No. 711,921. Patented Oct. 21, 1902.

F. B. COOK.

FUSE.

(Application filed May 21, 1902.)

(No Model.)

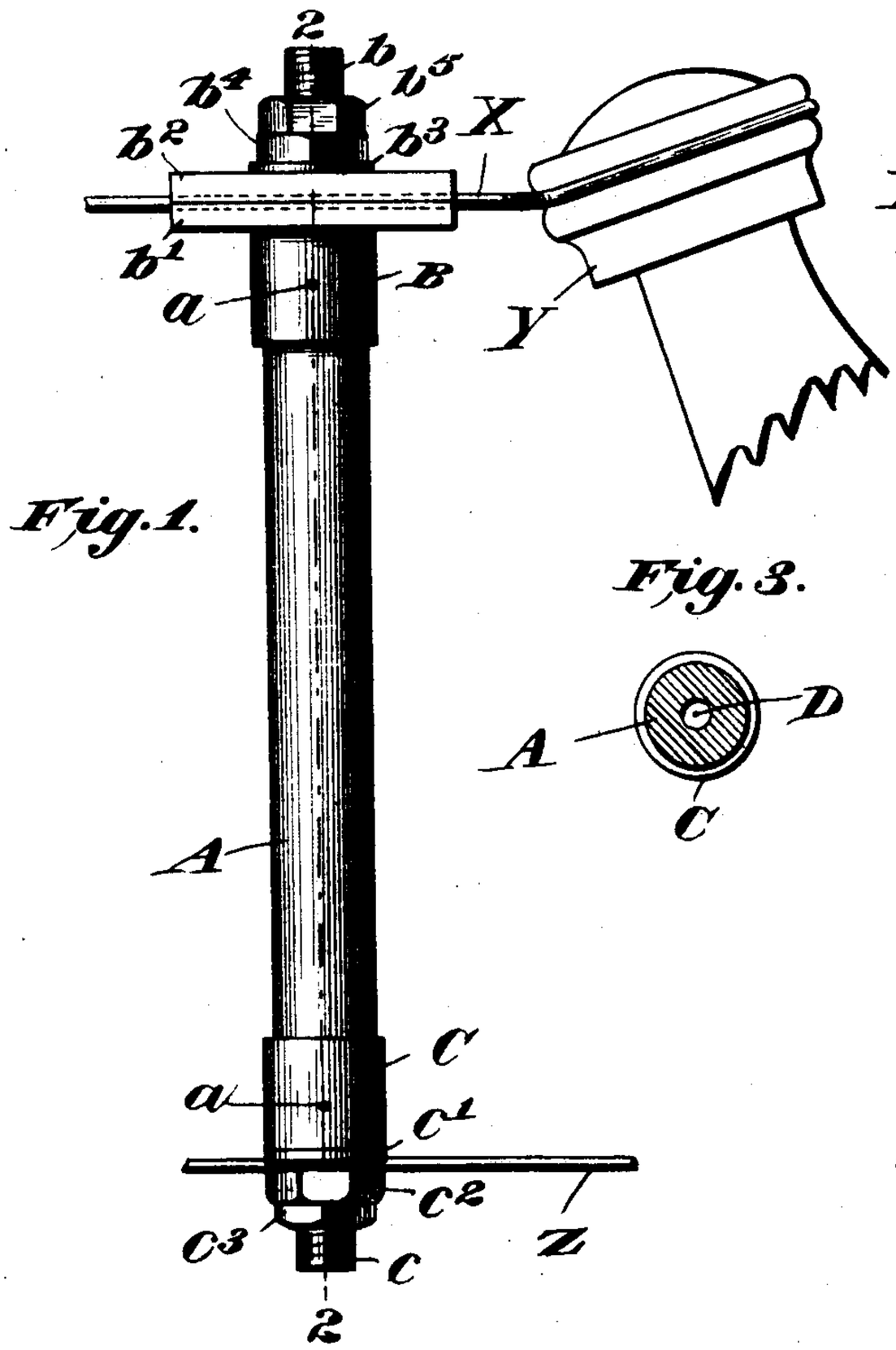

Fig. 1.

Fig. 3.

