May 12, 1931. R. J. LACKNER 1,805,406

TRAFFIC SIGNALING SYSTEM AND SIGNAL

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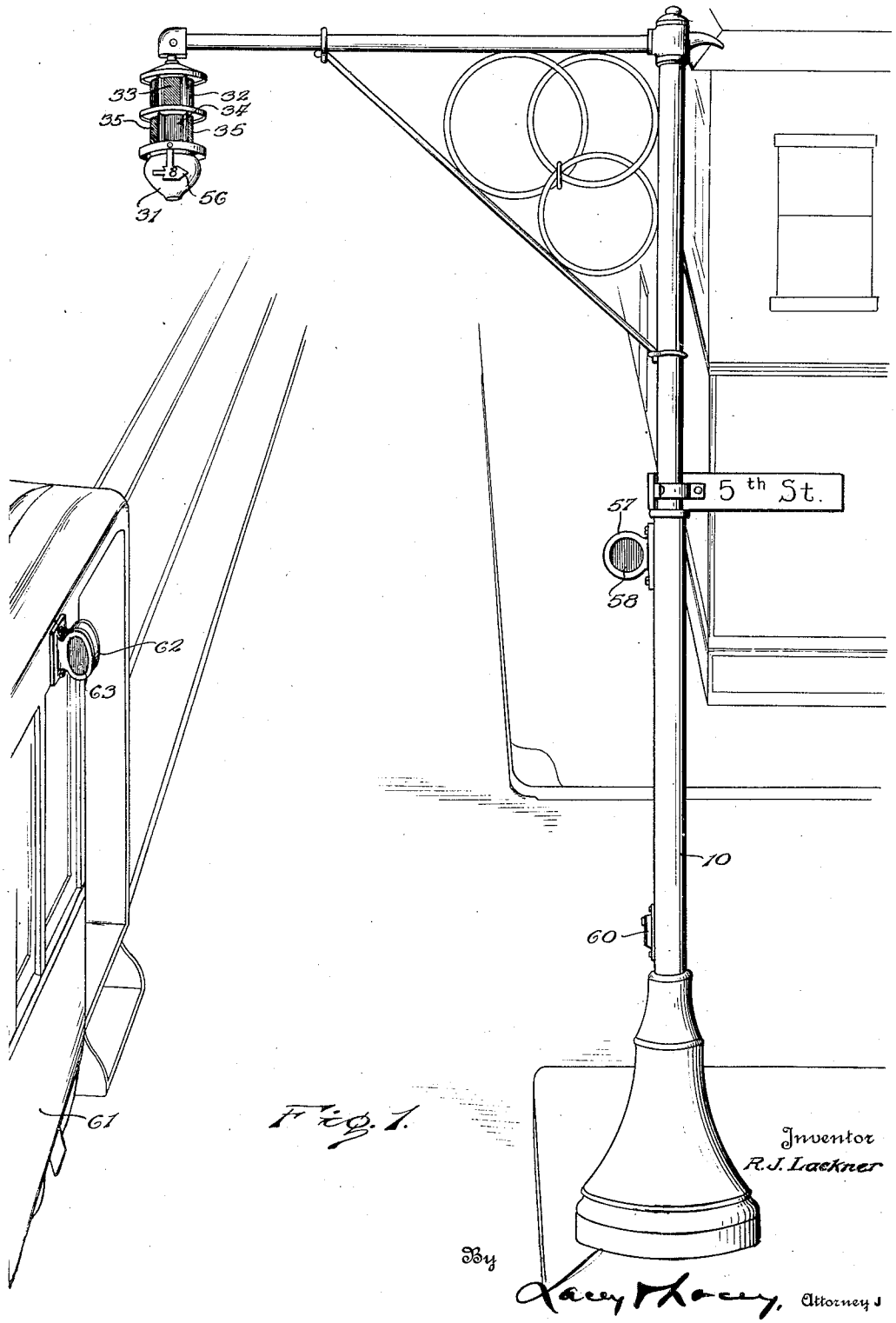


Fig. 1.

