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STREET CROSSING SIGNAL DEVICE FOR BLIND PEDESTRIANS

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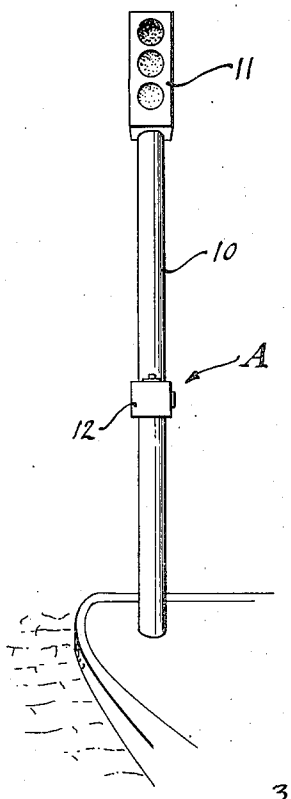


Fig. 1

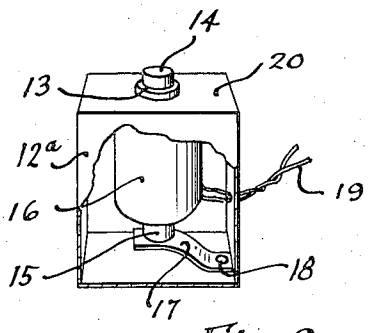


Fig. 2

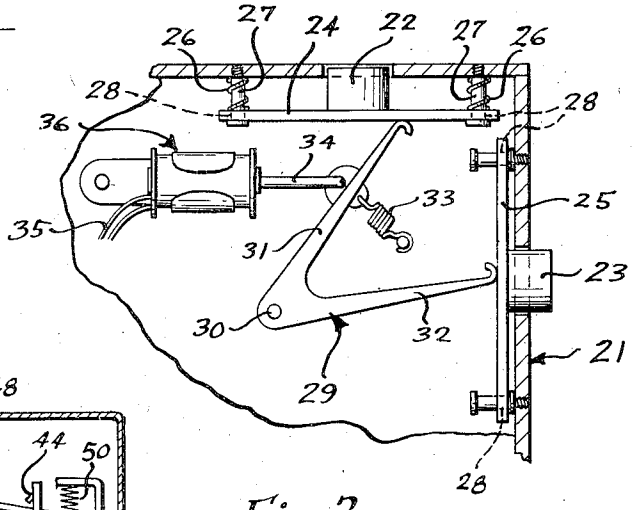


Fig. 3

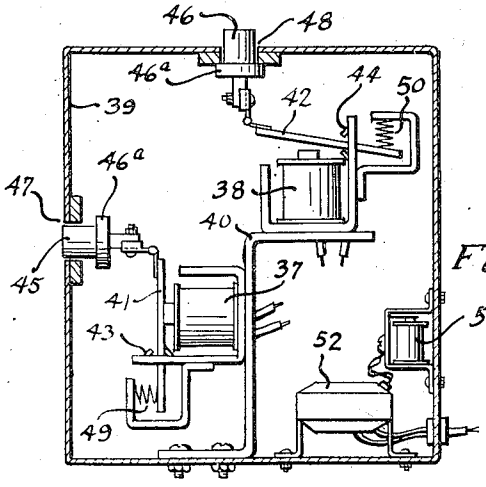


Fig. 4

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STREET CROSSING SIGNAL DEVICE FOR BLIND PEDESTRIANS

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9 Claims. (Cl. 177—337)

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This invention relates to a device adapted to communicate signals by the sense of touch.

Many blind persons become quite efficient at finding their way around busy city streets. They usually experience difficulty, however, at traffic intersections and especially at intersections having signal lights. If the intersection is not a busy one, the blind person usually listens for approaching traffic and if none is heard he can safely cross the street. If, on the other hand, traffic at an intersection is heavy and is controlled by traffic lights there are usually cars passing in one direction or the other at all hours and the blind person cannot rely on his sense of hearing to differentiate which way the cars are running and tell him whether or not he can safely cross the street.

Up to the present time no person has devised an efficient signal means for transmitting signals given by traffic lights to blind people. I have invented a device which will fulfill this purpose.

It is, therefore, an object of this invention to provide a signal device for transmitting signals by sense of feel which can be used in connection with traffic lights and the like.

It is a further object of the invention to provide a device as stated above which is simple to install.

It is a further object of the invention to provide a signal device of the above general type which is simple to construct and cheap to manufacture.

