

No. 713,831.

Patented Nov. 18, 1902.

C. C. BADEAU.

FUSE.

(Application filed Jan. 26, 1901.)

(No Model.)

Fig. 1.

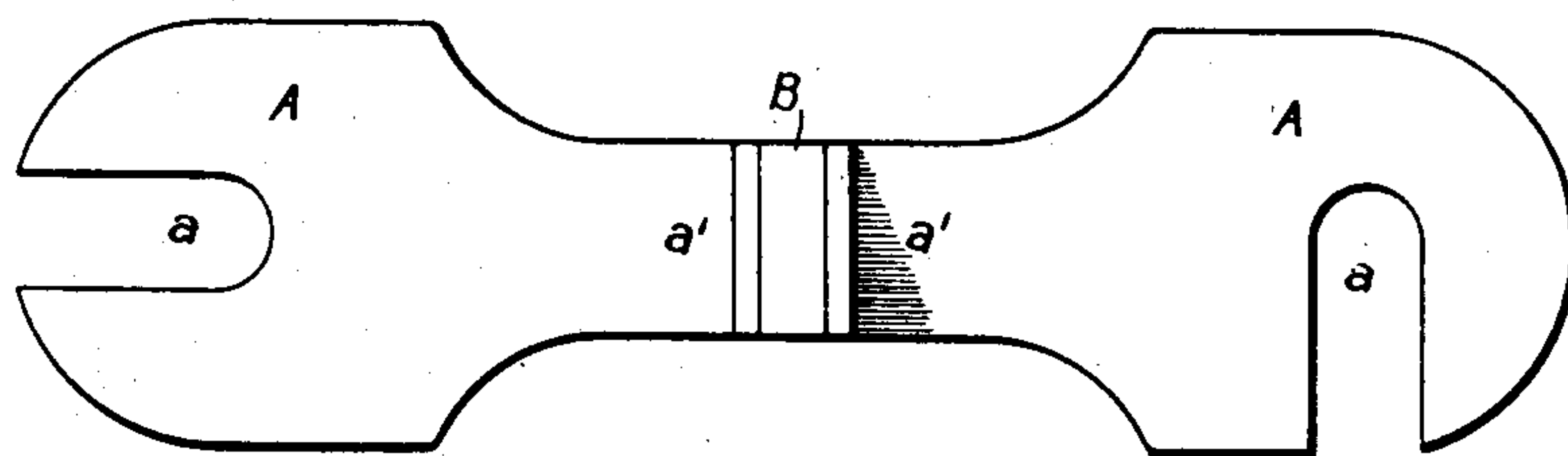


Fig. 2.

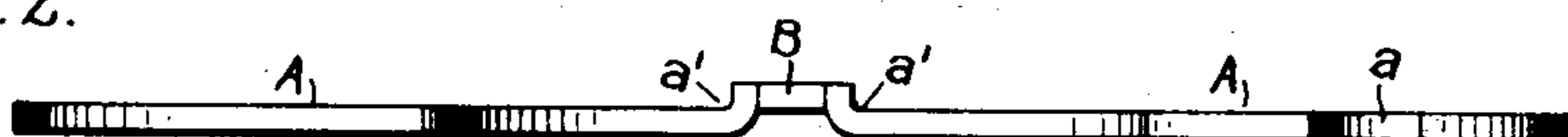
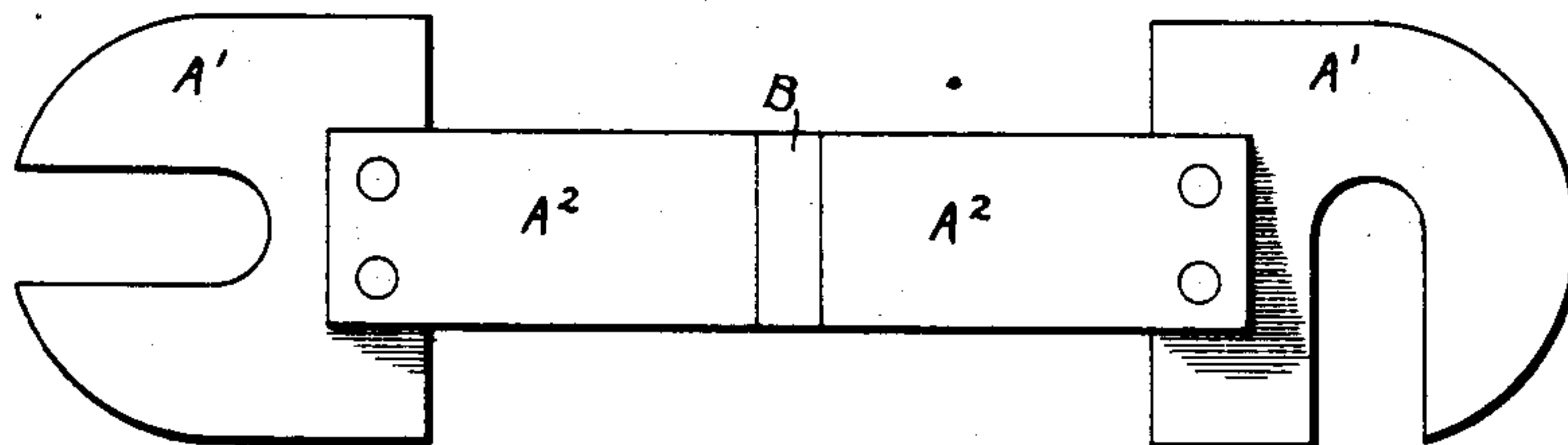


Fig. 3.



