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F. A. FEIGERT.

ELECTRIC INSULATOR.

APPLICATION FILED MAR. 19, 1906.

Fig. 1.

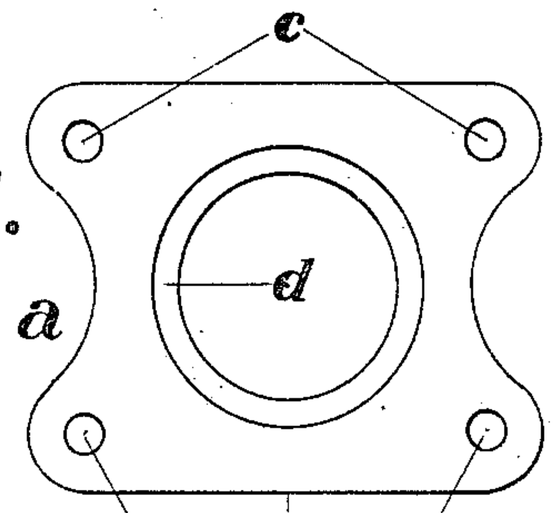

Fig. 3.

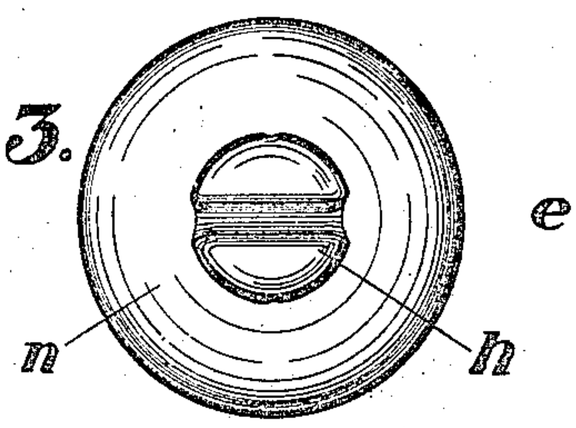

Fig. 2.

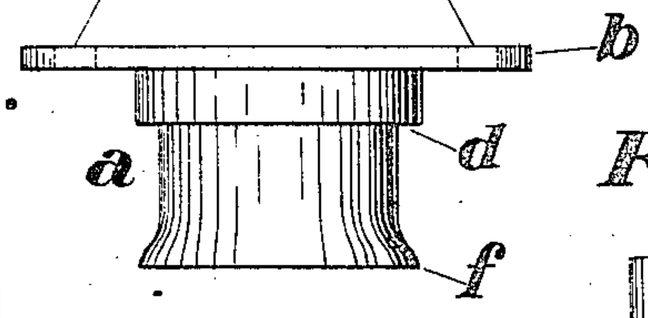

Fig. 4.

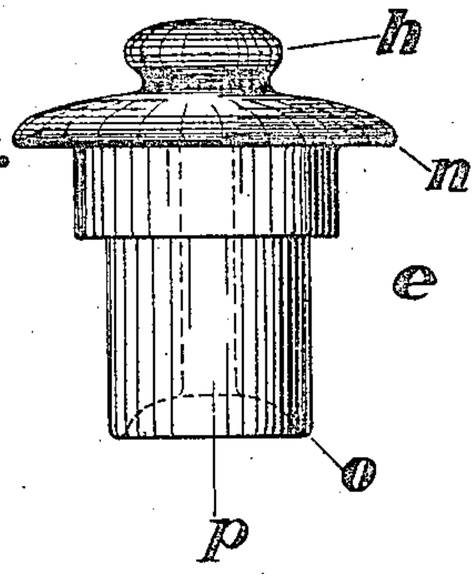

Fig. 5.

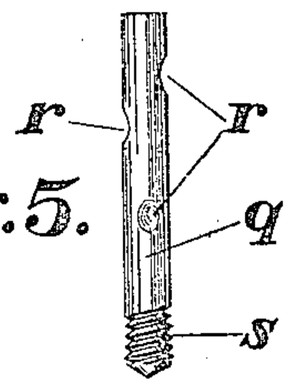

Fig. 7.

Fig. 6.

