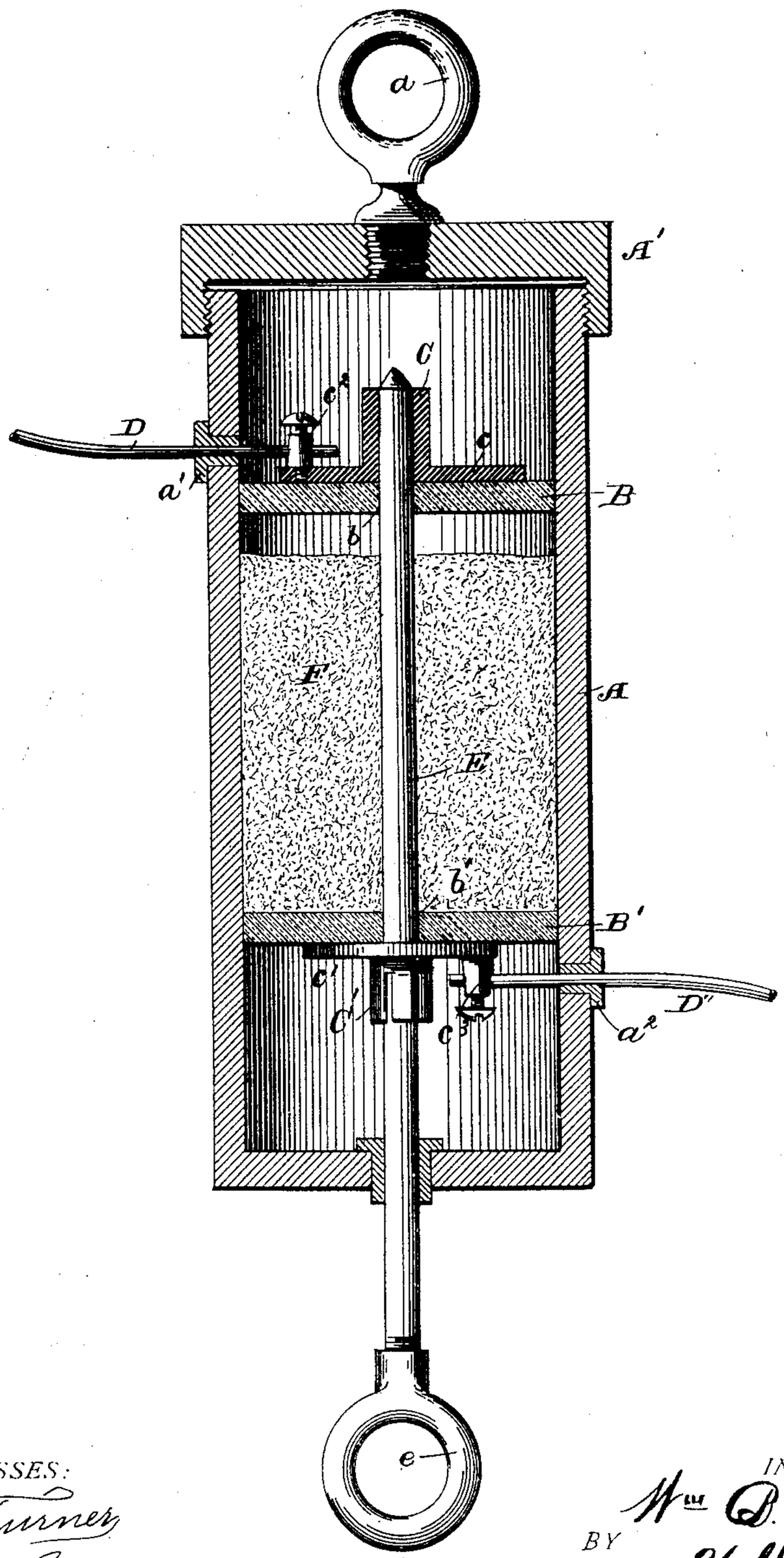
(No Model.) 2 Sheets—Sheet 1.

W. B. CLEVELAND.

CIRCUIT CONTROLLER.

No. 462,033. Patented Oct. 27, 1891.

FIG. 1



WITNESSES:

J. C. Turner

Wm Fecher

INVENTOR.

