(No Model.) 2 Sheets—Sheet 1.

L. McCARTHY.

STRAIN INSULATOR.

No. 518,373. Patented Apr. 17, 1894.

FIG. 8.

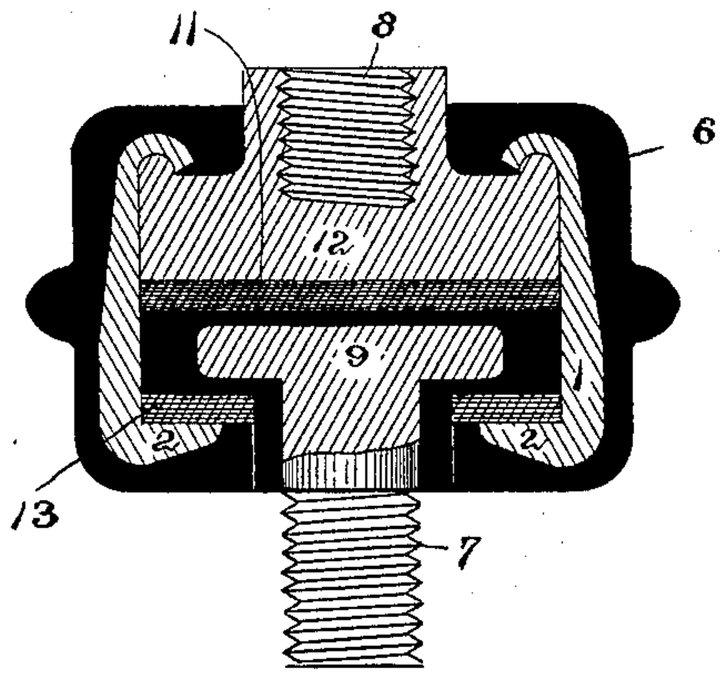

FIG. 7.

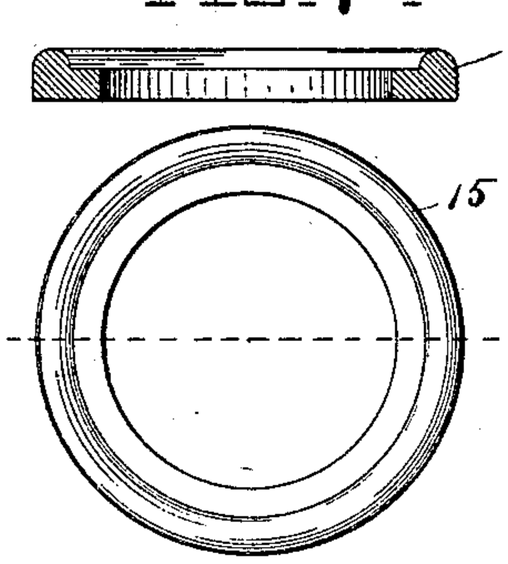

FIG. 6.

