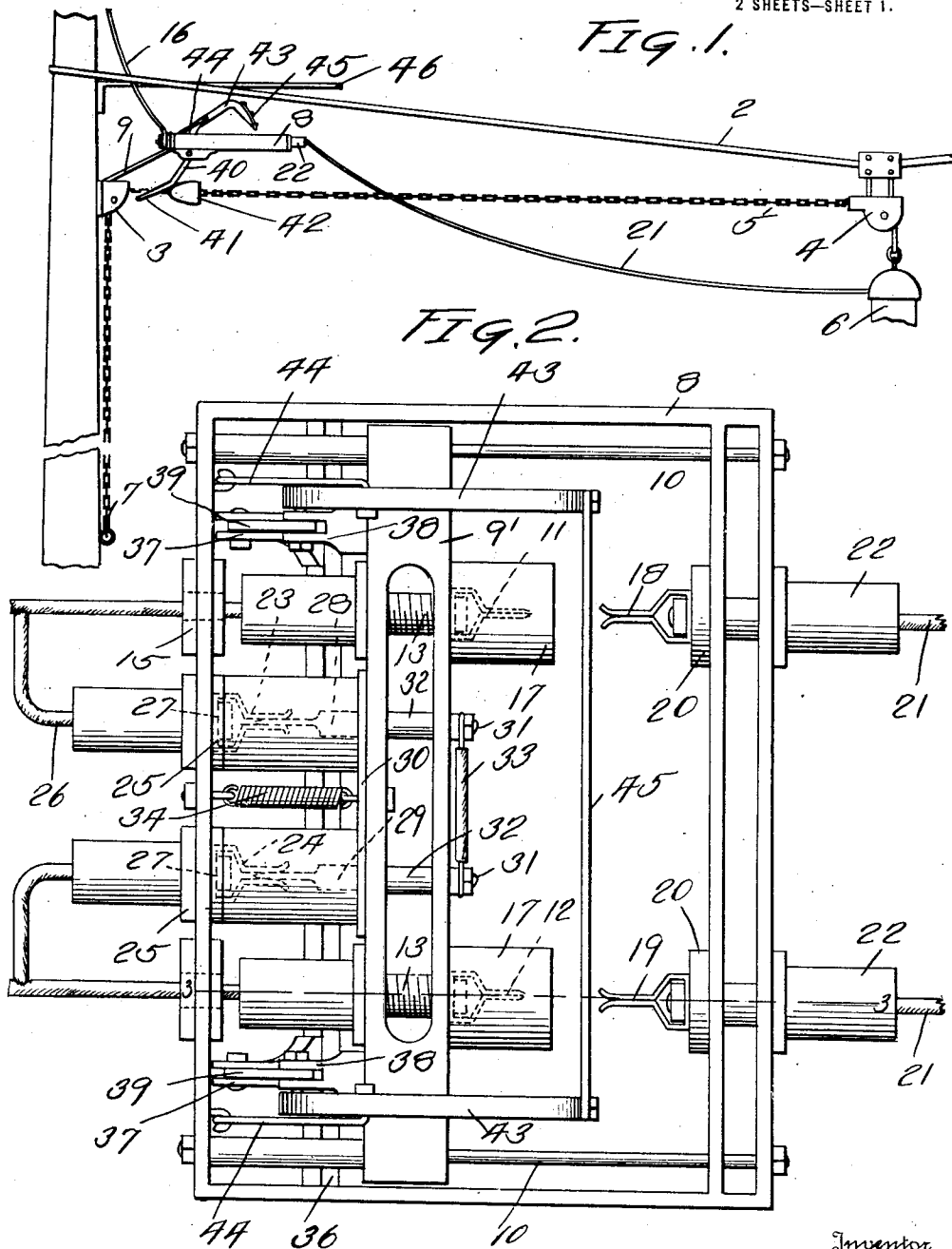


I. C. AND B. VINCENT.
SAFETY SWITCH.
APPLICATION FILED JAN. 5, 1916.

1,302,736.

Patented May 6, 1919.
2 SHEETS—SHEET 1.

