) arranged within the rear of the chambers 33, 34 respectively. The lamps 35, 36 are interposed in a controllable lighting circuit 39 therefor (Figure 11). The front of each of said chambers is of semi-circular contour.

Mounted in the lens holders 11, which correlate with the openings 9, are the annular flanges 41 of light transfusion lenses 42 of convexo-concavo contour which project outwardly from such holders. The holders 11, which are associated with the openings 9, coact with the flanges 40 for coupling the lenses 42 against the outer vertical faces of the housing 1. Each of the lenses 42 have that portion of its inner face surrounded by the flange 41 formed throughout with prisms 43 of pyramidal contour.

Mounted upon the upper face of each partition 32, at the horizontal median of the latter, is an indicator element operating shaft 44 extended from the front end of the said partition. The shaft 44 passes rearwardly through an opening 45 in a reflector. The opening 45 is positioned axially of the rear part of the reflector 32. The shaft 44 is retained upon the partition 32 by a strap-like retainer 46 which is secured to the upper face of the partition 32. The indicator element operated from shaft 44 is in the form of what may be termed a shadow creating arm 47 having a circular portion 48 and a pointer 49 integral with an edge part of said portion 48. The diameter of the portion 48 is greater than the width of the pointer 49. The length of the pointer 49 is greater than the diameter of the portion 48. The longitudinal median of the pointer 49 aligns with the axis of the portion 48. The latter, at its axis is fixed to the outer end of a shaft 44. The arm 47 conforms in curvature to the inner face of a lens 42 and is disposed in close proximity to such face. The diameter of the portion 48 of the arm 47 is such that such portion will extend above the upper face and depend from the lower face of the partition 32. With reference to Figure 8, the partition 32 is shown as provided at its horizontal median with a depressed semi-circular portion 50, and it also discloses the shape of the retainers 46. The retainer 46 has an upstanding semi-circular portion 51 which registers with the portion 50 of the partition 32 and such portions 50, 51 coact to provide a bearing for the shaft 44.

There is mounted in the holders 11, which are correlated with the upper openings 8 of the vertical walls of the housing 1, red lenses 52 of convexo-concave contour and which constitute "stop" signals. There is mounted in the holders 11 which are correlated with the lower openings 10 in the vertical walls of the housing 1, green lenses 53 of convexo-concavo contour, and which constitute "go" signals.

The lenses 52 and 53 are flanged in the same manner as the lenses 42 and the flanges of the lenses 52, 53 seat in the holders 11 which are correlated with the said upper and lower openings.

Arranged within the housing 1, and correlated with each lens 52, is a controllable electric lamp 54. Arranged in the housing 1, and correlated with each lens 53, is a controllable electric lamp 55. Reflectors may be arranged in the housing 1 for the lamps 54, 55.

It will be stated that with respect to the lenses 52, 42 and 53 carried by each vertical housing wall, a lamp 54 is correlated with the lens 52, a lamp 35 and a lamp 36 correlated with the lens 42 and a lamp 55 is correlated with the lens 53. The lamp 54 is to completely illuminate the lens 52. The lamp 35 is to completely illuminate the upper half portion of the lens 42, the lamp 35 is to completely illuminate the lower half portion of the lens 42, and the lamp 55 is to completely illuminate the lens 53.

The apparatus includes what may be termed sets of lenses each set carried by a vertical wall portion of the housing and consisting of the lenses 52, 42 and 53. The apparatus also includes what may be termed a set of lamps or illuminating elements for the lenses of each set and such set of lamps will consist of the lamps 54, 35, 36 and 55. A pair of the lenses 42 are aligned and the other pair of lenses 42 are aligned. A pair of the lenses 52 are aligned and the other pair of lenses 52 are aligned. A pair of lenses 53 are aligned and the other pair of lenses 53 are aligned. One pair of aligned lenses 52 are illuminated in unison. The other pair of aligned lenses 52 are illuminated in unison. The upper half of one pair of aligned lenses 42 are illuminated in unison and the lower half of such pair of aligned lenses 42 are illuminated in unison. The upper half of the other pair of aligned lenses 42 are illuminated in unison and the lower half of such pair of lenses are illuminated in unison. One pair of aligned lenses 53 are illuminated in unison, and the other pair of aligned lenses 53 are illuminated in unison. The apparatus includes a controllable lighting circuit opening and closing means constructed in a manner to provide for the illuminating of the lenses in the manner as referred to. A lighting circuit 39 is illustrated by Figure 11, for correlation with a set of lamps which illuminate a set of lenses. Each lighting circuit for correlation with a set of lamps will correspond to the lighting circuit 39 shown by Figure 11.

