(No Model.)

E. T. SCHOONMAKER.

ELECTRIC WIRE INSULATOR.

No. 321,646. Patented July 7, 1885.

Fig. 1.

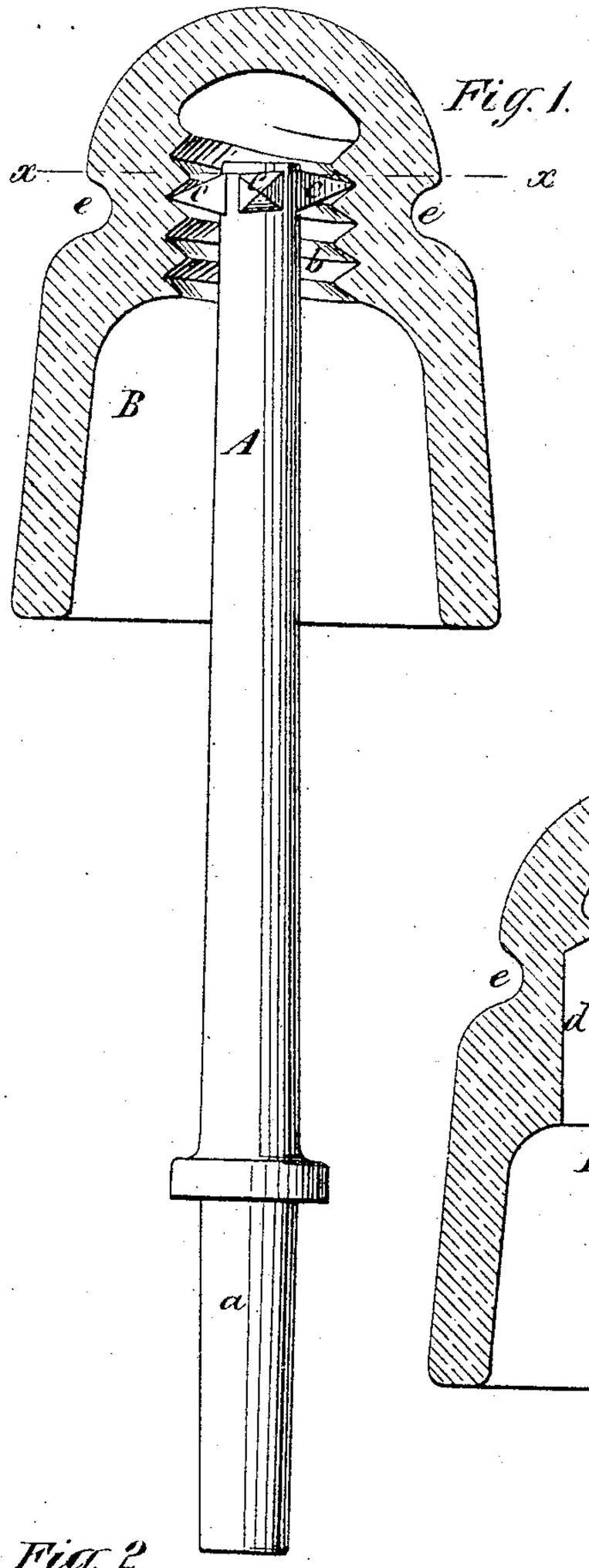


Fig. 3.

