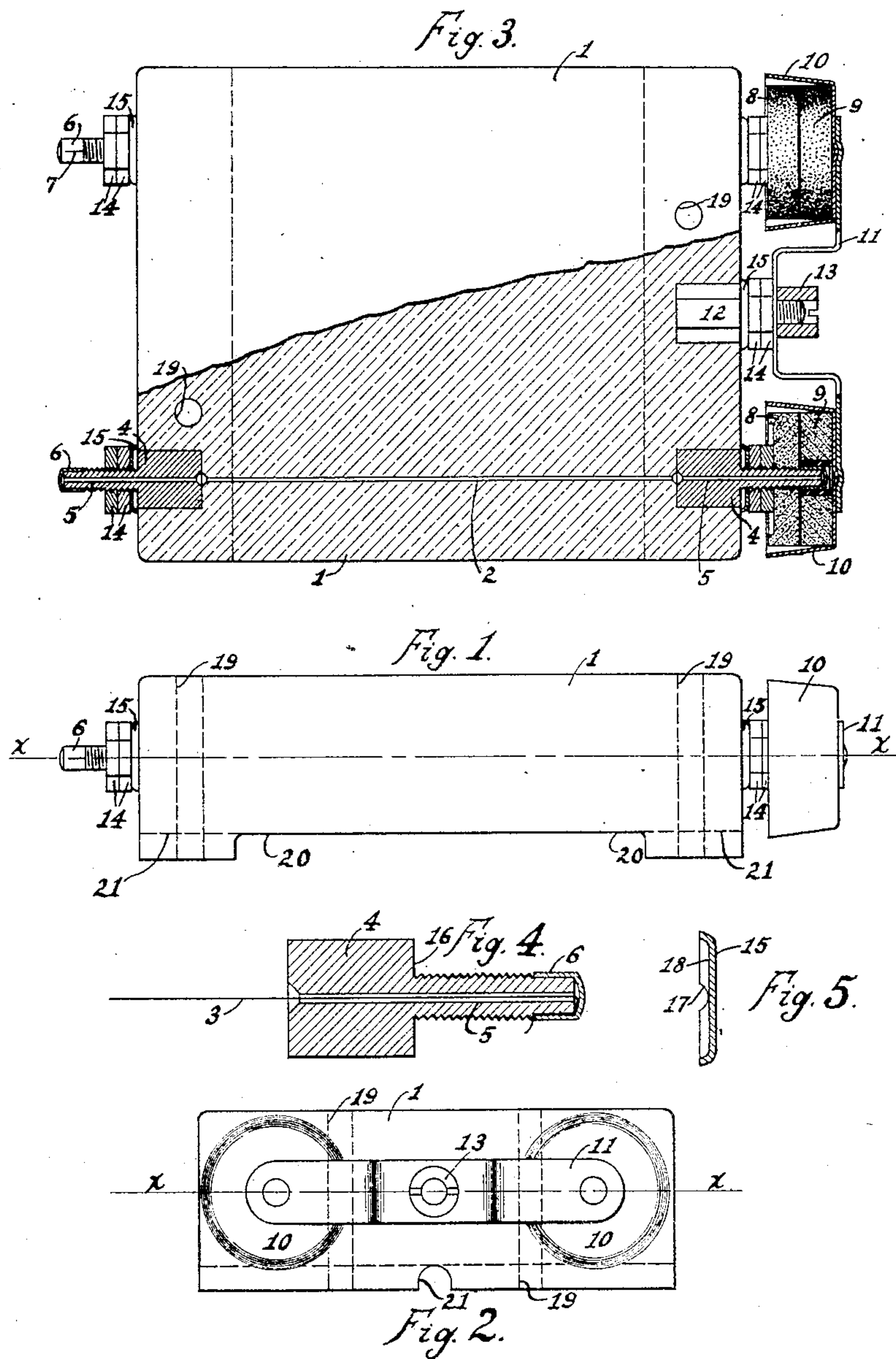


F. B. COOK.
INDIVIDUAL PROTECTOR.
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944,258.

Patented Dec. 28, 1909.



WITNESSES:

Frances M. Parker
Maudie Jacobs Ball

INVENTOR:

FRANK B. COOK.
BY Frederick R. Parker
ATTORNEY.

UNITED STATES PATENT OFFICE.

FRANK B. COOK, OF CHICAGO, ILLINOIS.

INDIVIDUAL PROTECTOR.

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To all whom it may concern:

Be it known that I, FRANK B. COOK, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Individual Protector, of which the following is a specification, reference being had to the accompanying drawings, illustrating same.

