C. N. ALLERDING.

STRAIN INSULATOR.

APPLICATION FILED MAR. 2, 1914.

1,170,723.

Patented Feb. 8, 1916.

Fig. 1

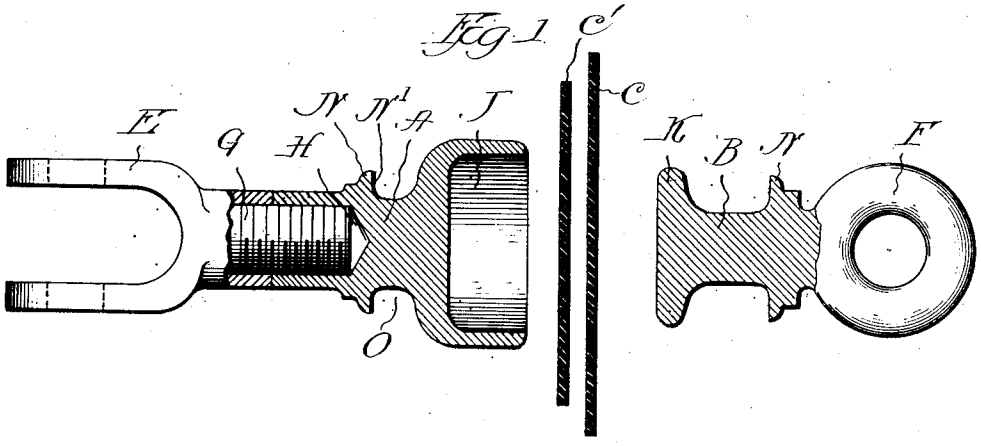


Fig. 2

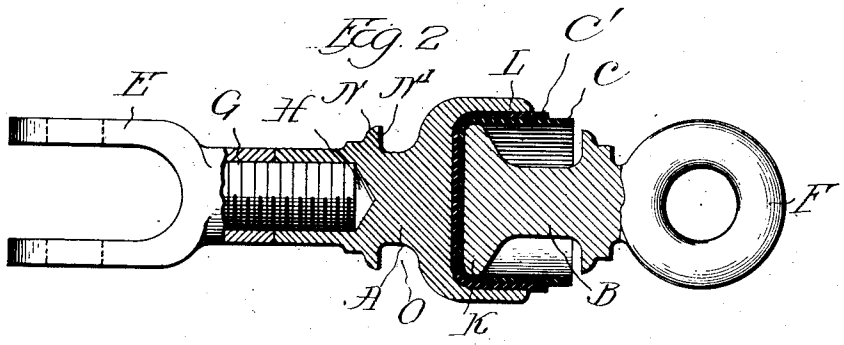


Fig. 3

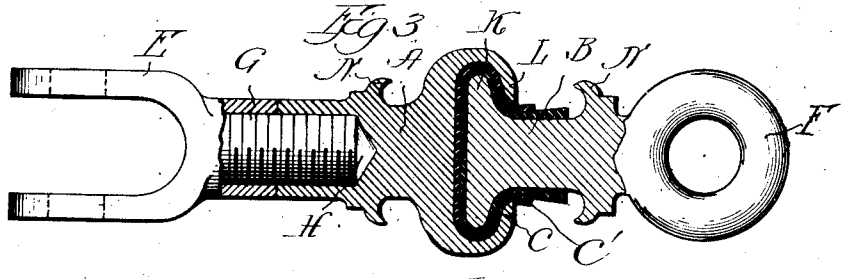
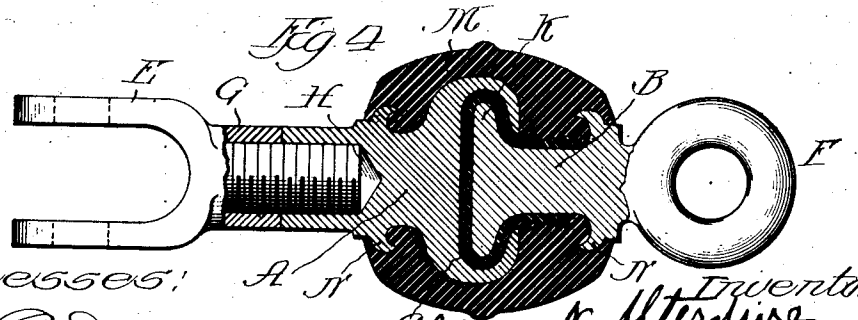


Fig. 4



Witnesses:

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Inventor

Clarence N. Allerding

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UNITED STATES PATENT OFFICE.