The controlling structure, generally indicated at 56 of the apparatus includes a prime mover in the form of an electric motor 57, a power transmission mechanism 58 operated from the motor, an intermittently operable controlling mecha-

nism 59 for said indicator elements 47 and operated from said transmission mechanism 58, controllable opening and closing means 60 for the lighting circuits, operating means 61 for and common to the shafts 44 and operating means 62 for the circuits opening and closing means. The said controlling structure is completely arranged in a casing 63 with the exception of part of the operating means 61 common to the shafts 44. The casing 63 is secured upon the top wall 14 of a housing 1, as indicated at 64. The controlling structure includes a supporting frame 65 for the various elements thereof, and such frame is completely housed by the casing 63. The latter is disposed in eccentric relation to the top wall 14 of the housing 1.

The shaft of the motor 47 is extended and such extended portion is in the form of a socket 66 provided with a binding screw 67. The mechanism 58 includes a driven shaft 68 supported by the frame 65 and extended at one end into the socket-like extension 66 of the motor shaft. The shaft 68 is secured to the extension 66 by a screw 67. The shaft 68 is provided intermediate its end with a gear wheel 69 which meshes with a gear wheel 70 mounted on a shaft 71 journalled in portions 72 of frame 65. Fixed to shaft 71 and disposed between the frame portions 72 and gear 70 are spacers 73. The shaft 71 extends from the frame portions 72 and has each end thereof provided with a crank arm 74 of like form provided in its outer face with a dove tail groove 75. Arranged against the outer faces of the cranks 74 are adjustable couplers 76 formed with dove tail tongues 77 adjustably mounted in the grooves 75. The couplers 76 are fixedly secured in adjusted position by binding screws 78 extended through the couplers 76 and binding against the bases of the grooves 75. The screws 78 also constitute pivots for a pair of pusher members or driving pawls 79 which are disposed at a downward inclination with respect to shaft 71 and depend below the gear 70. The upper end of each member 79 is apertured, as at 80 to provide for the mounting thereof on the non-threaded portion 81 of a screw 78. The adjustment of the couplers 76 is for controlling the extent of the stroke of the members 79. Each of the members 79 is provided at its lower end with a tapered depending nose 82. The shaft 68 is mounted in the frame portions 83 and such portions 83 and the frame portions 72 have suitably connected therewith combined spacing and bracing means 84.

The intermittently operable controlling mechanism 59 is driven from the members 79 and it includes a shaft 85 which is common to the operating means 61 for the shafts 44 and also common to the operating means 62 for the circuit opening and closing means 60. The shaft 65 is mounted in the frame portions 83, a frame portion 83^a, the frame portion 86 and the frame portions 87. Fixed to the shaft 85 is a pair of spaced parallel shifting assemblies 88 therefor intermittently and alternately driven by the members 79. The assemblies 88 alternately act to intermittently rotate the shaft. The assemblies 88 are of like form and each of which consists of a slotted time period disk 89 encompassing shaft 85 and having its outer edge 90, for substantially half its circumference, formed with equally spaced tapered notches 92 successively engaged by the nose 82 of a member 79 for intermittently rotating the disk 89. The remaining portion of said edge 90 is uninterrupted and inset with respect to the teeth. The latter is formed with a slot 93 extending from the edge 90 to beyond the axis thereof. The slot 93 is disposed diametrically of, but it is of a length less than the diameter of the disk 89. Positioned against the one side and of greater diameter than the diameter of disk 89 is a clamping member 91 of disk like form. Arranged at the other side of disk 89 is one side of a separator member 94 of disk like form corresponding in diameter to the member 91. The members 91, 94 have their outer edges align and form in connection with the edge 90 of disk 89 an endless groove in which the nose 82 of a member 79 operates. The members 91, 94 coact to prevent the nose 82 of a member 79 from shifting off of the edge 90 of the disk 89. Positioned against the other side of the member 94 is one side of a stop disk 95 encompassing shaft 85, corresponding in diameter to the disk 89 and having half of its outer edge 96 formed with closely arranged tapered notches 98, spaced in a like manner as the notches 92. The remaining portion of the edge 96 is uninterrupted and inset with respect to the notches 96. The disk 95 is formed with a slot 99 of the same form and arrangement as the slot 93. The slots in the disks 89, 95 are open at their outer ends and provide for removable mounting disks 89, 95 relative to shaft 89 and to conveniently change said disks when desired for any suitable purpose. Positioned against the other side of disk 95 is a clamping member 97 of disk-like form corresponding in diameter to and flush with the outer edges of the members 91, 94. The members 94, 97 coact with the outer edge of disk 95 to form an endless annular groove to confine and in which operates a stop member to be referred to. The members 91, 94, 97 have axial openings and openings arranged adjacent said axial openings. These latter provide for mounting members 91, 94, 97 on shaft 85. The arrangement of such openings with respect to each of said members is shown with respect to the member 94, Figure 12 and the said openings are indicated at 94^a, 94^b, 94^c. The openings 94^b, 94^c of member 97 are threaded.

