(No Model.)

W. R. COLE.

ELECTRIC CIRCUIT BREAKER.

No. 376,071. Patented Jan. 10, 1888.

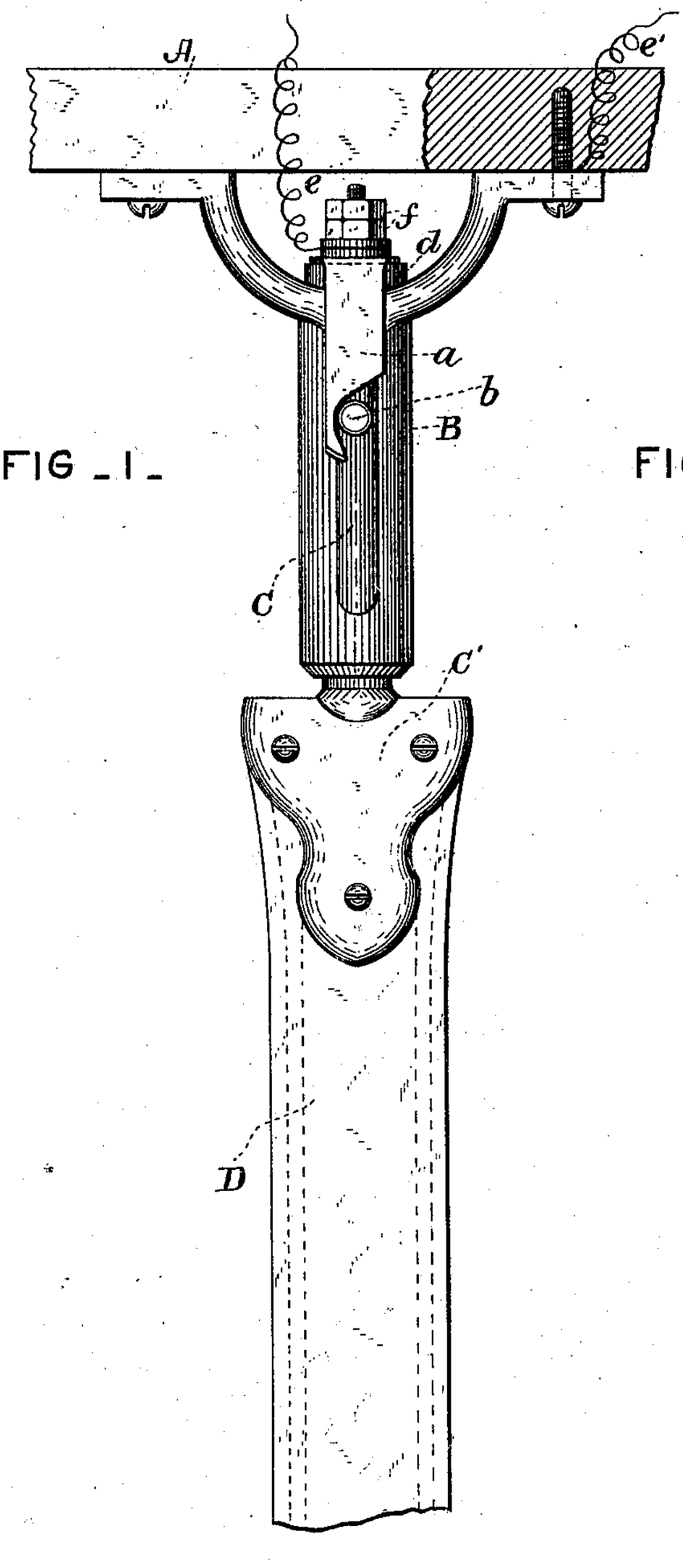

FIG _1_

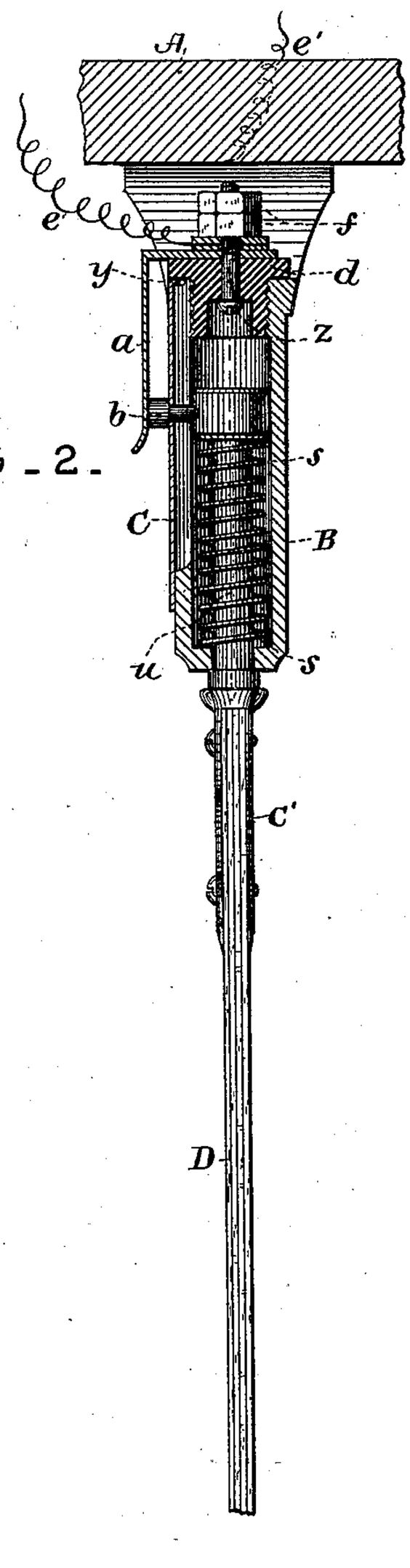

FIG _2_

Attest:
G. W. Hawkins.
James Odell

Inventor:
William R Cole
By Lucius C West
atty

UNITED STATES PATENT OFFICE.

WILLIAM R. COLE, OF DETROIT, MICHIGAN, ASSIGNOR TO PARRISH BROS. AND THE PECK ELECTRICAL COMPANY, BOTH OF SAME PLACE.

ELECTRIC-CIRCUIT BREAKER.

SPECIFICATION forming part of Letters Patent No. 376,071, dated January 10, 1888.

Application filed August 3, 1887. Serial No. 246,076. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. COLE, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a new and useful Electric-Circuit Breaker, of which the following is a specification.

This invention relates to spring-actuated devices employed at suitable locations in an electric circuit with which to break and make the circuit at the will of the operator; and the invention has for its object the construction substantially as below described and claimed.

In the drawings forming a part of this specification, Figure 1 is an elevation with parts broken; and Fig. 2 is a view looking from a point at the right of Fig. 1, with parts in vertical section on line 2 2 in said Fig. 1.

Referring to the lettered parts of the drawings, A may serve to illustrate the upper ceiling of a passenger-coach, of a boat, of a street-car, of a room—in short, the support of the circuit-breaker wherever located. For convenience and brevity of description, I will call the part A a "car-roof," in which