

J. H. ELLIS.
ELECTRICAL INSULATOR.
APPLICATION FILED MAR. 30, 1912.

1,102,252.

Patented July 7, 1914.

FIG. 1.

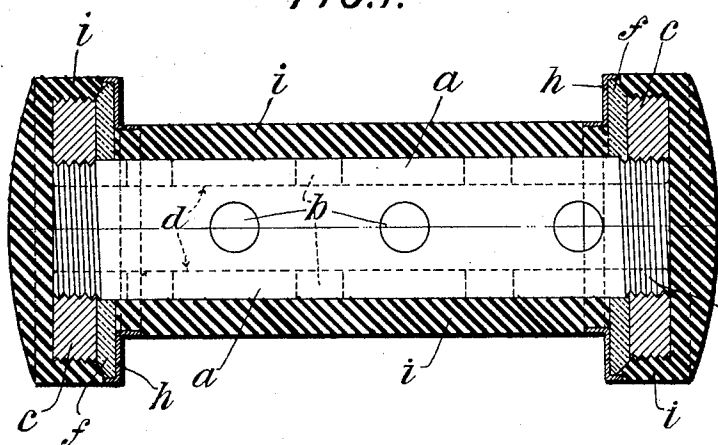


FIG. 2.

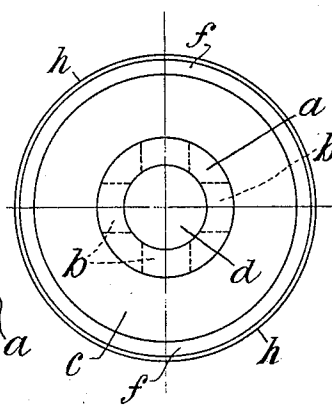
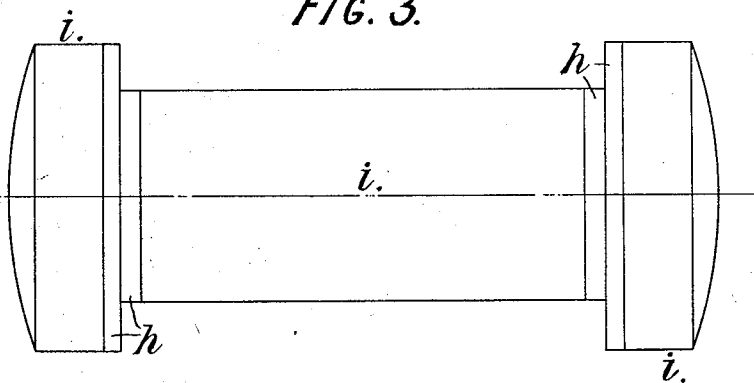


FIG. 3.



WITNESSES:

John C. Sanders
Albert F. Neuman

INVENTOR:

John Henry Ellis
BY *W. M. Miller*
ATTY

UNITED STATES PATENT OFFICE.

JOHN HENRY ELLIS, OF PRESCOT, ENGLAND.

ELECTRICAL INSULATOR.

1,102,252.

Specification of Letters Patent.

Patented July 7, 1914.

Application filed March 30, 1912. Serial No. 687,331.

To all whom it may concern:

Be it known that I, JOHN HENRY ELLIS, a subject of the King of England, residing at 18 Chester street, Prescott, in the county of Lancaster, England, have invented new and useful Improvements in and Connected with Electrical Insulators, of which the following is a specification.

This invention has reference to electrical insulators, such, for instance, as those called "double-strain" insulators, and the like, used on electric overhead conductor gear, where two or more parts of the gear are connected up by means of the insulator, and are insulated from one another, by it.

Generally—but not necessarily always—insulators of the kind referred to, are arranged to act in tension.

The object of the invention, is, primarily to provide an insulator of this kind, capable of withstanding the stresses or strains to which such insulators are subjected, in which the insulation is such that it remains effective and good under all conditions of use.

In the following description, and in the annexed drawing of insulator of the kind referred to, the improvements hereunder are comprised; and in the claiming clauses concluding the specification, the novel characteristics are specified.

It will be assumed that the core or body of the insulator which actually bears the strain or stress is metallic, say of cylindrical or other form, having a projecting collar or flange at each end; and that this core or body is to be covered with or inclosed in the insulating material, which may be of a bituminous, or any other suitable or equivalent nature. The covering or enveloping of this body or core with the insulation is effected by employing a species of mold, which is adapted to hold the body or core in position while being covered or inclosed, and by introducing by pressure the insulating material to and around and over the core or body. The mold is made of larger diameter and size than the core or matrix, so that when it is placed in position in the mold, a space exists between the walls of the mold, and the different parts of the core or body; and this space becomes filled with the insulation when it is forced under pressure into the mold through and around the body or core to be inclosed or enveloped. The body or core is supported in position in the mold while it is being inclosed or enveloped by

the insulation; which will be introduced either cold or hot, according to its character or nature; but in any case it will be such, that under pressure, it will flow in the manner desired, and as hereinafter described.

One form of insulator according to this invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of the insulator, the core being shown in elevation. Fig. 2 is an end view of the metallic core or body of the insulator; and Fig. 3 is an outside elevation of the completed insulator.

The insulator shown is of a form suitable for electrical street or road overhead conductor gear or for use for analogous purposes. In this construction, the metallic core or body is made of a tube *a*—of which *d* is the bore—with radial holes *b* in it, and having a flange or collar *c* at each end, one or both of which is or are fitted on to the tube end or ends by a screw thread or threads. Both ends of the tube in the case shown are threaded; and the collars or flanges *c* are screwed on to them, and the peripheries of the flanges are grooved or serrated as shown, so as to form a better "keying" effect of the insulation with them. Thus, in this construction, there is a longitudinal or axial hole through the body or core *a*, and radial holes *b* through its wall.

