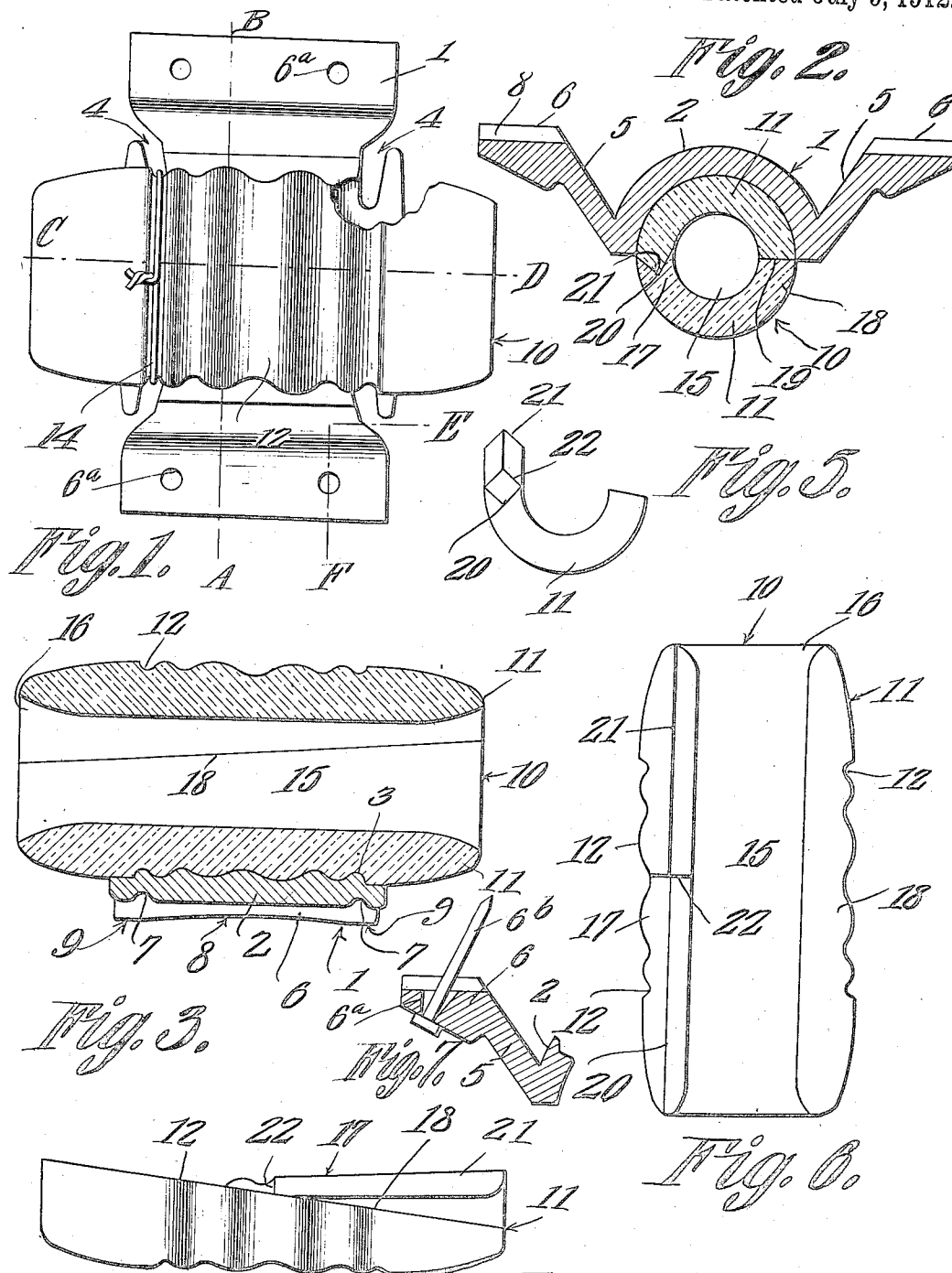


F. A. WARREN.
MINE INSULATOR.
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1,031,975.

Patented July 9, 1912.



Witnesses

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Fig. 4.

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UNITED STATES PATENT OFFICE.

