(No Model.) 2 Sheets—Sheet 1.

L. McCARTHY.

INSULATING TURNBUCKLE.

No. 524,684. Patented Aug. 14, 1894.

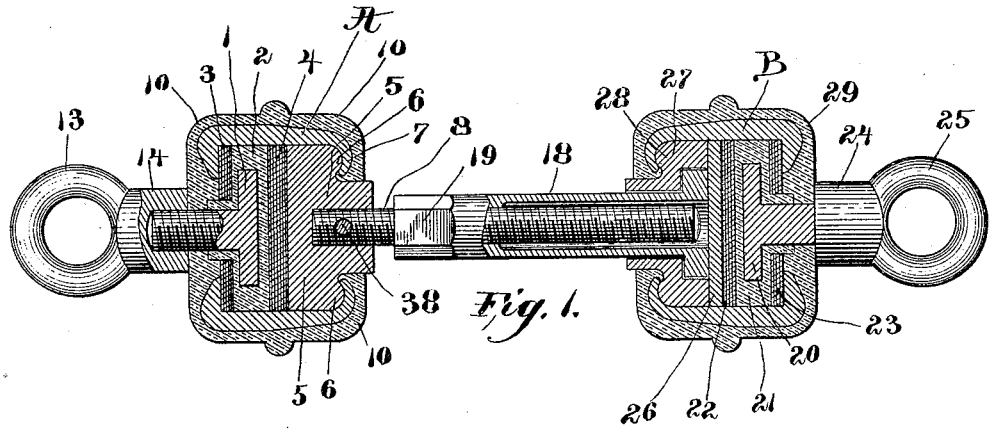

Fig. 1.

Witnesses:
Arthur J. Randall.
Robert Wallace

Inventor:
Louis McCarthy.
by Macleod Calvert & Randall
his Attorneys.

(No Model.) 2 Sheets—Sheet 2.

L. McCARTHY.

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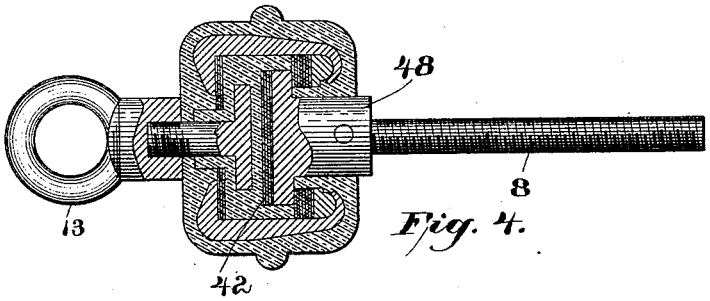

Fig. 4.

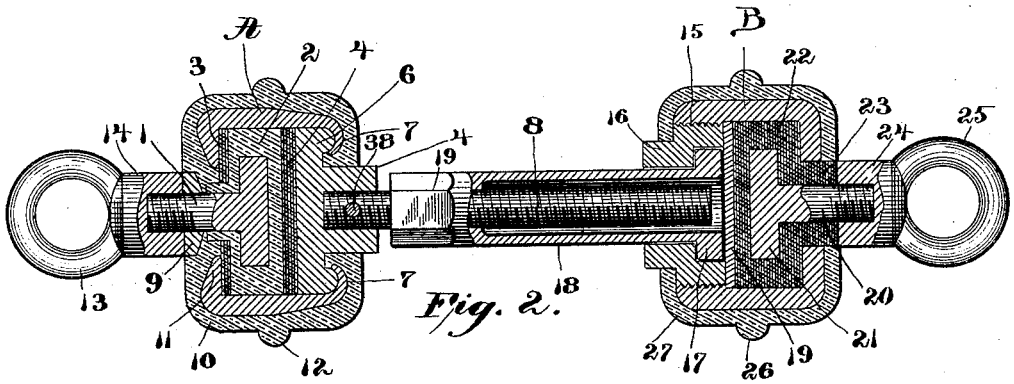

Fig. 2.

