March 24, 1936. C. J. SELLANDER 2,034,960

METHOD AND MECHANISM TO REPAIR BROKEN FILAMENTS WITHIN ELECTRIC LIGHT GLOBES

Filed Jan. 25, 1933 2 Sheets-Sheet 1

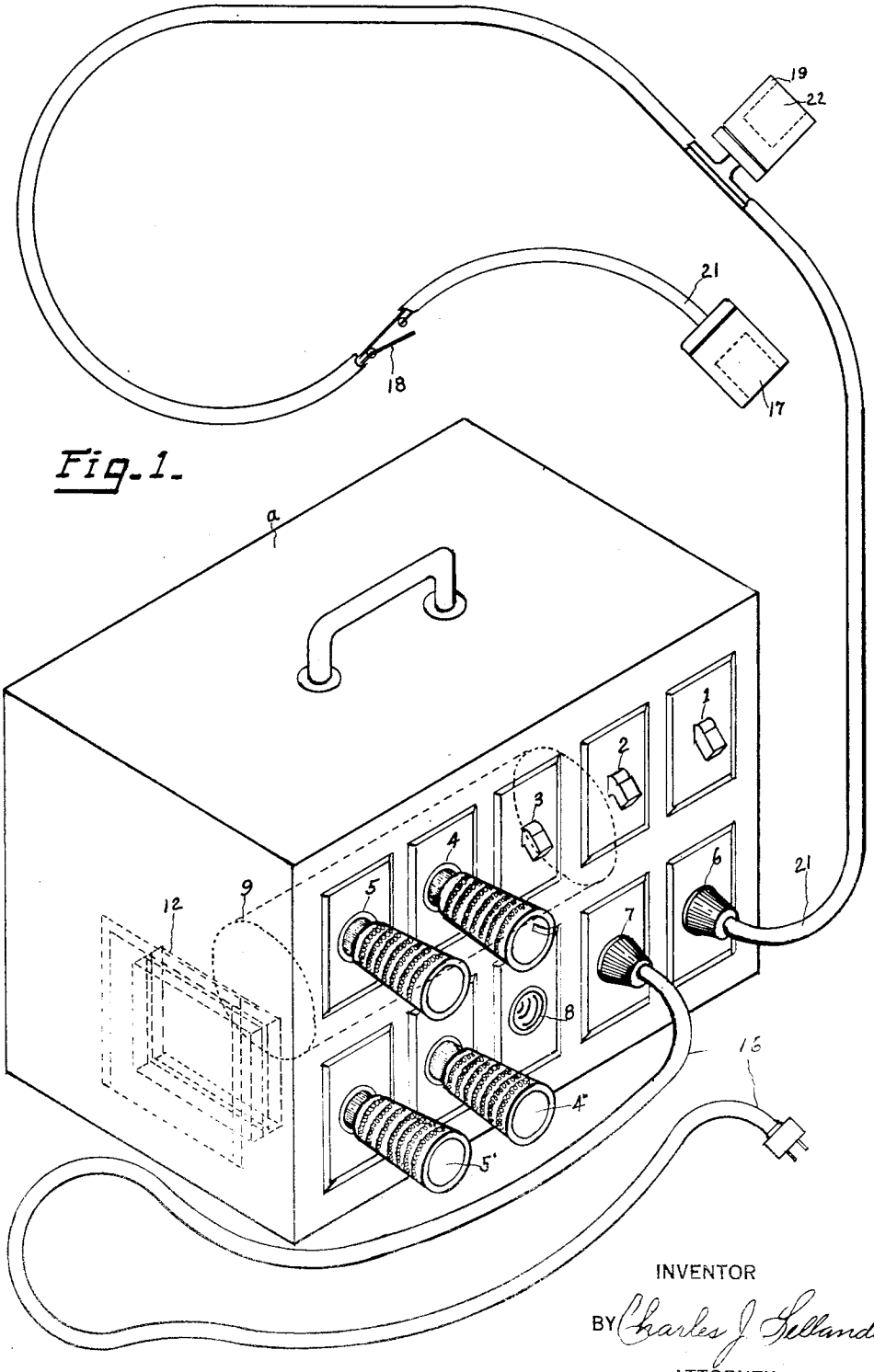


Fig. 1.