With these and other objects in view the device in general comprises a casing which is designed to be mounted at a street corner within the reach of a blind person. A means for transmitting a signal by sense of touch is provided externally of the casing and a means operatively connected to a traffic light or the like for operating the external signal means to predetermined positions corresponding to the signals transmitted by the traffic lights is provided internally of the casing whereby the signals given by the traffic lights can be transmitted to a blind person touching the casing. The invention will be fully understood after reference to the following detailed specification taken in conjunction with the drawings.

In the drawings,

Figure 1 shows a lamp post having traffic signal lights with a signal means of this invention mounted thereon.

Figure 2 shows a form of the invention partly broken away to show construction.

Figure 3 shows the operative portion of an alternative form of the invention, broken away to show construction.

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Figure 4 is a broken away side view showing a preferred form of the invention.

Referring to the drawings, A generally indicates a signal device of this invention which is mounted on a lamp post 10 having traffic signal lights 11. The signal device A is mounted within reach of a person approaching the lamp post and has means external of the casing 12 for transmitting the signal given by the traffic lights 11 by sense of touch.

Referring to Figure 2, the form of the invention there shown comprises a casing 12a having an external button 14 designed to project through a hole 13 in the casing for the purposes of transmitting a signal. The projecting button 14 is secured to or is part of an armature 15 which is designed to operate in the solenoid 16. The solenoid 16 is held in a normal position with the button 14 projecting from the casing by means of the spring 17 which is mounted on the casing by a bolt 18. Numeral 19 indicates leads from the solenoid coil and are designed to be connected across a voltage supply. When they are so connected, the solenoid armature 15 is drawn into the solenoid to depress the spring 17, and cause the projecting button portion 14 thereof to lie substantially flush with the top 20 of the casing 12a. Thus, by feeling whether the button 14 is projecting, or is lying flush with the top of the casing, it is possible to tell whether the leads 19 of the solenoid 16 are connected across a voltage.

In operation, the leads 19 are connected in parallel with the voltage which operates the red or green signal light at a traffic intersection so that the button 14 projects or is flush with the top 20 of the casing 12a, depending on whether the traffic lights are red or green. By mounting the casing 12a within human reach, as shown in Figure 1, it is then possible to provide a signal which can be sensed by the touch, for giving the traffic warnings which are given by traffic signal lights. Thus, it is possible for a blind man to cross busy intersections having traffic lights, without danger of being run over when crossing against a red light.

Figure 3 shows another form of the invention. In this embodiment, the signal box 21 is shown broken away. Two signal buttons 22 and 23 are provided. They are rigidly mounted on resiliently mounted plates 24 and 25 by means of the springs 26 disposed around the holding bolts 27. Holes extend through the plates 24, 25 as indicated by

the dotted line 28 to permit the plates 24 and 25 to pass freely over them when acutated against the pressure of the springs 26. The buttons are actuated by an actuating member 29 pivotally mounted within the casing as at 30 and having angularly disposed arms 31 and 32. The member is normally spring held in the position shown by means of a spring 33 and is actuated from this position by the action of the solenoid armature 34 which is caused to move when a voltage is applied across the leads 35 of the rigidly mounted solenoid 36.

The signal buttons 22 and 23 are designed such that one is flush with the casing while the other one projects therefrom, so that a blind man feeling for a signal can always obtain a positive indication and avoid the danger of feeling the top of the casing and assuming, that because he feels no indication, that the button is depressed and that the lights are green, when in fact, he may not be feeling the correct spot on the top of the casing, and the button may be projecting.

Figure 4 shows a preferred form of the invention in which two solenoids 37 and 38 are employed. They are mounted within the frame 39 on a bracket 40 and are adapted to attract armatures 41 and 42 respectively when actuated. Armatures 41 and 42 pivot in the bifurcated ends of the bracket arms 43 and 44 respectively. The bifurcations are not shown in the drawings. Buttons 45 and 46, shouldered as at 46*a*, are hingedly mounted to the outer arms of armatures 41 and 42 respectively. These buttons are normally urged to project through the holes 47 and 48 in the casing by means of springs 49 and 50.

In operation, the leads of solenoid 37 are connected across the green or "Go" traffic signal light and the leads of solenoid 38 are connected across the red or "Stop" traffic signal light. When the green traffic signal light operates, its solenoid will be actuated to attract its armature and cause the projecting portion of button 45 to lie substantially flush with the casing 39. As soon as the light goes out, the voltage across solenoid 37 will drop to zero and the spring 49 will urge button 45 to its normal projecting position. The red light will operate button 46 in a similar manner. In the event of a power failure, the button 45 will project from the casing 49 to transmit a stop signal and prevent a blind person from crossing the street.