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Fig. 2.

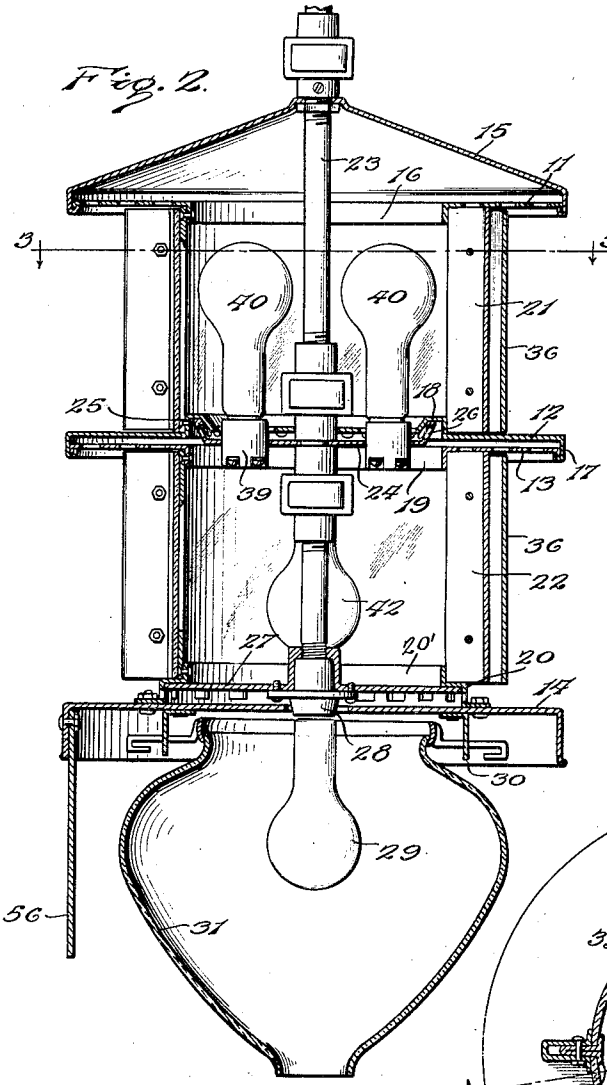


Fig. 6.

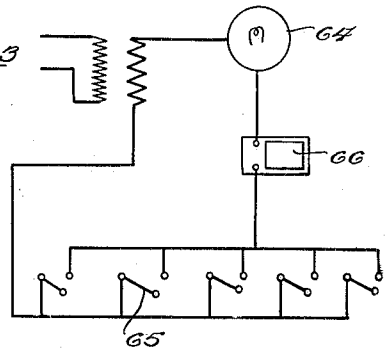


Fig. 3.

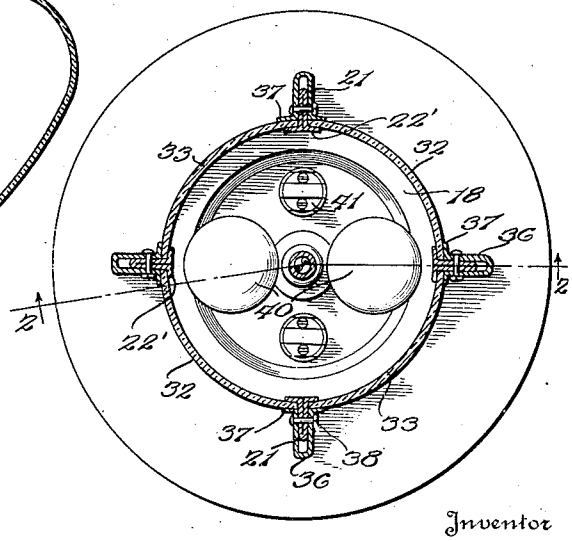
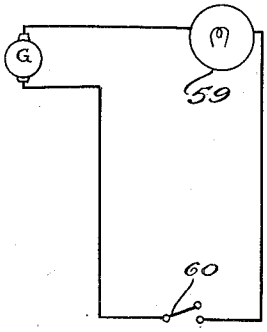


Fig. 5.