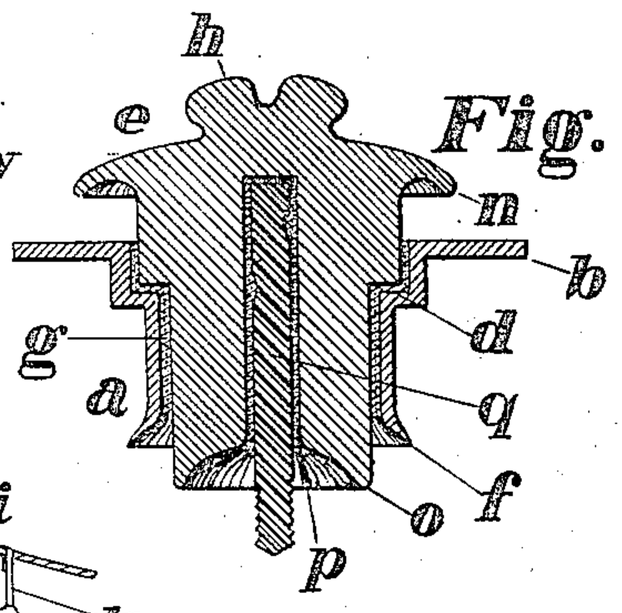

Fig. 8.

WITNESSES:

Jno. Hamilton.

Catherine M. Hart

INVENTOR

Frederick A. Feigert

BY

James Hamilton

ATTORNEY

UNITED STATES PATENT OFFICE.

FREDERICK A. FEIGERT, OF SHELBYVILLE, INDIANA.

ELECTRIC INSULATOR.

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To all whom it may concern:

Be it known that I, FREDERICK A. FEIGERT, a citizen of the United States, residing in Shelbyville, in the county of Shelby and State of Indiana, have invented certain new and useful Improvements in Electric Insulators, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to improvements in insulators for use upon the trolley-lines of electric railways where high voltage is used and high speed is maintained, and particularly to insulators of this class for use upon curves and at switches of lines having a side construction.

Heretofore the common practice has been to provide a mast-arm which projects from the trolley-pole and in which is mounted a support for the messenger-wire, which wire is that from which the trolley-wire is suspended. In straight-line work the trolley is suspended from this messenger-wire, and the latter is insulated from the mast-arm. On curves and at switches, however, this construction does not suffice to keep the trolley-wire in place under the messenger-wire, and an independent means is provided for supporting the trolley-wire and maintaining it in position. The messenger-wire is supported by the same mast-arm, from which it is suitably insulated; but the trolley-wire is held by a huge pole-insulator and a strain-rod, the trolley-wire being connected to the outer end of the latter, which at its inner end is connected by a gooseneck to a band encircling the insulator. This band is therefore charged, and since it clears the trolley-pole by only two inches, or thereabout, it constitutes an element of grave danger to linemen climbing the pole. Again, to move the trolley-wire either toward or from the pole is an operation requiring the strain-rod to be disconnected and shortened or a longer rod substituted and is therefore an operation attended by the expenditure of considerable time, as well as by much danger. Further, the distance between the strain-rod and the trolley-wire is necessarily so small that the sliding bow contact frequently strikes against or fouls the strain-rod, displacing the latter or damaging the contact, or both, and the elevation of the tracks at the curves tends to bring about this untoward result. Since a speed of seventy miles an hour is frequently maintained on these railways, the desirability of avoiding such collisions between the sliding contact and the strain-rod will be apparent.

The object of my invention is to provide an insulator for curves and switches upon high-voltage high-speed railways which will do away with the use of the huge pole-insulator and its connected strain-rod and which will prove simple in construction, durable in service, and highly efficient in operation.

In the drawings illustrating the principle of my invention and the best mode now known to me of applying that principle, Figure 1 is a top plan view, and Fig. 2 is an elevation, of the casing. Fig. 3 is a top plan view, and Fig. 4 is an elevation, of the carrier. Fig. 5 is an elevation of the core-pin. Fig. 6 shows the parts assembled. Fig. 7 illustrates the insulator in place upon the mast-arm, and Fig. 8 is a perspective view of a line construction at a curve in which my new insulator is used.

The casing *a* is made of malleable iron and is formed at its top with a flange *b*, through holes *c* in which pass the heads of J-bolts by which it is secured in place. Beneath the flange *b* there is formed in the cylindrical body portion of the casing a seat or ledge *d*, adapted to receive the carrier *e*, as shown in Fig. 6, and to support it. The lower edge of the casing is provided with a water-drip *f*.