This embodiment of the invention also includes a signal buzzer 51 which is connected through a transformer 52 across the leads of the orange or "Warning" light so that an audible signal is given as the traffic lights are about to change. This signal would be very useful in helping blind persons to locate the traffic signal box.

From the above it will be apparent that I have provided a signal device for warning a blind man of traffic signals by sense of touch so as to enable him to safely cross busy traffic intersections. It is further cheap to manufacture and easy to install. Anyone skilled in the art will be able to devise various modifications of my invention. It is, therefore, intended that the foregoing specification should not be read in the limiting sense except for the limitations expressed by the following claims.

What I claim as my invention is:

1. A device for transmitting signals by sense of touch comprising a casing adapted to be mounted within human reach, signal means external of said casing adapted to be sensed by the touch, means for urging said signal means to a predetermined normal position, means internal of said casing for actuating said signal means from said normal position to at least one other predetermined position, each of said predetermined positions of said signal means being related to a predetermined signal whereby said predetermined signals can be transmitted by touching said signal means.

2. A signal device as claimed in claim 1 in which said means internal of the case for actuating the signal means includes a solenoid electrically connected across a voltage which is related to the signals visibly given by said lights, an armature actuated by said solenoid, said armature being operatively connected to said external signal means whereby to operate it to said predetermined positions as the voltage across said lights varies.

3. A device for transmitting signals by sense of touch comprising a casing adapted to be mounted within human reach, signal means external of said casing adapted to be sensed by the touch, resilient means internal of the casing for urging said signal means to a predetermined normal position, electro-magnetic means within said casing for actuating signal means against the pressure of said resilient means from said normal position to at least one other predetermined position, each of said predetermined positions of said signal means being related to a predetermined signal whereby said predetermined signals can be transmitted by touching said signal means.

4. A device for transmitting signals by sense of touch comprising a casing adapted to be mounted within human reach, signal means external of the casing, adapted to be sensed by the touch, means within said casing including a solenoid and an armature therefore for actuating said signal means from a predetermined normal position to at least one other predetermined position, each of said predetermined positions of said signal means being related to a predetermined signal whereby said predetermined signals can be transmitted by touching said signal means.

5. A signal device comprising a case adapted to be mounted within human reach, signal means projecting from said case for transmitting signals by touch, means internal of said casing for operating said projecting signal means to predetermined positions, each of said positions being related to a predetermined signal whereby to communicate said signal to a person touching said signal means.

6. In a signal system, at least one electrically operated light adapted to transmit visual signals as they go on and off, and a device having a signal means mountable within human reach and adapted to be sensed by the touch operatively connected to said electrically operated lights whereby to transmit the signals visibly given by said lights by sense of touch.

7. In a signal system, at least one electrically operated light adapted to transmit visual signals as they go on and off, and a signal device having a signal means mountable within human reach and adapted to transmit signals by sense of touch, said signal device comprising a casing, signal means projecting from said casing for transmitting signals by sense of touch, means within said casing for operating said signal means to predetermined positions including a solenoid and an armature said armature being operatively connected to said signal means, said solenoid be-

ing electrically connected across a voltage which is related the voltage operating said signal lights whereby to operate said signal means to predetermined positions said positions being related to the signals transmitted by the lights whereby to transmit the signals given by the lights by sense of touch.

8. A device for transmitting signals by sense of touch for use in connection with a light signal system having a "Stop" and "Go" light, comprising a casing adapted to be mounted within human reach, two buttons adapted to normally project from said casing, two solenoids mounted within said casing, one of said solenoids being adapted for connection across the "Stop" light, the other for connection across the "Go" light, armatures in connection with each of said solenoids, each of said armatures being operatively connected to one of said buttons, whereby said buttons are actuated from their normal projecting position to a position substantially flush with the casing when their armatures are actuated, as their respective solenoids are energized by the voltages across said "Stop" and "Go" lights as they go on and off.

9. A device for transmitting signals by sense of touch for use in connection with an electrically operated light signal system having a "Stop" light, a "Go" light and a "Warning" light for indicating when the "Go" light is about to change, comprising a casing adapted to be mounted within human reach, at least one button adapted to project from said casing for transmitting signals given by said lights by sense of touch, means internal of said casing including at least one solenoid in electrical connection with the voltage operating said "Stop" or "Go" lights for actuating said buttons to predetermined positions whereby said buttons can transmit by sense of touch the signals given by said "Stop" and "Go" lights, an electrically operated audible signal device operatively connected across said "Warning" light operates to attract persons to the signal box and warn them that the signals are about to change.

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