Jan. 13, 1953 R. F. BROUSSARD ET AL 2,625,598

TRAFFIC SIGNAL

Filed Jan. 27, 1949 3 Sheets-Sheet 1

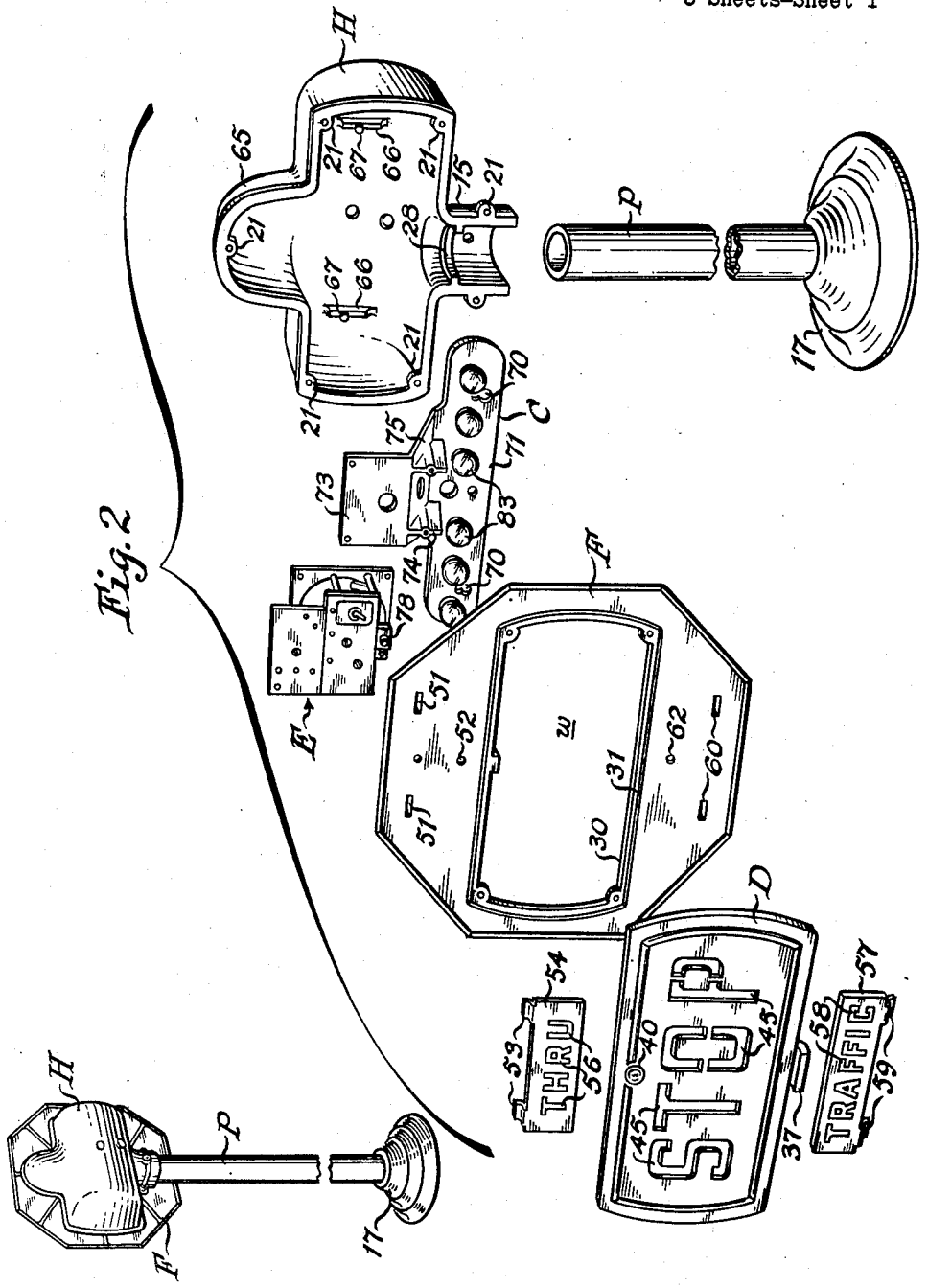


Fig. 2

Fig. 1

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Jan. 13, 1953 R. F. BROUSSARD ET AL 2,625,598