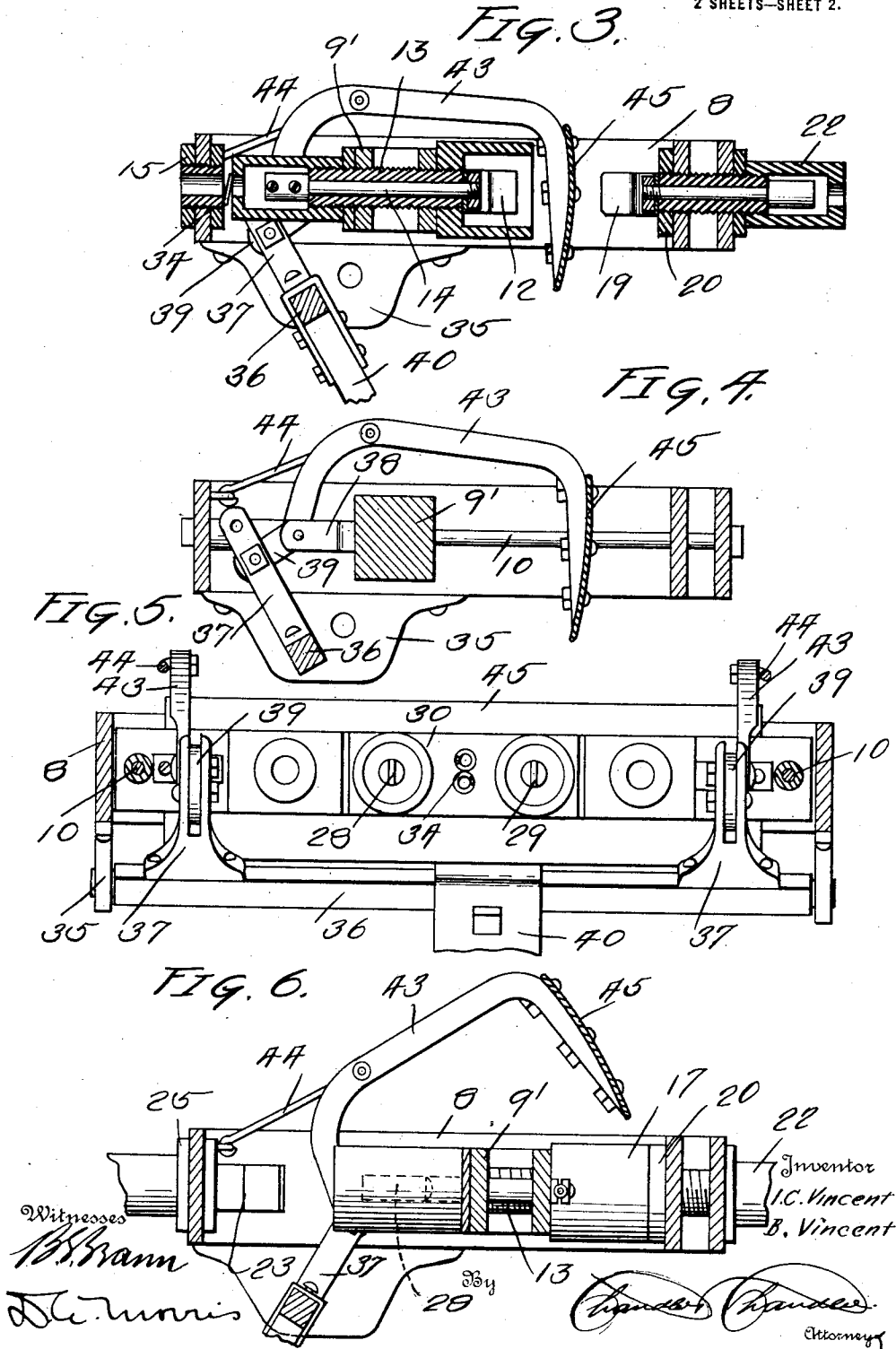


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UNITED STATES PATENT OFFICE.

IRA C. VINCENT AND BARZILLAI VINCENT, OF BRILLIANT, OHIO.

SAFETY-SWITCH.

1,302,736.

Specification of Letters Patent.

Patented May 6, 1919.

Application filed January 5, 1916. Serial No. 70,450.

