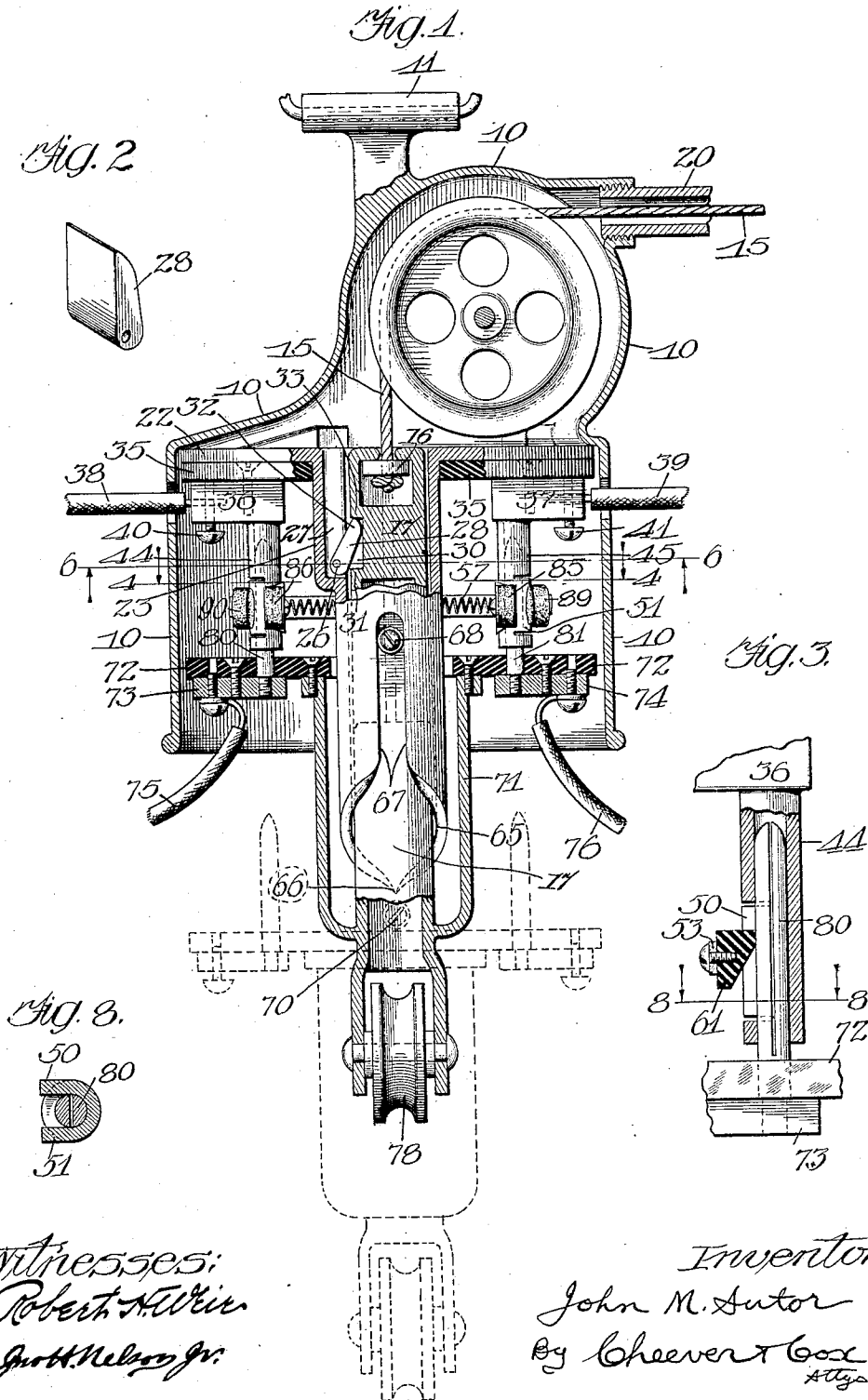


J. M. SUTOR.
HANGER FOR ARC LAMPS.
APPLICATION FILED FEB. 18, 1908.

963,259.