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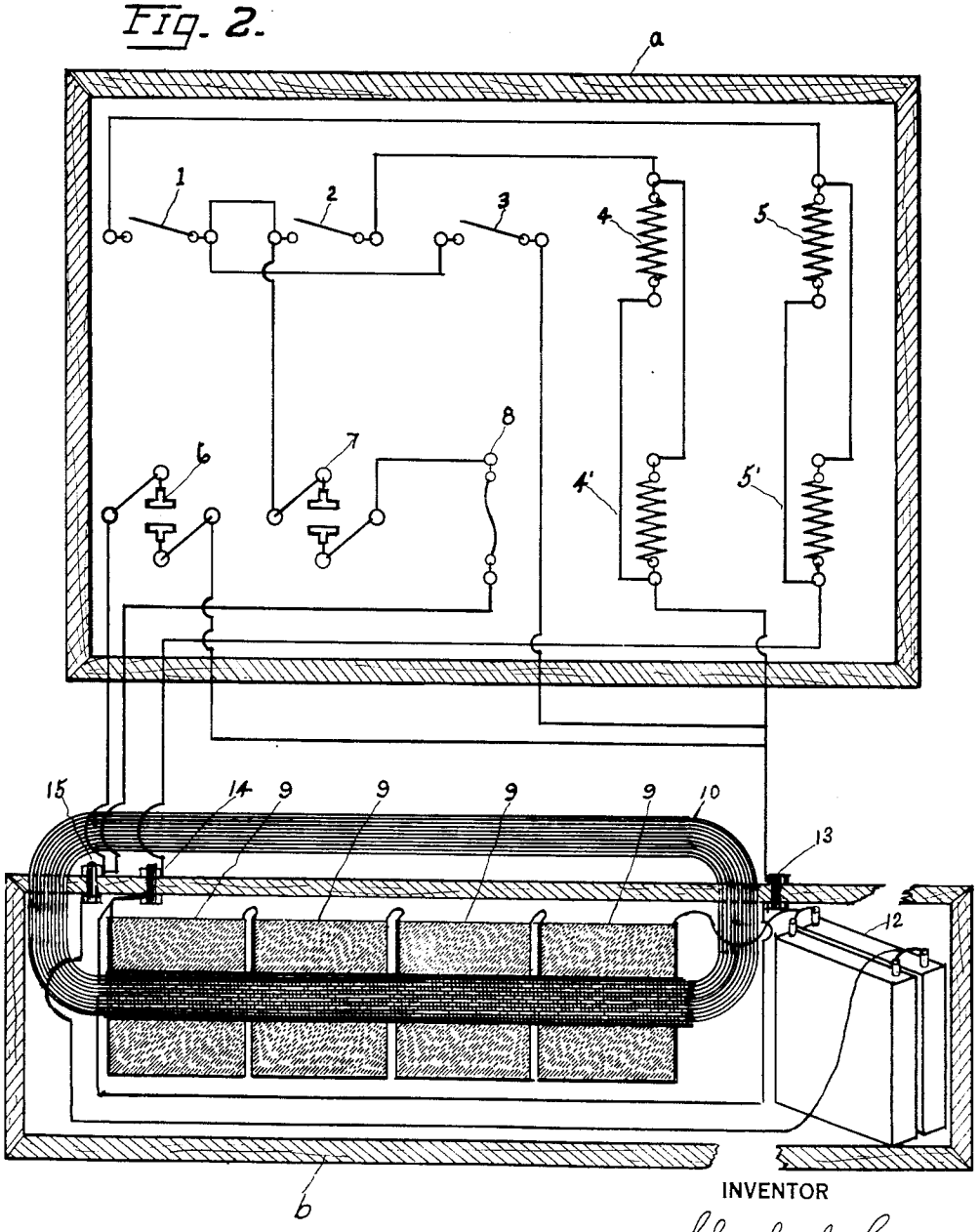
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Fig. 2.



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Patented Mar. 24, 1936

2,034,960

UNITED STATES PATENT OFFICE

2,034,960

METHOD AND MECHANISM TO REPAIR BROKEN FILAMENTS WITHIN ELECTRIC LIGHT GLOBES

Charles J. Sellander, Seattle, Wash., assignor, by direct and mesne assignments, of nineteen-twentieths to Electro Chemical Corp., Seattle, Wash., a corporation of Washington, and one-twentieth to Geo. Olson, Seattle, Wash.

Application January 25, 1933, Serial No. 653,406

1 Claim. (Cl. 176—7)

The principal object of the present invention is to provide a method whereby the filament of an incandescent electric light globe when broken by use or abuse, can be welded or fused together while within the globe and without the loss of the gas from therein.

Another object of the invention is to provide a readily portable mechanism to step up the voltage as required and provide the necessary controls for same.

A still further object of the invention is to provide a method of repairing broken filaments that at once is safe to handle, quick of action and simple to build and operate.