TRAFFIC SIGNAL

Filed Jan. 27, 1949 3 Sheets-Sheet 2

Fig. 3

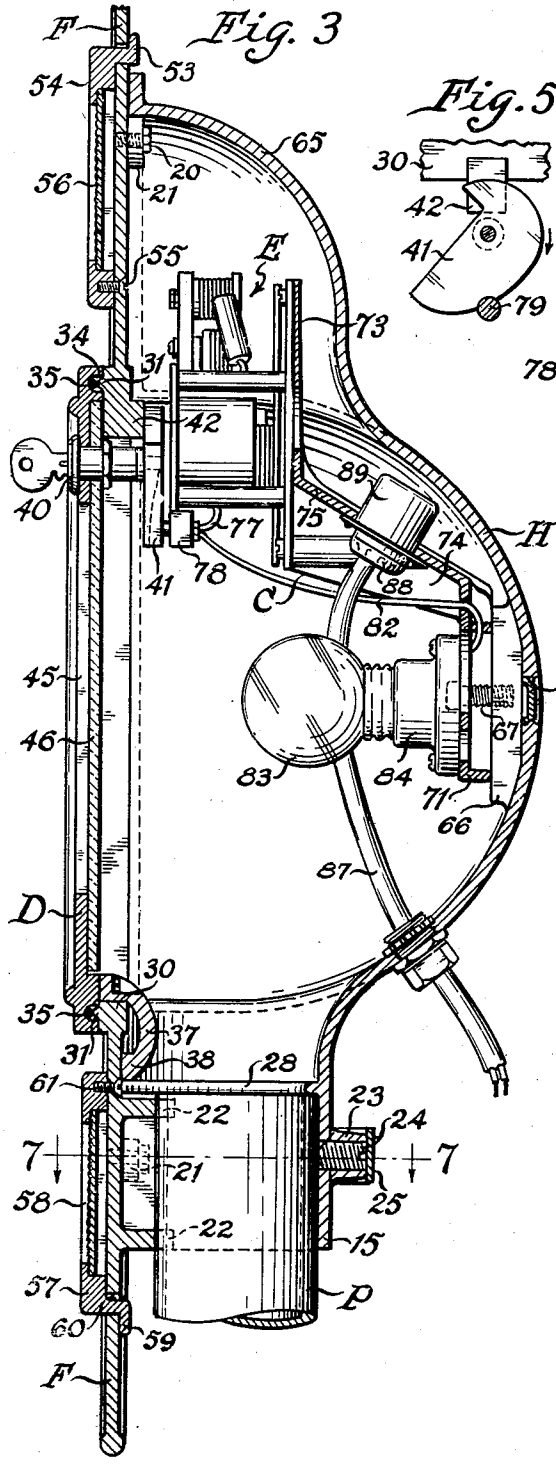


Fig. 4

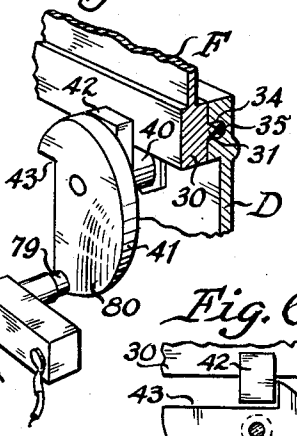


Fig. 5

Fig. 6

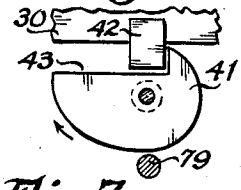


Fig. 7

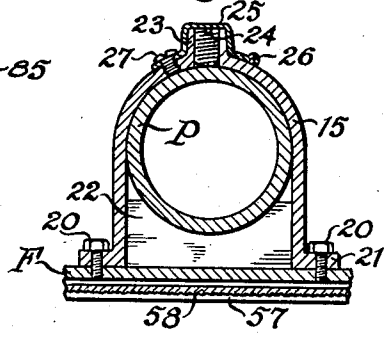
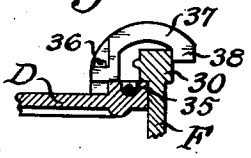