My invention relates to electrical protective devices and more in particular to protective devices of the individual type, such as are commonly used at telephone substations, the present application being a division of my copending application Serial No. 437,722, filed June 10, 1908, Patent 919,696, Apr. 27, 1909.

The principal objects of my invention are to provide an improved mounting base or block for an individual protector; to provide improved means for inclosing the fuses in such a protector; to provide an improved lightning arrester for protectors of the character specified; to provide an improved arrangement of the fuses and lightning arresters in such a protector; and to provide accessibility and simplicity of construction in such a device.

Other objects will be apparent from the following specification.

In the accompanying drawings Figure 1 is a side elevation of the preferred form of individual protector of the present invention; Fig. 2 is a right-hand end view of Fig. 1; Fig. 3 is a plan view of Fig. 1, with portions shown in cross-section taken on plane $x-x$ of Figs. 1 and 2; Fig. 4 is a longitudinal cross-sectional view of one of the binding posts or metallic connection terminals carried by the base portion of the protector, showing the method of attaching the fuse wire to the terminal; and Fig. 5 is a cross-sectional view of the clamping washer used on the connection terminal shown in Fig. 4.

Like characters refer to like parts in the several figures.

In the ordinary types of inclosed fuses it is customary to provide a tube for each fuse wire, and to employ a pair of such tubes for an individual protector for a metallic line. In one of applicant's patents a pair of such tubular fuses are inserted through openings

in a porcelain block, the whole being used as an individual protector. In this present invention the ordinary tubes for inclosing the fuse wires are done away with and instead of these tubes a heavy block of insulating material, preferably porcelain, is employed for inclosing the fuses, the block being provided with small bores therethrough through which the respective fuse wires are extended and suitably secured to metallic terminal portions mounted on the ends of the block of insulation.

In the accompanying drawings the numeral 1 represents the block of insulating material, and the numeral 2 represents one of the small bores through the block 1 for accommodating the fuse wire 3. The insulating base portion 1 is provided with recesses in its ends in which the binding posts 4 4 are preferably set and cemented, as shown. Each small bore 2 through the block 1 has a pair of connection terminals 4 4 at the opposite ends thereof, each connection terminal 4 having a longitudinal bore 5 therethrough in alinement with the bore 2. A fuse wire 3 is inserted through each of the bores 5, 2, 5 and is secured to the outer ends of the terminals 4 4 by small metallic caps 6 6, preferably as shown in Fig. 4, the fuse wire being bent over the exterior portion of the exterior ends of the terminals 4 4 and the caps 6 6 being then pressed over the ends of the terminals 4 4 as shown, to clamp the fuse wire 3 between the caps 6 6 and the ends of the terminals 4 4. Each of the caps 6 6 is preferably split as shown at 7 so as to properly grip the end of the terminal 4. This construction provides an arrangement whereby the block 1 may be readily refused, all that is necessary to refuse the block being to remove the caps 6 6, insert new fuse wire through the bores 5 2 5, and then replace the caps 6 6 on the exterior ends of the terminals 4 4 as shown in Fig. 4. In addition to this the caps 6 6 also prevent any flame from shooting out of the ends of the bores 5 5 when a fuse blows, because they cover up the ends of the bores 5 5 and divert the expelled gases back toward the base portion 1 of the protector. This construction practically forms U-shaped vents at the outer ends of the respective bores 5 5, which

vents destroy any flame tending to be emitted therefrom and allow only a slight amount of smoke to be emitted from the caps 6 6 toward the base portion 1.

5 On one end of the block 1 is provided a pair of lightning arresters, each comprising a pair of carbon disks 8 9 and an interposed dielectric, and carried by a terminal post 4, preferably as shown, the line carbon 8 making electrical connection with the post 4 and the ground carbon 9 being insulated from the post 4 and cap 6 by a suitable insulating bushing, as shown. Each of the lightning arresters is provided with a metallic cup-shaped portion 10 inclosing same preferably as shown, the cup-shaped portions 10 10 being electrically connected with the ends of a spring member 11 which is suitably mounted on a binding post 12 carried by the center portion of one end of the block 1. The cup-shaped portions 10 10 hold the ground carbons 9 9 in place and also inclose and protect the lightning arresters from foreign particles or objects. When it is desired to remove the lightning arresters the nut 13 is loosened and the spring 11 is turned around 90 degrees, whereupon the cup-shaped portions 10 10 and the carbons 8 9, 8 9 may be readily removed from the posts 4 4.