Fig. 4.



Witnesses.

John Ellis Glenn

Benjamin B. Hull

Inventor.

Charles C. Badeau.

by

Allen B. Davis
Atty.

UNITED STATES PATENT OFFICE.

CHARLES C. BADEAU, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

FUSE.

SPECIFICATION forming part of Letters Patent No. 713,831, dated November 18, 1902.

Application filed January 26, 1901. Serial No. 44,811. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. BADEAU, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Fuses, (Case No. 1,740,) of which the following is a specification.

This invention relates to fuses used in electrical systems of distribution to automatically open-circuit the line when the current accidentally runs up above a predetermined safe maximum value.

Heretofore it has been customary to make the fusible portion of the fuse of a metal having a low melting-point; but in order prevent the establishment of a destructive arc the length of the fusible section was considerable, offering an objectionable resistance to the normal current, owing to the low conductivity of the fusible metal. Moreover, there was a large mass of molten or vaporized metal to be taken care of. On the other hand, an all-copper fuse, while far more conductive, requires a considerable rise in current to heat it to the melting-point. Attempts have been made to use a copper fuse with a cut-away portion filled in with fusible metal; but this was uncertain in action, allowing the softer metal to melt and drop out before the small copper portion became hot enough to melt. My invention aims to avoid all these difficulties by using copper or other good conducting metal made in two separate and distinct parts placed within arcing distance of each other and connected by a short section of more readily fusible metal. The length of the latter is too small to offer any objectionable resistance; and when it melts it starts an arc which quickly burns away the adjacent portions of the copper and permanently opens the circuit.

In the accompanying drawings, Figure 1 is a plan view of my improved fuse. Fig. 2 is an edge view thereof. Fig. 3 is an edge view showing the result of overloading. Fig. 4 shows a modification.

The fuse is made up of two separate flat portions A, of copper or other relatively good conductor, each having a wide end containing a slot *a* or other means for attaching it to line-terminal. The opposite end of each por-

tion is reduced in cross-section, preferably by narrowing it, to localize the heat where it is wanted. The extremities *a'* may be flanged or otherwise thickened to afford a good surface for the union therewith of the intermediate connecting portion B of fuse metal, which is soldered to the ends of the copper portions A by being run in between them in a molten condition and then allowed to cool. The portion B is quite short, so that it does not offer any great resistance to the current; but its resistance is sufficient to cause it to heat rapidly to the melting-point under an overload of current. As soon as it melts the metallic continuity of the circuit is positively broken and an arc is started which quickly burns away the adjacent portions of the copper until the circuit is opened, as illustrated in Fig. 3. This fuse can therefore be adjusted to blow with a comparatively small rise in current, insufficient to raise the copper to the melting-point. The amount of vaporized fuse metal is so small as not to be troublesome. The fuse has practically all the advantages and none of the disadvantages of the several types of fuse heretofore in use.

If desired, that part of each portion of the fuse which burns away may be separate from the wide slotted end part and riveted or brazed or otherwise united thereto, as shown in Fig. 4, where the slotted copper end parts A' have attached to them narrow strips of copper A², united by a short intermediate section B, of fuse metal.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A fuse for an electric circuit, composed of two separate sections of good conducting metal within arcing distance of one another, and means for conveying current across the adjoining ends and establishing an arc when an overload occurs.

2. A fuse for an electric circuit, composed of two separate conductors of relatively good carrying capacity, a short connecting-bond of easily-fusible metal between them, and terminals at the free ends to permit ready connection with an electric circuit.

3. A fuse for an electric circuit, composed of two separate portions of conducting metal supported within arcing distance and a short

intermediate section of more readily fusible metal.

4. A fuse for an electric circuit, composed of two separate portions of relatively good
5 conducting metal supported within arcing distance having their adjacent ends reduced in cross-section, and a short intermediate connecting-section of more readily fusible metal.

5. A fuse for an electric circuit, composed
10 of two separate portions of copper or the like

approaching within arcing distance, each having a narrowed end thickened at its extremity, and a short section of fuse metal between said thickened extremities.

In witness whereof I have hereunto set my hand this 24th day of January, 1901.

CHARLES C. BADEAU.

Witnesses:

BENJAMIN B. HULL,
MARGARET E. WOOLLEY.