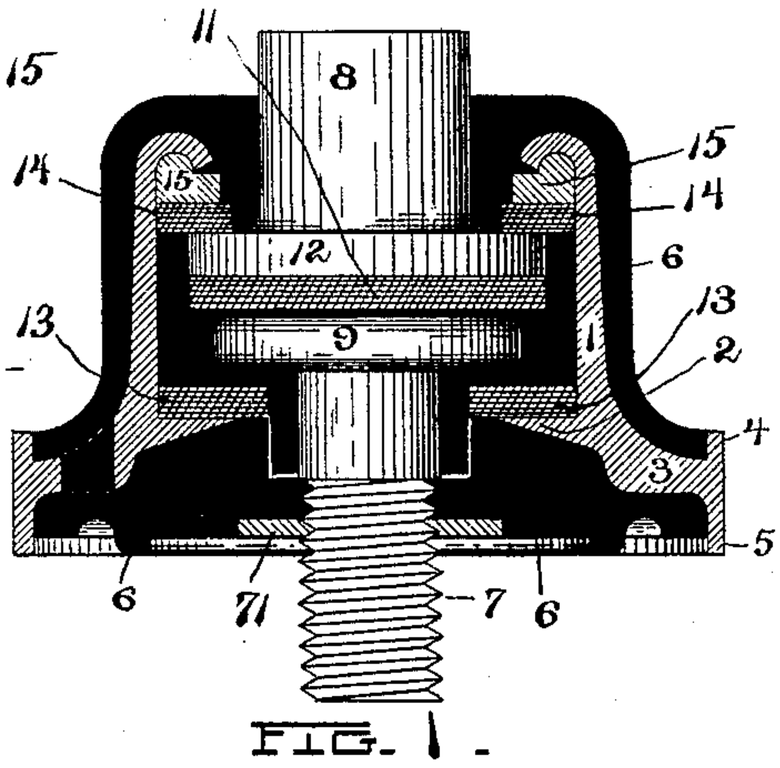

FIG. 1.

FIG. 5.

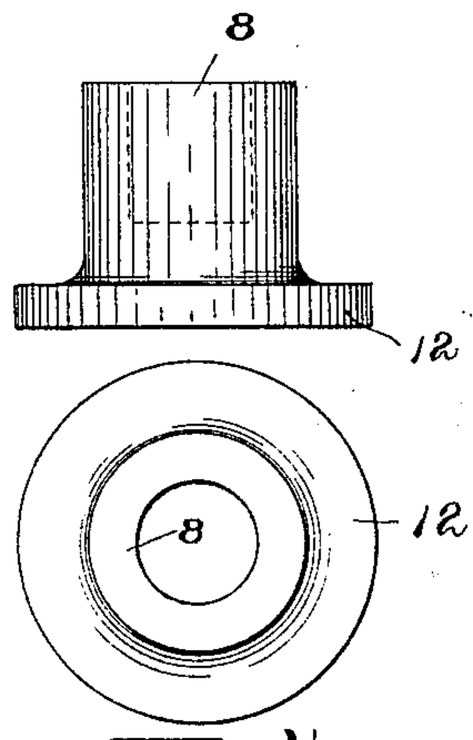

FIG. 4.

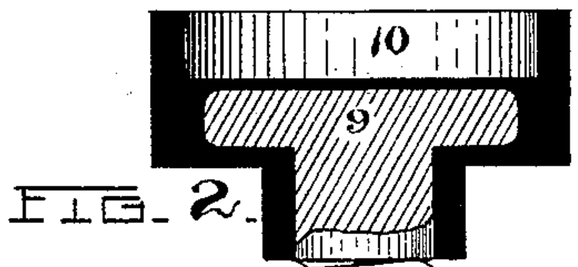

FIG. 2.

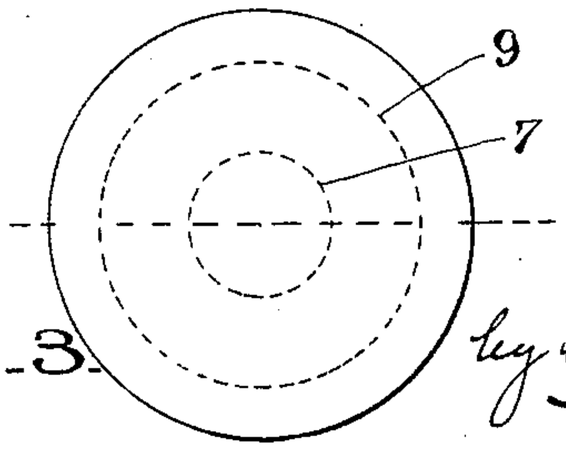

FIG. 3.

Witnesses.

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(No Model.) 2 Sheets—Sheet 2.

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STRAIN INSULATOR.

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FIG. 11.

