Sept. 17, 1929. J. CANNELLA 1,728,746

DISPLAY APPARATUS

Filed May 12, 1928 2 Sheets-Sheet 1

Fig. 1.

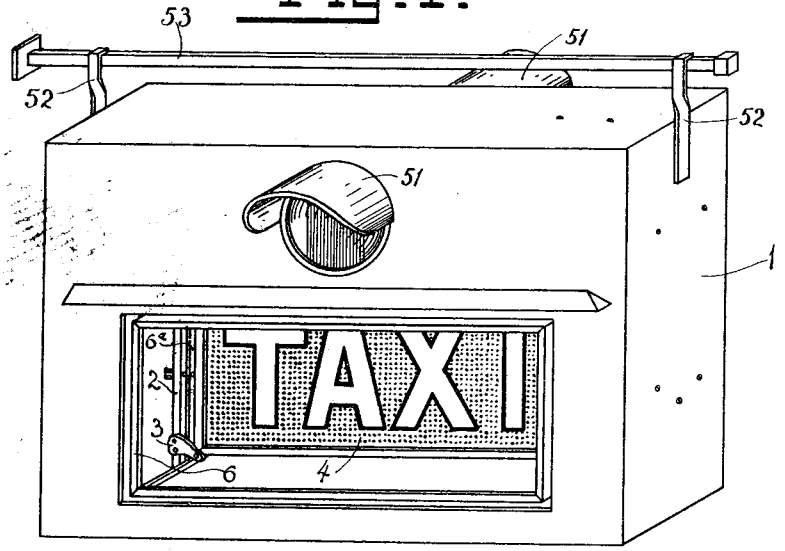
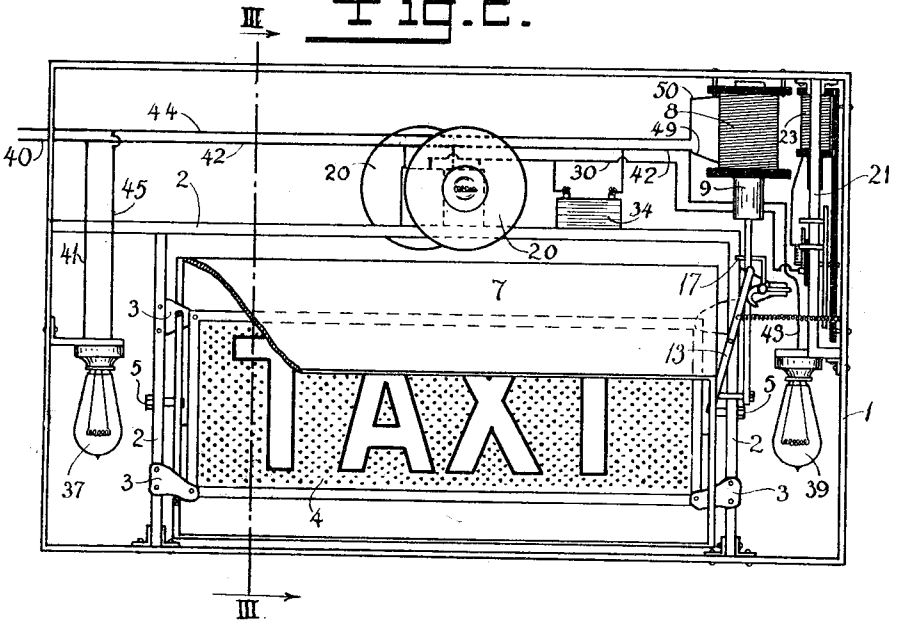


Fig. 2.



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Filed May 12, 1928 2 Sheets-Sheet 2

Fig. 3.