FREDERIC A. WARREN, OF CANON CITY, COLORADO.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERIC A. WARREN, a citizen of the United States, residing at Canon City, in the county of Fremont and State of Colorado, have invented a new and useful Mine-Insulator, of which the following is a specification.

By way of explanation, I will state that in mines, and elsewhere, where falling debris is encountered, such falling material frequently engages the wiring of the mine. The wires are commonly fastened rigidly to an insulator, and when the falling rock or other material strikes the wire, the wire is broken, the insulator is torn down, or the wire is slid forcibly along the insulator, thereby stripping the insulation from the wire.

One of the objects of the present invention is to provide an insulator which will support a wire, without interfering with the longitudinal movement of the wire, the construction being such that, when falling material strikes the wire, the same will yield longitudinally, there being upon the insulator, no element which closely engages the wire, to prevent free longitudinal movement thereof.

A further object of the invention is to provide a novel form of base for an insulator, and to provide a novel form of wire holder therefor.

A further object of the invention is to provide a base and a wire holder, having co-acting parts adapted to receive a tie wire, the tie wire constituting at once, a means for holding the constituent elements of the wire holder together, and a means for maintaining the wire holder, as an entirety, upon the base.

A further object of the invention is to provide an insulator which may readily be mounted upon supports of different configurations.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings,—Figure 1 shows the insulator in plan, parts being

broken away; Fig. 2 is a section on the line A—B of Fig. 1; Fig. 3 is a section on the line C—D of Fig. 1; Fig. 4 is a side elevation of one member of the wire-holder; Fig. 5 is an end view of the structure shown in Fig. 4; Fig. 6 is a top plan of the structure shown in Fig. 4; and Fig. 7 is a fragmental section on the line E—F of Fig. 1.

The invention includes as a primary element, a base 1, the same consisting of a trough shaped, arcuate body 2, transversely corrugated upon its inner face, as shown at 3. In the free edges of the body 2, adjacent the ends thereof, are transverse notches 4. In the outer face of the body 2 are grooves 7, connecting the bases of the notches 4. Outstanding from the edges of the arcuate body 2, are flaring wings 5, terminally provided with laterally extended feet 6. The outer faces of the feet 6 are concaved in their intermediate portions as shown at 8, the extreme end portions 9 of the feet lying in a common plane, and being flattened, as clearly appearing in Fig. 3. Since the feet 6 are concaved as shown at 8, the base 1 may be mounted upon a support having a curved cross section; but since the ends of the feet are flattened, to lie in a common plane, as shown at 9, a four-point support for the base 1 is provided, so that the base may rest securely upon a flat structure. Thus, the insulator may be assembled with a mine timber which is either circular or rectangular in cross section. The feet 6 are provided with openings 6^a, preferably tapered in form, and inclined toward the longitudinal center of the insulator. The openings 6^a are adapted to receive securing elements 6^b, and when these elements 6^b are in place, they will be inclined toward each other at their free ends, thereby affording a secure hold upon the support with which the insulator is assembled.

The arcuate body 2 of the base 1 is adapted to receive a wire holder which is denoted generally by the numeral 10. This wire holder 10 is somewhat longer than the base 1, and comprises a pair of trough-shaped sections 11. These sections 11 are superficially corrugated, as shown at 12, to engage with the corrugations 3 of the body 2 of the base. The interengagement of the corrugations 12 and 3 prevents the wire holder 10 as an entity, from moving longitudinally of the base 1, and, at the same

time, the interengagement of these corrugations serves to aline certain of the corrugations with the notches 4 and with the groove 7, the construction being such that when these parts are alined, a tie wire 14 may be passed through the groove 7, through the notches 4 and through one of the corrugations 12 of the wire holder 10, the sections 11 of the wire holder being thus held together, and the wire holder, as an entity, being thus held upon the body portion 2 of the base. Through the wire holder 10 extends a longitudinal opening 15, formed partly in one of the sections 11, and partly in the other of said sections. The opening 15 flares adjacent its ends, as shown at 16, the flaring of the opening permitting the insulator to be used upon curves, and likewise facilitating the longitudinal sliding movement of the wire in the opening 15 without chafing the insulation of the wire.

