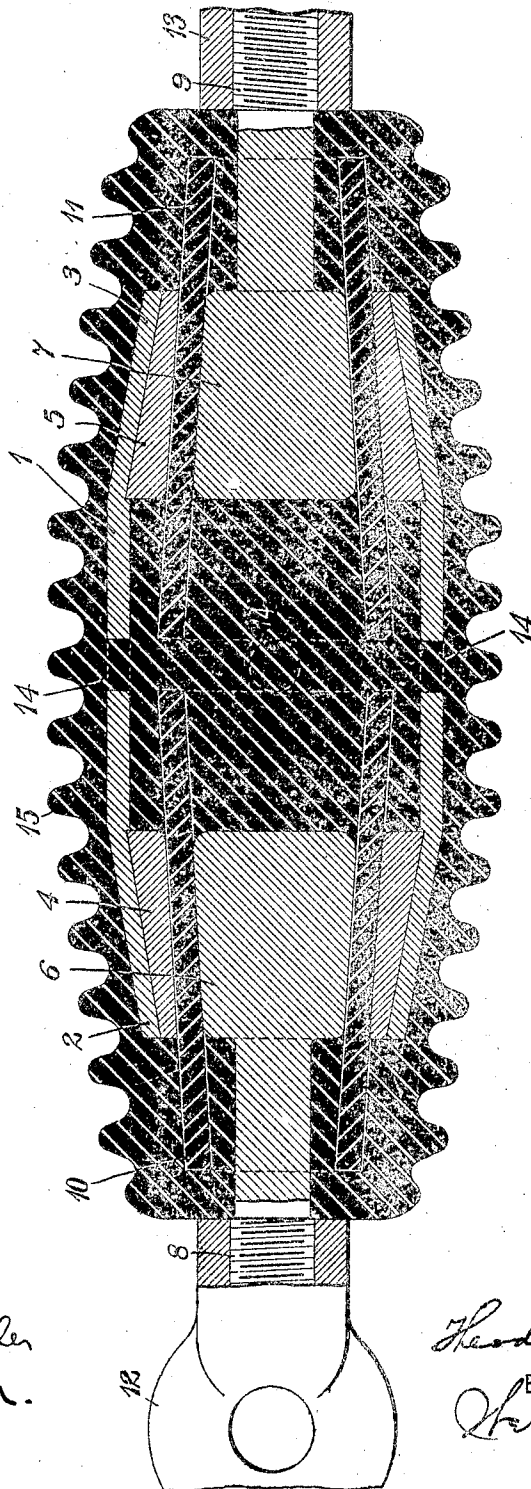


T. VARNEY.
STRAIN INSULATOR.

APPLICATION FILED JUNE 8, 1907. RENEWED JUNE 24, 1909.

938,092.

Patented Oct. 26, 1909.



WITNESSES:

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STRAIN-INSULATOR.

938,092.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THEODORE VARNEY, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Strain-Insulators, of which the following is a specification.

My invention relates to strain insulators for electric lines and it has for its object to provide a device of that character that shall be specially compact and durable in construction and capable of withstanding strains incident to the use of high voltages.

The single figure of the accompanying drawing is a section view of a strain insulator constructed in accordance with my invention, and reference may now be had to this figure.

The strain insulator here illustrated comprises a metal tube 1, having taper ends 2 and 3 and a plurality of holes substantially midway of its ends, taper bushings 4 and 5 that are seated in the ends of the tube 1, and taper plugs 6 and 7 having stems 8 and 9 projecting outwardly therefrom, said plugs being located within the bushings 4 and 5 and insulated therefrom by taper sleeves 10 and 11 of hard insulating material, such as micanite.

Each of the bushings 4 and 5, is of substantially the same length as the corresponding taper portion of the metal tube 1, but the insulating sleeves 10 and 11, which are interposed between the plugs 6 and 7 and the bushings 4 and 5, are preferably made of materially greater length than the bushings.

The stems 8 and 9 of the taper plugs 6 and 7 project outwardly beyond the extremities of the tubes 10 and 11 and are screw-threaded to receive strain loops 12 and 13.

