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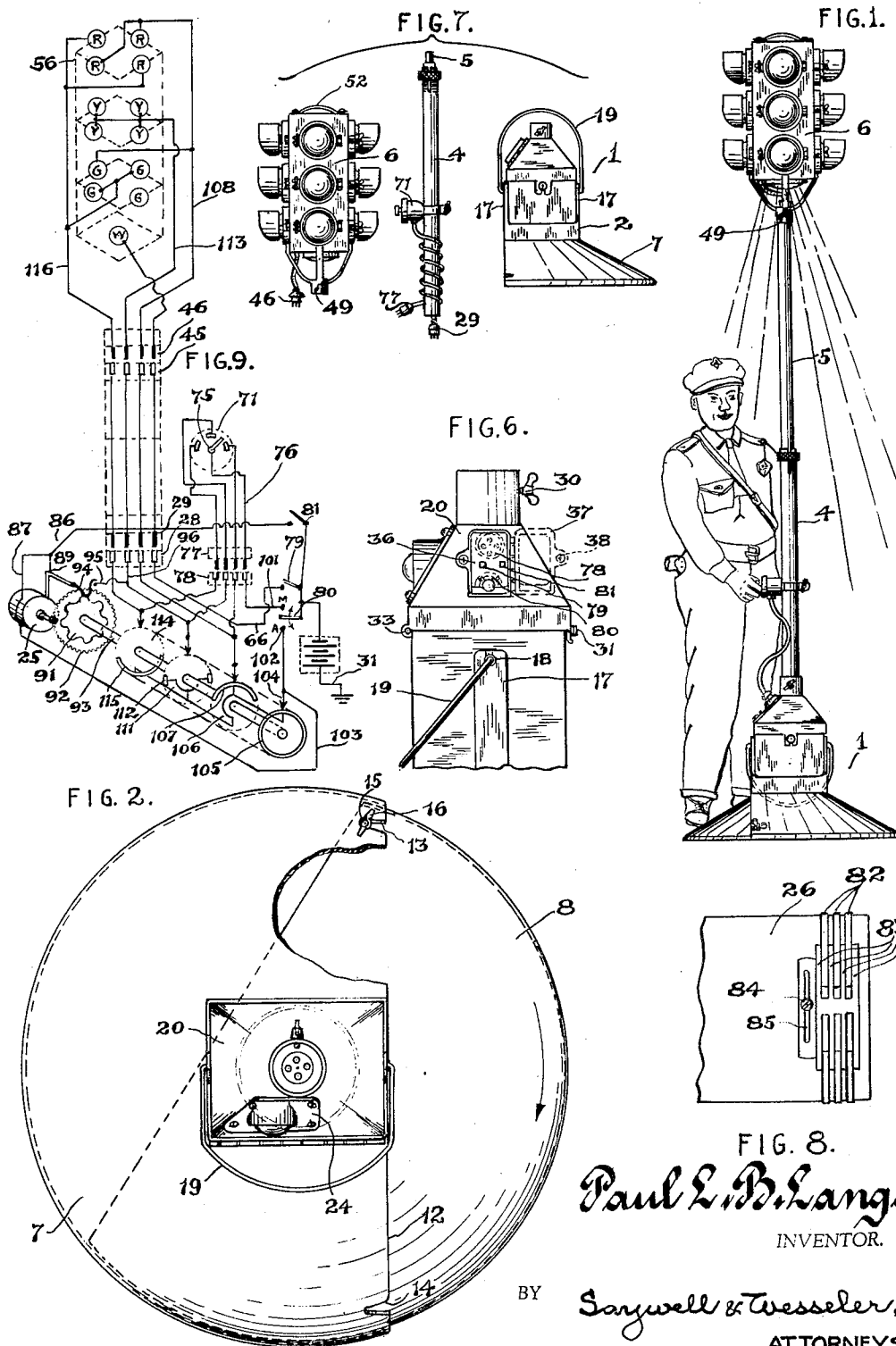
P. L. B. LANGE

2,401,940

PORTABLE TRAFFIC SIGNAL

Filed Feb. 27, 1942

2 Sheets-Sheet 1



Paul L. B. Lange,
INVENTOR.

BY Sargwell & Tresseler,
ATTORNEYS.