To all whom it may concern:

Be it known that we, IRA C. VINCENT and BARZILLAI VINCENT, citizens of the United States, residing at Brilliant, in the county of Jefferson, State of Ohio, have invented certain new and useful Improvements in Safety-Switches; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a safety switch for arc lamp circuits.

It is well known that when an arc lamp drops from the pole or support while still in contact that it becomes dangerous to pedestrians or when it is lowered for cleaning or repair while still in circuit it becomes dangerous to the operator since the lamp is in series with a plurality of other lamps and the circuit is therefore completed by the lamp when the other lamps are in operation. Inasmuch as the lamps are in series it is impossible, without the use of a switch, to repair the lamp without breaking the entire circuit and thus rendering the remaining lamps inoperative.

It is therefore an object of our invention to provide an improved automatically operated switch which may be interposed in the lighting circuit and which will complete the circuit through the lamp when the latter is in its proper position but which will cut the lamp out of the circuit should it drop or be manually lowered and will complete the circuit so that the remainder of the lamps therein will not be rendered inoperative.

It is a further object of our invention to so construct the device that it will be inexpensive to manufacture, readily applied and positive in its operation.

With these and other objects in view such as will appear as our description progresses, our invention comprises the combination and arrangement of parts as set forth in and falling within the scope of the appended claim.

In the drawing:

Figure 1 is an elevational view of the device showing the same mounted upon a pole and showing the parts in the positions they will occupy when the lamp supported by the pole is in its raised position;

Fig. 2 is a top plan view of the device with the parts in the positions they will occupy when the lamp is in its lowered position;

Fig. 3 is a vertical sectional view on line 3—3 of Fig. 2 showing the switch blades for completing the circuit through the lamp;

Fig. 4 is a similar view showing the manner in which the insulator plate is mounted and actuated;

Fig. 5 is a vertical sectional view taken at right angles to Fig. 3, and

Fig. 6 is a vertical sectional view showing the parts in the positions they will occupy when the lamp is raised.

Referring to the drawing by reference characters wherein like parts are indicated by like characters throughout the several views:

We have illustrated conventionally a pole which is provided with the usual lamp supporting cable 2 on which pole is a pulley 3 and on which cable is a pulley 4. A chain 5 passes over these pulleys 3 and 4 and supports a lamp 6 at one end and is at the other end attached to the pole at 7. The lamp obviously may be raised or lowered by means of this chain.

In order that the lamp 6 may be included in a circuit when the lamp is raised and automatically cut out of said circuit when the lamp is lowered, we have provided a frame 8 which is supported on the pole by suitable brackets 9 and is disposed horizontally. Slidably mounted within this frame 8 is a bar 9' which is mounted upon guide rods 10. A pair of lead contacts 11 and 12 are mounted upon this bar 9' and are insulated therefrom by suitable sleeves 13 through which conductors 14 extend, which conductors are attached to the lead contacts 11 and 12 and extend through the frame 8 and are insulated therefrom by suitable material 15. These wires are connected to the lead wires 16 and are also slidable through the frame 8. The lead contacts 11 and 12 are inclosed in sockets 17 which are made of suitable insulating material. Work contacts 18 and 19 are mounted on the frame 8 in alinement with the lead contacts 11 and 12 and are adapted to receive the latter. These work contacts 18 and 19 are insulated from the frame 8 by suitable disks 20 which, when the lead contacts 11 and 12 and the work contacts 18 and 19 interengage, close the

sockets 17. Wires 21 are connected to the work contacts 18 and 19, extending through suitable sleeves 22 which are made of insulating material, and extend to the lamp 6.

5 Thus when the lead contacts 11 and 12 engage with the work contacts 18 and 19, the circuit will be complete through the lamp 6.