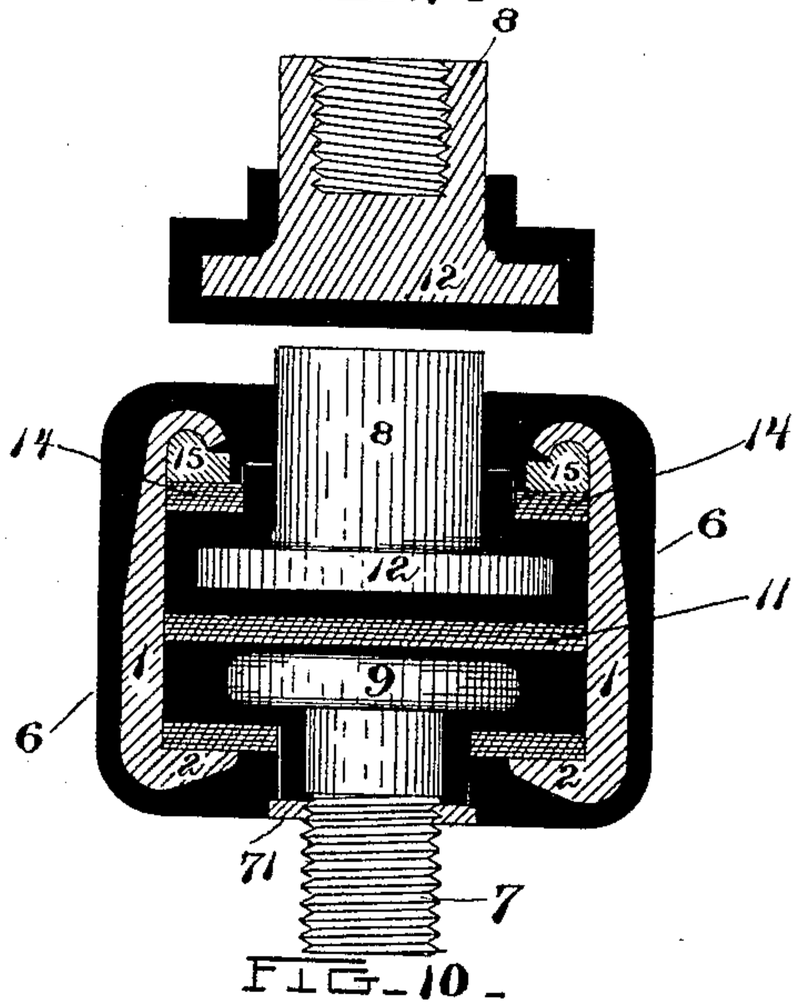

FIG. 10.

