

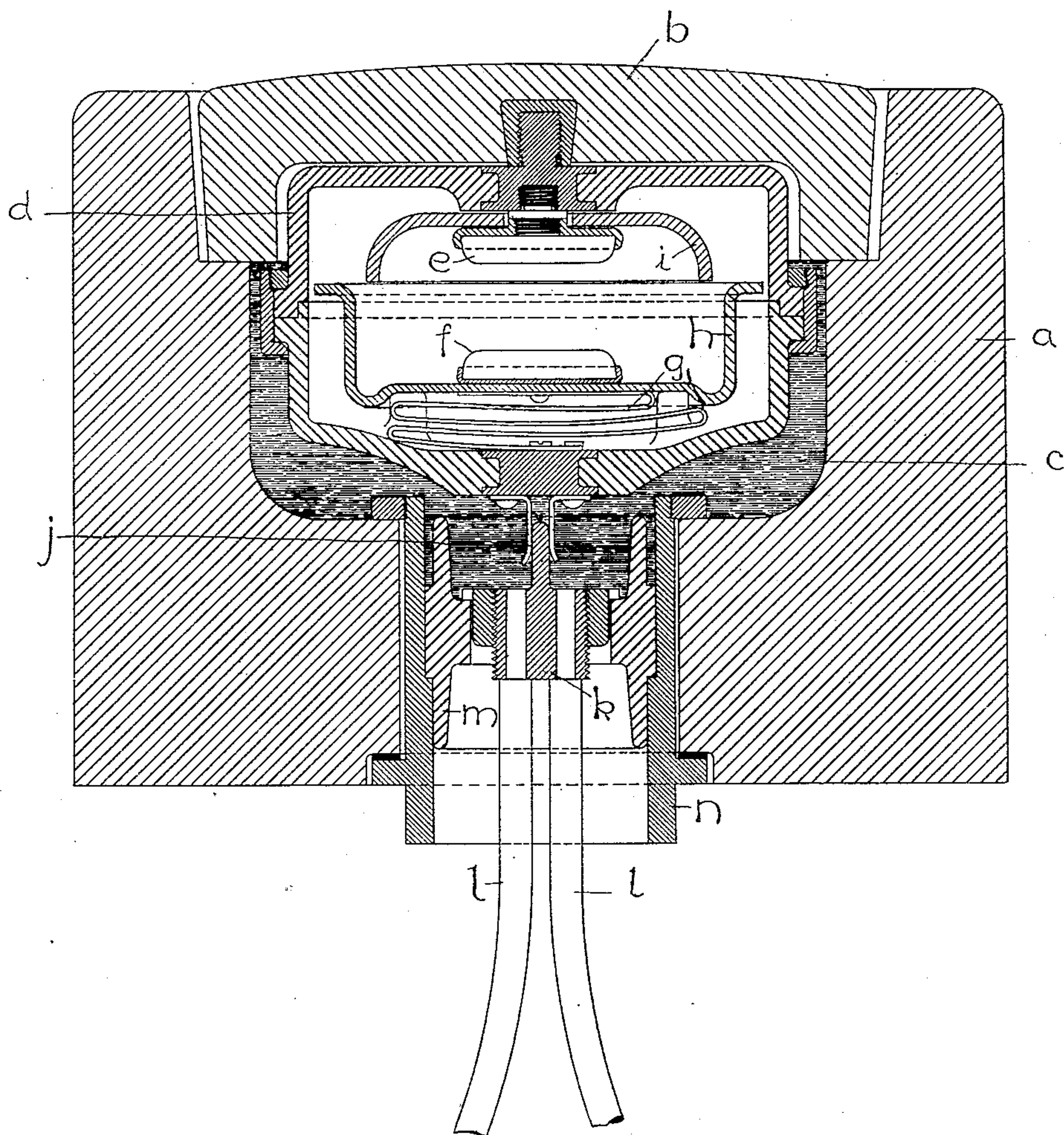
No. 745,778.

PATENTED DEC. 1, 1903.

W. M. BROWN.
CONTACT BOX FOR ELECTRIC RAILWAYS.

APPLICATION FILED DEC. 6, 1902.

NO MODEL.



WITNESSES:
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UNITED STATES PATENT OFFICE.

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CONTACT-BOX FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 745,778, dated December 1, 1903.

Application filed December 6, 1902. Serial No. 134,222. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MILTON BROWN, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented
5 a new and useful Improvement in Contact-Boxes for Electric Railways, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this spec-
10 ification.