Supplemental lead contacts 23 and 24 are mounted on the frame 8 and are insulated therefrom by suitable disks 25. A wire 26 extends from each of the lead wires 16 and is connected to the adjacent supplemental lead contact 23 or 24 by means of a binding post 27. A pair of shunt contacts 28 and 29 are mounted on and insulated from the bar 9' by means of a plate 30 of insulating material. Binding posts 31 extend through the bar 9', are insulated therefrom by sleeves 32 and are connected to the shunt contacts 28 and 29. A conductor 33 extends between and is connected to these binding posts 31. It will thus be seen that when the shunt contacts 28 and 29 engage with the supplemental lead contacts 23 and 24 the circuit will be complete from one of the line wires through the adjacent contacts, the conductor 33, the remaining contacts and the wire 26 back to the line wire and at the same time the lead contacts 11 and 12 will be disengaged from the work contacts 18 and 19 and consequently the circuit through the lamp will be broken. The shunt contacts 28 and 29 are normally held in engagement with the supplemental contacts 23 and 24 by a coil spring 34 which is attached to the bar 9' and to the frame. A pair of ears 35 depend from the frame 8 and mounted in these ears, oscillatably, is a rod 36 which is provided at its ends with arms 37. The bar 9' is provided with similar arms 38 and extending between and pivotally connected to these arms 37 and 38 are links 39. Secured to the rod 36 and depending therefrom is an arm 40 which is bifurcated to form legs 41, which legs straddle the operating chain 5 in such manner that the chain is permitted to slide therebetween. The chain is provided with an enlargement 42 which is rigid therewith and which is adapted to bear against the legs 41 of the arm 40 so that the lead contacts 11 and 12 will be held in engagement with the work contacts 18 and 19 against the tension of the springs 34 when the lamp is raised and the chain 5 is fastened at 7 to the pole.

A pair of arms 43 are secured to the pivots of the links 39 on the arms 38 and links 44 are connected to these arms beyond their pivot points and to the adjacent bar of the frame 8. An insulator plate 45 is carried by these arms 43 and is adapted to move between the lead contacts 11 and 12 and the work contacts 18 and 19 when they are separated so as to thoroughly insulate the same from each other irrespective of

the weather conditions. A suitable cover such as indicated at 46 may be provided to protect the device from the elements.

It will thus be seen that when the lamp is in its raised position, the lead contacts 11 and 12 will be in engagement with the work contacts 18 and 19 and the circuit will be completed through the blades, the wires 14 and the lamp. As has been previously pointed out, these contacts are held in engagement with each other because of the fact that the enlargement 42 on the chain 5 bears against the leg 41 of the arm 40 and is held in this position by the arrangement of the chain 5 to the pole, at 7. Now should the chain become loose from the pole and the lamp dropped or be lowered, the springs 34 will move the bar 9' so that the aforementioned contacts blades will be disengaged and so that the shunt contacts 28 and 29 will be thrust into engagement with the supplemental lead contacts 23 and 24, breaking the circuit through the lamp and completing a circuit through these last mentioned contacts, the conductor 33, the wires 26 and the lead wires.

It will thus be seen that we have provided a switch which will automatically cut an arc lamp out of a lighting circuit when the lamp is lowered and which will complete the circuit at such time so that the remaining lamps therein will not be rendered inoperative.

While we have illustrated and described a particular embodiment of our invention, it has merely been for the sake of convenience and we do not wish to be limited to that particular embodiment as it is obvious that numerous changes may be made in the details of construction without departing from the spirit of the invention or exceeding the scope of the appended claim.

What we claim is:—

The combination with an electric lamp supported for raising and lowering movement, a frame on the support for the lamp, a slidable bar in the frame and movable crosswise thereof, inner shunt and outer lead contacts carried by and insulated from the bar, a connection between the inner contacts, electric conductors connected with the outer lead contacts, pairs of contacts on opposite sides of the frame in alinement with the shunt and lead contacts and insulated from said bar, electric connection between the conductors and the pair of contacts on the frame in alinement with the shunt contacts, electric connections between the other pair of contacts on the frame and the lamp, sleeves carried by the bar and surrounding the contacts thereon to telescope over and inclose the contacts on the frame when said contacts are engaged with each other, a trip lever supported in the frame and having connection with the bar for moving the

same, means for raising and lowering the lamp, and a member engaged by the raising and lowering means and active upon the trip lever to operate the same for closing
5 the circuit when the lamp is raised and for opening the circuit when the lamp is lowered.

In testimony whereof, we affix our signatures in the presence of two witnesses. .

IRA C. VINCENT.

BARZILLAI VINCENT.

Witnesses:

BLAIR STEELE,

KATE POOLE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."