car a system of ringing the bell in the engine by electricity is supposed to be employed. For the purposes of this invention it is not necessary to disclose said system further than to state that when the circuit in which this circuit-breaker is located is broken a higher resistance-circuit at the station where the alarm is located rings said alarm.

Pendent from the car-roof A is a hollow case, B, having a rubber plug, *d*, screwed into the top and flanged over said top. Of course other insulating material than rubber may be used for the plug *d*. The horizontal angle of the upper end of the spring-metal finger *a* rests on the plug *d*, and is thus insulated from the case B. Above the finger *a* are the washers, between which the end of the circuit-wire *e* is clamped. A bolt, *z*, attached to the plug *d*, extends up through the finger and washers, and by means of the nuts *f* the parts are clamped and securely attached to the plug.

A plunger, *u*, having a head, *v*, at the top, is adapted to play vertically in the case B. The head *v* fits the inner surface of the case, and thus forms a guide to the plunger *u*. This plunger extends through a hole in the lower end of the case B, where it is enlarged, as at C. To this enlarged end a strap, D, is attached, which strap hangs down within reach of the conductor of the train or other person who may operate the breaker. The lower end of the strap is here shown broken; but it terminates in a suitable end for grasping in the hand. This is the plan I prefer to adopt for operating the plunger, but not necessarily so.

