

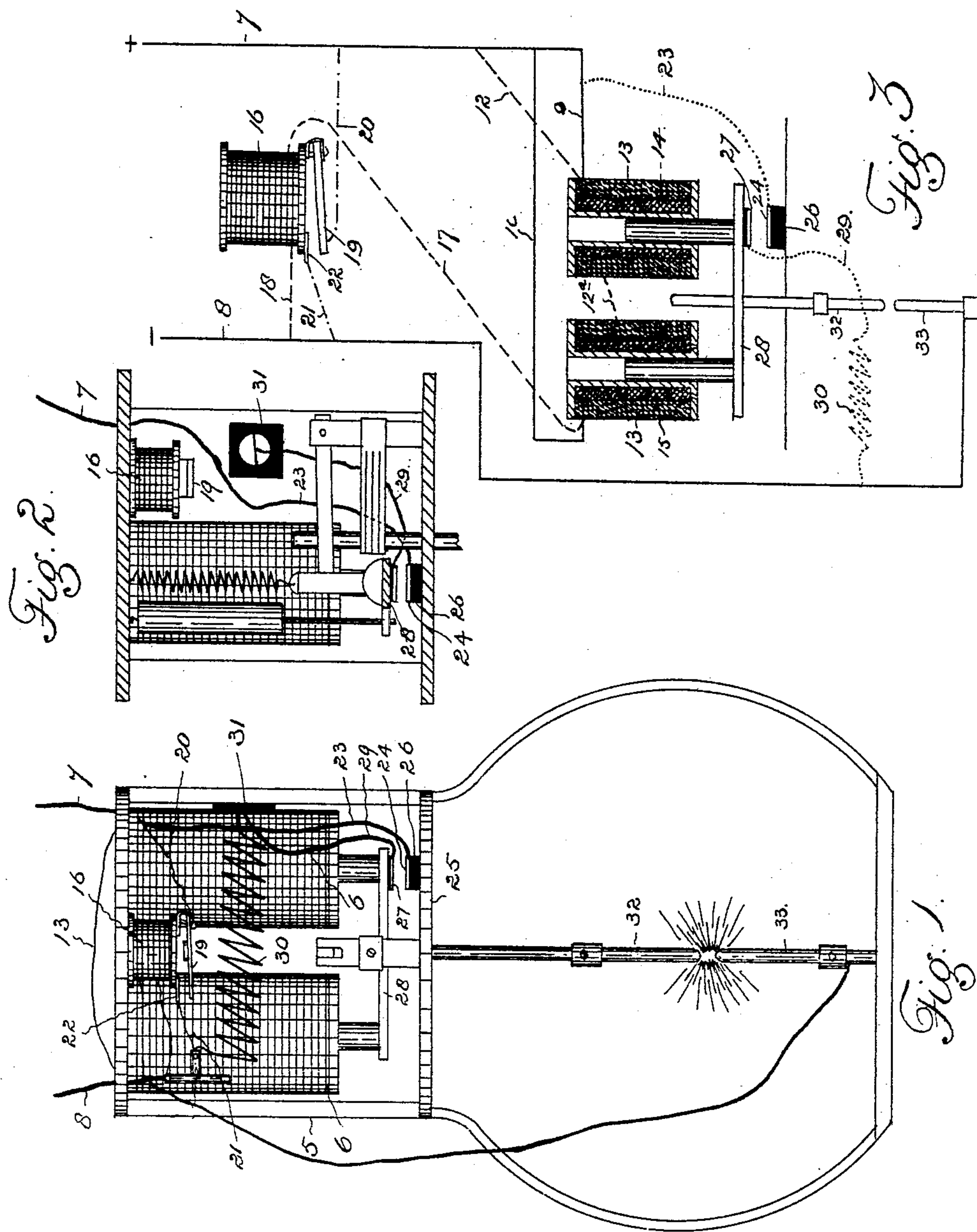
(No Model.)

B. ADAIR & C. H. KLEWER.

CUT-OUT FOR BRUSH LAMPS.

No. 494,995.

Patented Apr. 4, 1893.



WITNESSES:

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CUT-OUT FOR BRUSH LAMPS.

SPECIFICATION forming part of Letters Patent No. 494,995, dated April 4, 1893.

Application filed November 18, 1892. Serial No. 452,460. (No model.)