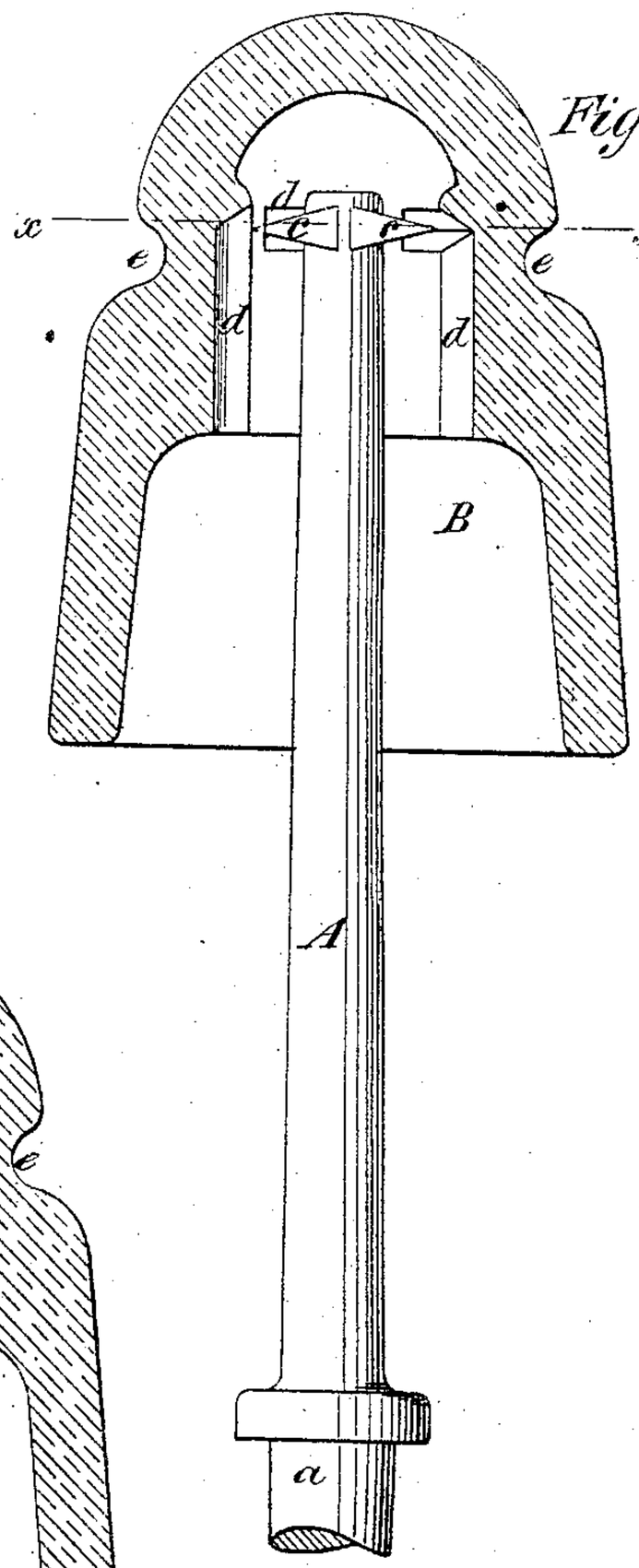


Fig. 5.

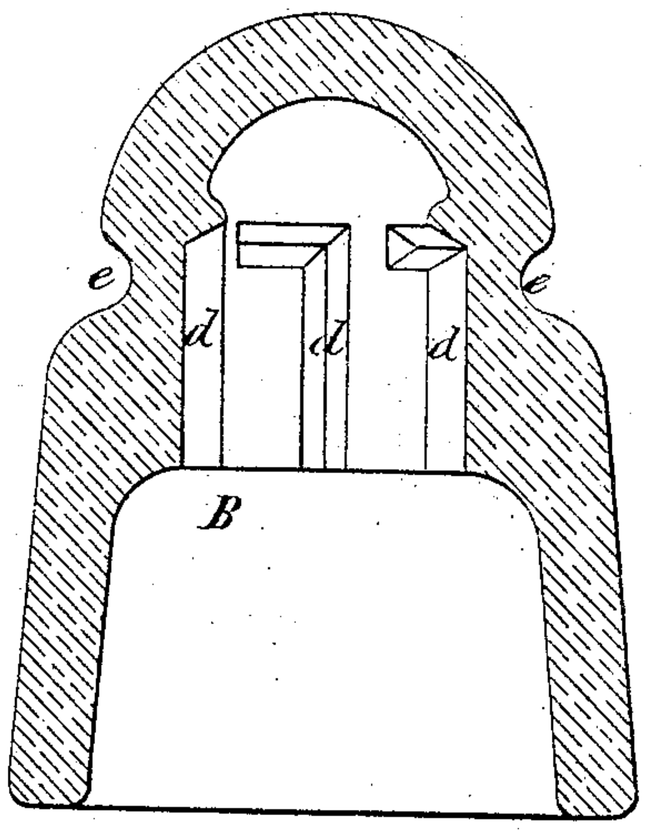


Fig. 2.