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Fig. 4.

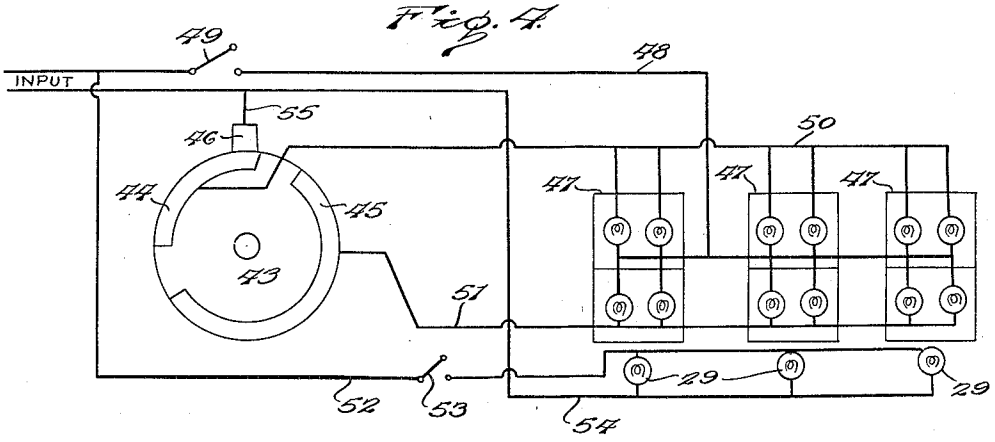


Fig. 12.

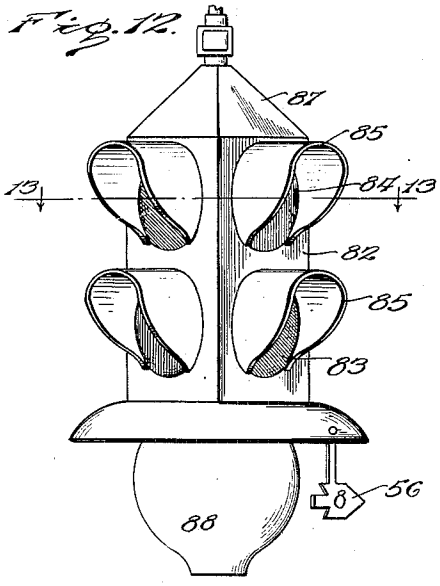


Fig. 10.

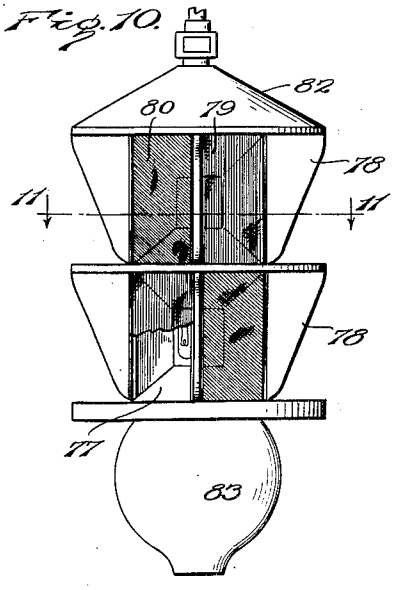


Fig. 11.

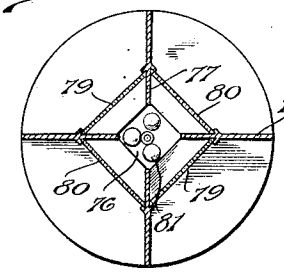
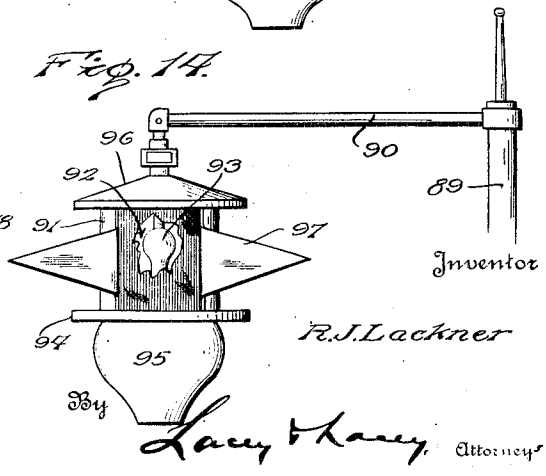


Fig. 14.