To all whom it may concern:

Be it known that we, BENJAMIN ADAIR and CHARLES H. KLEWER, citizens of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Cut-Outs for Brush Lamps; and we do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in cut-outs specially designed for use in the Brush arc lamp and the object of the invention is to provide a device of this class which while being simple in construction and economical in cost, shall be reliable, durable and efficient in use.

To these ends the improvement consists of the features, arrangements and combinations hereinafter described and claimed, and will be fully understood by reference to the accompanying drawings in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a front view of the lamp. Fig. 2 is a side view shown partly in section and partly in elevation. Fig. 3 is a diagrammatic view illustrating the circuit, the solenoids being shown in section.

Similar reference characters indicating corresponding parts or elements of the mechanism in the several views, let the numeral 5 designate the frame and 6 the solenoids of a Brush lamp. The circuit wires or conductors 7 and 8 are connected with the lamp in the usual manner, the one being connected with the positive pole and the other with the negative pole of the electrical source. From wire 7 the branch wire 9 leads to the inner or main coil 14 of one solenoid, while another branch wire 10 leads to the corresponding coil 15 of the other solenoid.

Let 12 designate the branch wire leading to the thin shunt-wound outer coils 13 of the solenoids. The connection between the thin coils of the two solenoids is shown at 12^a.

Let 16 designate a coil of thin wire wound on a suitable core and constituting an electromagnet. This coil is connected with the thin

coils of the solenoid by a wire 17 and with conductor 8 of the main circuit by a wire 18. The armature 19 of magnet 16 is connected with conductor 7 by a wire 20, while a wire 21 leads from a contact 22 secured to the base of magnet 16, to main wire 8. This construction is such that when the magnet 16 is sufficiently energized to draw the armature to engagement with its coil, the armature engages contact 22 and closes the circuit between wires 7 and 8. From the main wire 7 another branch wire 23 leads to a contact 24 supported upon the base 25 but insulated therefrom as shown at 26. From a contact 27 secured to the bottom of the heel piece or armature 28 of the solenoids, but insulated therefrom, leads a wire 29 to a resistance coil 30 supported at one extremity by an insulating piece 31 made fast to the frame, and at the opposite extremity is connected with wire 8 as heretofore explained. It will thus be seen that no current passes through the coil 30 until the heel piece drops sufficiently to bring the contacts 24 and 27 into engagement with each other. When, however, this does occur, as when the internal circuit is broken by the burning out of the carbon electrodes 32 and 33, and the main coils of the solenoids are no longer energized the current is short-circuited through the coil 30 and the circuit maintained or re-established. When, however, by reason of an accident to the lamp whereby the carbons are suddenly destroyed, a sufficient current is sent through the thin coils 13 of the solenoids and consequently through the coils of magnet 16, to draw the armature 19 to engagement with the contact 22, thus short-circuiting the current for an instant between wires 7 and 8 through wire 20, armature 19, wire 21 and contact 22, and cutting the coils of the solenoids and consequently magnet 15 out of the circuit, allowing the heel piece to drop to its lowest limit of movement, completing the circuit through coil 30 and cutting out the lamp. This coil 30 should be composed of some suitable material, as German silver and should be of such construction as to offer sufficient resistance to the current to drive the same through the lamp when the latter is in perfect working order. This is necessary in order to start the lamp. It will thus be seen that as soon as the current passes again through the

main coils of the solenoids, the heel piece or armature will be raised and the short circuit connection broken.

Having thus described our invention, what we claim is—

1. In the Brush arc lamp the combination with the solenoids, consisting of the main and shunt coils, an electro magnet having its coils interposed in the shunt circuit, a short circuit through the armature of the magnet, and another short circuit composed of a contact carried by the heel piece or armature of the solenoids, another contact on the lamp frame, a resistance coil and suitable connections where-
by the lamp is cut out of the circuit as soon as the heel piece drops, substantially as described.

2. The combination with an arc lamp having the solenoids provided with the main coils through which the circuit is completed to the electrodes and the thin shunt coils, of the elec-

tro magnet having its coils connected at one extremity with the thin coils of the solenoids and at the other extremity with one of the main circuit wires, and a short circuit connection through the armature of the magnet when the coil of the latter is sufficiently energized, and another short circuit consisting of two contacts, one supported on but insulated from the lamp frame, and the other connected with but insulated from the heel piece of the solenoids, and suitable conductors leading respectively from the main circuit wires to these contacts, substantially as described.

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

BENJAMIN ADAIR.
CHARLES H. KLEWER.

Witnesses:

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