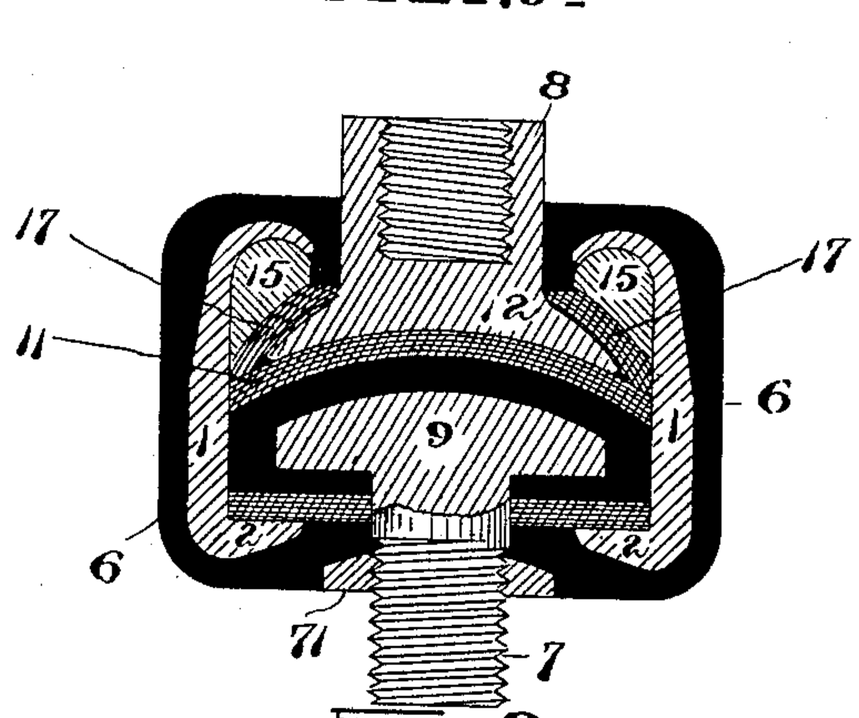

FIG. 9.

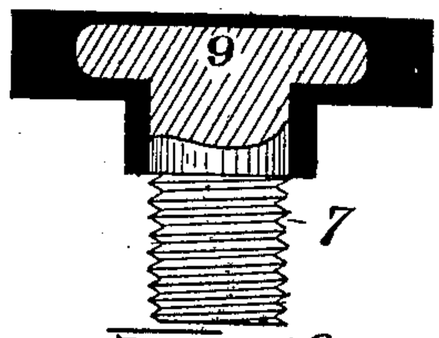

FIG. 12.

Witnesses.

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UNITED STATES PATENT OFFICE.

LOUIS McCARTHY, OF BOSTON, MASSACHUSETTS.

STRAIN-INSULATOR.

SPECIFICATION forming part of Letters Patent No. 518,373, dated April 17, 1894.

Application filed January 15, 1894. Serial No. 496,857. (No model.)

To all whom it may concern:

Be it known that I, LOUIS MCCARTHY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Insulators, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has for its object to provide an improvement in insulators, and relates more particularly to that class of insulators which employ mica as an insulating material and which are employed in the overhead construction of electric railways. Such insulators as at present made, so far as known to me, are apt to develop a weakness in use due to the imperfect sealing of the metallic connections or of those portions thereof which extend within the case of the insulator. My present invention has for its object to obviate this objection, and to produce a strong and durable insulator of high efficiency.

My invention is fully set forth in the following description and the novel features thereof pointed out in the claims which are appended thereto.

In the drawings to which reference is made in said description, Figure 1 is a vertical section of a trolley wire insulator embodying my invention, the metallic connections being shown in full. Fig. 2 is an elevation, partly in section, of one of the connections detached, and showing the head thereof sealed with a mass of molded material, which is applied thereto and molded thereon. Fig. 3 is a plan view of the same. Figs. 4 and 5 are respectively a plan and side view of the other metallic connection. Figs. 6 and 7 are a plan and section of the retaining ring. Fig. 8 is a vertical section showing the invention as embodied in a strain insulator, or one which is not provided with a skirt. Fig. 9 is a similar view showing a strain insulator of slightly modified construction. Fig. 10 is a similar view of another strain insulator showing both the connections embedded in or covered with a mass of composition which is molded thereon. Figs. 11 and 12 are sectional views of the metallic connections or coupling pieces of the insulator shown in Fig. 10, detached, and showing the covering of molded composition applied thereto.

An insulator embodying my invention may have either one or both of the connections sealed by a mass of insulating composition which is molded thereon. In the insulators which are shown, Figs. 1, 8, and 9, only one of the connections is thus sealed, while in the insulator shown in Fig. 10, both of the connections are sealed in this manner.

I will describe my invention as embodied in the insulators which are shown in the said drawings.

At 1 is shown a case, which is of metal, and which is provided with an inwardly projecting flange 2, and a skirt 3 having upwardly and downwardly projecting flanges 4 and 5, up to and against which the exterior covering 6 of composition is molded. One of the connections is shown at 7 and the other at 8. The connection 7 is provided with a head 9. Prior to the placing of the connection 7 in position in the insulator, the head and upper portion of the shank thereof are covered with a mass of insulating composition which is applied in a plastic state and molded thereon.