Within the casing *a* is seated the carrier *e*, which is firmly secured in place by cement *g* or other suitable insulating cementitious material. The upper portion of the carrier *e* is formed with a grooved knob or boss *h*, to which is secured the messenger-wire *i*, from which in "straight-line" work the trolley-wire *j* is suspended by the hangers *k*, Fig. 8. This upper portion of the carrier *e* projects above the flange *b* and holds the messenger-wire out of contact with the flange *b* and the mast-arm *m*, by which the insulator is supported. The carrier *e* is provided with a water-drip *n* just below the knob *h* and with a water-drip *o* at its lower edge, which projects below the water-drip *f* on the casing *a*.

The carrier *e* is formed with a central socket *p*, within which the core-pin *q* is secured firmly by means of insulating cementitious material. At its upper end the core-pin is formed with depressions *r*, which receive the cementitious material and aid in giving the latter a firm grip on the pin. The lower end of the core-pin is formed with a standard thread *s*, upon which is screwed the ordinary clamp *t* for the trolley-wire.

To the trolley-pole *u* is bolted the mast-arm *m*, braced by the guy *v*. At its free end the mast-arm is formed with an elongated eye or loop *w*, to the sides of which the casing *a* is secured by means of J-bolts *x*, the heads of which pass through the holes *c* in the flange *b*. By loosening these bolts the insulator may be readily moved in toward or out from the trolley-pole *u*.

As previously stated, my new insulator is particularly adapted for use in side construction curves of electric railways upon which high speed is maintained and high voltage is used. By it the trolley-wire is always kept directly under the messenger-wire and cannot be pulled out to one side and into contact with the mast-arm. My new insulator is also particularly adapted for use at the points where the trolley and messenger wires are "staggered." By it the same amount of stagger is obtained for both trolley and messenger wires, while in the construction now used the trolley-wire pulls out to one side and does not, therefore, receive as much stagger in actual operation. It will be understood that the trolley-wire is staggered to prevent the slide of the bow contact from wearing in a single place. By distributing the wear the life of the slide is increased.

In case of a change of the track construction, as a change of the track elevation at a curve, the position of the trolley-wire may be readily changed by loosening the J-bolts and moving the insulator in the loop to the desired position.

The porcelain carrier *e* is strengthened by the cementitious insulating material within the socket *p* and between the carrier and casing *a*. The only part of the carrier exposed below the casing is the water-drip *o*, and should this be broken, as by its being stoned, the water-drip *f* will still form a protection. The casing *a* gives strength to the whole structure and serves to prevent the core-pin *q* from bending or turning.

With my new insulator there is nothing upon which the sliding bow contact may strike, and a sufficient clearance is provided for any track elevation which will ever be used. It is readily put in place, varied in position, and replaced. There is no danger of linemen climbing the trolley-pole coming in contact with a charged or live member. The huge pole-insulator and troublesome strain-rod are done away with and a simple, strong, durable, and efficient insulator substituted therefor by my invention.

What I claim is—

1. An insulator comprising the combination of an outer casing the upper portion of which is formed with a retaining-flange and the lower portion of which is provided with a water-drip; a carrier secured in said casing by cementitious insulating material and projecting at both ends from said casing, said carrier being provided at its top with a grooved knob for the attachment of the messenger-wire thereto and at its lower edge with a water-drip just below the water-drip formed on said casing; and a core-pin mounted in said carrier for the attachment of the trolley-wire thereto.

2. An insulating device comprising the combination of a mast-arm formed with a loop at one end; a casing formed with a flange which rests upon the upper face of said loop and is adjustably secured thereto, said casing extending downwardly through said loop and having a water-drip at its lower edge; a carrier which extends through said casing and is formed at its lower edge with a water-drip and at its top with means for attaching the messenger-wire thereto; and a core-pin mounted in said carrier for the attachment of the trolley-wire.

3. An insulator comprising the combination of an outer casing of metal having an outwardly-extending flange around its top edge and a water-drip extending around its lower edge; a carrier made of insulating material seated in said casing and secured thereto by cementitious material, said carrier projecting above and below said casing and formed with a central socket and with a water-drip at its lower edge and means for securing the messenger-wire at its top; and a core-pin mounted in said socket for the attachment of the trolley-wire.

4. An insulator comprising the combination of an outer casing of metal provided at its upper edge with means for holding the casing in position and with a water-drip at its lower edge; a carrier secured and seated in said casing and extending therethrough, said carrier being of insulating material and formed with a water-drip at its lower edge and with means for the attachment of the messenger-wire to its top; and means mounted in and projecting from said carrier for the attachment of the trolley-wire.

FREDERICK A. FEIGERT.

Witnesses:
SAMUEL LAUGHLIN,
FRANK J. WEINTRANT.