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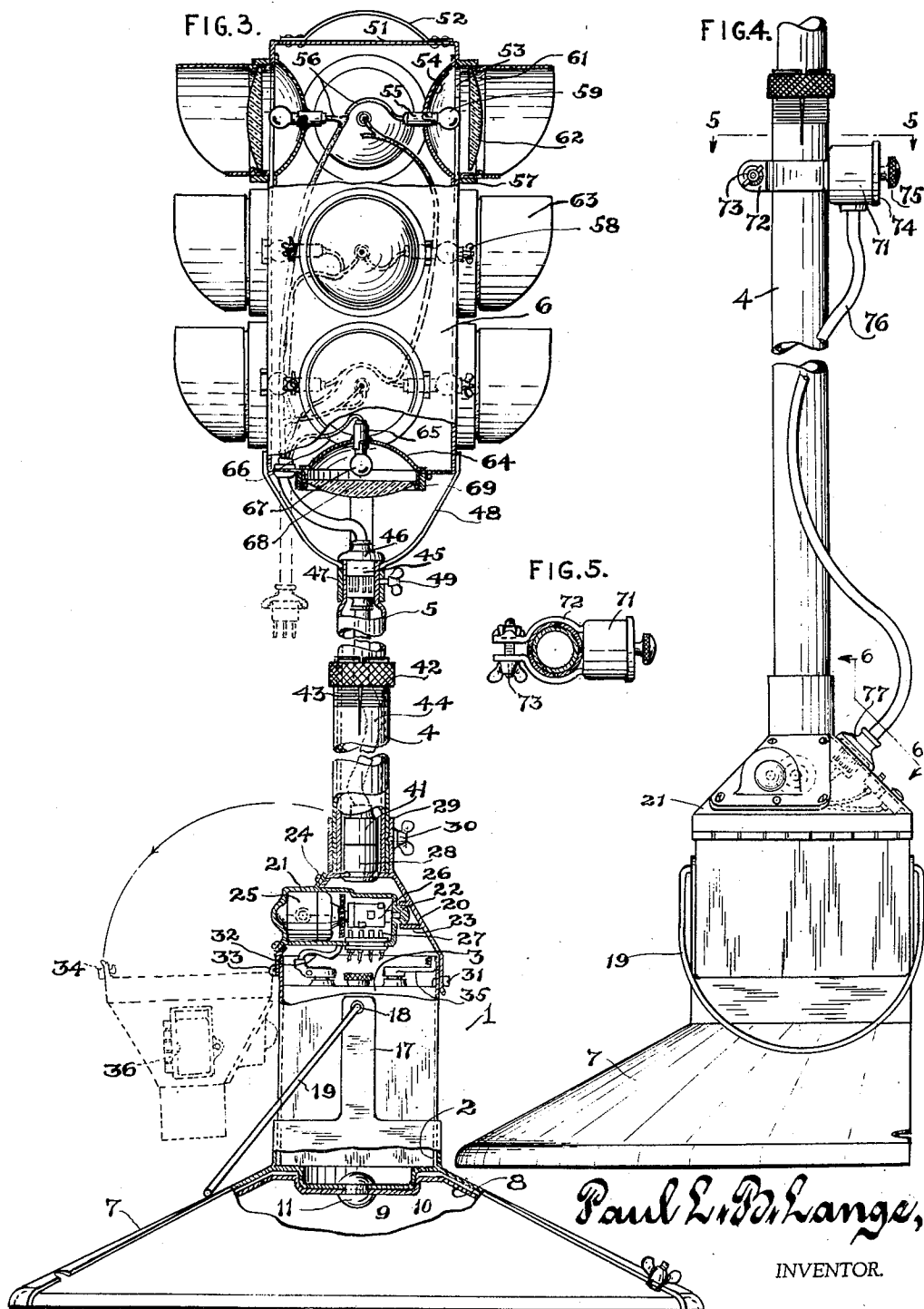
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Paul L. B. Lange,

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BY

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ATTORNEYS.

UNITED STATES PATENT OFFICE

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PORTABLE TRAFFIC SIGNAL

Paul L. B. Lange, Lakewood, Ohio

Application February 27, 1942, Serial No. 432,662

3 Claims. (Cl. 177-337)

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This invention, as indicated, relates to a portable traffic signal. More particularly, it comprises a portable unit having separable and collapsible parts permitting the same to be readily carried by a single person to a place of use to be quickly assembled into full operative relation in a minimum of time. The signals are adapted to be operated by a storage battery carried in the base of the structure, and the control of such signals may be adjusted for manual, automatic or emergency flashing operation.

The principal object of the present invention is to provide a traffic signal which may be of light, but sturdy, construction, and which may be readily carried from point to point in the manner of personal baggage, or may be carried in an automobile, or street car, or bus, or other public conveyance, to a point of use.