Fig. 8



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Jan. 13, 1953 R. F. BROUSSARD ET AL 2,625,598

TRAFFIC SIGNAL

Filed Jan. 27, 1949 3 Sheets-Sheet 3

Fig. 9

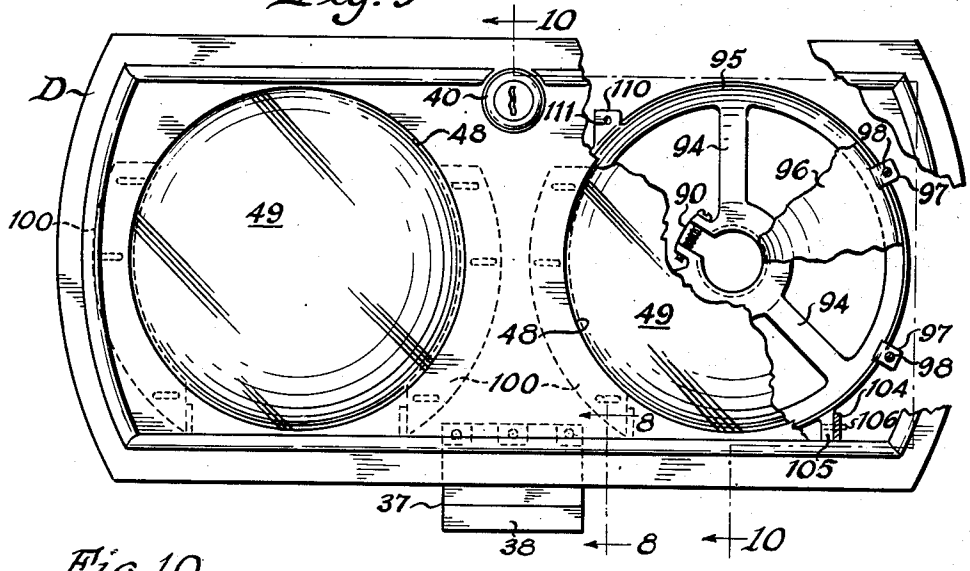


Fig. 10

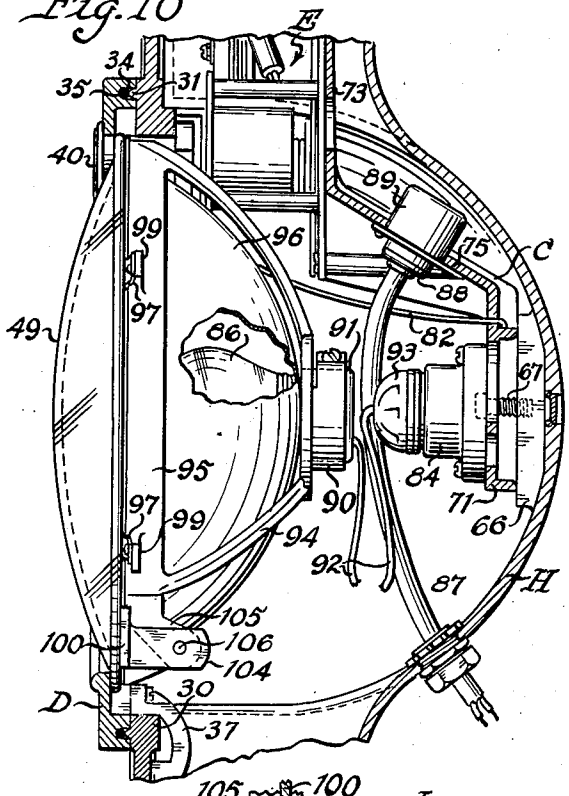


Fig. 11

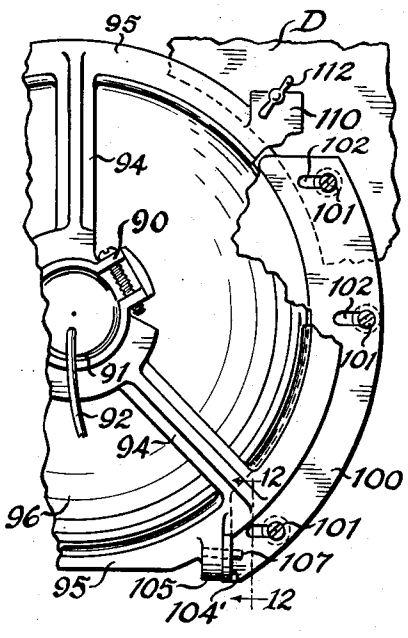
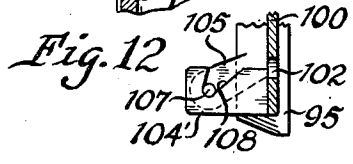


Fig. 12



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UNITED STATES PATENT OFFICE

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TRAFFIC SIGNAL

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Houston, Tex.

Application January 27, 1949, Serial No. 73,114

9 Claims. (Cl. 177—329)

1

This invention relates to an illuminated signal of the kind which is commonly used for the control of vehicular traffic. It has been designed particularly for installation at the intersection of busy streets or highways, in cities, towns or the open country.

In connection with the present traffic signal, it is a primary object of our invention to provide a weathertight housing which may be readily opened up by an authorized person for servicing of the mechanism therewithin. A control mechanism, such as a flasher unit, is carried upon a chassis which is removably supported in place so as to be readily removable from the housing. This operation is so simple and speedy as to facilitate the substitution of a new chassis whose parts are in proper working condition, for one which may need only minor servicing or repair. Such attention can better be given at a shop or repair station where a number of extra control units may conveniently be kept on hand always available for replacement use whenever necessary.