If an insulator like that shown in Fig. 1 is to be constructed, the connection 7 with the molded covering thereon will be of the shape shown in Fig. 2, that is, the jacket of molded material will cover the head of the connection, as also the upper portion of the shank, and will extend from the edge of the head a sufficient distance to fill the space between the edge of the head and the inside of the case 1, and it will also have a seat or depression 10 for the reception of a series of layers or sheets of mica 11, and for the head 12 of the other connection 8.

In putting the parts of the insulator together, a series of rings or washers of mica 13 are placed within the case 1, and resting on the flange 2 thereof. The connection 7 with the head thereof covered as above described with a mass of composition is then placed within the case, a series of sheets of mica 11 are then placed in the cavity in the molded composition above the head 9 of the connection, and the upper connection 8 is then placed on top of the mica 11. A series of washers of mica 14 which surround the connection 8 are then placed within the shell, and on top of them a metallic retaining ring 15 which has a beaded projection over which

the top of the walls of the case 1 are bent under pressure in the well-known manner. In this way the parts of the insulator are firmly compressed or retained in the position which they assume when under heavy pressure. The insulator is now ready for the application of the outer covering or mass of insulating composition 6, which is preferably applied to the whole exterior surface of the insulator as shown, and which is molded around the parts under pressure, thus securely covering and sealing the entire exterior of the case, and the joints, except where the flanged rim of the skirt projects. By the construction which I have just described, I attain what I term a "double insulation;" that is, the current requires to pass two portions of insulation in order to pass the insulator, and each of the connections 7 and 8 are not only insulated from each other, but are also each insulated from the case within which they are contained.

As will be clear the details of the construction of an insulator embodying my invention may be varied, any of the well-known forms of construction being employed, without departing from my invention so long as the proximate ends of one or both of the connections are covered with or are embedded in a mass of insulating composition which is molded thereon, and which supplements the mica insulation.

At Fig. 8 an insulator of slightly different construction from that above described is shown. Said figure shows a strain insulator, and therefore the projecting skirt which is commonly used in trolley wire insulators is absent. The head of the upper connection is also somewhat enlarged and fills the upper portion of the case, the top of the walls of the latter being bent over a projection on the said head instead of over an insulating retaining ring as shown in Fig. 1. At Fig. 9 a similar strain insulator is shown, the head of the lower connection being rounded or curved, and the proximate end of the upper connection being correspondingly concaved, so that a layer of mica of uniform thickness may be employed between the proximate ends of the connections. In this latter insulator the upper series of washers of mica shown at 17, Fig. 9, are inclined and set against the inclined projecting end or head of the upper connection.

At Fig. 10 another strain insulator is shown, of substantially the same construction, but with the proximate ends of both the connections covered with a mass of insulating composition which is molded thereon, the said upper and lower connections being both shown detached, and with the molded composition applied thereto, in Figs. 11 and 12.

The shanks of the lower connections in each of the insulators shown are provided with a nut or washer 71 which is screwed thereon and which serves as a retaining means in the well known manner.

It will be obvious that my present invention may be embodied in an insulator which is not provided with an exterior covering of molded composition.

What I claim is—

1. An insulator comprising a case, metallic connections within said case, and insulating material between said connections, said insulating material consisting of a series of sheets of mica and a layer of molded composition, substantially as set forth.

2. An insulator comprising a case, metallic connections within said case, and a series of sheets of mica interposed between said connections and serving to insulate the same from each other, one of said connections having the head or end thereof within said case covered with a mass of insulating composition which is molded thereon, substantially as set forth.

3. An insulator having a metallic connection or coupling piece provided at the head thereof with a covering of insulating material which is molded upon the same, said molded covering being formed with a cavity or seat thereon to receive the parts of the insulator which are adjacent said connection, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS McCARTHY.

Witnesses:
WM. A. MACLEOD,
ROBERT WALLACE.