Mica or other suitable insulating washers *f* are placed on the tube *a*, before the flanges or collars *c* are screwed on to it; and in the case where the insulator is a tension one, as in the case shown, metallic rings or collars *h* are also passed over it, the center aperture of which is larger in diameter than the tube *a*. One of the mica or like washers or rings *f* comes next each of the metal flanges or collars *c*, and between them and the metal rings or washers *h*; and in this construction these metal rings or washers *h* are flanged in opposite directions, and one flange will come on the outside of each head of the insulator, while the other or inner flange will come on the outside of the body portion of the insulation. The outer edge of each of the mica or like insulation washers *f* is beveled off as shown, so that its outer edge lies within the outer flange of the ring *h*, and forms a recess within this flange, between it and the beveled edge of the mica or like ring; and so that, when the insulation material *i* is introduced, and formed around the core or

body, it will also enter this recess, and tend to prevent the creeping of moisture between these parts, as it furnishes a considerable thickness of insulation there. The purpose of the flange rings or washers *h* is to provide metallic parts where the parts of the gear with which the insulator is to be connected up with, come. That is to say, the inside of the heads of the insulator will serve as the abutment to the connecting or coupling parts of the overhead gear in which will be introduced the rings *h*, and so provide metallic contact surfaces to take the friction, wear, and strain.

With regard to the mold, and the manner of applying the insulation to the core or body of the insulator, if the metal core or body be placed in the mold, it will be seen that it will be held centrally in it by the washers *f* and rings *h*; the outer edges of which will fit and rest in the larger or head portions of the mold; and the mold is so made that there will exist between the exterior of the body *a*, and the interior of the body portion of the mold, an annular space; while the walls or surfaces of the mold, outside the washers *f* and rings *c* peripherally and at the ends, stand away from these parts, and so provide spaces; and these spaces are in communication with the annular space outside the body part *a*, by way of the core hole *d*, and the holes *b*.

When the body or core has been placed in the mold, the insulation is forced into it by a ram or other forcing means; and it passes or flows through the central bore *d* of the tube *a*, and through the radial holes *b* in it, into the annular space around the body, which it fills, as well as around and over the peripheries and ends of the metal collars or flanges *c*. The point of introduction of the insulation may be at one end, or both, or in the middle portion of the mold or any of them; and all the spaces within the mold being in communication, as just described, the flow of insulation to all the cavities and spaces by way of the holes specified, can take place. Thus, when the operation of introducing the insulation is effected, the central and smaller portion of the metal core or body *a*, as well as the flanges *c* and washers *f* on the peripheries and ends, will be entirely inclosed or enveloped in it—the insulation—and it will be in one body, without join, and so impermeable, and immune to the entrance of moisture. After the operation is complete, the mold is taken down or opened, and the completed insulator removed.

In the case more particularly described and shown, the bore of the tubular body or core *a* will, in the completed article, be filled with insulation, but in some cases, a hole may be formed through the insulation by introducing a central core in the mold or

otherwise suitably forming it; and in this case, the inside surface of the tubular portion of the body *a* should be inclosed or covered with the required thickness of insulation, similarly to the other parts; this being effected by making this central core of less diameter than the internal diameter of the tube or body part *a*.

What I claim is:—

1. As a new or improved article of manufacture, an insulator comprising a metal body or core part, having a flanged part at one end of greater diameter than the body; an insulating ring on the inside of said flange; an insulating material (*i*) covering the outside of the said body and flange; substantially as set forth.

2. As a new or improved article of manufacture, an insulator comprising a core or body of hard and strong material of tubular form, having a perforated wall, and an external envelop or covering of insulation in which the ends, interior and exterior of the body, are all in one without joint; substantially as set forth.

3. An insulator comprising a metal body or core part, having a flanged part at one end of greater diameter than the body; an insulating ring, as *f*, on the inside of said flange; insulating material *i* covering the outside of the said body, with the exception of the parts covered by the said insulating ring, and covering also the said flange; substantially as set forth.

4. An insulator comprising a metal body or core part, having a flanged part at one end of greater diameter than the body; an insulating ring, as *f*, on the inside of said flange; insulating material *i* covering the outside of the said body, with the exception of the parts covered by the said insulating ring, and covering also the said flange; and a metal ring on the inside face of the said insulating ring; substantially as set forth.

5. An insulator comprising a core or body of metal; a flange *c* at each end of said body, and held thereon by screw threads, insulating rings *f* in contact with the inner surfaces of the said flanges *c*, and extending from the said core to beyond the periphery of the said flanges; insulation *i* covering the said body *a* between the inner parts of the inner faces of the said rings *f*, and in contact therewith; and also the periphery and outer surface of the said flanges, and ends of the insulator, and said insulation also being in contact with the outer edge or surface of the said insulating rings; substantially as set forth.

6. An insulator comprising a hollow and perforated core or body *a* of metal; a flange *c* at each end of said body, and held thereon by screw threads, insulating rings *f* in contact with the inner surfaces of the said flanges *c*, and extending from the said core

to beyond the periphery of the said flanges;
insulation *i* covering the internal surface
of the body, and extending through the per-
forations thereof, and covering the said
5 body *a* between the inner parts of the inner
faces of the said rings *f*, and formed in con-
tact with the said faces, and also arranged in
contact with the periphery and outer sur-
faces of the said flanges, and ends of the in-
10 sulator; and said insulation also being in

contact with the outer edge or surface of the
said insulating rings; substantially as set
forth.

In testimony whereof I have signed my
name to this specification in the presence of 15
two subscribing witnesses.

JOHN HENRY ELLIS.

Witnesses:

SOMERVILLE GOODALL,
HAROLD HOLMES.