The traffic signal of our invention also embodies certain improved features with respect to the display face of the housing. This comprises a single movable part, viz. a windowed door which is normally secured in a fixed position with the aid of a key-operated lock. When the door is to be opened, it may either be swung to a down position of rest or be removed entirely from the housing, as preferred. The hinge connection for this purpose is one which is also separable at will.

As a further feature of improvement, we have incorporated with the key-operated lock for the door a cam which operates a switch in the circuit which energizes the control unit. This switch is automatically opened to break the circuit whenever the lock is key-operated preliminary to gaining access to the housing interior; by the same token the switch is closed automatically to restore the circuit connection to the control unit whenever the lock is again key-operated to secure the door in its fixed position.

These novel features of construction, as well as others which conduce to simplicity and dependability of the parts, are incorporated into the present traffic signal of which a preferred embodiment is illustrated in the accompanying drawings, wherein:

Figure 1 is a small scale perspective view of our traffic signal in its entirety, looking toward its rear side;

Fig. 2 is a larger scale perspective view of the

2

traffic signal, looking toward the front and exploded so as to exhibit in separated relation the main units which are comprised in its construction;

Fig. 3 is a central vertical section through the housing and chassis therewithin whereon is mounted the signal control mechanism;

Fig. 4 is a rear view in perspective, showing the cam associated with the door lock and the switch which is automatically operated thereby;

Fig. 5 is a rear elevational view of the switch cam advanced to a second position;

Fig. 6 which is a similar view shows the switch cam advanced to a third position;