Positioned against the other side of member 91 is an apertured annular flange 100 formed integral with one end of a sleeve 101 encompassing and fixed to the shaft 85 by the binding screws 102. Carried by the flange 100 is a pair of spaced diametrically opposed hold-fast threaded means 103 which extend through the slots in the disks 89, 95 and the openings 94^b, 94^c of members 91, 94 and threadedly engage with the walls of the openings 94^b, 94^c of member 97 to provide for clamping said disks 89, 95 and members together whereby when an impulse is imparted to an assembly 88 from a member 79, they will bodily move together with shaft 85. The assemblies 88 bodily move in unison with shaft 85, but such movement is had when one assembly is shifted from a member 79. There is associated with the disk 95 an adjustable stop member 104 which correlates with the notches 98 to prevent back rotation of an assembly 88. The member 104 is formed with a nose 105 for selective engagement in the notches 98. The member 104 is slidably mounted in and adjustable relatively to a carrier 106 therefor. The carrier 106 is pivotally connected as at 107 to an arm 108 formed on the frame 65. The member 104 is slotted as at 109 and arranged in said slot is a binding screw 110 which connects to the carrier 106. The screw 110 functions to fix the member 104 in its adjusted position.

The time period disk 89 and stop disk 95 of one assembly are oppositely disposed with respect to the time period disk 89 and stop disk 95 of the other assembly. The notches 92 of a disk 89 are equally spaced to an extent to provide for the intermittent operation of a disk 89 at intervals of seconds of time. The number of notches will correspond to the number of seconds required to shift the disk to the extent desired on "stop" (red) or "go" (green) signal. The notches will be disposed on one-half of the circumference of the disk 89. The amount of movement of the shadow hand element 47 is governed by the time period disks. If it be a ten, fifteen, twenty, twenty-five or thirty seconds period, a time period disk is to be shifted, the corresponding number of equally spaced notches are arranged on half the circumference of its edge. The time period disks are so set on the shaft 85 that one shifting assembly 88 operates one-half the complete cycle of the "stop" (red) signal and the "go" (green) signal and the other shifting assembly operates on the other half of the complete cycle of said signals. One assembly 88 rides free of a member 79 while the other is being operated from its member 79. It is readily obvious how in a ten seconds period the shadow hand element will move further in one interval than in a thirty second period, so by noting the extent of movement to the shadow hand element the motorist detects the length of the period.