The sections 11 of the wire holder 10 are duplicates, and but one of them will be described. Each section 11, then, is fashioned with longitudinal edges 17 and 18, inclined in opposite directions, longitudinally of the sections, the edges 17 and 18 lying in intersecting planes. The edge 18 is flat and is radially disposed, as shown at 19. The edge 17 is grooved for one-half of its length, as shown at 20, a tongue 21 outstanding from the edge 17, throughout the other half of the length of said edge. The cross section of the tongue 21 is the same as the cross section of the groove 20, the obvious end being to permit one section 11, formed as above described, to interfit with another, similarly formed section. The inner end of the tongue 21 serves to define a shoulder 22 in one section, which, abutting against the similarly formed shoulder in another section, serves to prevent the sections from having longitudinal movement upon each other. When the tongue 21 of one section registers in the groove 20 of another section, the coöperation of these parts will prevent the sections from moving transversely upon each other. As the edges 17 and 18 slope in opposite directions, and lie in intersecting planes, the water finding its way between the sections will travel longitudinally of the insulator and be discharged beyond the ends of the base 1.

Referring to Fig. 2 it will be noted that when the feet 6 of the base 1 are assembled with a support, the body 2 will be spaced apart from such support, and thus the tie wire may be mounted in the notches 4, without removing the base 1 from the support whereby it is carried.

It is to be noted that the conductor is not bound or held in the insulator, but is free to slide longitudinally therein, the opening in the insulator being flared, to permit this movement in the conductor. Therefore,

when falling material strikes the conductor, the conductor will yield, avoiding a breaking of the conductor, a tearing of the insulator from its support, or a rending of the insulating material wherewith the conductor is surrounded.

It is to be understood that the tie wire 14 is of relatively small diameter, compared with the diameter of the conductor which the insulator carries. Therefore, the tie wire 14 will give away, before the conducting wire is injured, the yielding of the tie wire 14 permitting a separation of the members 11, and a consequent freeing of the conductor. However, it is to be noted that should the portions 11 of the device become broken, the wire 14 remaining intact, the conducting wire will, nevertheless, be upheld.

Having thus described the invention, what is claimed is:—

1. An insulator comprising a base and a wire holder mounted upon the base, the wire holder comprising freely separable parts; the base and the parts of the wire holder having alined grooves located in a common plane and adapted to receive a tie.

2. An insulator comprising a base and a wire holder resting upon the base, the wire holder comprising freely separable parts; the base and the parts of the wire holder having alined grooves located in a common plane; and a tie mounted in the grooves, the tie constituting at once a means for holding the parts of the wire holder together, and a means for maintaining the wire holder upon the base.

3. An insulator comprising an arcuate body having oppositely disposed notches in its edges, and a groove in its outer face, connecting the bases of the notches; and a wire holder mounted in the body; the notches and the groove being adapted to receive a tie, whereby the holder is bound upon the body.

4. An insulator comprising an arcuate body having oppositely disposed notches in its edges, and a groove in its outer face, connecting the bases of the notches; and a wire holder mounted in the body; the holder and the body having interengaging corrugations, adapted to aline one of the corrugations in the holder with the notches and with the groove, to receive a tie.

5. As an article of manufacture, a trough-shaped block for use in the construction of an insulator, the longitudinal edges of the block being located in intersecting planes, one of said edges being flat, the other of said edges being longitudinally grooved for a portion of its length, and provided with a raised rib throughout the remainder of its length, the cross section of the rib corresponding to the cross section of the groove.

6. As an article of manufacture, an insu-

lator base comprising an arcuate body provided adjacent its edges with outstanding wings, and lateral feet at the extremities of the wings; the outer faces of the feet being 5 concaved at their intermediate portions and being flat at their ends, and disposed in a common plane.

10 7. As an article of manufacture, an insulator base comprising an arcuate body provided along its edges with outstanding elements, the outer edges of which are concaved, the ends of said elements lying in a

common plane; the body having transverse notches adjacent its edges, there being 15 grooves in the outer face of the body, connecting the bases of oppositely disposed notches.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FREDERIC A. WARREN.

Witnesses:

ALVAH S. HOBART,

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