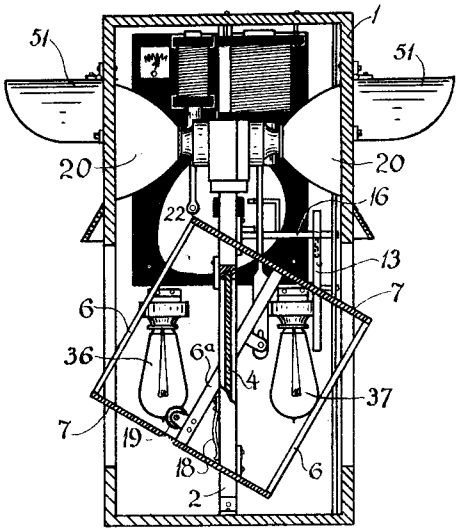


Fig. 4.

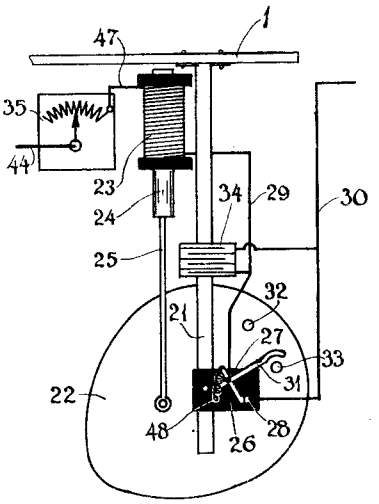


Fig. 5.

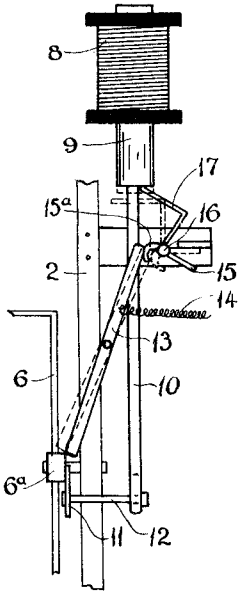
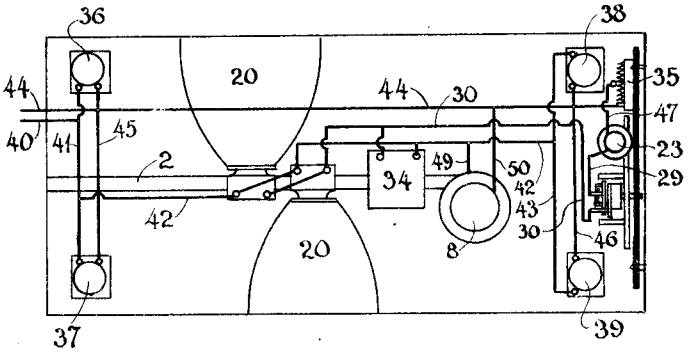


Fig. 6.



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UNITED STATES PATENT OFFICE

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DISPLAY APPARATUS

Application filed May 12, 1928. Serial No. 277,340.

This invention relates to display apparatus, the principal object of the invention being to provide an automatically operated apparatus of this character by means of which a normally concealed object may be readily exposed to view.

A further object of the invention is to provide, in combination with a device of this character, means for effectively attracting attention to the exposed object.

With the foregoing, and other objects in view, the invention consists in the novel features of construction and combination of parts which will be more fully described hereinafter and particularly pointed out in the claims.

In the drawings accompanying and forming part of this specification,

Fig. 1 is a perspective view of one form of apparatus embodying the present invention, the apparatus being shown completely assembled in its housing;

Fig. 2 is a front view with the wall of the casing removed to show the interior arrangement of the parts;

Fig. 3 is a transverse sectional view, taken approximately on line III—III of Fig. 2, looking in the direction of the arrows;

Figs. 4 and 5 are fragmentary views, on a somewhat larger scale, showing respectively the flasher apparatus and the sign shielding apparatus; and

Fig. 6 is a diagrammatic view illustrating the wiring.

The same characters of reference designate the same parts in the different figures of the drawing.

Referring to the drawings, 1 designates a housing which may be made of any suitable material but is preferably of sheet metal. Rigidly secured within the housing is a frame 2, and secured to brackets 3 carried by said frame is a centrally disposed partition or screen 4 bearing in the present instance the word "Taxi" on both sides thereof, the front and rear walls of the housing being open so as to expose the screen and its legend. Pivoted at the points 5 to the frame 2, is a rectangular frame 6, two opposite sides of which are closed by solid walls or shields 7 adapted, when the frame 6 is swung into proper position, to close the openings in the front and rear walls of the housing and conceal the sign-carrying screen 4.