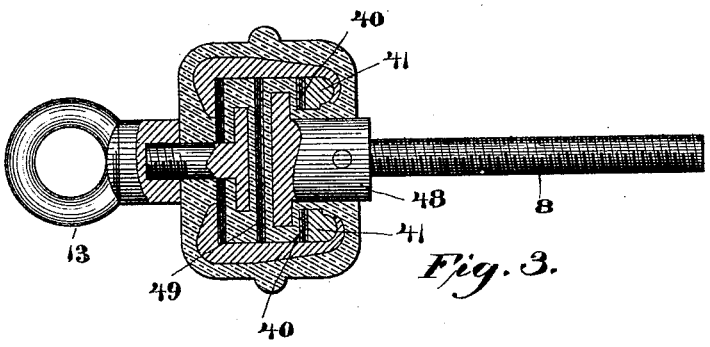

Fig. 3.

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UNITED STATES PATENT OFFICE.

LOUIS McCARTHY, OF BOSTON, MASSACHUSETTS.

INSULATING-TURNBUCKLE.

SPECIFICATION forming part of Letters Patent No. 524,684, dated August 14, 1894.

Application filed June 13, 1894. Serial No. 514,416. (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.

What are termed strain insulators are frequently employed in connection with the overhead wire supports of electric railway constructions and for similar purposes. Such insulators require to be very strong and durable, and it is also desirable to provide them with a turn-buckle device so that the insulator serves not only to completely insulate the connected parts but also as a means of tightening these parts or supports. As a high degree of insulation is required, the insulative power or capacity of the device should be of the highest character.

My invention has for its object to provide a strain insulator which shall meet these requirements, and especially in relation to the quality of the insulation obtained, and it consists of an insulator having two metallic cases or shells, metallic connections in each of the said cases, said connections being insulated therefrom by mica or other insulating material, and said shells being secured together by means of an intermediate connection in the form of a turn-buckle device, all as hereinafter more particularly set forth.

The novel features of my device are pointed out in the claim which is appended hereto and which forms a part hereof.

I have shown my invention in the accompanying drawings to which reference is made in the following description, and in which—

Figure 1 is a longitudinal section showing the construction of my device. Fig. 2 is a similar section showing a modification hereinafter referred to. Figs. 3 and 4 are similar sections of one part of my device, some of the portions thereof being in elevation and showing modifications which are hereinafter referred to.

The insulator will be readily understood from the following description of its construction.

Referring to the drawings, A and B are shells or cases of metal, preferably cylindrical in form and open at the ends.

Within the case A is placed a headed connection 1. Before this connection is placed within the shell A, the head and contiguous portion of the shank thereof is provided with a covering of insulating material 2 which is molded thereon in a plastic condition and is then allowed to harden. Any of the well known insulating compositions may be employed. Washers of mica 3, of a size to fit the interior of the case or shell A and having a central opening to fit the molded covering of the shank of the connection are placed within the shell A. A series of sheets of mica 4 cut to the proper size are then placed within the shell A and the shouldered cap 5 is placed within the shell A and against the sheets of mica 4. The shoulder of the cap 5 is shown at 6 and is preferably annular in shape. The end 7 of the shell A which is thinned somewhat is then by means of a press turned inwardly over the shoulder 6 while the whole is under pressure, thus securing the parts very rigidly and firmly in place. The cap 5 is provided with a projecting shank 8 which is screw threaded as shown and which may be secured in the cap in any suitable manner. As shown it is screwed into the cap and secured by means of a pin 38. The shank of the connection 1 is also screw threaded and receives the shank 14 of the eye 13.

The shell A preferably is covered with an outer layer or covering 10 of insulating material which is molded thereon in a plastic condition and allowed to harden. The shank 14 is applied after the outer layer 10 has been molded on the shell, the inner end of said shank being brought to a bearing on the said outer layer or covering. The projection on the covering layer 10 which is shown at 12 is provided to facilitate the shedding of moisture. By means of the eye 13 the insulator may be secured to the end of the supporting wire.

The case B at the other end of the insulator is a counter-part of the case A, which has been described above, and the headed connection 20 is also incased in a jacket or covering of molded material 21 and is surrounded by a series of sheets of mica 22 and a series of washers of mica 23 in the same manner as is the said connection 1 in the case A. The connection 20 is also provided with a screw threaded shank upon which is screwed the

shank 24 of the eye 25, said eye 25 corresponding with the eye 13 at the other end of the insulator and being employed as a means of securing the insulator to the wire support. The parts within the inner end of the shell B differ from the corresponding parts in the shell A and I will now describe these parts.