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Fig. 7.

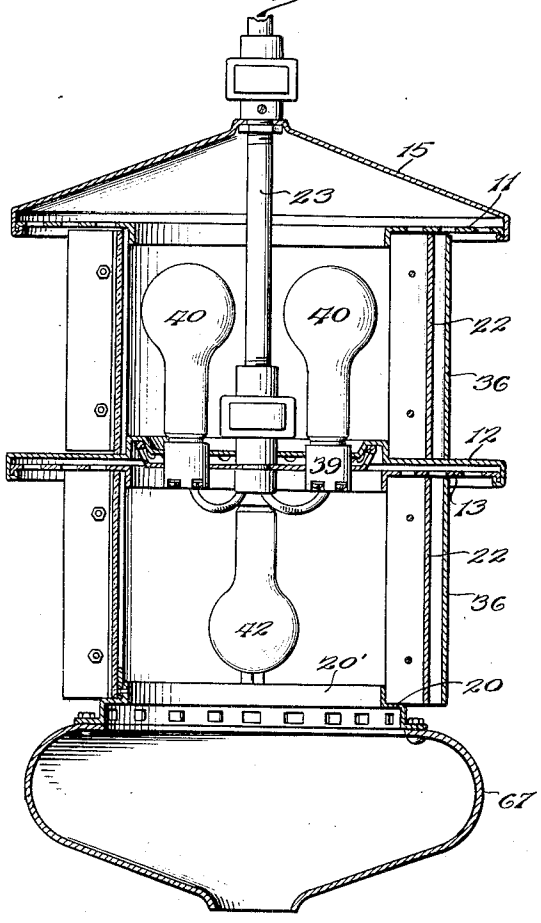


Fig. 8.

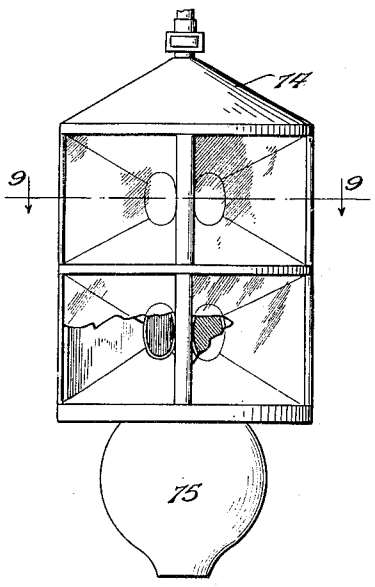


Fig. 9.

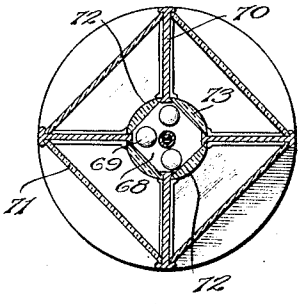
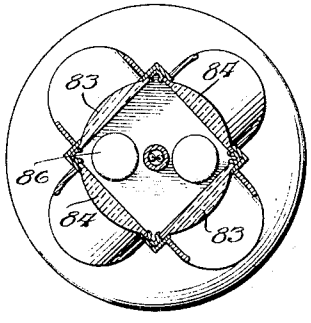


Fig. 13.



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Patented May 12, 1931 1,805,406

UNITED STATES PATENT OFFICE

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TRAFFIC SIGNALING SYSTEM AND SIGNAL

Application filed May 13, 1925. Serial No. 30,041.

This invention relates to a traffic signaling system and signal and seeks, among other objects, to provide a signaling system for the regulation of traffic at street intersections or the like and which will tend to reduce vehicular traffic accidents and prevent injury to pedestrians.