Patented July 5, 1910.

2 SHEETS—SHEET 1.



Witnesses:
Robert M. Allen
J. H. Nelson Jr.

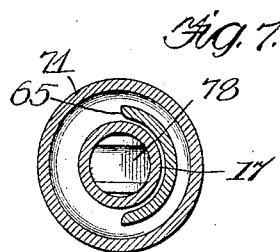
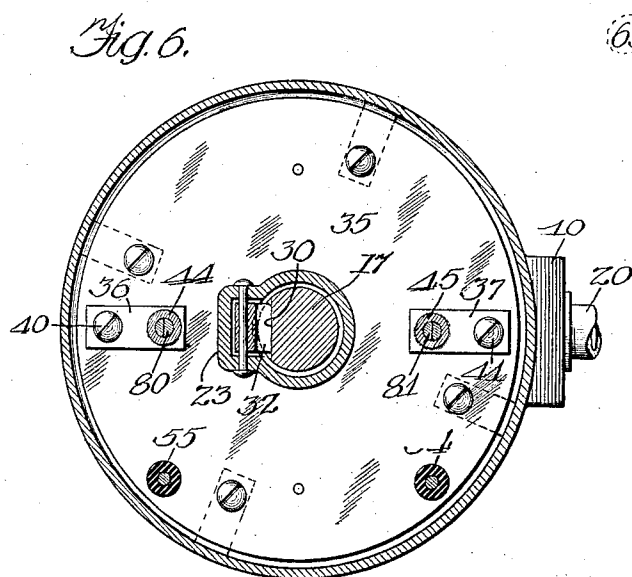
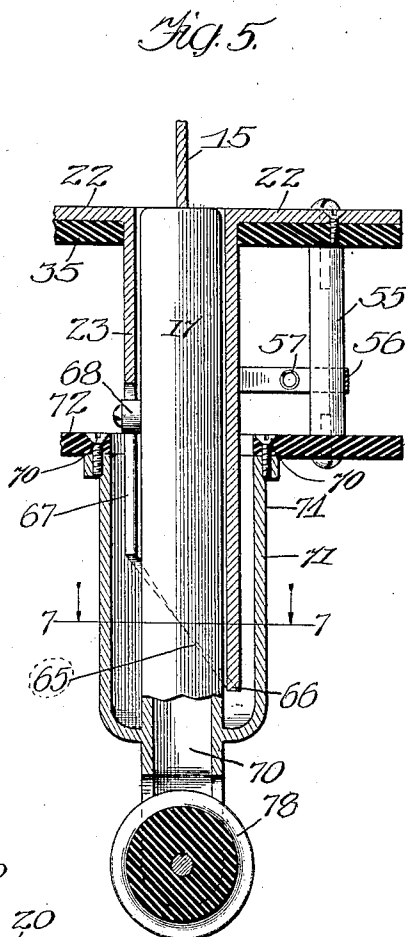
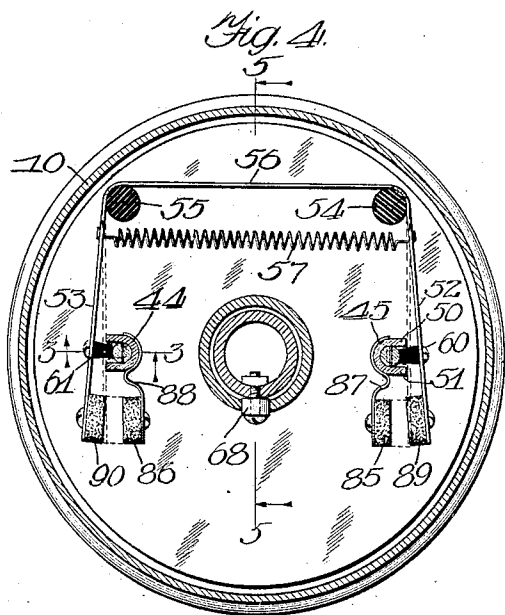
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John M. Sutor
By Cheever & Cox
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JOHN M. SUTOR, OF OAK PARK, ILLINOIS.

