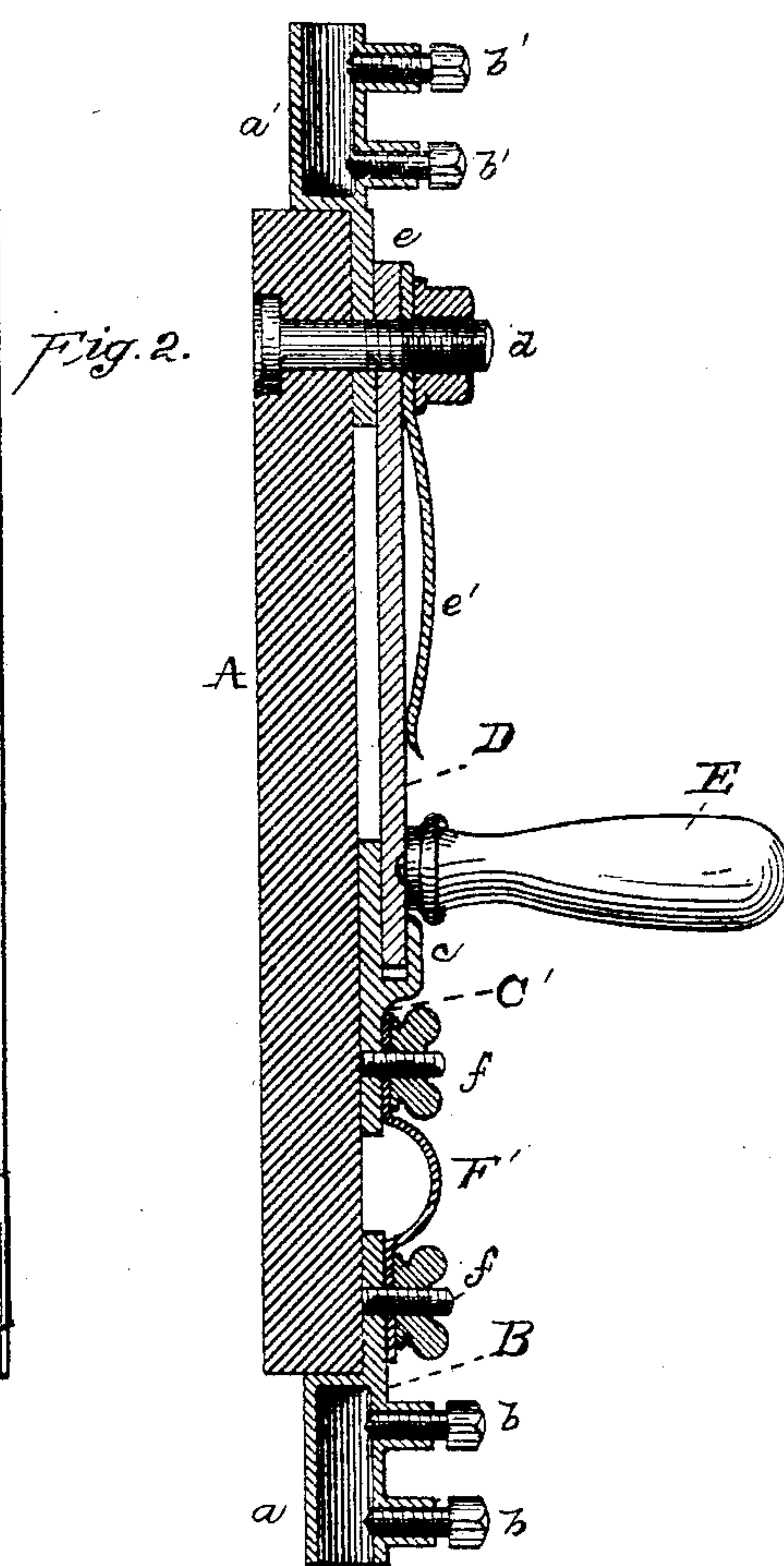
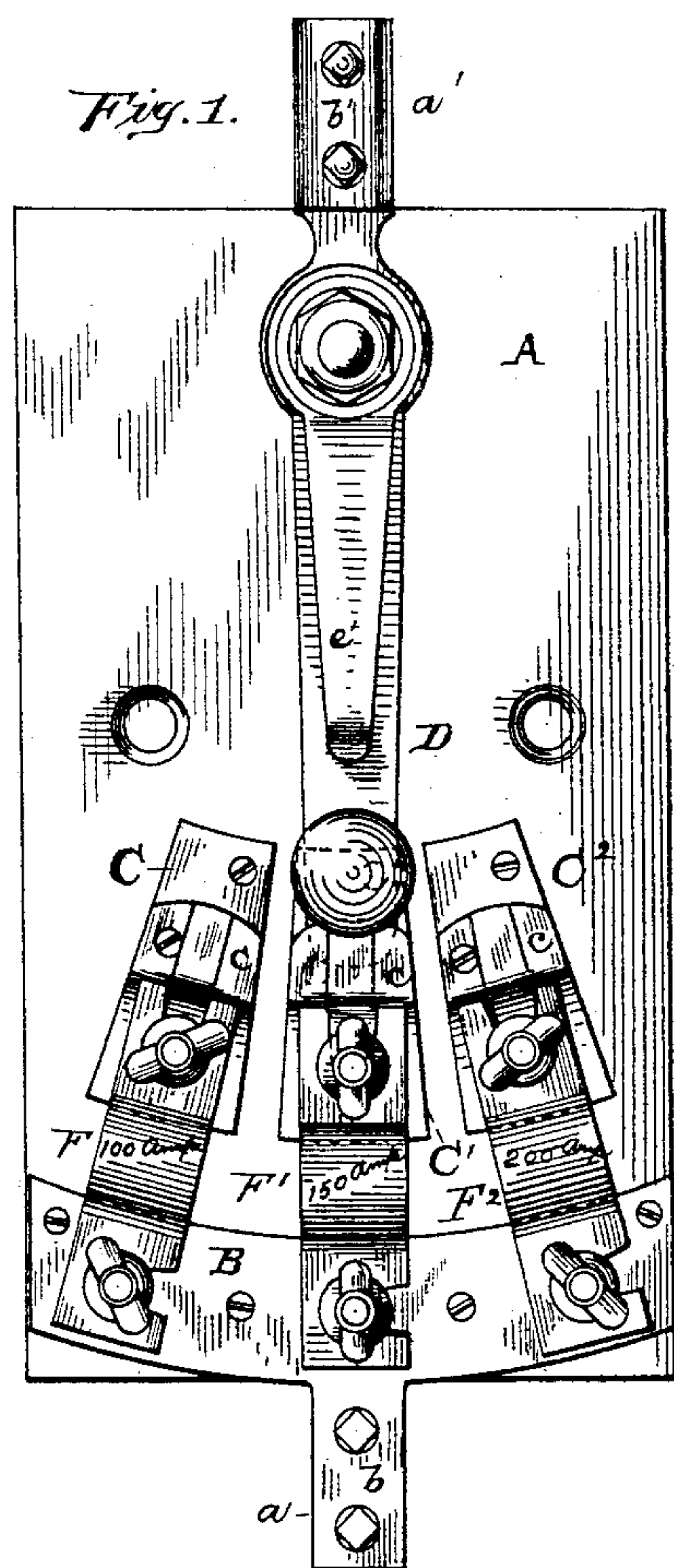