Each of the binding posts 4 carries a pair of nuts 14 14 and a washer 15, by which a circuit conductor may be readily secured to the post 4, the circuit conductor being clamped between the washer 15 and the shoulder portion 16 of post 4, and the washer 15 being cut away as at 17 to permit the entrance of the conductor into the concave portion 18 of the washer 15. This construction of the washer 15 gives a finished appearance to the joint between the circuit conductor and the binding post 4. The binding posts 4 4 at the lightning-arrester end of the block 1 are preferably connected with the instrument or circuit to be protected, the binding posts 4 4 at the opposite end of the block 1 being connected with the respective line conductors of a metallic circuit, and the binding post 12 being connected with a grounded conductor. The binding post 12 is also provided with a pair of nuts and a washer for clamping the grounded conductor thereto.

The base portion 1 is provided with a pair of holes 19 19 for mounting the protector in place, and is cut away on the underneath side thereof as at 20, and grooved as at 21, so that any of the circuit conductors may be carried underneath the base portion 1 if desired.

It is believed that the operation and the purposes of the fuses and lightning arresters of this invention will be well understood without further detailed description.

I do not wish to limit this invention to all of the particular details of construction herein shown, as various modifications in same may be made without departing from the scope of the appended claims.

What I claim as my invention is:

1. An individual protector of the character described, comprising a block of insulating material having small bores there-through for accommodating fusible conductors, suitable terminal posts carried by the said block at the ends of the said bores and to which the fusible conductors are secured, a pair of lightning arresters at one end of the said block carried by a pair of the terminal posts, one electrode of each arrester making electrical connection with its terminal post, a ground terminal post carried by the said block near the arresters, and a spring member carried by the ground terminal post and making electrical connection with the pair of lightning arresters, substantially as described.

2. An individual protector of the character described comprising a block of insulating material having small bores there-through for accommodating fusible conductors, suitable terminal posts carried by the said block at the ends of the said bores and to which the fusible conductors are secured, a pair of lightning arresters at one end of the said block carried by a pair of the terminal posts, one electrode of each arrester making electrical connection with its terminal post, a metallic cap for each of the arresters inclosing same and making electrical connection with one of the electrodes thereof, a ground terminal post carried by the said block near the arresters, and a spring member carried by the ground terminal post and making electrical connection with the said metallic caps, substantially as described.

3. An individual protector of the character described comprising a porcelain block having a pair of small bores extending longitudinally therethrough, terminal posts carried by said block at the ends of the said bores, each terminal post having a small bore extending longitudinally therethrough in alinement with its bore in the porcelain block, fuse wires extending through the said bores in the block and terminals and suitably secured to the terminal posts, a pair of lightning arresters at one end of the porcelain block carried by a pair of the said terminal posts, each arrester comprising a pair of carbon disks threaded on to its terminal post, one of the said carbon disks making electrical connection with its terminal post, a metallic cup-shaped portion for each of the arresters inclosing same and making electrical connection with one of the said carbon disks thereof, a ground post carried by the said porcelain block near the arresters, a

spring member carried by the ground post and making electrical connection with the said pair of metallic cup-shaped portions, the said porcelain block being provided with
5 holes therethrough for suitably mounting same and suitable passages on the underneath side thereof for accommodating electrical conductors extending beneath the block, substantially as described.
10 4. A block of insulating material having a small bore therethrough, a pair of terminal posts carried by the said block at the respective ends of the said bore, each terminal post having a bore therethrough in alignment with the bore in the said block, a
15 fusible conductor extending through the bore in the said block and terminal posts and secured to the latter, a lightning arrester comprising a pair of carbon disks
20 threaded over one of the said terminal posts, one of the said disks making electrical connection with its terminal post, a suitable ground connection for one of the carbon disks of the arrester, a cup-shaped member
25 inclosing the lightning arrester, and suitable

nuts and washers carried by the last mentioned terminal post underneath the lightning arrester for connecting a circuit conductor therewith.

5. A protector of the character described, 30 comprising a block of insulating material having a bore therethrough, suitable terminal posts carried by said block at the ends of the said bore, a fusible conductor extending through the said bore and secured 35 to the terminal posts, a lightning arrester carried by one of the terminal posts, a cup-shaped member placed over the lightning arrester and making connection with one electrode thereof and means for suitably con- 40 necting the fuse and lightning arrester as protectors for an electrical circuit.

As inventor of the foregoing I hereunto subscribe my name this 15th day of February, 1909.

FRANK B. COOK.

Witnesses:

FREDERICK R. PARKER,
MAUDE JACOBS BALL.