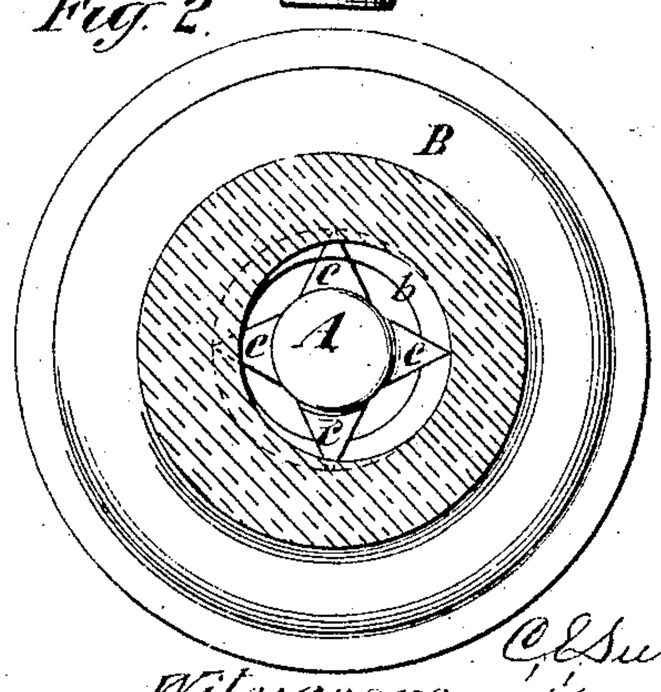
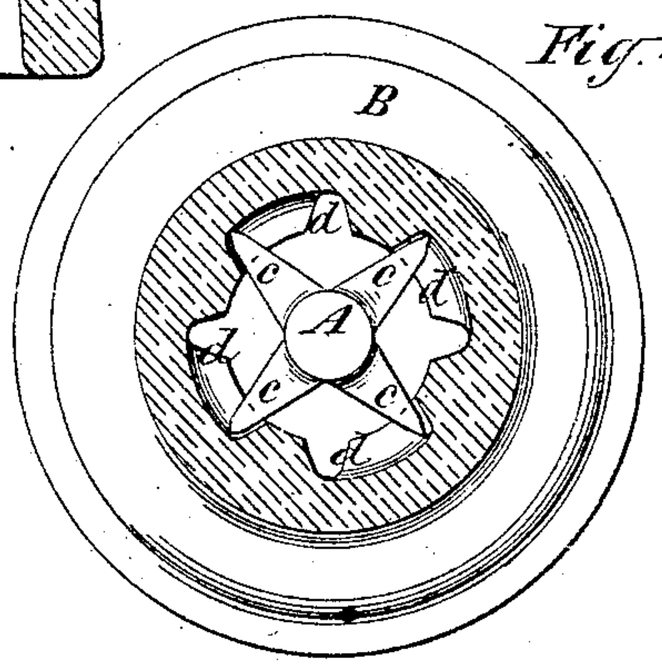


Fig. 4.



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Inventor: Edward T. Schoonmaker by his Attys. Brown & Hall

BELL BROS. PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWARD T. SCHOONMAKER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO JOHN E. SMITH, OF SAME PLACE.

ELECTRIC-WIRE INSULATOR.

SPECIFICATION forming part of Letters Patent No. 321,646, dated July 7, 1885.

Application filed December 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD T. SCHOONMAKER, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Electric Insulators, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to insulators for electric conductors, especially to the insulators of aerial telegraphic and telephonic circuits. Its object is to prevent or reduce the leakage of the electric current over the insulators during wet weather. Heretofore the shank of such insulators has generally been cemented or screwed into the glass shield for a distance of an inch and a half or two inches, thus making five or six square inches of contact between the two. In some other forms of insulator the shield is held on the shank by a single pin or arm entering a groove; but in these also a large portion of the body of the shank touches the inner surface of the shield. So large a contact between shank and shield, when both become damp in rainy or foggy weather, allows enough of the electric current to leave the line to seriously interfere with its operation.

The object of my invention is to diminish the surface-connection between the shank and the shield; and to this end my invention consists, essentially, in the combination, in an insulator, of a shield having a groove or grooves in its inner surface and a shank with spurs which enter the said groove or grooves and so support and hold the shield that it has no contact whatever with the body of the shank.