W. J. HAMMER.

SAFETY DEVICE FOR ELECTRICAL CIRCUITS.

No. 397,715.

Patented Feb. 12, 1889.



ATTEST:  
*Edw. Rowland*  
*Wm. Egan*

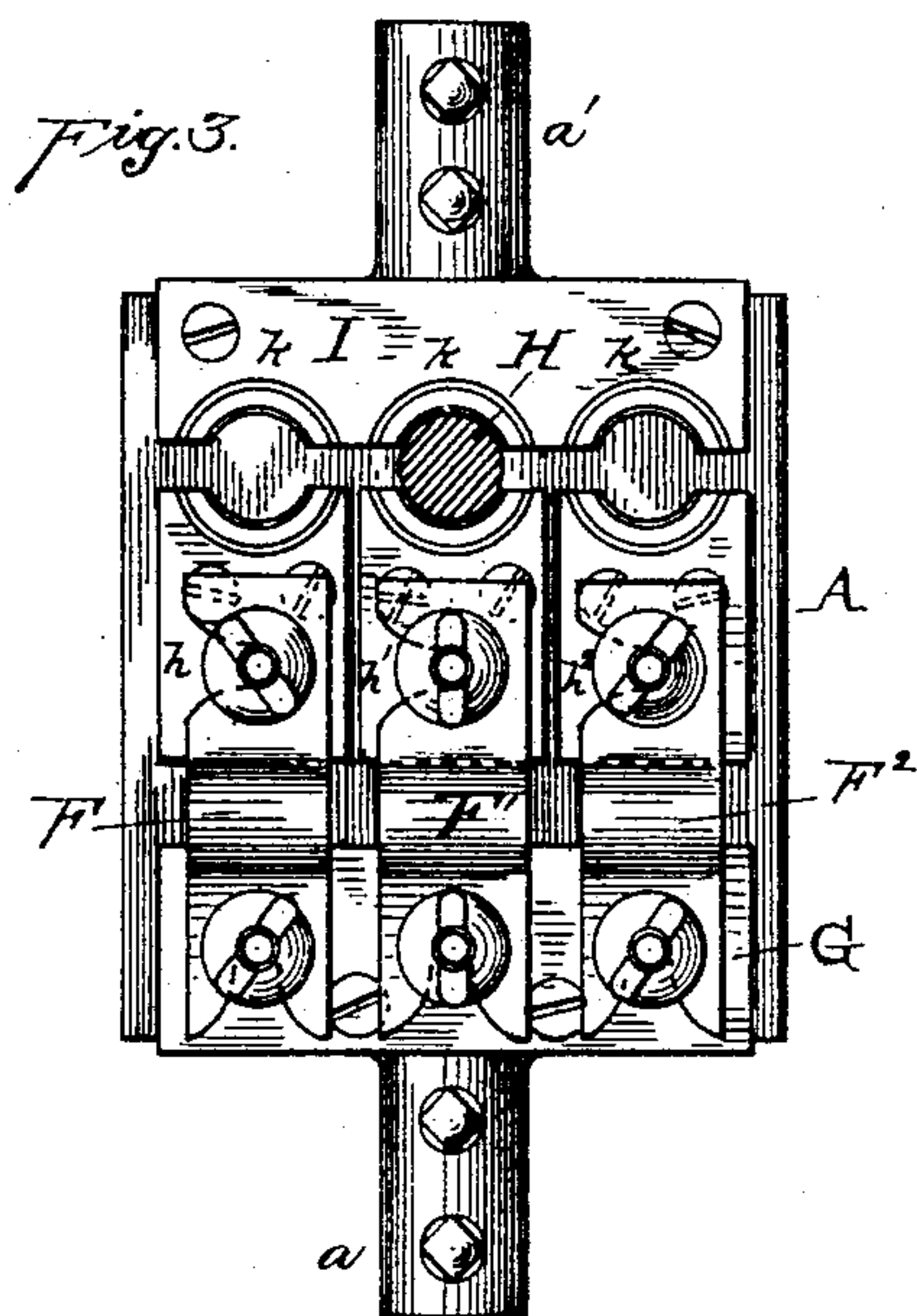
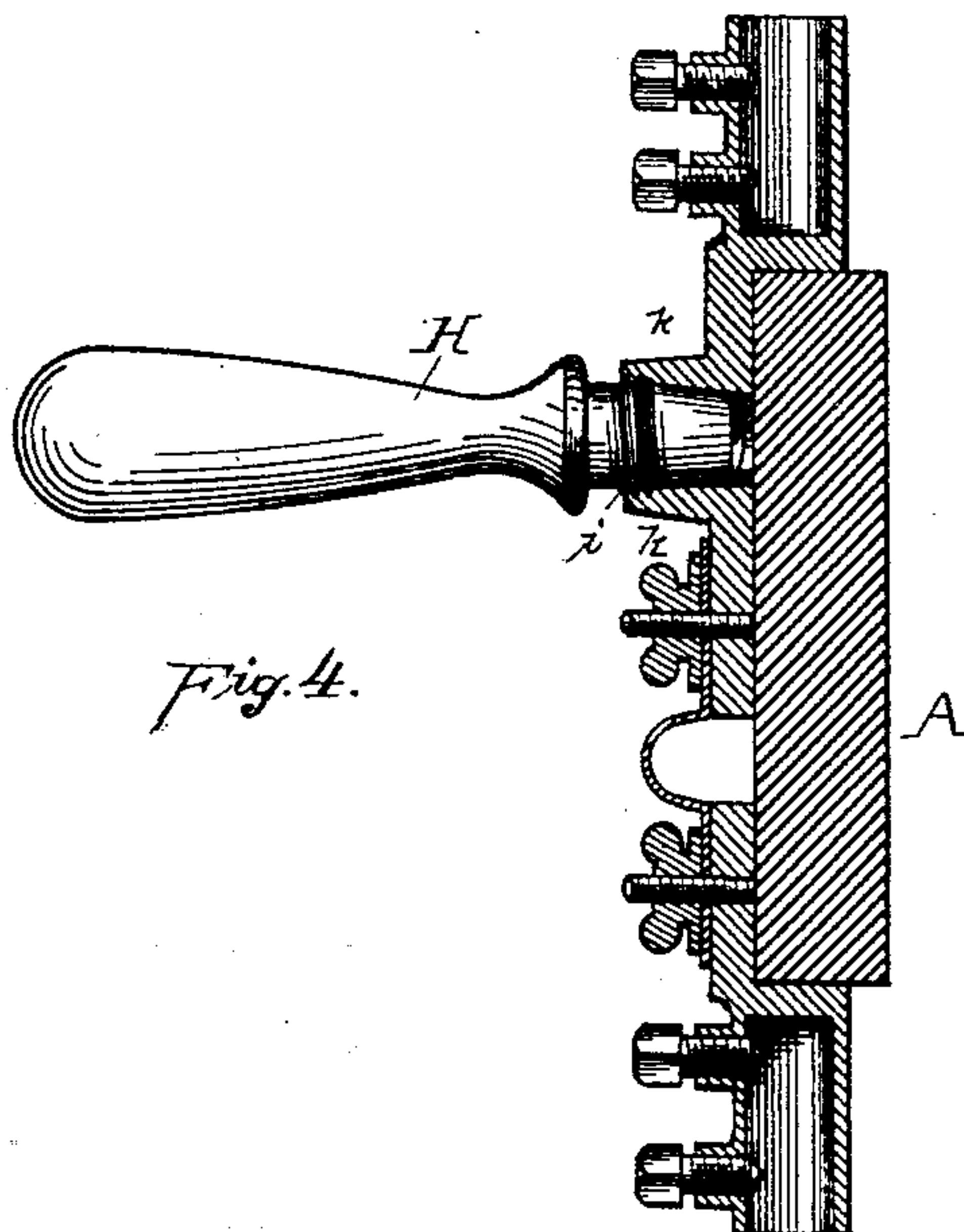
INVENTOR:  
*William J. Hammer*  
*B. L. H. H. H.*