Another object of the invention is to provide a portable traffic signal adapted for emergency use and capable of operation on a base similar to permanently installed signals.

Another object of the invention is to provide a portable traffic signal utilizing a storage battery and having structural features permitting the same to be moved about in knocked-down form, and after reaching the point of installation to be transformed into a rigid structure firmly supported on the surface of the roadway, and having a convertibility to permit the same to be operated manually, automatically, or as a caution flashing signal.

Another object of the invention is to provide safety features in the structure whereby the base of the signal will be constantly illuminated to avoid collision with the standard.

Another object of the invention is to provide means whereby the signal when placed in automatic operation may be locked to prevent tampering therewith.

Other and further objects of the invention will appear in the course of the following description.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawings and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but several forms in which the principle of the invention may be used.

In said annexed drawings:

Fig. 1 is a side elevation of the apparatus assembled in operative condition and indicated as under manual control of a traffic officer;

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Fig. 2 is a top plan view of the base portion of the structure showing the rotatable base segment providing for ready portability;

Fig. 3 is an enlarged side elevation, partly in section, showing the assembled parts of the apparatus;

Fig. 4 is an enlarged side elevation of the base and the lower portion of the standard of the apparatus showing the manually operated switch and connections in position on the apparatus;

Fig. 5 is an enlarged detail view showing the clamping means for the manual switch of the apparatus, as seen along the line 5-5 shown in Figure 4, looking in the direction of the arrows;

Fig. 6 is a fragmentary view of the upper portion of the base, as seen along the line 6-6 shown in Figure 4, looking in the direction of the arrows; and showing the switch control unit and locking cover therefor;

Fig. 7 is a side elevation showing the three major portions of the apparatus in knocked-down and collapsed, or telescoped condition, ready for transportation to a point of use;

Fig. 8 is a fragmentary detail view showing means for adjusting a commutator bar for varying the timing of one of the lighting circuits; and

Fig. 9 is a wiring diagram showing diagrammatically the motor, commutator discs and switches, battery and circuit connections to the lamp units.

As is shown more particularly in Figures 1 and 3 the signal apparatus comprises a base member 1 providing a receptacle 2 for a storage battery 3, and having an intermediate standard 4 with a telescopic extension member 5 mounted centrally above the same, such telescopic section supporting at its upper end a traffic signal unit 6 carrying signal bull's eyes and lamps, preferably of standard colors and arrangement. The base 1, as stated, has a receptacle 2 for the storage battery, such receptacle preferably being of rectangular outline and of a size to receive a battery of suitable type. The receptacle merges with a bottom support 7, preferably of frusto-conical outline, as seen in side elevation. In order to provide for ready portability of the base portion of the structure it is formed of two frusto-conical segments, one at the upper side 7 of slightly larger diameter than the lower segment 8. Each of the segments is provided centrally with a recessed area 9, 10, respectively, nested together and held in pivotal relation by means of a pivot pin 11. The upper segmental base member preferably terminates at one side of the battery receptacle in a straight margin 12, as seen from above, such marginal

portion having notches 13, 14, spaced from its respective margins a sufficient distance to receive a locking stud 15 provided with a wing nut 16. Such locking stud is mounted on the lower segmental member 8 and when moved into engagement with the notch 13 may be held in such position by tightening the wing nut to form a rigid base for the structure. When it is desired to move the base from one position to another the segmental portion 8 is rotated about the pivot 11 until the stud 15 engages the notch 14, and the wing nut is then turned to lock the telescopic base members in telescoped or nested relation, as shown more particularly in Figure 7. The battery receptacle is provided with upstanding arms 17 on opposite sides and has apertures 18 to receive a bail 19 by means of which the base portion of the apparatus may be readily transported. The upper portion of the battery receptacle is provided with a hinged casing top 20 within which a combined switch and motor housing 21 is slidingly engaged supported at one end by means of a boss 22 within a socket 23, and supported at the other end by bolts engaged through apertures in the flanged portion 24 of said housing.

Within the motor housing 21 is engaged the motor 25 and commutator unit 26 with cooperating contact fingers 27 connected by suitable conductors with a plug terminal 28 mounted centrally within a cylindrical socket 29 adapted to receive the lower end of the standard 4 and hold the same in clamping engagement by means of a set-screw 30. One terminal of the battery is grounded by means of a metal bar 31 to the inner wall of the receptacle, and the commutator is connected by means of a flexible cable 32 to the other terminal of the battery. The casing top 21 is preferably mounted on the upper end of the receptacle by means of a hinge 33, and on the opposite side carries a latch member 34 adapted to fit within a lock 35 on the opposite side of the receptacle. At one side of the casing top a housing 36 is provided to receive the switch unit and manual plug-in. A hinged cover plate 37 provided with a lock 38 is adapted to engage over the switch housing and be locked in secure relation to the same to prevent tampering with the automatic mechanism of the apparatus.