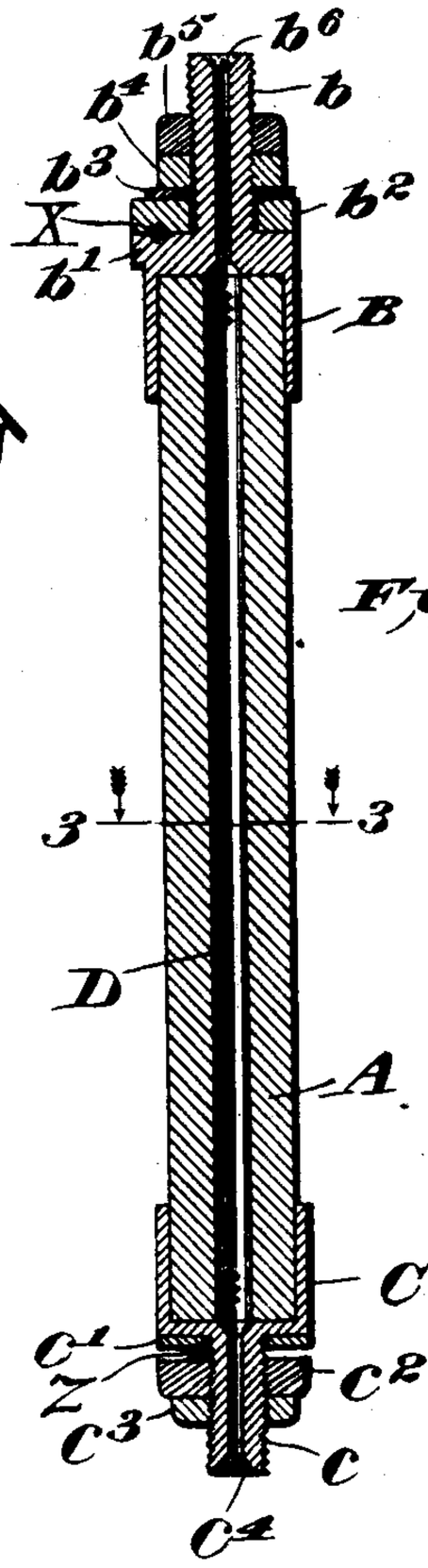

Fig. 2.

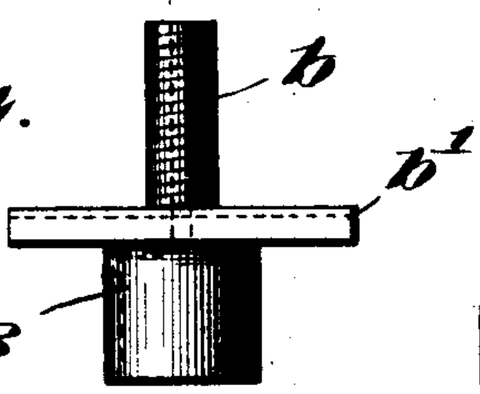

Fig. 4.

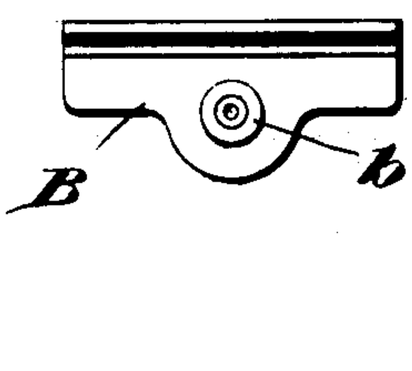

Fig. 5.

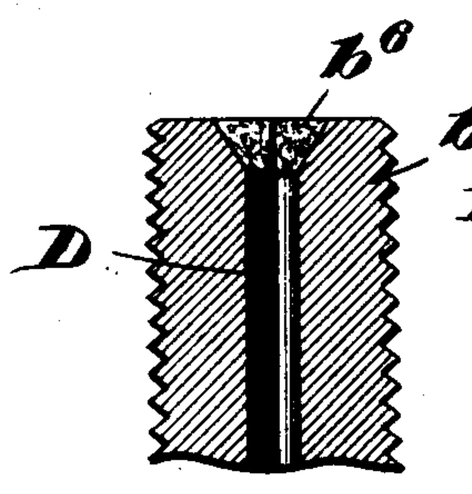

Fig. 6.

Witnesses
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FUSE.

SPECIFICATION forming part of Letters Patent No. 711,921, dated October 21, 1902.