For swinging the frame 6 into and out of closing position, I have provided means operated by a solenoid 8, the armature 9 of which carries a depending rod 10 which is pivotally connected to a short arm 11 secured to the frame 6, the pivotal connection being shown herein as formed by means of a short shaft 12 secured at one end in the arm 11 and having its opposite end passing through a slot in the rod 10. The length of the rod 10 is such that when no current is passing through the solenoid the weight of the armature 9 and rod 10 will cause the frame 6 to swing down on its pivots into closing position. When the solenoid is energized, however, the armature 9 is caused to move upward, carrying with it the rod 10, which in turn exerts a pull on the arm 11 and swinging the frame 6 on its pivots until the solid portions 7 thereof are in horizontal position above and below the screen 4, thus exposing said screen to view from the rear as well as the front of the housing, as will be readily understood. In Fig. 3, the frame 6 is shown in a position intermediate its closing and opening positions.

Means is provided for positively holding the frame 6 in its closed position. In the present instance this means comprises a lever 13 pivoted intermediate its length to the fixed frame 2, said lever being engaged at one side of its pivot by one end of a coil spring 14, the opposite end of which is secured to a fixed part of the housing, whereby when the frame 6 is in its closing position the lower end of the lever 13 will engage the upper edge of the horizontal bar 6^a of said frame, as indicated in dotted lines in Fig. 5, thus positively retaining the frame against swinging movement. In order to limit the swinging movement of the lever 13 under the tension of the spring 14 and also to swing the lever against said tension thereby to release the frame 6 when the solenoid is energized, I have provided a pivoted member 15 having a curved cam head 15^a on the outer surface of which the upper end of the lever 13 rests. Secured

to the elongated pivot 16 of the member 15, and extending from said pivot at right angles to said member 15, is an L-shaped trip member 17 having a horizontally disposed portion lying in the path of the armature 9 whereby, when the device is not in operation the weight of the armature will act on said member 17 and move it to the dotted line position shown in Fig. 5, thus swinging the pivot 16 and with it the cam head 15ª, the latter being of such form as to permit the lever 13 to swing under the tension of its spring into full frame-engaging position when the armature 9 is at the limit of its descending movement. At this time the pivot rod 12 is at the upper end of the slot in rod 10. When the solenoid is energized, however, the armature 9 begins to move upward, and attracts with it the member 17, thus causing the cam member 15ª to swing upward thereby exerting pressure on the lever 13, forcing its upper end toward the left of Fig. 5 and swinging its lower end out of engagement with the crossbar 6ª of the frame 6. In the meantime, the rod 10 has moved upward sufficiently to cause the lower endwall of its slot to engage the pivot shaft 12, so that during the remainder of the upward movement of the armature the frame 6 is swung on its pivot into position to expose the screen 4 in the manner heretobefore described, in which position it remains as long as the solenoid is energized. When the passage of current through the solenoid is discontinued the frame 6 will, under the weight of armature 9 and rod 10 swing back into closing position. In order to limit the swinging of the frame 6 and at the same time to absorb any shock caused by the sudden stopping thereof a bumper 18 of flat spring metal is secured to one of the uprights of frame 2 and a roller 19 carried by the crossbar 6ª in position to contact with said spring bumper when the frame 6 has been moved into its fully open position.

In order to attract attention to the sign displayed on the screen, I have provided in combination with the apparatus above described, a pair of reflectors 20 each having a socket for receiving a light bulb, one of said reflectors being disposed so as to throw the light toward the front and the other toward the rear of the apparatus, said lights being in circuit with a flasher device hereinafter described.