In carrying out my invention, the shank and the shield may be of any material or materials of sufficient strength, provided one of them is a good non-conductor; but it will probably be most advantageous to make the shank of iron and the shield of glass, as in the insulators now in common use.

In the accompanying drawings, Figure 1 is an elevation of an insulator constructed according to my invention, the shield being shown in section. Fig. 2 is a horizontal section in the line *x x* of Fig. 1. Fig. 3 is an elevation, with the shield in section, of an insulator differing in its details from that shown in Figs. 1 and 2, but illustrating my invention. Fig. 4 is a horizontal section on the line *x x* of Fig. 3. Fig. 5 is a central vertical section of the shield shown in Figs. 3 and 4.

Similar letters of reference indicate corresponding parts in the several figures.

A is the shank, and B is the shield. The shank may have that end, *a*, which is to be fastened to the cross-arm or pole of any known or suitable form. I have represented it of a round form suitable to be driven into a hole in a cross-arm. The shield may have any desired form externally. The body of the shank or that portion of it which enters the shield is considerably smaller than the bore of the shield, and is constructed or provided with radiating spurs *c c*, of which I prefer that there should not be less than three.

In the example of my invention shown in Figs. 1 and 2 the spurs *c c* are arranged spirally, so that they practically form parts of the thread of a male screw; and in this example the shield has the groove *b* in its interior or bore in the form of a female screw-thread, the bore and screw-thread tapering toward the crown, and being of such size relative to the circle circumscribing the points or extremities of the spurs *c c* that when the shield is screwed onto the said spurs it will become tight and rigid thereon, without the body of the shank touching either the side or the crown of the shield.

In the example shown in Figs. 3, 4, and 5, instead of a single groove in the form of a male screw-thread, there are in the interior of the shield several grooves, *d d*, corresponding in number with the spurs on the shank, each in the form of an inverted ⌐, one portion being vertical or parallel with the axis of the shield and the other portion being horizontal or running in a direction circumferential to the shield. These grooves are open at the bottom or toward the mouth of the shield, terminating in a portion of the shield which is wider than the portion in which they are formed. The shield being placed directly on the shank with the grooves opposite the spurs,

and then turned a short distance to bring the horizontal or circumferential portions of the grooves *d d* on the spurs, the latter alone will touch the shield and prevent the line-wire or conductor from pulling it off from the shank. In all cases I prefer to make the angle of the transverse section of the groove or grooves more obtuse than the corresponding angle of the extremities of the spurs, as shown in Figs. 1 and 3, so that only the points of the latter will touch the shield, leaving the body entirely free from contact therewith. The groove *e* to receive the line wire or conductor should, preferably, be opposite or nearly opposite the spurs of the shank, to prevent unnecessary strain on said spurs.

By this invention, while I am enabled to securely fasten the shield to its support, I am enabled to reduce the contact between them to about one sixty-fourth part of a square inch, or about one three-hundredth part of the usual amount, and not only this, but the contact being higher up in the shield is less liable to become wet and the distance which the current must travel over the inner surface of the shield is greatly increased.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in an insulator, of a shield having a grooved inner surface and a shank having spurs on different sides thereof to engage with the said grooved surface, and support and hold the shield out of contact with the body of the shank, substantially as herein described.

2. The combination of the shield having in its interior a groove in the form of a female screw-thread and the shank having a series of spurs arranged at distances apart thereon, on different sides thereof, and in spiral relation to each other to form portions of a male screw-thread corresponding with the groove or female thread in the shield, substantially as herein described.

3. The combination of the shank having at one end of its exterior a series of spurs arranged to form sections of a screw-thread and the shield having in its interior a taper female screw-thread fitting the said spurs to become tight thereon, while the end of the shank does not touch the crown of the shield, substantially as herein described.

4. The combination of the shank furnished on different sides with spurs having angular extremities and the shield having in its interior a groove or grooves, the angle of whose transverse section is more obtuse than that of the extremities of the spurs, for the purpose of limiting the contact to and near the ends of the spurs, substantially as herein described.

EDWARD T. SCHOONMAKER.

Witnesses:

ALEX. S. VAN NOTE,

SAM. G. HUYTER.