Original application filed July 29, 1896, Serial No. 600,970. Divided and this application filed May 21, 1902. Serial No. 108,330. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. COOK, a citizen of the United States of America, and a resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Fuses, of which the following is a specification.

This is a division of my application, Serial No. 600,970, filed July 29, 1896.

The invention hereinafter described consists of a fuse adapted to be employed as a protecting device for electrical circuits. For example, it may be employed in connection with telephone or telegraph systems or in any electrical system wherein it may be desirable to make provision for protecting various instruments or devices against abnormally strong currents.

Generally stated, it is the object of my invention to provide a simple, inexpensive, and highly-efficient fuse for use in electrical circuits.

A special object is to provide an improved form of fuse which may be employed in the open air without means for inclosing it against weather attacks.

Another object is to provide an improved construction and arrangement whereby one end of the fuse can be clamped and supported upon the line-wire.

It is also an object to provide certain details and features of improvement tending to increase the general efficiency and serviceability of an electrical protecting device of this character.

To the foregoing and other useful ends my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a fuse constructed in accordance with my invention and showing the same supported upon the line-wire, which is secured to an ordinary insulator. Fig. 2 is a vertical section on line 2 2 in Fig. 1. Fig. 3 is a horizontal cross-section on line 3 3 in Fig. 2. Fig. 4 is a detail of the upper cap of the fuse. Fig. 5 is a plan of said cap. Fig. 6 is an enlarged sectional view of the upper end of said cap.

As thus illustrated, my invention comprises, preferably, a tubular casing A, which can be of any suitable insulating material. The metal cap B is adapted to be fitted upon the upper end of said tubular casing and is preferably formed with a screw-threaded stem b and also with a grooved jaw b'. The lower cap C is adapted to fit the lower end of said tubular casing and is also provided with a screw-threaded stem c. It will be observed that both of these caps have their stems provided with longitudinal bores. The other jaw b^2 is adapted to fit over the stem b and to rest upon the shoulder provided by the jaw portion b' of the upper cap. Upon this jaw b^2 preferably rests a washer b^3, and the nuts b^4 and b^5 are preferably screwed down upon this washer, so as to hold the jaw b^2 firmly upon its seat. The jaw b^2 is, it will be observed, provided with a groove adapted to register with a groove in the jaw b'. In this way the line-wire X can be clamped between these two jaws, which constitute a clamp, as shown in Fig. 1. This, it will be seen, makes it possible to support the fuse on the line-wire, which is secured in the usual manner to the insulator Y. The washer c' preferably rests upon the shoulder of the lower cap C, and the nuts c^2 and c^3 are screwed down upon this washer. When the fuse is employed as a means of protecting the instruments of a telephone set, for example, the conductor Z, leading to the instruments, can be connected to the lower end of the fuse, as shown in Fig. 1. Thus each end of the fuse is provided with binding-post devices, the upper one being adapted to clamp upon the stretched line-wire, while the lower one is adapted to make a connection in the usual manner with a conductor leading from the instruments to be protected. The two caps thus applied to the opposite ends of the casing are connected in series with the fuse-wire D. This fuse-wire extends through the bore of the casing and also through the reduced openings or bores in the two caps. With respect to the method of securing the ends of this fuse-wire to the caps, it will be observed that the said bores in the caps are preferably flared or enlarged at their outer ends. In this way the opposite ends of the fuse-wire can be secured to the caps by small masses of solder b^6 and c^4, run into the said flared or enlarged end portions of the bores

or passages in the caps. In this way the fuse-wire is not only effectually secured in place, but the casing is also hermetically sealed, so as to protect the fuse-wire against weather attacks. With this construction and arrangement the fase-protector can be mounted in the open air and without any means for inclosing or sheltering it against rain, snow, &c. Preferably the two caps are maintained in place upon the opposite ends of the tubular casing by means of the pins *a*.

With the provision of the nuts b^4 and b^5 it will be seen that the upper end of the fuse-protector can also be secured to a wire conductor in the same manner that the lower end is shown connected with the conductor Z. Thus the device is adapted to serve in various connections and in various arrangements, according to the conditions and requirements of any particular case.

I claim as my invention—

1. The combination of an insulator, a horizontally-disposed line-wire secured to said insulator, a protector having its upper end provided with a pair of elongated jaws clamping the said line-wire between them, and a wire connected with the lower end of said protector.