There will be employed a circuit opening and closing means for a pair of sets of lamps correlated with a pair of sets of signals, that is to say the sets of signals carried by opposite vertical walls of the housing 1, will each have correlated therewith a set of lamps and a circuit opening and closing means will be associated with such sets of lamps. The circuit opening and closing means 60 will include the necessary number of normally open contact devices 111 each consisting of a pair of lengthwise opposed strap-like members 112, 113 of conducting material provided with contact points 114, 115. The members 112, 113 are suspended from an insulated support 116. The latter is connected to the frame 65. The members 112, 113 are connected intermediate their ends to the support 116 therefor. One end of each of said members carries a binding screw 117 for connecting the circuit wires thereto. The contact points 114, 115 are arranged on the opposed faces of the members 112, 113 in proximity to the other ends of the latter. The members 112, 113 are resilient and normally have the contact points carried thereby in non-contacting relation. The member 113 on its outer face, and in alignment with the contact point 115, is formed with a nose 118, engageable by a means, to be referred to, for shifting member 113 in a direction relative to member 112 to provide for the engaging of the contact points 114 and 115 thereby closing the lighting circuit. The shaft 85 of the mechanism 59 is arranged below the supports 116.

The members 112, 113 preferably will be formed of bronze and the points 114 of tungsten. The support 116 will include "Bakelite" sections 116a between which the members 112, 113 are arranged and project from in opposite directions.

The operating means 62 of the circuit opening and controlling means 60 comprises a series of cams 119 fixed to and revoluble with the shaft 85. Each cam coacts with a contact device 111. The cams 119 are so arranged on the shaft 85 to provide for the cams operating their associated contact devices at the proper time. The cams 119 are so disposed whereby the higher part 120 thereof will ride against the noses 118 to provide for the closing of the contact devices 111. The high part 120 has a tapered leading edge and an abrupt following end edge. The latter provides for sudden opening of the circuit. The cams 119 preferably will be formed of "Bakelite".

The operating means 61 which is common to the shafts 44 includes a bevelled pinion 121 formed on one end of the shaft 85, a bevelled pinion 122 formed on the upper end of a vertical shaft 123 which depends from the casing 63 through the opening 16 in the top wall 14 of housing 1. The shaft 123 is a length to extend into a gear box 124 anchored within the housing 18 between the inner ends of the reflectors 18, 22, 26 and 29. The lower end of shaft 123 is provided with a bevelled pinion 125 which meshes with bevelled pinions 126 fixed on the inner ends of the shafts 44 which are extended into the gear box 124. As the pinion 121 meshes with the pinion 122, they will provide, when the shaft 85 is operated for the rotation of the shaft 123 and under such circumstances pinion 125 meshing with pinions 126 will rotate the shafts 44. The operation of the shafts 123 and 44 is an intermittent one and such operation is derived from the intermittent actuation of the shaft 85 due to the intermittent impulsing applied to the assemblies 88, from the alternate action of the members 79. On the intermittent operation of shafts 44, the indicating elements 47 will be intermittently revolved relative to the lenses 43.

The motor 57 is for transmitting power to the shaft 68 to provide for the latter to travel at 60 R. P. M. and on the operation of shaft 68 the assemblies 88 will be alternately intermittently driven. As the couplers 76 are adjustable, the duration of the extent of the intermittent movement imparted to the assemblies 88 may be varied. The assemblies 88 may be termed time period controlling structures and which transmit power for the purpose of operating the gears 126 within the box 124, and such power is distributed four ways to operate the indicating elements arranged relative to the four amber lenses in the complete light unit. The indicator elements may be termed shadow hands.

The operation of a complete unit is as follows: The amber lens through which shows the shadow hand is backed by the divided reflector having arranged therein the upper and lower lamps. The apparatus operates once per second hence the shadow hand does not move steady, but moves at given periods. The extent the shadow hand moves at each interval is governed by the length of the light period which, in turn, is controlled by the assemblies 88. The complete period that a "stop" signal is active corresponds to the upper one-half of the amber lens and the complete period that a "go" signal is active corresponds to the lower half of the amber lens. The light changes are as follows: When the indicating shadow hand aligns at point A, one second before the change from "stop" to "go" (red to green) the lower half of the amber lens is also illuminated. At point B the "stop" light (red) goes off and the "go" light (green) on. At point C the upper half of the amber lens goes dark repeating the semi-cycle on each half of the amber lens. This operation provides the following advantages: The intermittent movement of the shadow hand element is more readily noted by the eye than a steady movement; the complete

amber lens being illuminated for a period of two seconds shows the motorist at all times the position of the hand and is a positive indication when it first lights up that they have one second before stop and go lights (red and green) or go and stop lights (green and red) changes, making it unnecessary for anyone being caught in the intersections of streets leaving it open for immediate starting of traffic in opposite directions; the number of interval movements of the shadow hand element in the upper or lower half of the amber lens indicates the number of seconds of the light period consequently the motorist's eye readily catches the remaining time left on the go light (green) period as waiting time on the stop light (red) gives him the opportunity to stop safely on the go light (green) or be prepared to move at once on the expiration of the stop light (red) period.