HANGER FOR ARC-LAMPS.

963,259.

Specification of Letters Patent.

Patented July 5, 1910.

Application filed February 18, 1908. Serial No. 416,585.

To all whom it may concern:

Be it known that I, JOHN M. SUTOR, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Hangers for Arc-Lamps, of which the following is a specification.

This invention relates to arc lamps of the type which are ordinarily hung over the intersections of streets for lighting purposes.

The object of the invention is to provide a means by which the operating mechanism of the lamp can be lowered to a position near the ground for the purposes of repair and replacing carbons without breaking the continuous series circuit in which such lamps are ordinarily connected and without current passing through the mechanism parts of the lamps at the time the repairs are being made; thus removing the repairing operator from all danger.

A further object of the invention is to provide mechanism by which the operating mechanism containing parts of the lamp may be automatically restored to exactly their original position in connection with the stationary portions of the lamp which are not lowered thereby automatically replacing the lamp proper which has been lowered into the electrical circuits supplying the lamp.

The invention consists in a lamp hanger or frame permanently secured in fixed or relatively fixed position provided with a short circuiting switch adapted to carry the current of the main line circuit during the time when the lamp is being repaired; that is when it is cut out of the electrical circuit, said short circuiting device being automatically thrown into circuit and the continuity of current through the main line circuit maintained although the lamp proper is lowered within reach of the operator and is entirely out of circuit.

The invention further consists in an automatic guiding or switching mechanism for restoring the two parts of the device to normal position.

The invention also consists in details of construction which will be hereafter more fully described and claimed as the specification proceeds.

Referring to the drawings Figure 1 is a central vertical sectional elevation of one form of device illustrating this invention in its preferred form. Fig. 2 illustrates a

latch dog. Fig. 3 is a detail view on the line 3—3 of Fig. 4. Fig. 4 is a horizontal detail view on the line 4—4 of Fig. 1. Fig. 5 is a vertical sectional side view on the line 5—5 of Fig. 4. Fig. 6 is a bottom view on the lines 6—6 Fig. 1. Fig. 7 is a detail view on the line 7—7 Fig. 5. Fig. 8 is a detail view showing the manner of opening out a conducting tube for the purposes hereafter described.

In constructing this device some form of supporting frame must manifestly be used and for this purpose a water proof hood 10 is provided having on its upper portion a projecting lug 11 by means of which the device may be secured to any suitable support as for instance the ceiling of the room or to one or more wires diagonally across the intersection of two streets. Inside this hood and a little to one side of its center is mounted a grooved wheel 14 of any suitable size and dimensions over which a suspension rope, cord or chain 15 is adapted to pass, one end of the chain being connected by a swivel 16 to a vertical rod or plunger 17 preferably circular in form and preferably though not at all necessarily lying in the central axis of the device. The other end of the rope or chain 15 passes out through the passageway 20 into the open air and may be carried by any suitable device to a point where it can be conveniently manipulated by the operator for the purpose of raising and lowering the lamp mechanism supported by the vertical rod or plunger 17. Rigidly secured inside the casing 10 by any suitable means is a horizontal plate 22 having depending from it at its center a tubular member 23 of any suitable form adapted to inclose and guide the pin or plunger 17 heretofore described.

Pivotaly mounted at 26 in a suitable recess 27 in the side of the cylindrical guide member 23 is a latch dog 28 adapted when the parts are in normal position to engage the pin or plunger 17 in the recess 30 as shown. This recess 30 is so shaped that when the parts are in the normal position shown the dog 28 holds the plunger 17 and the parts attached to it in the normal or full line position of Fig. 1 and that when a pull is given to the lifting member 15, tending to elevate said plunger 17 slightly above in position of Fig. 1, the angular corner 31 engages said dog 28 and throws it to vertical position or in other words throws its

point 32 sufficiently out of engagement with the angular corner 33 that by quickly releasing the pull upon the cord or lifting member 15 plunger 17 may slip, with attached parts, past the dog 28 and be thus wholly released from contact with the frame proper of the lamp. The swivel is preferably used so that the plunger 17 with attached parts may rotate freely about the center of the suspension member 15 but any other form of attachment may be used without departing from the invention.