Fig. 7 is a transverse section through the base of the housing, taken on line 7—7 of Fig. 3;

Fig. 8 is a detail in vertical section, taken on line 8—8 of Fig. 9;

Fig. 9 is a front elevation of the door partly broken away to exhibit a modification in which a pair of lamps are carried by the door, rather than by the chassis which is mounted within the housing;

Fig. 10 is a fragmentary detail in section, taken on line 10—10 of Fig. 9;

Fig. 11 is a fragmentary front elevational view of the traffic signal shown in Fig. 10; and

Fig. 12 is a fragmentary detail in section, taken on line 12—12 of Fig. 11.

The present traffic signal is enclosed within a housing H which is open upon its front in a vertical plane. Depending from the housing is a semi-circular base wall 15 for reception of the upper end of a supporting post P which rises from a base 17 or other suitable anchorage. A frame plate F of distinctive contour, here shown as an octagon, is fitted over the open front of the housing to which it is secured as by screws 20 which pass through ears 21 which are flush with the front face of the housing (see Figs. 2 and 7). The frame plate extends across the space defined by the semi-circular wall 15, and carries a pair of horizontal ribs 22 having arcuate rear edges conforming with the post P. A boss 23 extending rearwardly from the wall 15 is provided therethrough with a tapped hole for receiving a set screw 24 which, when advanced against the post, will provide a lock whereby to secure the head H fixedly thereto. A band 25 hinged at 26 to the wall 15 is adapted to be swung to a covering position relative to the exposed end of the set screw whereby to prevent operation thereof except when the band is first moved out of the way. The free end of the band may be held fast to the wall 15 as by means of a screw

27, padlock or other securing device. A semi-circular rib 28 extending inwardly of the wall 15 provides a shoulder to receive the upthrust from the top of the post P when the housing is mounted thereon.

The frame plate F of Figs. 2 and 3 is provided centrally with a large rectangular window *w* bordered by a thickened wall 30 which carries a continuously extending bead 31 upon its front face. A door D of proper size and shape to fit over the window opening of the frame and provide a closure therefor is provided near its periphery with a rearwardly facing, continuously extending, channel 34 adapted to receive the bead 31 and with the aid of a gasket 35 placed therebetween to establish a weather-tight connection therewith.

Bolted as at 36 or otherwise secured to the rear face of the door D near its bottom is a depending hook plate 37 terminating in a forwardly facing head 38 which abuts the frame plate F at a point below its adjacent border wall 30 (see Fig. 3). This constitutes, in effect, a separable hinge connection for the door at its bottom (see also Fig. 8 in this connection). Near its top the door mounts a key-operated lock 40 having the usual rotatable barrel to which is affixed a locking plate 41 (see Figs. 3–6). In one rotative position of the lock one end of the locking plate stands inside and opposite a lug 42 which depends from the adjacent border wall 30 (see Fig. 4) thereby securing the door to the frame plate F in substantially coplanar relation therewith. An elongated notch 43 formed in the locking plate provides clearance for the lug 42 when the lock 40 is turned 90° to advance the locking plate a like distance (see Fig. 6). In this position the top edge of the door is freed, permitting it to be swung outwardly through 90° until the head 38 of its hook plate abuts the border wall 30 of the frame plate F (see Fig. 8). At this point its motion is arrested and the door D will remain in a substantially horizontal position to afford access through the frame plate F into the interior of the housing H. When in this position the door may optionally be manipulated to effect its separation from the frame plate F preliminary to its bodily removal therefrom.

In the form shown in Figs. 2 and 3 the door serves as a display plate, and for this purpose is windowed to exhibit certain letters 45, such as "Stop." A transparent or translucent panel 46 is carried fixedly upon the rear face of the display plate to bar the weather from reaching the interior of the housing. A different arrangement is shown in Figs. 9–11 where the windowed door is provided with two large circular openings 48 each fitted upon the rear side with a weather-resisting outwardly convex lens 49, desirably of some attention-arresting color such as red, and supported in place by means hereinafter described.