2. The combination of a line-wire, means for supporting said line, a thermal protector clamped upon said wire, and a conductor secured to the depending portion of said protector and adapted to lead to the instruments to be protected.

3. The combination of an insulator, a line-wire secured to said insulator, a fuse-protector having its upper end clamped upon said line-wire at a point outside of said insulator, and a conductor secured to the lower end of said protector and adapted to connect with the instruments to be protected.

4. The combination of a suitable insulator, a line-wire secured to said insulator, a tubular fuse-protector having its upper end provided with a pair of jaws having grooves adapted to receive said line-wire, a binding-post mounted upon the lower end of said protector, and a conductor secured to said binding-post and adapted to lead to the instruments to be protected.

5. The combination of a line-wire, means for supporting said wire, a tubular fuse-protector having its upper end provided with a cap adapted to form one member of a clamp, a jaw adjustably mounted on said cap and adapted to form the other member of said clamp, the line-wire being clamped between the two jaws or members of said clamp, means for holding the two jaws together, and a conductor secured to the lower end of said tubular protector and adapted to lead to the instrument to be protected, the said line-wire serving as the sole means of support for said fuse.

6. A tubular fuse-protector comprising a tube of insulating material, metal caps fitted upon the opposite ends of said tube and provided with passages or bores, a fuse-wire leading through said tube and the passages or bores in said caps, and small masses of solder run into the outer ends of said passages or bores and securing the ends of said fuse-wire in place, and clamping-nuts mounted on said caps.

7. A fuse-protector comprising a tube of insulating material, metal caps fitted upon the opposite ends of said tube and provided with bores, a fuse-wire extending through said tube and the bores in said caps, and solder plugs in said bores to secure said wire in place and hermetically seal said tube.

8. A fuse-arrester for electrical circuits consisting of a hollow tubular casing made of suitable material to withstand weather attacks, a fuse-wire extending through said hollow casing and end caps of conducting material secured on either end to which the said fuse-wire is directly connected by a suitable solder, said end caps and solder also serving to hermetically seal the opening containing the fuse-wire, together with a two-part conductor-holder mounted on and projected from one of the caps of the fuse-arrester, and means whereby the holder is clamped upon an aerial line-wire to secure the arrester to the wire and provide a direct contact therewith.

9. A fuse-arrester for electrical circuits, consisting of a hollow tubular casing of weatherproof material, end caps of conducting material fitting over the ends of said casing and having outward screw-threaded extensions longitudinally bored, a fuse-wire extending through said casing and said bores and secured in said bores by solder, and means connected with said screw-threaded extensions to clamp circuit-wires thereto.

10. A fuse-arrester for electrical circuits, consisting of a hollow tubular casing of weatherproof material, and caps of conducting material fitting over the ends of said casing and each having an outward screw-threaded extension longitudinally bored, a fuse-wire extending through said casing and said bores and secured in said bores by solder which also serves to hermetically seal the tube, and wire-clamping means on both caps, that on one cap comprising transversely-extending jaws, one jaw being formed integrally with the cap and the other movable on the threaded extension of the cap, and nuts on the said extension to clamp the jaws together.

11. A fuse comprising a tube of insulation, a metal cap fitted upon each end of said tube, each cap having a longitudinal bore or passage, a fuse-wire extending through said tube and having its opposite end portions permanently secured in the said bores or passages of the caps, and a binding-post or clamping device mounted upon each cap.

12. A fuse-protector comprising a tube of insulation, metal caps fitted over the end portions of said tube, each metal cap having an externally-threaded stem portion and a lon-

gitudinal bore, a fuse-wire extending through said tube and having its end portions secured to the caps by solder run into the enlarged outer end portions of said bores, and a pair of clamping-nuts on each of said threaded stem portions.

13. A fuse consisting of a tube of insulation, a binding-post device secured to each end of said tube, one of said binding-post devices having a pair of elongated jaws adapted to clamp a line-wire between them, and a fuse-wire extending through the said tube and having its ends secured to the said binding-post devices.

Signed by me at Chicago, Cook county, Illinois, this 14th day of May, 1902.

FRANK B. COOK.

Witnesses:

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HARRY P. BAUMGARTNER.