Inside and below the plate member 22 heretofore described there is secured by any suitable means a plate 35 of insulating material. Rigidly secured to this insulating material preferably on opposite sides of the lamp are line wire terminals 36 and 37 adapted to have line wires 38 and 39 connected to them in the ordinary manner by the screws 40 and 41 or any other equivalent or suitable means. Rigidly and electrically connected to these terminal blocks 36 and 37 are hollow depending conducting tubular members 44 and 45. At some suitable points, in the particular case here shown that slightly below the line 4-4 of Fig. 1, these tubes are split vertically and sawed into horizontally as shown in Fig. 8 and the intervening quarter circumferences 50 and 51 bent outward as shown so that their edges may make contact with an adjacent switch member 52 or 53 of the short circuiting device which comprises these switch members 52 and 53, suitably mounted on one or more posts 54 and 55 and electrically connected by any suitable conducting devices as member 56. These switch members 52 and 53 are normally held in contact with their respective contact points on posts 44 or 45 by the spring 57 but manifestly any suitable spring mechanism may be used without departing from the spirit of this invention. The result of this construction is that when the switch members 52 and 53 are in the dotted line position of Fig. 4 current coming into the line wire, as for instance 38, will pass through the short circuiting device out through the post 45, block 37 and line wire 39. In other words when the switch members are in the dotted line position of Fig. 4 current may pass from one line wire terminal to the other without passing through any of the mechanism containing the lamp proper which is carried by the plunger 17 in the manner hereafter described.

Any person familiar with electrical matters will see on inspecting Fig. 4 and when the switch members 52 or 53 are either of them removed to full line position of Fig. 4 out of contact with the adjacent post 44 or 45 that this short circuit will be broken and that the current will not flow through the short circuit device in the manner described.

Rigidly secured to the switch member 52

is an insulating member 60 adapted to enter the tube 45 and similarly connected to the switch member 53 is an insulating member adapted to enter tube 44, in the manner shown when the short circuiting switch is in dotted line position and to clear the interior of said tubes when the switch members 52 and 53 are moved to full line position.

The lower end of the tube 23 heretofore described is cut off as shown in Figs. 1 and 5 in the diagonal plane 65; made at its lowest point or bottom with a rather sharply pointed portion 66, thence curving easily up into the vertical slot 67 within which the pin or roller 68 on the rod or plunger 17 is adapted to travel.

The object of this construction and the result of it is that when the rod 17 is lowered entirely out of the tubular member 23 and is then lifted up the pin or roller 68 will strike some portion of this curved cam track 65 and travel up into the vertical slot 67 with the result that as the elevating motion is continued the engagement of said roller 65 against this track causes the pin 17 to rotate upon its axis to the same circumferential position in which the pin 68 may travel up the slot 67 thereby insuring the return of the pin and connected plunger 17 to the normal position.

Rigidly connected to the lower portion of the plunger 17 by any suitable means as for instance the screw 70 and the tubular member 71 is a plate 72 of insulating material carrying on its lower portion terminals 73 and 74 connected by wires 75 and 76 to the lamp mechanism proper which is not here shown said lamp being ordinarily suspended from the insulator 78, or any other suitable mechanism connected to and movable with the rod 17. This plate 72 is normally in the position shown in full lines in Fig. 1 and carries two vertically projecting conducting pins 80 and 81 the former connected at its lower end to terminal 73 and the latter connected at its lower end to terminal 74. The pin 80 normally extends up into and in electrical connection with the tube 44, in so doing engaging the insulating plug 61, thereby pressing the switch 53 outward to full line position of Fig. 4 as heretofore described. Similarly the pin or rod 81 enters the tube 45 and presses outwardly the insulating plug 60 thereby holding the switch member 52 in a position heretofore described. Each of these pins 80 and 81 is split as shown so as to insure spring contact and therefore good electrical connection with the tubes in which they fit. The result of this construction is that when this plate 72 is in normal position current coming in through the line wire 38 or 39 passes down through the adjacent tube 44 or 45 and the pin within it; thence through the lamp mechanism