At 26 is shown a disk of metal which fits the interior of the shell B and lies against the sheets of mica 22. The plate or disk 26 serves as a wear-plate to resist the wear of the revoluble connection 18. Adjacent the disk 26, within the shell B, is a cap 27 having an annular shoulder 28 over which the thinned end of the shell B is bent to secure the parts firmly together in the same way as is the corresponding end of the shell A over the shoulder of the cap 5. The cap 27 is provided with a central aperture which is recessed at its inner end to receive the head of the revoluble connection 18 which fits within the same and which is adapted to be turned or rotated when in its position in the cap 27. The projecting end of the shank of the connection 18 is squared or formed of polygonal shape, as shown at 19, in order that a wrench may be applied to the said connection for the purpose of rotating it. The said connection 18 is cored out to form a central aperture lengthwise thereof and toward the outer end of the said connection 18 the said aperture is threaded so that the shank 8 of the cap 5 may be screwed into the said aperture.

It will be clear that the shank 8 and connection 18 form a turn buckle device and that by rotating the connection 18 the length of the insulator may be diminished or increased and thus the supports to which it is secured tightened or slackened.

The shell B is covered in the same way as is the shell A with an outer layer or covering 29 formed from an insulating composition which is molded thereon in a plastic state and allowed to harden. This outer layer 29 is applied before the shank 24 of the eye 25 is screwed onto the connection 20 and when the shank 24 is screwed home it bears at its inner end on the surface of the outer covering layer 29 immediately surrounding the said connection 20.

In the modified form of my device shown in Fig. 2, one end of the case B is internally threaded as shown at 15, and a cap 16 is provided which is correspondingly threaded so that it may be screwed into the case to close the end thereof. The cap 16 has a central aperture therethrough and is recessed at the inner end of said aperture to receive the head of the revoluble connection 18 which is of the same shape and construction as the connection 18 in Fig. 1. The construction shown in Fig. 2 is otherwise the same as that shown in Fig. 1.

Instead of the interior construction shown within the case A Fig. 1 a construction similar to that shown Figs. 3 and 4 may be employed. In Fig. 3, the shank 8 which forms one part of the turn buckle device is secured to a head or connection of the shape shown at 48. This part 48 is so formed that the head thereof may be covered with a molded layer of insulating material which is applied thereto and molded thereon before the said head is placed within the shell. An intermediate layer of insulation consisting preferably of a series of sheets of mica 49 is employed, the said sheets of mica being placed within the shell intermediate the jacket or covering of molded composition which covers the part 48 and the covering on the head of the connection. A number of washers of mica 40 as also a metallic ring 41 are placed between the head 48 and the inturned ends of the shell, that is the ends of the shell are turned over the ring 41 instead of being turned over the shoulder 6 as in the construction shown in Fig. 2. In this way the head of the part 48 which forms a portion of the turn buckle device is perfectly sealed by an insulated layer and insulation is rendered more secure by the employment in addition to said layer of the sheets of mica shown at 40 and 49.

In Fig. 4, the construction is quite similar to that shown in Fig. 3, but the intermediate sheets of mica shown in said Fig. 4 at 42 do not extend from side to side of the shell, but are placed between the metallic connections and directly against the head of the connection 48 so that the insulation is obtained by means of a layer of composition and said layer 42 which is composed of a series of sheets of mica whereas in the construction shown in Fig. 3 and previously described there are two layers of composition and a layer composed of sheets of mica between the connections.

I do not desire to limit myself to any specific arrangement of the insulating material or any specific method of securing the parts together within the shells A and B.

By the employment of a strain insulator constructed as herein set forth a very high degree of insulation is obtained; the joints are thoroughly sealed and protected; the device is strong and durable; is not readily injured; and affords a ready means of tightening the supports.

What I claim is—

An insulator comprising two shells having oppositely projecting connections placed within the same and insulated therefrom, a turn buckle device having the opposite ends of the same placed within the respective shells and insulated from each of the said connections by an interposed mass of insulating material, substantially as and for the purposes set forth.

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

LOUIS McCARTHY.

Witnesses:

WM. A. MACLEOD,

CHAS. F. RANDALL.