Mounted for rotation in a frame 21 is a disk 22 which as shown herein is of eccentric formation in order to provide additional weight at the required point. Disposed above said disk is a solenoid 23, having an armature 24 provided with a depending rod 25 which is pivotally connected to the disk, as clearly shown in Fig. 4. Disposed on a base 26 of insulating material adjacent to the disk 22 are a pair of terminals 27 and 28 connected respectively with conductors 29 and 30. The terminal 27 forms the pivot of a cross-shaped lever 31 of conducting material, the cross arm of said lever being normally maintained in contact with the terminal 28 by means of a spring connected at one end to the lever and at its opposite end to a pin 48 secured in the base 26. The long arm of the lever extends between a pair of pins 32 and 33 projecting laterally from the disk 22. The terminals 27 and 28 are in the circuit of the solenoid 23, so that when the cross arm of the lever 31 is in contact with terminal 28 the solenoid is energized whereupon its armature 24 is attracted upward, carrying with it the rod 25, whereby the disk is partially rotated. Before the armature reaches the limit of its upward movement, however, the pin 32 of the disk 22 engages the lever 31 and swings it on its pivot against the tension of its spring thus separating the cross arm of the lever from the terminal 28 and breaking the circuit. As soon as the armature loses its upward momentum it begins to descend thus rotating the disk in the opposite direction, and permitting the cross arm of the lever to return under tension of its spring into contact with terminal 28, this return being insured by the engagement of the pin 33 with the lever 31, so that the solenoid is again energized and the operation repeated. In order to absorb the arcs which might be caused by the make-and-break device described, I have placed a condenser 34 in the circuit. I have also provided a rheostat 35 for regulating the current passing through the solenoid 23. Finally, in order to properly illuminate the screen on both sides thereof a plurality of lamps 36, 37, 38 and 39 may be disposed in the lower part of the housing and equally distributed at opposite sides of the screen.

Fig. 6 shows diagrammatically the wiring of the apparatus. The conductor 40 coming from the positive pole of a source of electric energy is connected with the lamps 36 and 37 by a wire 41, to which in turn is connected a wire 42 which conveys the current to one terminal of each of the lights in the reflectors 20 and thence to a wire 43 connected with one terminal of each of the lamps 38 and 39. Conductor 44 coming from the negative pole of the generator is connected to lamps 36 and 37 by a wire 45, and with the lamps 38 and 39 by a wire 46, the said conductor 44 being then connected to one terminal of the rheostat 35. The circuit is continued from the other terminal of the rheostat by a wire 47 to the solenoid 23, which in turn is connected with the wire 29 leading to the terminal 27 of the circuit breaker. The wire 30 connects the terminal 28 of the circuit breaker with the remaining terminals of the reflector lamps 20, thus completing the circuit through the solenoid 23 and the circuit breaker. The solenoid 8 is connected with the positive and negative conductors 42 and 44 respectively by tap wires 49 and 50, while the condenser is similarly connected to wires 42 and 30. It

will thus be obvious that when the current is turned on, it will flow without any interruption through lamps 36, 37, 38 and 39, since said lamps are not in circuit with the circuit breaker, the course of the current being as follows: conductor 40, wire 41, lamps 36 and 37, wire 42, wire 43, lamps 38 and 39, wire 46, conductor 44, back to generator. The current will also flow steadily through the solenoid 8, the course of said current being as follows: conductor 40, wire 41, wire 42, across lamps 20, wire 49, solenoid 8, wire 50, conductor 44, back to the generator, so that during the passage of current through the solenoid 8 the frame 6 will be maintained steadily in position to expose the screen 4. The circuit through the lamps 20, however, is as follows: conductor 40, wires 41, 42, condenser 34, wire 30, circuit breaker 31, wire 29 to solenoid 23, wire 47, rheostat 35, conductor 44, back to the generator.

The embodiment of the apparatus illustrated herein is especially designed as a taxi cab call box for the use of hotels and other public places. In this form it may be hung outside and operated from a switch within the building. For this purpose the openings for the reflectors are provided with suitable protecting hoods 51, and the housing is also provided with strong metal straps or ears 52 for the reception of a bar 53 by which the apparatus may be suspended from a suitable support. It will be observed that the screen 4 is so supported that there is plenty of space above and below as well as at the sides of said screen, so that there will be little resistance to wind pressure when the apparatus is hung out doors.

