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PLUG SWITCH BOX FOR SERIES CIRCUITS.

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1,197,339.

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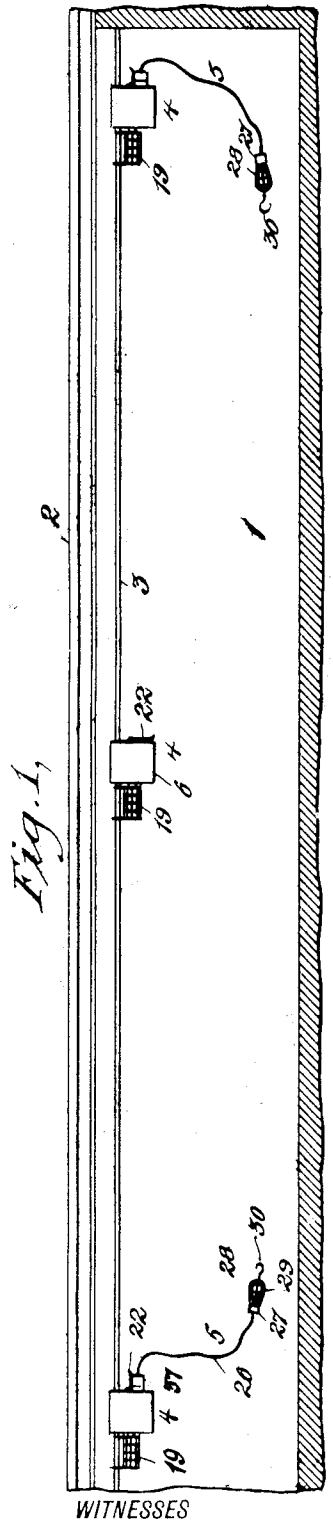


Fig. 1.

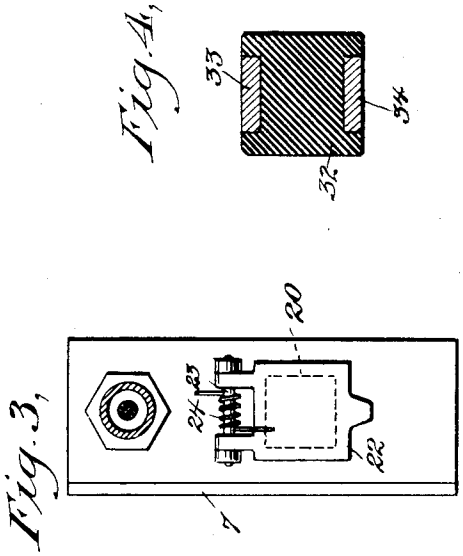


Fig. 3.

Fig. 4.

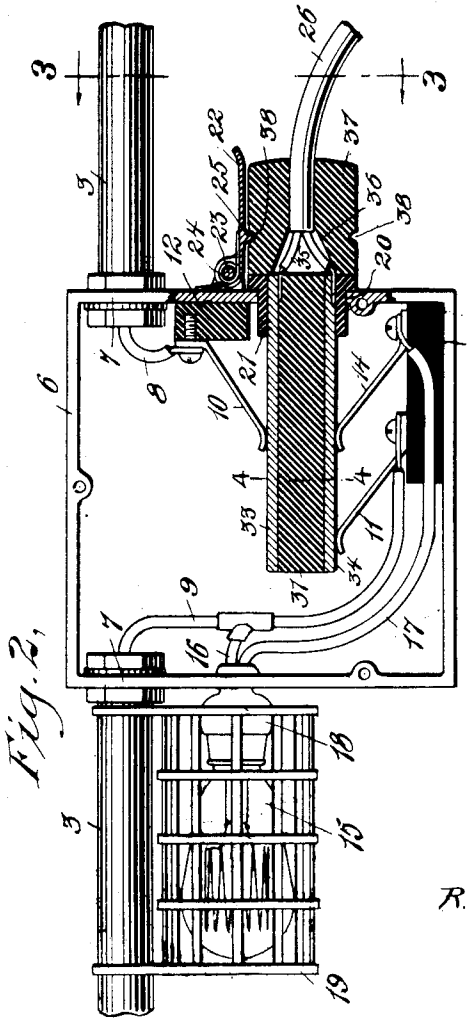


Fig. 2.

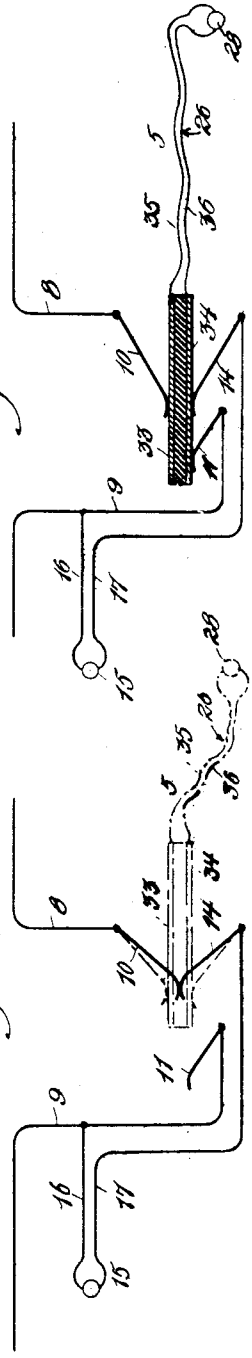


Fig. 6.