The apparatus may be employed for fire alarm and ambulance signaling and for this purpose the apparatus may be wired to a suitable controlling means and operated from any desired points. Where lights are operated in groups or in single units there can be as many as desired controlled from one or more points. This feature consists in blocking out all but the red lights of the traffic signals in the chosen section and flashing all the red lights in this section at the rate of once per second, using, of course, the red of the regular traffic signal which will be controlled by the flasher element 130, Figure 3. The switch 130 will include a cam 131 of the same form as, but of less diameter than a cam 118 and a circuit opening and closing device 132 supported from the frame 65 and controlled by the cam 131 (Figure 5). The latter is mounted on and operated from shaft 68.

There may be employed in connection with the apparatus a master control synchronizing unit for insuring synchronism of lights within its control.

The structure shown by Figure 3 is a light control unit and with slight changes may be used as a master control when connected to the aforesaid structure at a circuit opening and closing means 133 to the unit. The means 133 forms an element of said structure and is operated from shaft 85.

The traffic signaling apparatus or system, in accordance with this invention is so designed as to be adaptable to conversion of traffic signals now in general use to this system, which includes time indicating, fire and ambulance signals and synchronizing control.

The traffic signaling apparatus or system, in accordance with this invention is so designed to illuminate the danger with color-blind drivers of vehicles as they can be governed by the upper half of the indicator correlating with red and the lower half of the indicator correlating with green.

The traffic signaling apparatus or system, in accordance with this invention provides a double protector for safety to wit:—If the red or the green light bulb burns out the upper or lower half of the amber lens will control to indicate the direction of flow of traffic until the bulbs are replaced, or if the amber indicator bulb burns out the red or green continues to direct traffic as in the present system.

Preferably each of the lenses 42 will be formed of what may be termed an outer portion and an inner portion. The said portions are integral with each other. The outer portion will be in the form of smoked glass and the inner portion of amber color. By this arrangement the shadow from the indicator will be at all times readily discernible through the illuminated part of the lens even though the lens be exposed to the sun rays.

What I claim is:

1. A time period indicating traffic signaling apparatus including an illuminable go traffic signal, an illuminable stop traffic signal, a safety signal, said safety signal including means for providing it with a pair of illuminable safety portions one correlating with the go and the other with the stop signal, an intermittently revoluble indicator common to and disposed rearwardly of said portions providing a shadow hand visible through an illuminated safety portion for indicating the duration of the time interval between a change from the stop to the go signal and from the go to the stop signal, and means operatively connected with said indicator and electrically connected to the go and stop signals and said safety portions for illuminating one of said safety portions during the travel of said indicator across the major part of the inner face of said one safety portion and to illuminate both of said safety portions simultaneously during the travel of said indicator over the remaining minor part of the inner face of said one safety portion and also during the travel of said indicator over a minor part of the inner face of said other safety portion, said means being so constructed and arranged to cut off illumination of said one safety portion when said indicator passes the said minor part of the inner face of the said other safety portion and to retain the illumination of the said other safety portion during the travel of said indicator across the remaining major part of the said other safety portion, said means being also so constructed and arranged that a traffic controlling signal will be illuminated during the travel of the indicator completely across the inner face of its correlated safety portion and that one traffic controlling signal is made ineffective and the other traffic controlling signal is made effective during the travel of the indicator completely across the inner face of the safety portion correlated with the said other traffic controlling signal.