The outer ends of all of the tapered parts are of less diameter than their inner ends so that when forces in tension are applied to the strain loops 12 and 13, the taper plugs 6 and 7 are drawn firmly into position.

When the parts already described have been assembled, the interior of the tube 1 is filled with a suitable hot liquid insulation compound which is poured in through the openings 14, then the entire structure between strain loops 12 and 13 is enveloped in a casing 15 of molded insulation, which may be applied under heavy pressure in a well

known manner. The pressure applied in molding the casing in position is transmitted to the insulating compound in the interior of the tube so that the entire structure becomes very hard and rigid.

During the molding process, the strain loops 12 and 13 will generally be removed and replaced by cylindrical rods of substantially the same diameter as the plugs 6 and 7 so that the pressure may be entirely equalized inside and outside the tube 1 except for a pressure tending to separate the two plugs.

The taper sleeves 10 and 11 are made of such length as to respectively project materially beyond the outer ends of the parts 6 and 2 and 7 and 3 to constitute effective insulating barriers, their insulating properties being retained by the casing 15 of molded insulation which completely seals them from the weather.

A further advantage of the strain insulator of my present invention lies in the fact that any tendency for the tapered plugs to become loosened or unseated when the device is suddenly released from mechanical tension is prevented by reason of the solid mass of insulating compound which has hardened under pressure between the inner ends of the plugs.

The tube 1 is first formed with substantially cylindrical walls and after the plugs, bushings and taper sleeves are assembled, as shown in the drawing, the side walls of the tube are forced into final form which produces the taper ends 2 and 3. This result may be accomplished under very heavy pressure obtained in a suitable swaging machine.

Although the taper parts are all provided with conical surfaces, as shown in the drawings, it is conceivable that modifications in their contours may be effected without substantially changing the general construction or diminishing the usefulness of the insulator.

I desire that only such limitations shall be imposed as are indicated in the appended claims, since variations in size and arrangement of details may be effected within the scope of my invention.

I claim as my invention:

1. A strain insulator comprising a metal tube having taper ends, taper metal bushings seated therein, and taper metal plugs located within, and insulated from, said bushings.
2. A strain-insulator comprising a metal

tube having taper ends, taper metal bushings seated therein, taper metal plugs located within, and insulated from, said bushings and having outwardly projecting stems.

5 3. A strain insulator comprising a metal tube having taper ends, taper metal bushings seated in said ends, taper metal plugs located within said bushings and having outwardly projecting stems, and means for insulating
10 the taper plugs from the bushings.

4. A strain insulator comprising a metal tube having taper ends, taper metal bushings seated in said ends, taper sleeves of insulating material seated in said bushings, taper
15 metal plugs seated in the taper insulating sleeves and having outwardly projecting stems.

5. A strain insulator comprising a metal tube having taper ends, metal bushings
20 seated in the ends and provided with taper holes, taper sleeves of insulating material seated in the holes, taper plugs seated in the taper sleeves and having outwardly projecting stems, and a molded casing of insulating
25 material which seals the tube and extends from one stem to the other.

6. A strain insulator comprising a metal tube having taper ends, taper bushings seated in the ends and provided with taper

holes, taper sleeves of insulating material
30 seated in the holes, taper plugs seated in the taper tubes and having outwardly projecting stems, an insulating compound which fills the space in the metal tube between the
35 plugs, and a molded casing of insulating material which seals the structure and extends from one stem to the other.

7. A strain insulator comprising taper metal plugs having outwardly projecting
40 stems, taper insulating sleeves in which said plugs are seated, and a one-piece metal tube having swaged taper ends within which said
45 plugs and sleeves are seated.

8. A strain insulator comprising a one-piece metal tube having swaged taper ends,
45 taper insulating sleeves seated in the ends of said tube, taper plugs seated in said sleeves and provided with outwardly projecting stems, and a molded casing of insulating material which seals the tube and extends from
50 one stem to the other.

In testimony whereof, I have hereunto subscribed my name this 29th day of May, 1907.

THEODORE VARNEY.

Witnesses:

W. H. KEMPTON,
BIRNEY HINES.