Fig. 5.

WITNESSES

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PLUG-SWITCH BOX FOR SERIES CIRCUITS.

1,197,339. Specification of Letters Patent. Patented Sept. 5, 1916.

Application filed December 4, 1915. Serial No. 65,013.

To all whom it may concern:

Be it known that I, ROBERT W. BRODMANN, a citizen of the United States, and a resident of the city of New York, Rockaway Park, borough of Queens, in the county of Queens and State of New York, have invented a new and Improved Plug-Switch Box for Series Circuits, of which the following is a full, clear, and exact description.

This invention relates to switch boxes especially adapted for use in pits or other places, in car barns, work shops and the like whereby drop or extension lights or equivalent translating devices may be connected with the supply circuit as required.

In the present lighting installations for car barn pits switch boxes are arranged at intervals and connected with supply wires, and at each switch box is a lamp socket in which is a lamp that is normally lighted, and when it is desired to apply a drop or extension light it is necessary to remove the lamp and insert a plug attachment, and in so doing the lights in the entire circuit are momentarily cut out, so that workmen using the lamps or drop-lights in other switch boxes are temporarily without illumination. This interruption of work also happens when a lamp in any of the switch boxes is broken and another lamp has to be obtained and inserted in its place.

The general objects of the present invention are to overcome these difficulties by the provision of a novel switch box connected in series with the supply circuit and having a special arrangement of contacts whereby a plug of a drop or extension light or equivalent translating device can be inserted or removed without breaking the continuity of the supply circuit, and furthermore, whereby the lamp permanently attached to the switch box may be thrown into and out of circuit by the plug of the drop-light without affecting the continuity of the supply circuit.

A further object of the invention is the provision of a switch box having a contact plug which is easily inserted or withdrawn and with which coöperates a yielding locking device that normally closes the hole of the switch box in which the plug is inserted, and which is adapted to release the plug when a pull is exerted on the cord of the drop or extension light, thereby preventing injury to the switch box circuit, or drop or extension light attachment. It will be understood that the drop-lights usually are provided with hooks, so that they can be attached to the truck of a car to support the light in proper position for the workman to perform his duties, and in case the car should be moved after the repair is done, and with the drop-light still attached to the truck, the pull on the cord will cause the plug to be automatically withdrawn.

In case a lamp in a drop-light should be accidentally broken, the continuity of the circuit can be immediately restored for the benefit of the other workmen, by simply pulling out the plug of the drop-light having the broken lamp, and only one man thereby loses time while he replaces a lamp, but in the present installation all the men will, in such an event, lose the use of their lights until a new lamp is replaced.

For a more complete understanding of the invention reference is to be had to the following description and claims taken in connection with the accompanying drawings, which illustrate one embodiment of the invention and wherein similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional view of a portion of a car barn pit with a lighting system therein; Fig. 2 is a side view of a switch box with the cover removed and the portions in section, the plug of the switch being inserted to show the conditions when a drop or extension light is being used; Fig. 3 is a sectional view on the line 3—3, Fig. 2, of a switch box with the plug removed and the plug-receiving opening covered; Fig. 4 is a detail sectional view of the plug on the line 4—4, Fig. 2; Fig. 5 is a diagrammatic view showing the contacts of the switch box in normal position by full lines, and showing by dotted lines the normally engaged contacts separated by the partial insertion of the plug of a drop-light, the lamp of which is in circuit; Fig. 6 is a similar view showing the plug fully inserted, whereby the lamp of the switch box is short-circuited and the lamp of the drop-light is connected in circuit.

In the present instance the invention is shown in connection with a lighting system for car barn pits, but it is not necessarily limited to this use.

Referring to the drawing, 1 designates a pit under the rails 2, whereby it is possible to inspect and repair the street or other cars

without removing them from the tracks. Extending longitudinally of the pit are pipes or conduits 3 in which are the circuit wires of a lighting system. At suitably spaced points switch boxes 4 are connected with the conduit, whereby it is possible to make a temporary connection with the circuit wires for drop or extension lights 5, whereby the workmen can effectively light up any part of a car truck or body which may require inspection or repair.