A further object of the invention is to provide a signal which may be operated to simultaneously display red signal lights to traffic moving on one street and green signal lights to traffic moving on an intersecting street and vice versa, and wherein the signal lights will be readily visible from practically any angle.

A further object is to provide a signal which may be combined with the usual street lighting fixtures of a city or town and swung from or otherwise attached to the lamp posts at the intersections of streets, thereby eliminating the necessity for separate pedestals for the signal.

Still another object of the invention is to provide a signal wherein a number of the signals along a street, for instance, may be connected with a single control switch so that all of said signals may be manually operated from a single point or, wherein, if preferred, the signals may all be connected with an automatic circuit closer timed to properly alternate the energization of the signal lights and so permit alteration in the movement of traffic at the street intersections.

Still another object of the invention is to provide a traffic signal which may be economically produced, which will be sturdy in construction as well as pleasing in appearance, and wherein the transparencies employed may be readily removed or replaced.

The invention seeks, as a further object, to provide, in conjunction with the traffic signal, a car flagging signal which may be used by any pedestrian desiring to stop and board a street car, and wherein the flagging signal will be visible to vehicular traffic so that such traffic may stop to permit the pedestrian to safely cross from the sidewalk to the street car.

And the invention seeks, as a still further object, to provide, in conjunction with the traffic signal, a stop signal on each street car, which stop signal will be energized when a passenger sounds the usual annunciator on the car for signaling the motorman to stop the car, so that vehicular traffic in the rear of the car will be signaled to stop, whereby the passenger, after alighting, may safely cross from the street car to the sidewalk.

Other and incidental objects will appear hereinafter.

In the accompanying drawings:

Figure 1 is a perspective view showing my improved traffic signal combined with a street lamp and mounted upon a conventional lamp post, this view also illustrating the car flagging signal employed as well as the car stop signal.

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

Figure 3 is a transverse sectional view on the line 3—3 of Figure 2, looking in the direction of the arrows, and particularly showing the mounting of the transparencies employed.

Figure 4 is a diagrammatic view showing the circuit connections of a plurality of the traffic signals.

Figure 5 is a diagrammatic view showing the circuit connections of the flagging signal.

Figure 6 is a diagrammatic view showing the circuit connections of the car stop signal.

Figure 7 is a vertical sectional view showing a slightly modified form of traffic signal.

Figure 8 is a side elevation showing a further modification.

Figure 9 is a transverse sectional view on the line 9—9 of Figure 8, looking in the direction of the arrows.

Figure 10 is a side elevation showing a further modification.

Figure 11 is a transverse sectional view on the line 11—11 of Figure 10, looking in the direction indicated by the arrows.

Figure 12 is a side elevation showing still another modification of the invention.

Figure 13 is a transverse sectional view on the line 13—13 of Figure 12, looking in the direction indicated by the arrows.

Figure 14 is an elevation showing a further modified structure.

Referring now more particularly to Figures 1, 2 and 3 of the drawings, I have shown my improved traffic signal suspended from a conventional lamp post 10 at intersecting streets. In the installation of the signal, separate or individual posts or pedestals may, however, be provided for the signal, but by combining the signal with a street lamp, the customary lamp posts, such as typically illustrated at 10, may be employed to support the signal, thus eliminating the expense of separate posts or pedestals for the signal.

As shown in Figure 2, the signal includes a casing comprising a flat top ring 11, mating flat center rings 12 and 13, and a flat bottom ring 14 of substantially uniform diameter. Surrounding the top ring is a conical roof 15 crimped to said top ring at its periphery, and formed on the top ring at its inner circumference is a depending flange 16. Formed on the center ring 12 at its outer periphery is a depending flange 17 crimped to the ring 13, and formed on the ring 12 at its inner circumference is a channel 18. Depending from the ring 13 at its inner circumference is a flange 19 and secured to the bottom ring 14 is a stepped ring 20 having an upstanding flange 20′ and provided with suitable ventilating openings. Extending between the rings 11 and 12 are quadrantly spaced vertical posts 21 abutting the flanges 16 and 18 of said rings, and extending between the rings 13 and 20 are alined posts 22 abutting the flanges 19 and 20 of the latter rings. The posts, like the rings, are formed of sheet metal doubled to produce overlapping thicknesses in turn bent to form lateral base flanges 22′ at the inner edges of the posts.