BY Wm B. Cleveland

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ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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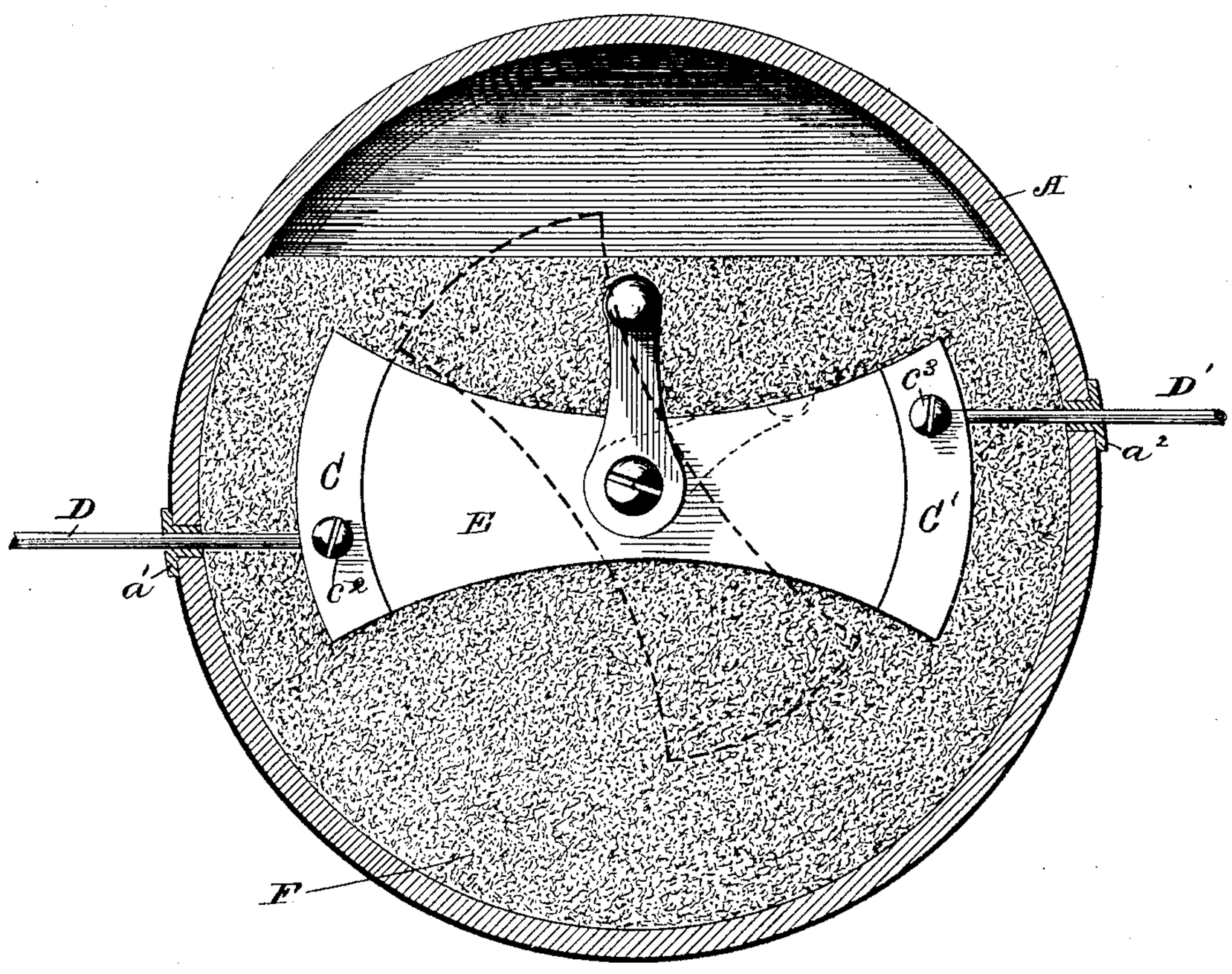
FIG. II



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UNITED STATES PATENT OFFICE.

WILLIAM B. CLEVELAND, OF CLEVELAND, OHIO.

CIRCUIT-CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 462,033, dated October 27, 1891.

Application filed June 17, 1891. Serial No. 396,539. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. CLEVELAND, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Circuit-Controllers, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

The objects of my invention are to provide improved means for cutting out a portion of an electric-light or power circuit in cases of emergency, such as in case of breaking or dropping of the wires of the circuit, in case of wires of another circuit coming in dangerous contact with the wires of the circuit, or in similar emergency cases; to provide improved means for admitting of such cutting out being safely and completely performed by a non-expert, and to provide improved means for smothering and extinguishing the arc formed by the contact members in the act of separating them and cutting off the circuit.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In such annexed drawings, Figure I represents a vertical section of my improved circuit-controller, and Fig. II a section of another form of the same.

In the drawings the letter A indicates a cylindrical casing, preferably of cast-iron and having a closed bottom and an open externally-screw-threaded top. Said top is closed by means of a screw-cap A′, having an eye *a* or other fastening device for attaching the casing to the support of the conductors.