It will be noted that easy removal of the motor unit is provided for as well as convenient access to the switches and battery connections. Replacement of the battery may be readily carried out. The battery may be connected for recharging when the unit is not in service without removing the same from the receptacle.

The standard 4 fits snugly within the socket 29, but before being placed in position the terminal plug 41 is engaged with the plug socket 28, heretofore referred to. The upper telescopic section 5 of the standard is then raised to the desired elevation and clamped by means of the clamping ring 42 on the threaded portion 43 at the upper end of the standard 4, which, by reason of the split socket effect, has clamping action against the outer surface of the extension member 5. The plug 41 is at the lower end of the conducting cable 44 carrying the various individual circuit wires, and its upper end is provided with connection to the permanently secured plug member 45 which receives the contact elements of the plug member 46 connected with the cable carrying various conductors to their respective lamp units of the signal casing. The upper end of the extension member 5 is slightly reduced in diameter in order to permit firm engagement thereof of the

supporting socket 47 which is provided at the lower end of the supporting frame of the signal unit 6.

The socket has a plurality of arms 48, shown as four in number, and at one side is provided with a stud engaged by a wing nut 49 whereby the signal unit may be firmly clamped at the upper end of the extension member 5. The arms 48 are secured, preferably, centrally of the respective sides of the rectangular traffic signal unit 6, which, as shown, is preferably a light metal casing having a closed upper end 51, to which is permanently secured a handle 52 so that said unit may be readily carried when the parts are disassembled for transportation. It will be noted that each side of the signal unit is provided with circular openings 53 behind which reflector members 54 are provided carrying lamp sockets 55 connected to their respective conductors 56. Outwardly of each of the openings 53 an annular frame 57 is provided, preferably hinged at one side and provided with a stud and wing nut clamping device 58 at the opposite side whereby free access to the lamp socket may be had and the bulbs 59 inserted as required. The annular frame is adapted to frictionally receive a sleeve 61 supporting a lens or bull's eye 62 at its inner end and formed adjacent its outer portion as a shield or hood 63 to restrict the projected rays of the adjacent light unit when it is turned on.

In order to prevent injury to the apparatus, or to the traffic officer who may be in charge of the same when it is used for manual operation, a downwardly directed reflector 64 is provided at the base of the signal unit supporting the bulb socket 65 with an individual conductor 66, and provided below the bulb 67 with a lens 68 mounted in a removable frame 69.

When it is desired to have the signal unit operated by a traffic officer, the manual switch shown in Figures 4 and 5 is connected with the apparatus, the switch casing 71 having a spring clip 72 adapted to be resiliently engaged around the standard 4 and held firmly in position by means of a wing bolt 73. The switch casing carries centrally of its cover plate 74 a switch knob 75 by means of which the control of the respective light elements may be carried on. A flexible cable 76 carries the necessary conductor elements, which, through prongs on the terminal plug 77 are placed in proper relation to the various lamp circuits.

The plug 77, it will be noted by reference to Figures 1, 4 and 6, is connected with the terminal unit 78 in the switch housing 36 heretofore referred to. Said housing also carries the individual switch 79 for the bottom light 67 on the reflector and the two-way switch 80 for manual and automatic control, and the switch 81 for the caution light control, which will be more particularly described in connection with the wiring diagram shown in Figure 9.

In order to provide for variation in the timing allowed for main highway traffic and for cross traffic it is desirable to provide an adjustable element on each of the switch contacts carried on the commutator element 26. Such variable control may be provided for by the sliding adjustment of the contact area on the commutator, as shown in Figure 8. This adjustment may assume various forms, but preferably includes a stationary contact plate 82 with which a sliding contact plate 83 cooperates to provide a total range of contact area to insure correct timing for each of the lamp circuits of the signal unit. The sliding contact may be locked in position by means of a setscrew

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84 engaged in a slot 85 in the margin of the sliding contact element.