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ATTEST:

*E. B. Rowland*  
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INVENTOR:

*William J. Hammer*  
*B. D. Lacey*  
*attest*



# UNITED STATES PATENT OFFICE.

WILLIAM J. HAMMER, OF BOSTON, MASSACHUSETTS.

## SAFETY DEVICE FOR ELECTRICAL CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 397,715, dated February 12, 1889.

Application filed November 19, 1886. Serial No. 219,368. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM J. HAMMER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Improvement in Safety Devices for Electrical Circuits, of which the following is a specification.

My invention relates to safety-catches or fusible conducting-strips for electrical circuits, and especially to the use thereof in the feeding-circuits of systems of electrical distribution; and my invention consists, mainly, in the use, with a conductor of a circuit, of two or more safety-catches, usually of different sizes, and a suitable switching device whereby any one of said safety-catches may be interpolated in the circuit of such conductor, whereby when the safety-catch in circuit is destroyed, in consequence of a cross or of too heavy a load on the circuit, another and preferably one of greater conducting capacity may be switched in to take its place.

In the Edison system of electrical distribution, as is now well known, circuits called "feeding-circuits" extend from the source of supply to which they are all connected to a system of connected positive and negative main or lighting conductors. Each of these feeding-circuits has heretofore been provided with a safety-catch. If the load upon any feeder becomes too great for its conducting capacity, its safety-catch is fused, and all the current passes over the remaining feeders; but this may have the effect of overloading one or more other feeders, whose safety-catches may be in turn destroyed, and so on until all the feeding-circuits are broken and the supply of current is entirely cut off. This once actually occurred in the Edison distributing system in New York city, when all the lamps in the district were extinguished in consequence of the original overloading of a single feeder.