This invention has relation to contact-boxes for electric railways, and more particularly to contact-boxes of that type in which the circuit is closed by the action of a mag-
15 net on the passing car and is opened by gravity as soon as the car has passed. In this type of box the upper fixed electrode or contact of the circuit-closer and the lower movable contact, which is carried by an arma-
20 ture, are inclosed in a sealed cup or vessel of insulating material, connection being made with the circuit through conductors which are embedded in the upper and lower portions of the said cup or vessel. In practice
25 it is found that the formation of arcs between these contacts or electrodes, which are preferably of carbon, tends in time to produce a carbonaceous condition or coating on the inner surface of said cup or vessel and that
30 such surface may become a conductor of electricity to an extent to cause some current leakage between the said conductors at times when the circuit through the box should be entirely open.

The object of the present invention is to guard against the formation of the carbonaceous condition or coating above referred to, and thus obviate this current leakage. This object is accomplished by providing within
40 the cup an arc-guard so arranged as to prevent largely the possibility of arcs coming in contact with the inner walls of the cup or the deposit thereon of the carbonaceous products of arcs and also by the employment of an ar-
45 mature of peculiar form for the movable contact or electrode, whereby the two contacts or electrodes may be normally separated to a greater distance than heretofore, (without increasing correspondingly the air-gap in the
50 magnetic circuit,) and the arcs between the same will be more quickly broken.

The precise nature of the invention will be better understood by reference to the accompanying drawing, which shows a vertical section of the improved contact-box.

In the drawing, the letter *a* designates the body of the box and *b* the cover thereof. *c* is a cavity, in which is placed the cup or vessel *d*, containing the upper fixed contact or electrode *e* and the lower movable electrode *f*,
60 which is connected to the feeder-cable *l* by means of the flexible conducting-ribbon *g*. The latter is connected to a conducting-piece in the bottom of the cup, which has a detachable connection *j* with the connecting-
65 piece *k*, to which the bared ends of the cable are attached. The piece *k* is secured in an insulating-block *m*, which is in turn supported in a sleeve *n*. All these parts are arranged substantially as in former patents and
70 need not be specifically described.

i indicates the arc-guard of insulating material, which constitutes one feature of the invention. This guard is of inverted-cup
75 shape and is placed around the upper contact *e* in the manner shown, with its lower edge extending below the lower surface of the said contact.

h is the armature, which carries the lower contact *f* and which constitutes the second
80 and coöperating feature of the invention. This armature is also of cup form and is of larger diameter than the arc-guard *i*, so that it will inclose the same when raised. It will be noted that in the open-circuit position of
85 the contacts there will be but a comparatively short air-gap between the flange portions of this armature and the magnetic portions of the cover *b*. This enables the open-circuit distance between the two contacts to be ma-
90 terially decreased without weakening the action of the magnet on the car, and thereby insures the breaking of all arcs which might otherwise tend to hang between said contacts. The combined arrangement of the arc-guard
95 and armature very effectively prevents the objectionable action of arcs upon the inner walls of the cup or vessel. The arc-guard may be made of reconstructed granite or of
100 any other suitable refractory insulating material.

The improvements herein described are ob-

viously applicable to contact-boxes of this type of various general construction, and the invention is therefore not limited to the precise construction and arrangement of parts
5 herein shown and described.

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

1. In a contact-box for electric railways,
10 the combination with normally separated co-operating contacts or electrodes, and a cup or vessel inclosing the same, of an arc-guard of refractory insulating material between one of said contacts or electrodes and the adja-
15 cent interior surfaces of said cup or vessel and an armature carried by the other contact or electrode and shaped to embrace said arc-guard.

2. In a contact-box for electric railways,
20 the combination with normally separated co-operating contacts or electrodes, and a cup or vessel inclosing the same, of a cup-shaped arc-guard of refractory material within which one of said contacts or electrodes is situated
25 and an armature carried by the other contact or electrode and arranged to telescope said arc-guard.

3. In a contact-box for electric railways, the combination with the movable contact or electrode, of a cup-shaped armature carrying
30 the same.

4. In a contact-box for electric railways, the combination with the movable contact or electrode, of an armature carrying the same, said armature being of cup form with its
35 flange surrounding and extending above the contact or electrode.

5. In a contact-box for electric railways, the combination with fixed and movable contacts or electrodes, and a cup or vessel inclos-
40 ing the same, of a cup-shaped arc-guard of refractory insulating material surrounding the fixed electrode, and a cup-shaped armature carrying and surrounding the movable contact or electrode, said armature being of
45 greater diameter than the arc-guard and arranged to inclose the latter.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM MILTON BROWN.

Witnesses:

LORETTO O'CONNELL,
H. W. SMITH.