Referring to Fig. 2, the frame plate F, above its central opening, is provided with a pair of aligned slots 51 and therebetween at a lower elevation with a hole 52. A pair of inwardly offset lugs 53 upstanding from a sign plate 54 is adapted to enter the slots 51 to interlock therewith. When so positioned a screw 55 is passed through the hole 52 from the rear side of the frame plate to engage with a tapped hole in the sign plate 54 near its lower margin. By some such means as this the sign plate is secured fixedly in place so as to exhibit prominently therethrough (or thereupon) any desired letters 56, such as "Thru," produced of reflecting material or otherwise. A second sign plate 57, here shown as exhibiting letters 58 which may spell "Traffic," is also carried by the frame plate F in the space below its window opening (see Fig. 2). A pair of inwardly-offset lugs 59 depending from the sign plate 57 are adapted to enter a pair of aligned slots 60 formed in the frame plate to interlock therewith, and a screw 61 passed through a hole 62 in the frame plate from the inside thereof engages with a tapped hole in the sign plate 57 near its top margin to complete the affixation of the sign plate to the frame plate.

The description up to this point has been concerned entirely with the housing which constitutes the head for the present signal. The housing itself, as well as the frame plate F and the door and sign plates carried thereby, are of sturdy construction, produced desirably by casting operations from a suitable metal or plastic. These several parts are releasably secured together in weather-tight relation by concealed screw means operable from within the housing to which access may be gained only by first opening the door with the aid of the proper key.

Referring again to Figs. 2 and 3, the housing upstands at its center in the form of a dome 65 which is rounded to the rear of its vertical front face. This dome merges with a horizontally elongated chamber wherein is a pair of forwardly-extending spaced chocks 66, one toward each end of the housing. Each chock mounts a forwardly-extending headed pin 67 adapted to enter the lower end of a key-hole slot 70 that is formed in a mounting plate 71 constituting part of a chassis C. By the means described, the mounting plate is adapted for releasable engagement with the two pins 67 to be supported thereby upon the two chocks 66 in a fixed position within the housing.

The chassis comprises also a head plate 73 supported upon a pair of spaced vertical walls 74 which are forwardly extended from the mounting plate 71 to which they join at its top together with an offsetting wall 75 which extends forwardly and upwardly from the mounting plate. Upon the forward face of the head plate is secured an approved control unit E comprising such parts as a flasher, motor coils, condensers, switches, etc., in circuit connection by means of a wire 77 with a normally-open switch 78. The switch is operable by a button 79 that is spring-urged to an outer position of engagement with the cam face 80 of the locking plate 41 (see Fig. 4). When the door is locked to the frame plate F, the position of the locking plate 41 is such that the cam face 80 forces the button inwardly to maintain the switch closed; whenever the lock 40 is operated to free the door for movement away from or off of the frame plate F, then the cam face 80 recedes from the button which thereupon advances outwardly to open the switch (see Fig. 3). This arrangement makes certain that the electrical circuit to the control unit within the housing will automatically be broken whenever the display plate is conditioned for removal therefrom; and that the circuit will automatically be restored whenever the door is again locked in its closed position thereupon.

The switch 78 is an electrical connection by a wire 82 with a plurality of lamps 83 carried in sockets 84 which are arranged in a row upon the mounting plate 71. These lamps are positioned directly to the rear of the transparent or

translucent panel 46 of the door so that, when energized, the light rays emanating from the lamps 83 will be clearly visible from the outside. A translucent jewel 85 in the rear wall of the housing will also be illuminated whenever any of the lamps 83 are energized. By appropriate means (not shown) the control unit will make and break the circuit to the lamps, or to a selected group thereof, in a predetermined time relation. The visual display thus produced may be that of recurrent alternate flashings of the lamps or of selected groups thereof whereby to compel the attention of all approaching persons. A similar circuit arrangement may be provided for the two lamps 86 which are used in the arrangement of Figs. 9–11, one to the rear of each lens 49. In such an installation the lights will flash alternately through the two lenses so that while one is illuminated the other is dark.