2. In a time period indicating traffic signaling apparatus of that type having go and stop signals, said apparatus including a safety signaling means for selective correlation with said go and stop signals and formed of a concave reflector, a light transfusion lens of concavo-convexed contour secured across the open front of the deflector, a horizontally disposed flat opaque partition disposed within, having its side and rear edges secured against the reflecting surface of and extended forwardly from the reflector to position its outer edge in proximity to the inner face of the lens at the horizontal median of the latter to thereby divide the lens into upper and lower safety portions each for correlation with a signal, said lens in connection with the reflector and partition providing the reflector with upper and lower chambers each correlated with a safety portion, an intermittently revoluble indicator arranged between said outer edge of the partition and inner face of the lens for alternately correlating with said safety portions for indicating the duration of the period of alternate change between the signals, a normally inactive illuminable element for and within said upper chamber for illuminating when active the said upper safety portion, a normally inactive illuminable element for and within said lover chamber provided when

active for illuminating said lower safety portion, and means correlating with said indicator and said elements for intermittently revolving the indicator and making said elements alternately active on the alternate change of said signals.

3. In a time period indicating traffic signaling apparatus of that type having go and stop signals said apparatus including a safety signaling means for selective correlation with said go and stop signals and formed of a concave reflector, a light transfusion lens of concavo-convexed contour secured across the open front of the deflector, a horizontally disposed flat opaque partition disposed within, having its side and rear edges secured against the reflecting surface of and extended forwardly from the reflector to position its outer edge in proximity to the inner face of the lens at the horizontal median of the latter to thereby divide the lens into upper and lower safety portions each for correlation with a signal, said lens in connection with the reflector and partition providing the reflector with upper and lower chambers each correlated with a safety portion, an intermittently revoluble indicator arranged between said outer edge of the partition and inner face of the lens for alternately correlating with said safety portions for indicating the duration of the period of alternate change between the signals, a normally inactive illuminable element for and within said upper chamber for illuminating when active the said upper safety portion, a normally inactive illuminable element for and within said lower chamber provided when active for illuminating said lower safety portion, and means correlating with said indicator and said element for intermittently revolving the indicator and making said elements alternately active on the alternate change of said signals, said means having a part thereof supported by said partition connected to said indicator.

4. In a time period indicating traffic signaling apparatus of that type having go and stop signals said apparatus including a safety signaling means for selective correlation with said go and stop signals and formed of a concave reflector, a light transfusion lens of concavo-convexed contour secured across the open front of the deflector, a horizontally disposed flat opaque partition disposed within, having its side and rear edges secured against the reflecting surface of and extended forwardly from the reflector to position its outer edge in proximity to the inner face of the lens at the horizontal median of the latter to thereby divide the lens into upper and lower safety portions each for correlation with a signal, said lens in connection with the reflector and partition providing the reflector with upper and lower chambers each correlated with a safety portion, an intermittently revoluble indicator arranged between said outer edge of the partition and inner face of the lens for alternately correlating with said safety portions for indicating the duration of the period of alternate change between the signals, a normally inactive illuminable element for and within said upper chamber for illuminating when active the said upper safety portion, a normally inactive illuminable element for and within said lower chamber provided when active for illuminating said lower safety portion, and means correlating with said indicator and said element for intermittently revolving the indicator and making said elements alternately active on the alternate change of said signals, said means having a part thereof supported by said partition connected to said indicator and including a time assembly.

5. In a time period indicating traffic signaling apparatus of that type having go and stop signals said apparatus including a safety signaling means for selective correlation with said go and stop signals and formed of a concave reflector, a light transfusion lens of concavo-convexed contour secured across the open front of the deflector, a horizontally disposed flat opaque partition disposed within, having its side and rear edges secured against the reflecting surface of and extended forwardly from the reflector to position its outer edge in proximity to the inner face of the lens at the horizontal median of the latter to thereby divide the lens into upper and lower safety portions each for correlation with a signal, said lens in connection with the reflector and partition providing the reflector with upper and lower chambers each correlated with a safety portion, an intermittently revoluble indicator arranged between said outer edge of the partition and inner face of the lens for alternately correlating with said safety portions for indicating the duration of the period of alternate change between the signals, a normally inactive illuminable element for and within said upper chamber for illuminating when active the said upper safety portion, a normally inactive illuminable element for and within said lower chamber provided when active for illuminating said lower safety portion, and means correlated with said indicator and electrically connected to said elements for making said elements alternately active on the alternate change of said signals.

GEORGE A. WERLING.