Extending through the apex of the roof 15 axially of the signal casing is a conduit 23 to which is fixed a plate 24 having an upturned flange 25 freely received by the channel 18 of the ring 12. The plate 24 thus forms a partition dividing the casing into upper and lower signal compartments and, as will be observed, the flange 25 of said plate is preferably provided with ventilating openings 26. Fixed to the lower end portion of the conduit 23 is a plate 27 which is snugly received within the ring 20 and provides a closure at the lower end of the casing. The conduit 23 is connected with the supporting arm of the post 10 in any approved manner, for securing the signal to said arm, and mounted at the lower end of said conduit is a lamp socket 28 mounting a lamp 29. This lamp is connected in the circuit of the lighting system of the city or town employing the signal and is intended to furnish street illumination. Fixed to the bottom plate 14 at its lower side are brackets 30 and removably supported by said brackets is a globe 31 for said lamp.

Closing the upper signal compartment of the casing is a pair of oppositely disposed red colored transparencies 32, and a pair of oppositely disposed green transparencies 33. These transparencies rest against the base flanges of the posts 21 and are curved transversely to impart a cylindrical shape to said compartment. The lower compartment is, as shown in Figure 1, closed by a like pair of red colored transparencies 34 disposed beneath the green transparencies of the upper compartment, and a like pair of green colored transparencies 35 disposed beneath the red transparencies of the upper compartment. Straddling the posts 21 are channel-shaped clamping members 36 having base flanges 37 overlying the vertical margins of said transparencies, and extending through the posts and through said members are bolts 38 securing the clamping members in position.

Mounted upon the plate 24 is a pair of appropriate lamp sockets 39, and removably fixed in said sockets are signal lamps 40 upstanding within the upper signal compartment. As brought out in Figure 3, the plate 24 also carries a second pair of suitable lamp sockets 41 which are presented downwardly, and removably fixed in these sockets are signal lamps 42 depending into the lower signal compartment. Pairs of lamps are employed so that should one lamp of either pair burn out, the other lamp will remain in service. Thus, when the lamps 40 are energized, the transparencies 32 of the upper signal compartment will display red signal lights to traffic moving along one street, for instance, while the transparencies 33 will display green signal lights to traffic moving along an intersecting street. Furthermore, as will be seen, when the lamps 42 are energized, the transparencies 34 of the lower signal compartment will display red signal lights to the traffic moving along the latter street mentioned while the transparencies 35 will display green signal lights to the traffic moving along the former street. Thus, by alternately energizing the pairs of lamps 40 and 42, the proper signals will be displayed for regulating or controlling traffic at the intersection of the streets so as to permit the traffic to move first along one street and then along the other.

In Figure 4 of the drawings, I have illustrated the manner in which a number of the signals may be electrically connected and operated by an automatic circuit closer. Any approved circuit closer may be employed and I have diagrammatically shown a contact wheel of such a circuit closer at 43. This wheel is provided with segmental short and long contacts 44 and 45 and mounted to cooperate with said contacts is a brush 46. Three of the signals are diagrammatically illustrated at 47 and electrically connected