At S is a spring having an upward pressure and holds the plunger up when in its normal state.

Laterally projecting from the head *v* is a stud, *b*, passed through a vertically-elongated slot in the case B. The outer end of this stud contacts the spring-metal finger *a* when the circuit is closed, said stud wedging behind the finger and slightly pressing it outward against a spring-resistance. This forms a sure contact, which the jarring of the car cannot possibly disturb. I prefer to thread the end of the stud *b* and screw it into the head *v*, thus making it serve as a set-screw to detachably attach the head *v* to the end of the plunger, so as to be able to remove the head and spring S by first removing the plug *d*. The plunger *u* can then be taken out also, thus making the parts all detachable in case of contingent repairs.

A covering to the vertical slot of the case B is shown at *c*, the same being a metal plate retained in place by the stud *b*, which passes through it. This plate *c*, which is wider than the slot which it covers, is adapted to slide up and down on the side of the case B. At the extreme upper end it is narrowed and bent over into the slot, as at *y*, Fig. 2. Thus the plate is kept from turning on the stud *b*. By means of the plate *c* dust and cinders are largely prevented from accumulating in the case. The other wire of the circuit is shown at *e'*, contacting the metal bracket portion of the case B. These wires *e e'* it will of course be understood are in use extended to a generator or a battery. Thus the circuit over wire *e* is through the finger *a*, stud *b*, head *v* and plunger, the case B, and over wire *e'*. The circuit is broken by pulling the plunger down until the stud is disconnected from the finger. By releasing the plunger it is automatically raised by the

spring S, and the stud *b* again contacts the finger *a*, as before explained, thus "making" the circuit.

Having thus described the details of my construction, what I claim as new is—

1. A circuit-breaker comprising a metal case having the vertical slot, a spring-actuated plunger provided with a stud laterally extending through said slot, and a spring-metal finger attached to the case, but insulated therefrom and adapted to contact the stud outside of the case, substantially as set forth.

2. A circuit-breaker comprising a metal case having the vertical slot, a spring-actuated plunger provided with a stud laterally extending through said slot, a sliding cover to the slot retained in place and carried by the stud, and a metal finger attached to the case, but insulated therefrom and adapted to contact said stud, substantially as set forth.

3. A circuit-breaker comprising a case having the vertical slot, a spring-actuated plunger having a detachable head, a stud projecting through said slot and constituting a set-screw to attach the head to the plunger, and a finger attached to the case, but insulated therefrom, substantially as set forth.

4. A circuit-breaker comprising a metal case having the vertical slot, an insulating-plug in the end of said case, a spring-metal finger attached to said plug and extending downward parallel with the slot of the case, and a spring-actuated plunger provided with a stud extending laterally through the slot and adapted to contact said finger, substantially as set forth.

In testimony of the foregoing I have hereunto subscribed my name in presence of two witnesses.

WILLIAM R. COLE.

Witnesses:
MYRON W. PARRISH,
CHARLES REINKE.

Corrections in Letters Patent No. 376,071.

It is hereby certified that in Letters Patent No. 376,071, granted January 10, 1888, upon the application of William R. Cole, of Detroit, Michigan, for an improvement in "Electric Circuit-Breakers," the name of the assignee was erroneously written and printed "Parrish Bros. and the Peck Electrical Company," and the grant was erroneously made to "Parrish Bros., their heirs or assigns and the Peck Electrical Company, its successors or assigns," whereas the name of the assignee should have been written and printed *Parrish Bros. and Peck Electrical Company*, and the grant should have been made to *Parrish Bros. and Peck Electrical Company, its successors or assigns;* that the proper corrections have been made in the files and records pertaining to the case in the Patent Office and should be read in the Letters Patent to make the same conform thereto.

Signed, countersigned, and sealed this 14th day of February, A. D. 1888.

[SEAL.]

D. L. HAWKINS,
Acting Secretary of the Interior.

Countersigned:

BENTON J. HALL,
Commissioner of Patents.