Electrical energy is conducted to the housing H through an insulated cord 87 in connection with a plug 88 which is removably fitted to an outlet box 89 from which other electrical connections (not shown) continue on to the control unit E. This box is carried upon the chassis C, so that whenever the latter is to be removed for inspection, repair or replacemen, it is necessary only to pull out the plug 88 to free the chassis for removal off of the supporting pins 67.

Referring now to Figs. 9–12, each lamp 86 is fitted into a socket 91 in electrical connection, as by wires 92, with a plug 93 which is operatively fitted into a selected socket 84 in circuit with the control unit E (see Fig. 3). Each socket 91 is secured in a clamping collar 90 forming part of a reflector frame which comprises arms 94 radiating outwardly to connect with a ring 95 which provides a seat for the periphery of a reflector shell 96. Extended outwardly from this shell is a plurality of tabs 97 through each of which is entered a screw 98 which engages with a tapped hole in an ear 99 that is carried by the frame ring 95.

Two confronting arcuate brackets 100, adjustable toward and from each other, are mounted on the door D to which are anchored screws 101 passing through plural sets of horizontal slots 102 in the brackets. Such a mounting provides for fixed securement of either bracket in any adjusted position. These brackets are adapted to engage and support between them the lens 49.

The lower ends of the arcuate brackets are provided with rearwardly extending lugs 104 104', each adjacent and to the outside (or inside) of a lug 105 which is extended rearwardly from the ring 95 of the reflector shell frame. A pivot pin 106 which is anchored in one ring lug 105 projects laterally therefrom into a registering hole in the ear 104 of one of the brackets 100 for a loose fit therewithin; a second pivot pin 107 which is anchored in the other ring lug 105 extends into an open slot 108 in the other bracket ear 104' (see Fig. 12). The edges of the ear 104' which define this slot are diverged upwardly and forwardly whereby to permit lateral rocking of the supported reflector shell frame to the point of disengaging the pivot pin 107 from the slot 108 preliminary to a lateral shifting of the frame with consequent disengagement of the other pivot pin 106 from its supporting hole in the ear 104, thereby freeing the frame, together with the reflector shell 96 supported thereby, for separation from the door D. Near the top of each frame ring 95 is a laterally extended lug 110 having therethrough a hole 111 for reception of a stud bolt which may be anchored in the door D to receive thereon a wing nut 112 which, when advanced, will fixedly secure the reflector frame fixedly in position.

In the construction just described, the door D is hingedly carried by the frame plate F, the same as shown in Figs. 1–8. Each lens 49 is removably supported in a fixed position against the inner face of the door by the clamping brackets 100 which may be adjusted to free the lens or lock it in place; these brackets also carry means whereby to support the lamp frame rearwardly of the lens. The lamp frame, together with the reflector shell carried thereby, is swingable inwardly and also separable from the door whenever the latter has been opened out to afford access to the housing interior. It will be noted that the door furnishes a common support for the lens brackets and for the lamp frame, that either the lens or the lamp frame may be removed from the door without disturbing the other, and that the lamp frame may also be swung inwardly away from the door while maintaining its hinged connection therewith and without affecting the lens. It is not possible to initiate or execute any of these movements, however, so long as the door remains closed, consequently the single key-operated lock 40 affords a comprehensive protection to all parts interiorly of the housing.

To remove the lamp frame completely the plug 93 is disconnected from its socket 84, and to condition the chassis for removal from the housing the plug 88 is pulled out of the box 89, all as hereinbefore described. Adjustments, repairs or replacements are accordingly facilitated and simplified by reason of the novel structural features which characterize our present traffic sign which may be depended upon to perform satisfactorily over a prolonged period of service.