with corresponding sides of all of the lamps of the signals is a feed wire 48 in which is interposed a suitable switch 49. Connecting the short contact 44 with opposite corresponding sides of the lamps of the upper signal compartments of the signals is a wire 50 and connecting the opposite corresponding sides of the lamps of the lower signal compartments with the contact 45 is a wire 51. Leading to the street lamps 29 of the signals is a feed wire 52 in which is interposed a switch 53 and connected to all of said lamps is a return wire 54 connected with the brush 46 by a wire 55. Thus, as will be seen, when the switch 49 is closed and the wheel 43 is turned, the brush will cooperate with the contact 44 for closing a circuit through the lamps of the upper signal compartments of all of the signals and will then cooperate with the contact 45 for closing a circuit through the lamps of the lower signal compartments of all of the signals. The length of the contacts 44 and 45 and the speed of rotation of the wheel 43, will, of course, determine the relative length of time the lamps of the upper and lower signal compartments are illuminated while the length of the spaces between the ends of the contacts will determine the length of time the signal lamps are extinguished. By making one of the contacts of the wheel longer than the other, as shown, traffic may be allowed to move along one street, for instance, a greater length of time than along intersecting streets. Accordingly, as will be seen, the contact wheels of the circuit closer may be designed so that the circuit closer will control the signals, as may be desired, to regulate traffic under given conditions. If preferred, an appropriate switch may be substituted in lieu of the automatic circuit closer so that the several signals may be manually controlled and, preferably, the street lamps 29 of the signals are connected in a separate circuit, as shown, so that said lamps may be controlled independently of the signal lamps.

In conjunction with the signal, I also provide a direction indicator 56. This indicator may be of sheet metal and is fixed to the peripheral flange of the bottom ring 14 of the signal casing to depend from said flange at one side of the globe 31. Accordingly, said indicator will be readily visible and may be in the shape of an arrow, as shown, or other approved shape, for indicating a given direction. Furthermore, the indicators may bear a key number so that a tourist, by observing the key numbers, may pursue a given route.

I also provide in conjunction with the traffic signal, a car flagging signal which is disposed at street intersections and may, as suggested in Figure 1, be mounted upon the usual lamp posts 10. This flagging signal includes a casing 57 which is bolted or otherwise secured to the post and is closed by red colored transparencies 58. Arranged within the casing is, as diagrammatically shown in Figure 5, a signal lamp 59 and mounted upon the post, within reach of pedestrians, is an appropriate switch 60. Thus, pedestrians wishing to board a car, may close the switch 60, when the lamp 59 will be energized so that the signal will display a red signal light. A pedestrian may thus signal a car without the necessity of leaving the sidewalk while the signal light will also be visible to vehicular traffic in the rear of the car. The vehicular traffic will thus also be brought to a standstill so that the pedestrian may safely cross from the sidewalk to the car.

I further provide, in conjunction with the traffic signal, a stop signal for each car. In Figure 1, I have conventionally shown a street car at 61. The stop signal is mounted exteriorly of the car near the rear end thereof and includes a casing 62 bolted or otherwise secured to the car. Closing the casing are transparencies 63 and mounted within the casing is, as diagrammatically shown in Figure 6, a lamp 64. The button switches of the usual annunciator signal of the car are indicated at 65 while the annunciator is indicated at 66, and, as will be observed, the annunciator and lamp 64 are connected in circuit with said switches. Accordingly, when a passenger closes any one of the switches to sound the annunciator for signaling the operator of the car to stop the car, the lamp 64 will be energized for displaying a red signal light at the rear of the car externally thereof. Thus, vehicular traffic traveling on the street in a direction with the car, will be signaled to stop, so that such traffic will be brought to a standstill with the car, whereby the passenger alighting from the car may safely cross from the car to the sidewalk.

In Figure 7 of the drawings, I have illustrated a slightly modified form of traffic signal which is designed for use independently of any street lighting system. The modified structure is identical with the structure shown in detail in Figures 2 and 3 of the drawings, with the exception that the socket 28 and lamp 29 are omitted as is also the plate 27. The bottom ring 14, globe 31, and associated parts, are also omitted and in lieu of the globe 1 employ an ornamental metallic bottom globe 67 which is bolted or otherwise fixed to the bottom flange of the ring 20.