While I have described in detail the apparatus herein illustrated, it is to be understood that I do not thereby limit my invention to the precise details of construction shown herein, as I am aware that many mechanical changes and modifications may be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.

Having thus described my invention, what I claim is:

1. An apparatus of the character described, comprising in combination, a housing having a pair of oppositely disposed open sides, a screen disposed in said housing intermediate said sides, a member mounted for rotation about said screen and normally closing said sides, and electrical means operative to rotate said member out of closing position thereby to expose said screen.

2. An apparatus of the character described, comprising in combination, a housing having oppositely disposed open sides, a screen disposed in said housing intermediate said sides, a frame mounted for rotation about said screen and having means normally closing said sides, an electrically movable member, and connecting means between said member and frame for rotating the latter out of closing position thereby to expose said screen.

3. An apparatus of the character described, comprising in combination, a housing having a pair of oppositely disposed open sides, a screen disposed in said housing intermediate said sides, a frame mounted for rotation about said screen and having means normally closing said sides, a solenoid having an armature movable when the solenoid is energized, and connecting means between said armature and frame for imparting motion to the latter thereby to rotate it out of closing position.

4. An apparatus of the character described, comprising in combination, a housing having a pair of oppositely disposed open sides, a screen disposed in said housing intermediate said sides, movable means normally closing said sides, means for positively retaining said movable means in closing position, electrical means operative to move said closing means out of closing position, and means effective on the initiation of said electrical means to release said retaining means prior to the actuation of said movable means.

5. An apparatus of the character described, comprising in combination, a housing having a pair of oppositely disposed open sides, means in said housing intermediate said sides for supporting an object to be displayed, a frame rotatable about said supporting means and having means normally closing said sides, a solenoid having an armature movable when the solenoid is energized, a rod connecting said armature and frame for rotating the latter out of its closing position, a pivoted lever adapted automatically to engage said frame and retain it in its closing position, and means operative on the movement of the armature to shift said lever thereby to release the frame prior to the rotation thereof.

6. An apparatus of the character described, comprising in combination, a housing having an open side, means within said housing for supporting an object to be displayed, movable means within the housing normally closing said side, electrical means operative to move said closing means out of its closing position, and intermittently acting means operative while the housing is open to attract attention thereto.

7. A device of the character described, comprising in combination, a housing having an open side, means within said housing for supporting an object to be displayed, movable means within the housing normally closing said side, electrical means operative to move said closing means from its closing position, a lamp disposed in said housing, and means operative when the housing is open for intermittently interrupting the flow of current through said lamp.

8. An apparatus of the character described,

comprising in combination, a housing having an open side, movable means within the housing normally closing said side, electrical means operative to move said closing means out of its closing position, and intermittently acting means operative while the housing is open to attract attention thereto.

9. An apparatus of the character described, comprising in combination, a housing having a pair of oppositely disposed open sides, a frame mounted for rotation within said housing and having means normally closing said sides, a solenoid having an armature movable when the solenoid is energized, and connecting means between said armature and frame for imparting motion to the latter thereby to rotate it out of closing position.

10. An apparatus of the character described, comprising in combination, a housing having a pair of oppositely disposed open sides, movable means normally closing said sides, means for positively retaining said movable means in closing position, electrical means operative to move said closing means out of closing position, and means effective on the initiation of said electrical means to release said retaining means prior to the actuation of said movable means.

11. An apparatus of the character described, comprising in combination, a housing having a pair of oppositely disposed open sides, a frame rotatable within said housing and having means normally closing said sides, a solenoid having an armature movable when the solenoid is energized, a rod connecting said armature and frame for rotating the latter out of its closing position, a pivoted lever adapted automatically to engage said frame and retain it in its closing position, and means operative on the movement of the armature to shift said lever thereby to release the frame prior to the rotation thereof.

In testimony whereof I have signed my name to this specification.

JOHN CANNELLA.