I accomplish the above and other objects by use of the mechanism illustrated in the accompanying drawings, described in the specifications and finally set forth in the claim.

Fig. 1 of the drawings is an isometric exterior view of the case, embodying my invention and the elements thereof.

Fig. 2 is a sectional view lengthwise thru Fig. 1 but with the inside assembly moved down for convenience in illustration. In this view the various elements are shown symbolically and a diagram of the wiring system as required is shown.

Referring now, more particularly to the drawings: *a* is the case preferably made of wood or other light, non-conducting material, but may be made of metal if desired. Within case *a* is located assembly *b*, consisting of a soft iron core or armature 10 with a primary winding around same. To reach a voltage of approximately sixteen thousand volts, the primary core should be approximately twelve inches long and approximately three-quarters of one inch in diameter. Around this core is wound approximately two hundred turns of Number 19 to 24, B. and S. gauge, thin insulated copper wire and both ends brought out to one terminal at end of core. The secondary winding consists of a multiplicity of units greater than three, each composed of one thousand turns of enameled silk insulated wire, Number 34 to 38 B. and S. gauge. In the accompanying drawings are shown four spools, 9 connected together in series. From the final coil, the last turn is connected to one terminal of condenser 12, which is four M capacity. The wiring connections are clearly shown and no further description is deemed necessary.

Having described the mechanism, I will now describe the manner in which it is to be used while repairing a lamp.

First see that all elements are properly screwed into their sockets. Make sure that the fuse in receptacle 8 is in good order and of sufficient strength. 15 amperes is sufficient for a one thousand watt lamp. Be sure that switches, 1, 2 and 3 are open, or at "off" position. Insert one end of power cord 16 into receptacle 7 which is the main line or current supply connection. Connect the other end of cord 16 to a source of current, 120 to 130 volts, A. C. three phase, sixty cycle. Insert end of welding cord 21 into receptacle 6. If the lamp, to be welded, has a standard base, insert a reducer into mogul receptacle 17 and with a second reducer, insert a fuse into receptacle 19. Close switch 18. Place a known good lamp into receptacle 17 and if all contacts are in good order, the lamp should light up when switch 3 is closed. If lamp does not light up it is because the current is not grounded. (Most circuits are grounded at the meter or some other convenient point.) If no ground exists, make a ground connection from one of the wires on circuit leading to source of current supply. If, after doing this, the test lamp fails to light up, pull out plug from receptacle 6 and insert it again the opposite way. If all connections are properly made, the test lamp will now light up. Open switch 3 and remove the test lamp, then insert the lamp to be repaired. Hold the lamp in such a position as will allow the broken ends of filament to contact each other. Close switch 1. If the two ends of broken filament are close enough together, or a distance less than the space between the main wires that are imbedded in the glass, near the base of the lamp, two intensely bright spots will appear, one at each end of broken filament. Lightly tap the globe of lamp to bring glowing ends together. When the ends join, the glow will cease. If the filament shows checkered or dark in spots, make and break this contact several times in order to build up a small bead about the size of a pin-head on each end of filament. After building up proper bead, you are ready to weld the filament together. Break the contact lightly and when the ends of the filament again become incandescent and are about one eighth or one quarter of an inch apart, close switch 2 in addition to switch 1. This will immediately light the whole filament. Give the lamp a few sharp taps to bring the ends together, where they will be firmly joined in a butt weld. Immediately open switches 1 and 2 and close switch 3. Let the lamp burn a few seconds on switch 3. Let the lamp cool a few seconds and if properly welded, will stand a few sharp taps without coming apart.

In case the filament of the lamp to be welded, has a gap, greater than across the wires in the glass support at the base, when switch 1 is closed, there will appear an arc across at the closest point. This will heat the upright posts that hold the filament. While they are hot, tap lamp in such a way as will bring the ends of the filament close enough to contact for welding as at first described.

In certain cases it is necessary to bend the upright glass tube that supports the wires, in order to get the broken ends of the filament to contact. If such is the case, regulate the heat as desired, by unscrewing resistance element 5, just enough to break contact. This will reduce the heat and not allow the glass to burn off completely, but will render it pliable and by holding the lamp in a horizontal position, the tube can be pulled toward the side of the globe by the force of gravity.

Having thus described my invention, what I claim is:

The method of repairing a gas filled electric lamp in which the filament has become broken, which consists in impressing a sufficiently high potential on said filament to cause an arc discharge between said broken ends whereby they are rendered semi-fluid, then tapping the bulb to cause the filament ends to move into contact with each other causing a weld and thereafter passing current at lower potential through said filament to heat said entire filament.

CHAS. J. SELLANDER.