In Figures 8 and 9 of the drawings, I have illustrated a further modified form of traffic signal having upper and lower signal compartments 68 in each of which are arranged signal lamps 69, and radiating from each of said compartments is a set of frusto pyram-

idal reflectors 70 closed at their outer ends by clear transparencies 71. Mounted at the inner ends of one pair of reflectors of each set are red colored lenses 72 and mounted at the inner ends of the other pair of reflectors of each set are green colored lenses 73. The red lenses of the lower compartment are arranged beneath the green lenses of the upper compartment while the green lenses of the lower compartment are arranged beneath the red lenses of the upper compartment. Thus, as will be seen, the signal may be operated in the manner previously described in connection with the preferred embodiment of the invention, for controlling traffic at intersecting streets. At the upper end of the signal is a roof 74 while at the lower end of the signal is a globe 75 in which, if desired, may be mounted a street lamp, or said globe may be omitted and a globe like the globe 67 used.

In Figures 10 and 11 of the drawings, I have illustrated a further modified form of the invention wherein the signal is provided with upper and lower signal compartments 76 and sets of reflectors 77, as in the prior modification, but said reflectors are shorter while the side walls of the reflectors are continued to form wings 78. Closing one pair of reflectors of each set is a pair of red colored transparencies 79 and closing the other pair of reflectors of each set is a pair of green colored transparencies 80. The transparencies of the lower set are staggered with respect to the transparencies of the upper set and mounted in each of the compartments 76 is a plurality of signal lamps 81 so that the signal may be operated in the same manner as the preferred embodiment of the invention. At the upper end of the signal is a roof 82 while at the lower end of the signal is a globe 83 in which may be mounted a street lamp, or, if preferred, a globe like the globe 67 may be employed.

In Figures 12 and 13 of the drawings, I have illustrated still another modification of the invention wherein the signal is formed with a rectangular sheet metal casing 82 divided into upper and lower signal compartments, and mounted in the side walls of the casing at each of said compartments is a pair of red colored lenses 83 and a pair of green colored lenses 84. Overhanging said lenses are hoods 85 and, of course, the lenses of the lower compartment are staggered with respect to the lenses of the upper compartment. Mounted in each of the signal compartments are signal lamps 86 so that, as will be understood, this modified form of signal may be operated in the same manner as the preferred construction. The signal casing is provided at its upper end with a roof 87 while at the lower end of the casing is mounted a globe 88 in which may be mounted a street lamp, or, if preferred, a globe like the globe 67 may be employed. As will be observed, Figure 12 shows the direction indicator 56 and, in this connection, it may be noted that the said direction indicator may be employed in connection with any of the various embodiments of the invention.

In Figure 14, I have illustrated a further modification particularly designed for use as an end-of-street signal. A post 89 having an arm 90 is employed. The signal is suitably connected to said arm and includes a preferably cylindrical metal casing 91 providing a signal compartment 92 in which is mounted a lamp 93. At the lower end of the casing is a plate 94 mounting a globe 95, while at the upper end of the casing is a roof 96, and projecting from the casing are triangular-shaped pointers 97. If preferred, a single pointer may be employed and mounted at the forward side of the casing is a red colored transparency 98. Thus, when the lamp 93 is energized, a red colored signal light will be displayed while the pointers 97 will indicate the direction in which the traffic must turn.

Having thus described the invention, what I claim is:

In a traffic signal, a casing, a post extending vertically in said casing and constituting a conduit for conductor wires, said casing being divided into upper and lower compartments and consisting of a hood secured to said post and projecting radially therefrom, a head for the upper compartment disposed about said post in spaced relation thereto and having its outer marginal portion joined to said hood and its inner marginal portion formed with a depending flange, a bottom for the upper chamber fitting about said post and formed with an annular shoulder spaced from its outer margin, a disk secured about said post and supporting said bottom, a head for the lower compartment disposed about the post in spaced relation thereto and having its outer marginal portion secured to the bottom of the upper chamber and its inner marginal portion formed with a depending flange spaced about said disk, a bottom for the lower compartment carried by said post and having an upstanding annular flange, lamp sockets extending through openings in the disk and bottom of the upper compartment to support bulbs in the compartments, transparent wall sections for the compartments bearing against the flanges and shoulder, and securing means for the wall sections between adjacent side edges thereof.

In testimony whereof I affix my signature.

ROLPH J. LACKNER.