proper and thence out to the opposite line wire and does not pass through the short circuiting switch. When however the operator takes hold of the chain or rope 15 and elevates the plungers 17 sufficiently to release the dog 28 and then lowers the plunger 17 with the member 72 and pins 80 and 81 attached thereto toward the dotted line position a sufficient distance so as to withdraw the pins from engagement with the insulating plugs 61 and 60 respectively the switches 52 and 53 are thrown in contact with their adjacent tubular members and the current passes through the member 56 heretofore described and does not then pass down through the pins 80 and 81 into the lamp. The result of this is that the current in the main line circuit is unbroken and lamps other than the one being handled by the operator are not extinguished and that the current is cut off from this particular lamp with the result that the operator may repair the lamp or replace carbons at will. The distance to which he may remove the lamp proper from the case 10 and its connected parts is only limited by the chain or rope 15. When the repairs have been made or a carbon replaced the operator lifts the lamp mechanism proper by pulling on the rope 15 and as the parts reach the upper end of their stroke the pin 68 engages and travels upon the track 65 in the manner described. The plate 72 is thereby rotated to the proper position so that as the further elevating action takes place pins 80 and 81 enter their respective tubes and engage their respective insulating portions 61 or 60 thereby throwing out the short circuiting device and throwing the lamp into circuit. Particular attention is here called to the fact that the same pin is always brought into engagement with the same tube thereby insuring the lamp always being in the same positive and negative position with reference to the main circuit. In order to avoid too violent a spark when this last mentioned throwing in and out takes place supplemental carbon switches 85 and 86 and contacts 89 and 90 are provided carried on suitable springs 87 and 88 adapted to carry the current from the hollow tubes above described through carbon plugs 89 and 90 as the case may be into the adjacent switch member. These devices are so adjusted in the ordinary manner that the breaks between adjacent carbons are not made until after the metal switch members have been taken out of contact with the adjacent hollow tubes.

In order to prevent arcing between the

tubes and pins as the lamp is lowered the mechanism is so arranged that the short circuiting takes place as described before the pins are wholly removed from the tubes.

What I claim as new and desire to secure by Letters Patent, is:

1. In a device of the character described, the combination of a relatively stationary part, a relatively movable part, means for maintaining said movable part normally in engagement with said stationary part but permitting removal thereof, mechanism for automatically carrying said movable part into a predetermined position with respect to said stationary part as said parts are brought into engagement, a pair of contact pins carried by said movable part, a pair of contact members carried by said stationary part and adapted to cooperate with said contact pins when said stationary and movable parts are in engagement, a pair of switch members carried by said stationary part and held normally in engagement with said contact members, said switch members having portions lying in the paths of said contact pins and insulated therefrom, whereby as said pins are brought into engagement with said contact members said switch members are moved out of contact therewith, and a conductor connecting said switch members.

2. In a device of the character described, the combination with relatively stationary and movable parts, of a pair of contact pins carried by said movable part, a pair of contact members mounted on said stationary part, a pair of switch members mounted on said stationary part, means tending normally to hold said switch members in engagement with said contact members, said switch members having insulating members adapted for engagement with said contact pins, whereby as said pins are brought into engagement with said contact members said switch members are moved out of contact therewith, a conductor connecting said switch members, supplemental switches mounted on said contact members, and supplemental contacts carried by said switch members and adapted to engage said supplemental switches prior to the engagement of said switch members with said contact members.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

JOHN M. SUTOR.

Witnesses:

DWIGHT B. CHEEVER,
FREDERIC S. RICHMOND.