Each switch box comprises a metal or other casing 6 which has a removable cover 7, and the sections of the conduits 3 between adjacent boxes have their ends suitably fastened to the side walls 7 of the casing, as shown in Fig. 2. The circuit wires 8 and 9 extend into the switch box from the sections of the conduit, and these wires are connected respectively with spring contacts 10 and 11 fastened to the blocks of insulation 12 and 13 suitably secured in the casing of the switch box; and also secured to the block 13 is a spring contact 14 which is oppositely disposed to the contact 10, and the tips of these two contacts are adapted normally to engage each other. A fixed lamp 15 is connected in bridging relation to the contacts 11 and 14, one terminal of the lamp being connected by a wire 16 with the wire 9, and the other terminal being connected by a wire 17 with the contact 14, so that when the contacts 10 and 14 are in engagement, the lamp 15 will be in circuit and therefore lighted. The lamp 15 is disposed in a socket 18 which is fastened to one side of the switch box casing, and this lamp is protected by a guard 19 which is rigidly fastened to the conduit 3, whereby accidental breakage or theft of the lamp is prevented. The side of the casing opposite from the fixed lamp 15 has an opening 20 provided with an insulation bushing 21, whereby a contact plug can be inserted into the box for engagement with the contacts 10 and 14. This opening is normally closed by a door 22 swinging on a horizontal pintle 23, and a spring 24 acts on the door to hold the same in closed position. This door is adapted to be raised to an open position, and it has a catch-forming projection 25 which is adapted to engage with the switch plug to thereby yieldingly hold the same in proper position.

The drop or extension lights 5 each comprise a flexible conductor 26 having a socket 27 for receiving a lamp 28 that is inclosed in a wire guard 29 which has a hook 30 whereby the lamp can be attached to any suitable support to be near the work to be done, and attached to the opposite end of a cord conductor is a switch plug 31 which is adapted to be inserted in the bushing 21 of the switch box casing. This plug comprises a body of insulation 32 which has longitudinal metallic strips 33 and 34 set in the surface thereof at diametrically opposite points, and the wires 35 and 36 of the cord conductor 26 are connected with the contact strips 33 and 34, respectively. This plug has a handle portion 37 provided with recesses 38 at opposite points, so that the catch 25 on the door 22 may engage in the uppermost recess and thereby releasably lock the plug in closed-circuit position. The contacts 33 and 34 are so arranged that the contact 33 will engage the contact 10, and the contact 34 will engage the contacts 11 and 14. When the plug is either partially or fully inserted the lamp 28 of the drop-light will be connected in series with the supply circuit wires 8 and 9. When the plug is only partially inserted, as shown in Fig. 5, the fixed lamp 15 will also remain in circuit, but when the plug is fully inserted, as shown in Fig. 6, the fixed lamp 15 becomes short-circuited. Whether the plug is inserted wholly or partially, or removed, the continuity of the main supply circuit is never broken, and it is only when a lamp of a drop-light is broken or the drop-light is rendered inoperative, that the lighting circuit is broken, and to correct this it is merely necessary for the impaired drop-light to be withdrawn from its switch box, when the main circuit will be automatically restored. If a pull should be exerted on a plug of the drop-light, the spring-pressed door 22 would yield to automatically release the plug and permit the latter to be withdrawn, so that no damage would result, and the door automatically closes so as to keep the switch box clean to insure good electrical contact. When the plug is withdrawn the spring contacts return to normal position, the contacts 10 and 14 engaging so as to close the circuit.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains, and while I have described the principle of operation, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made when desired as fall within the scope of the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination of a switch box, leading-in wires, a translating device associated in fixed relation to the switch box, a removable translating device, switch contacts and circuits in the said box, movable contacts connected with the removable translating device and insertible in the switch box to engage the contacts therein, whereby the translating devices may be connected in series

with each other and the leading in wires, or the removable translating device connected in series with the leading in wires while the fixed light is shunted.

2. The combination of circuit wires, a fixed translating device having one terminal connected with one of the wires, a contact connected with the same wire, a second contact connected with the other terminal of the translating device, a third contact connected with the other wire, a removable translating device, and an element having contacts connected with the terminals of the removable translating device and engageable first with the second and third contacts, whereby both translating devices are connected in series between the circuit wires and engageable with all three contacts for short-circuiting the fixed translating device, and connecting the removable translating device in series with the circuit wires.

3. The combination of a switch box, circuit wires leading into the same, said box having an opening at one side, a spring contact in the box and connected with one of the circuit wires, a lamp having a terminal connected with the other circuit wire, a contact in the box and disposed opposite to the first-mentioned contact and connected with the other terminal of the lamp, said contacts being normally in engagement, whereby the lamp is in series with the circuit wires, a third contact in the box and connected with the circuit wire with which the lamp is directly connected, a plug insertible in the said opening and having contacts arranged to engage all of the said contacts in the box, whereby the said lamp is short-circuited, and a translating device connected with the contacts of the plug for connecting said device with the circuit wires.

4. The combination of a switch box, leading-in circuit wires, a lamp rigidly associated with and located outside of the box, a drop-light having a plug insertible into the box through an opening in a wall thereof, and contacts in the box arranged to be engaged by the plug, whereby the lamp and drop-light can be connected in series with the circuit wires when the plug is in one position, or whereby the drop-light alone can be connected with the circuit wires when the plug is in a different position.

5. The combination of a switch box, conduits connected with the same, circuit wires in the conduits and leading into the box, a lamp fixed with respect to the box and disposed outside the same, a drop-light removably attached to the box, and switch contacts within the box for connecting the lamp and drop-light in series with each other and the circuit wires, or for short-circuiting the lamp while the drop-light remains in circuit.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT W. BRODMANN.

Witnesses:

C. BRODWAY,

G. H. EMSLEE.