In order to provide for the intermittent flashing of the caution light, preferably yellow or red, when it is desired to slow traffic in the region of emergency, such as accident, fire or the like, use is made of the caution light circuit 86 closed by the switch 81, heretofore referred to, and carrying current to the motor through the branch circuit 87 and the interrupter unit to the branch circuit 89. The interrupter unit comprises a cam wheel 91, preferably mounted on the large end gear 92 on the commutator shaft 93. The cam elements of the cam wheel ride against the spring terminal 94 bearing intermittently against the contact 95 connected with the circuit 96 to the caution or yellow lamps of the signal unit. Such connection could be made with the red lamp circuit, or with the combination of circuits, as might seem most desirable.

It will be noted that the switch 79 controls the circuit 66 and the white or floor light 67 beneath the signal unit and is maintained in constant operation after nightfall to prevent collision with the signal unit, and also to prevent injury to the traffic officer if the unit is manually operated.

When the two-way switch 80 is set upon the contact 101 for the manual control the remainder of the manual control circuit is supplied by the group of conductors within the cable 76 terminating in the plug unit 77 received in the socket 78. The circuits are completed through the contacts within the manual switch casing 71 over which the contact finger is moved by means of the knob 75.

The various circuits of the lamps are completed through the socket 28 and the plug 29 and the socket 45 and plug 46 and the respective conductor connections 56 within the signal unit 6.

When the device is set for automatic operation the switch 80 is placed upon the contact 102 which has a branch circuit 103 connected with the motor 25, and the companion branch circuit 104 is connected with a contact finger riding upon the contact disc 105 comprising the main connection with the commutator. The conductor from the contact disc 105 is connected with a series of contact segments upon insulated contact areas of the commutator drum, the segments 106 carrying a contact 107 energizing the circuit 108 connected with the green light controlling traffic over one thoroughfare and its companion red light controlling traffic over a cross-thoroughfare. An intermediate insulated disc 111 carries two short contact members 112 controlling the circuit 113 for illuminating the four yellow, or caution, lights intermediate a signal change. The insulated disc 114 is similar to the insulated disc 106, heretofore described, the contact segment 115, however, being diametrically opposite the position of the contact segment 107, and the contacts of the circuit 116 being to green lights controlling traffic on the cross-thoroughfare and the red lights controlling traffic on the main thoroughfare. As has been heretofore stated, the battery is grounded to the casing by means of a conductor 31 and the return circuits to all the operative elements is through the middle of the base member standard and signal unit in accordance with the position of the elements energized.

As has been stated, the battery of the traffic

unit may be connected with the charging unit during the intervals between its active use as a traffic signal. The entire unit is light in weight, and may be readily carried by a traffic officer to a point of installation.

When set for automatic operation the unit is adapted for long continued operation without attention. The automatic operation may be carried on as an intermittent flashing unit during times of emergency, or it may be operated as a standard traffic control for week-end traffic, or heavy traffic arising through special gatherings of people at unusual times and places where ordinarily no permanent traffic light would be required.

Other modes of applying the principle of my invention may be employed instead of those explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point and distinctly claim as my invention:

1. An apparatus of the character described having in combination a self-energized portable traffic signal unit comprising a base formed of two frusto-conical segments having cutaway straight margins adapted to be brought into alignment when the apparatus is to be carried and providing a standard having a rotary segmental section housing a storage battery, a signal casing engageable thereon and readily separable therefrom, and having means permitting nested vertical alignment of the segmental section, when arranged for hand transportation, and permitting outward positioning of the segmental section for base enlargement for holding the structure in firm operative relation when assembled for service.

2. An apparatus of the character described comprising a knock-down portable traffic signal adapted to be separated into three readily portable parts, including a lamp casing provided with a handle at the upper end thereof, an intermediate standard portion adapted to be telescoped to reduce its overall length, and a base member formed of two frusto-conical segments having cutaway straight margins adapted to be brought into alignment when the apparatus is to be carried and providing a receptacle for a battery and electrical connections and control elements and provided with a handle for ready portability.

3. An apparatus of the character described comprising a knock-down portable traffic signal adapted to be separated into three readily portable parts, including a lamp casing, an intermediate standard portion adapted to be telescoped to reduce its over-all length and a base member formed of two frusto-conical segments having cutaway straight margins adapted to be brought into alignment when the apparatus is to be carried and providing a receptacle with a surface contacting flange, means for reducing the contact area of such flange to permit convenient carrying of the unit, said base member providing a receptacle for a battery and electrical connections and control elements whereby the lamps in said lamp casing may be operated automatically as directional signal means or as flasher signal means, or operated manually as directional means, said casing provided with a handle for ready portability.

PAUL L. B. LANGE.