My invention is designed mainly to overcome this difficulty, since by its use as soon as any safety-catch is destroyed another and a heavier one may be immediately switched into its place by the attendant at the station, so that the circuit is practically uninterrupted. My invention is, however, as stated, adapted for use in other situations—for instance, where

a circuit of any electric lighting or other electrical system is required to convey at different times current for a greater or less number of lamps or varying amounts of current. By my invention such a circuit may always be provided with a safety-catch of a size adapted to the load upon it.

My invention is illustrated in the accompanying drawings.

Figure 1 is a plan view of apparatus embodying said invention in which a pivoted switch is employed; Fig. 2, a central vertical section thereof; and Figs. 3 and 4 are similar views of a form of the invention employing a plug-switch.

Referring first to Figs. 1 and 2, A is a suitable insulating-base, on which the parts of the apparatus are mounted, and which is adapted to be secured by means of screws or otherwise upon a wall or in other convenient situation. Attached to said base near one end is an arc-shaped metal plate, B, from which, beyond the end of the base, extends a metal sleeve, a, adapted to receive an electrical conductor which is held therein by set-screws b b.

C, C', and C<sup>2</sup> are metal contact-plates secured to the base A, and preferably of the double form shown, so that the metal switch-arm D enters between the two parts of a plate, so as to make good contact therewith, the upper tongues, c, of the plates being split to make a spring-pressure upon the switch-arm. Such switch-arm has an insulating-handle, E, for moving it, and is pivoted, as shown, the pivot d passing through a plate, e, from which extends a sleeve, a', provided with set-screws b' b' for receiving the circuit-wire. The arm may be provided with a flat spring, e', to assist its contact. The contact-plates C, C', and C<sup>2</sup> are connected with the plate B, respectively, by fusible safety-catch strips F, F', and F<sup>2</sup>, which strips are removably held upon the plates by thumb-nuts f f. These safety-catches are preferably of different sizes, so that they are adapted to convey, without fusing, different amounts of current, the amounts of current being marked upon them in the drawings to illustrate this. As shown, the circuit will be through the middle strip, F'; but if this strip should be destroyed, or if the circuit should be required to convey a greater



or less amount of current, the switch-arm is shifted to one side or the other, so as to throw in another strip of the desired size.

In the form shown in Figs. 3 and 4 the base  
 5 A has upon it a plate, G, connected by the safety-catches F, F', and F<sup>2</sup> with plates h h' h<sup>2</sup>, any one of which is adapted to be joined by the insertion of a suitable plug, H, with the plate I. The plate G has extending from  
 10 it the sleeve a, and the plate I the sleeve a', whereby the conducting-wires are connected to the device. By shifting the plug the different safety-catches are connected in series in the same way as by the movement of the piv-  
 15 oted switch-arm in the first-described form. The plug is preferably provided with a short screw-thread, i, and the shoulders k on the plates between which it is inserted have similar screw-threads, whereby when the plug is  
 20 inserted it may be given a slight turn, so that it will be held securely in position and cannot be accidentally dislodged or loosened by the jarring of the switch. This form of connecting-plug is evidently adapted for use in  
 25 other situations in electrical apparatus.

What I claim is—

1. The combination, with a broken con-  
 ductor of an electrical circuit, of two or more fusible safety-catches, all connected in par-  
 30 allel circuit with one terminal of said conductor, and a switching device for connecting

the other end of any one of said safety-catches with the other terminal of said conductor, substantially as set forth.

2. The combination, with a broken con- 35 ductor of an electrical circuit, of two or more fusible safety-catches, all connected in parallel circuit with one terminal of said conductor, and a pivoted switch-arm connected with the other terminal and adapted to be  
 40 brought into connection with any one of said safety-catches, substantially as set forth.

3. The combination of the insulating-base, a circuit-terminal at one end thereof, two or more separate contact-plates on the base, 45 fusible safety-catches joining said contact-plates with said terminal, another terminal at the other end of the base, and a switching device for connecting said last-named terminal, substantially as set forth. 50

4. The combination, with the conductor of an electrical circuit, of two or more fusible safety-catches of different conducting capacities, and a switching device for interpolating any one of them in the circuit of said con- 55 ductor, substantially as set forth.

This specification signed and witnessed this 17th day of November, 1886.

WM. J. HAMMER.

Witnesses:

WM. F. SONN,

W. C. LAWTON.