Two partitions B and B′, of slate, soapstone, or similar refractory and non-conducting material, are secured in the casing, respectively, a distance from its top and bottom, and said partitions have central openings *b* and *b′*.

A longitudinally-slitted contact-sleeve C is secured with its base *c* upon the upper face of the upper partition, and a similar contact-sleeve C′ is secured with its base *c′* upon the under side of the lower partition. Said bases *c* and *c′* have binding-posts c^2 and c^3, in which the respective terminals D and D′ of the conductor and circuit-wire are secured, said wire terminals passing through insulating-sleeves *a′* and a^2 in the sides of the casing.

A contact-rod E, having an insulating eye or handle *e* at its lower end, passes through an insulating-sleeve a^3 in the center of the bottom of the casing and through the central openings in the partitions and registering contact-sleeves and having good electrical contact with the latter.

The space within the casing between the two partitions is nearly filled with a non-liquid filling F, of sand, gravel, marbles, broken stone or brick, or other more or less comminuted, refractory, and non-conducting material.

In practice the casing is suitably supported in the circuit, which passes through one terminal, through one slitted contact-sleeve, through the sliding contact-rod, through the other slitted contact-sleeve, and out through the other terminal. When a necessity arises for cutting off the circuit, the sliding contact-rod is pulled down, which may be done by any one without danger, and the circuit is broken, when the arc which will be formed between the upper contact-sleeve and the end of the receding contact-rod is smothered and extinguished by the comminuted filling, which will tumble in over the rod and thus interrupt and smother the arc. When contact is to be again established, the rod is pushed upward, pushing the filling out of its way. The space between the partitions in the casing is not completely filled, as the rod would then be liable to carry particles of the filling into the upper contact-sleeve and thus injure the sleeve or interrupt the contact; but a small space remains open between the partition and the filling. The arc will, however, not be liable to jump from either of the contacts, the stationary or the movable, to the side of the casing, as it will be drawn with the movable contact until cut off and smothered by the filling. The contact-sleeves may be supported directly in or upon the ends of a casing formed of an insulating material, or the casing may be lined with an insulating material, in either

of which cases all danger of the arc jumping from a contact to the casing will be avoided.

In the construction illustrated in Fig. II of the drawings two segmental contacts C C′ are secured in the circular casing A and have the terminals D and D′ of the circuit-wire connected to them by binding-posts c^2 and c^3. The terminals pass through insulating-sleeves a' and a^2 in the sides of the casing. A movable contact E, in the shape of a two-armed lever having segmental ends, is pivoted in the center of the casing and concentric to the segmental contacts, so that the segmental ends may engage and have good contact with the segmental contacts. The lever has a suitable handle or other means for swinging it. A filling F of a refractory substance of high resistance and in a more or less comminuted state is contained in the casing and completely covers the stationary contacts and the contact-levers.

The operation of this device is exactly similar to the operation of the previously-described device—the filling, smothering, and extinguishing the arc formed between the stationary and the movable contacts when the circuit is cut off. As in this device it is desirable to have a filling which will easily make way for the contact-lever when the latter is turned to engage the stationary contacts without entering between the same, the filling should preferably consist of small balls or pellets of a refractory and non-conducting material—such as, for example, globular glass beads.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be made as regards the mechanism herein set forth, provided the principles of construction respectively recited in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. The combination, with a stationary contact and a movable contact, of a casing and a comminuted non-liquid filling in said casing, said filling being so disposed in the casing as to tumble into the space between the contacts when the movable contact is withdrawn, substantially as set forth.

2. The combination of a casing, a comminuted non-liquid filling therein, a stationary contact above said filling, and a movable contact arranged to be withdrawn into the filling, substantially as set forth.

3. The combination of a casing, a comminuted non-liquid filling therein, a slitted contact-sleeve above said filling, and a contact-rod sliding in the casing and through the filling and registering with and sliding into the contact-sleeve, substantially as set forth.

4. The combination of a casing, slitted contact-sleeves in the upper and lower portions of said casing, a comminuted non-liquid filling partly occupying the space in the casing between said sleeves, and a contact-rod insulated from the casing and movably inserted through the latter and through the contact-sleeves, substantially as set forth.

5. The combination of a stationary and movable contact, a casing, and a non-liquid filling in said casing, said filling being so disposed as to interpose between said contacts when the movable contact is withdrawn, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 5th day of June, A. D. 1891.

WM. B. CLEVELAND.

Witnesses:
WM. LECHER,
GEO. A. SNOW.