We claim:

1. A traffic signal comprising a housing open upon its forward face, a windowed door removably affixed to the housing over the open face thereof, a chassis located at the rear wall of the housing, and signal mechanism within the housing carried by the chassis and comprising an electric lamp opposite the door in position for illumination therethrough and, in electrical connection therewith, control means therefor mounted on the chassis and controlling the lighting of the electric lamp, coacting means on the chassis and housing providing for the chassis a fixed support from which it is demountable, a conductor leading from a source of electrical energy to a point within the housing, and coacting separable fittings, one in connection with the conductor and the other with the control means for the electric lamp, and disconnectible from within the housing whereby to free the chassis for removal therefrom when demounted from its support.

2. A traffic signal according to claim 1 in which the fixed support for the chassis is one whereon the chassis is gravity-seated in an upright position and from which it may be demounted by an upward movement.

3. A traffic signal according to claim 1 in which the coacting separable fittings consist of an outlet box mounted on the chassis and in electrical connection with the control means for controlling the lighting of the electric lamp, and a pull-out plug engageable with the box and disengageable therefrom and in connection with the conductor.

4. A traffic signal comprising a housing open

upon its forward face, a windowed door movably affixed to the housing to provide a closure for the open face thereof, and signal mechanism within the housing comprising a lamp opposite the door in position for illumination therethrough and, in electrical connection therewith, control means therefor for controlling the lighting of the lamp, a chassis demountably positioned within the housing at the rear wall thereof and providing a common mounting for the lamp and the control means therefor, means for securing the chassis in a fixed position within the housing, and a conductor leading from the control means to a source of electrical energy.

5. A traffic signal according to claim 4 in which key-operated locking means is provided to releasably secure the door in closure position, the locking means comprising a bolt which is movable in response to operation of the key, in which a switch is placed in the electrical circuit within the housing, and in which coacting means on the bolt and switch is provided to operate the latter to open position with each operation of the locking means whereby to assure a breaking of the circuit preliminary to freeing of the door for movement relative to the housing.

6. A traffic signal comprising a housing open upon its forward face and formed with a dome extending rearwardly and upwardly thereof in communication with a horizontally elongated main chamber within the housing, a windowed door movably affixed to the housing to provide a closure for the open face thereof, and signal mechanism within the housing comprising a horizontal row of lamps opposite the door in position for illumination therethrough and, in electrical connection therewith, control means therefor in an elevated position within the dome for controlling the lighting of the lamps, a chassis extended lengthwise of the housing main chamber and upwardly into the dome and providing a common mounting for the row of lamps and the control means therefor, means for securing the chassis in a fixed position within the housing at the rear wall thereof, and a conductor leading from the control means to a source of electrical energy.

7. A traffic signal according to claim 6 in which key-operated locking means is provided

to releasably secure the door in closure position, the locking means comprising a bolt which is movable in response to operation of the key, in which a switch is placed in the electrical circuit within the housing, and in which coacting means on the bolt and switch is provided to operate the latter to open position with each operation of the locking means whereby to assure a breaking of the circuit preliminary to freeing of the door for movement relative to the housing.

8. A traffic signal comprising a housing open upon its forward face, a windowed door movably affixed to the housing to provide a closure for the open face thereof, coacting means for releasably securing the door to the housing comprising a key-operated lock mounted on the one part having a bolt movable into and out of locking engagement with the other part, and signal mechanism mounted within the housing comprising a lamp opposite the door in position for illumination therethrough, control means in electrical connection with the lamp and with a source of electrical energy for controlling the lighting of the lamp, a switch in circuit with the electrical connection within the housing, and coacting means on the locking bolt and switch for operating the latter to open position with each operation of the lock to a like position.

9. A traffic signal according to claim 8 in which the switch is spring-actuated to a normally open position and in which it is operated to its closed position by movement transmitted thereto from the locking bolt when operated to closed position.

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