CLETUS N. ALLERDING, OF MANSFIELD, OHIO, ASSIGNOR TO THE OHIO BRASS COMPANY, OF MANSFIELD, OHIO, A CORPORATION OF NEW JERSEY.

STRAIN-INSULATOR.

1,170,723. Specification of Letters Patent. Patented Feb. 8, 1916.

Application filed March 2, 1914. Serial No. 821,872.

To all whom it may concern:

Be it known that I, CLETUS N. ALLERDING, a citizen of the United States, and resident of Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Strain-Insulators, of which the following is a specification.

My invention relates to improvements in strain insulators more particularly of the type used in connection with guy wires, trolley wire suspensions and the like, and one of the objects of my invention is to provide an improved device of this character which will be simple, durable and reliable in construction and effective and efficient in operation.

Other objects of my invention will hereinafter appear.

Referring to the accompanying drawings, Figure 1 illustrates the parts, principally in section, of a structure embodying my invention, said parts being shown in readiness to be assembled; Figs. 2 and 3 are sectional views of said parts in progressive stages of assemblage; and Fig. 4 is a view mostly in section of a complete insulator structure embodying my invention.

The structure shown in the drawings is composed principally of a female member A, a male member B, pieces of insulating material C and an outer casing M of insulating material, all of these being consolidated together so as to form, in a sense, an integral structure, as shown more particularly in Fig. 4. At each end of the structure there is provided means by which wires may be attached when the device is placed in use. In the structure shown this means consists of a clevis E at one end of the insulator and an eye member F at the other end thereof. But it is obvious that a clevis or an eye member or any other suitable means for this purpose may be used at each end of the structure. In the structure shown the eye member F is preferably integrally formed at the outer end of the male member B and the clevis member is preferably provided with a threaded shank or stem G which is screwed into a threaded socket H formed at the outer end of the female member A so that the clevis may be removed, if desired, or may be rotated to any position desired. Both the male and the female members A and B are preferably made in the form of castings of malleable iron or other suitable metal.

In manufacturing my improved insulator the female member is preferably provided with a cup-shaped end portion J formed at the inner end of the stem portion and of considerably larger diameter. This hollow cup-shaped portion J, as is clearly shown, is preferably cast in such shape that it will admit the layers of insulating material C and the enlarged flattened head or end K of the male member. The insulating layers or pieces C and C^1 may be of any suitable material for this purpose, such as mica, rag-board and the like. They are preferably made in the form of flat circular disks which are adapted to be interposed between the male and female members in such manner as to completely insulate said members. When the female member A is made as a metal casting the interior surfaces of the cup-portion J are likely to be more or less rough and for this reason I prefer to use rag-board for the insulating piece C^1 and mica for C, the rag-board being better adapted than the mica to withstand contact with said surfaces without injury. These parts are preferably assembled by forcing the enlarged end K of the male member against the disks C of insulating material and into the cup-shaped portion of the female member, so that said insulating disks take the form of cup-shaped members, as shown in Fig. 2, the cup-shaped portion of the female member surrounding said cup-shaped insulating pieces C, and the major portion of the male member being inclosed within the cup-shaped insulating pieces C. After the parts are assembled in this manner the rim or outer edge L of the cup-shaped portion J is turned inwardly or spun in around the head K of the male member carrying with it the insulating material C.

As seen in Figs. 3 and 4 the cup-shaped portion J of the female member A completely surrounds and incloses the head K of the male member, to hold or interlock said members tightly against separation, the two parts being electrically insulated from each other by means of the layer or layers of insulating material C. In this manner the parts are in a sense consolidated together into a single structure, one end of which is completely insulated from the other, and at the same time the structure is

capable of withstanding the longitudinal strains imposed upon it when it is attached to guy wires and the like. It is desirable, however, after the parts have been thus assembled, to completely inclose the joint and adjacent parts by means of an insulating casing M so as to increase the distance electrically on the outside of the device from one end to the other, and thus prevent any possibility of the two parts being connected electrically by means of snow or rain or in any other manner accidentally.

The insulating casing or other closure is preferably molded or cast about the male and female members after they have been assembled, as above described. It often happens, however, that due to accidental blows or to the action of the weather the molded insulating casing M becomes cracked or broken and drops away from the structure thereby exposing the parts not only to disintegration by the weather but also to the chances of becoming short circuited. In order, therefore, to eliminate any possibility of the insulating material M dropping away from the structure after it has been cracked, I provide each member A and B with preferably an integral outstanding flange or rim N, these flanges or rims being longitudinal with the members A and B and arranged in such manner that an annular groove or depression O is formed adjacent said flanges. These flanges are turned over, as more clearly indicated in Figs. 3 and 4, so that they overhang the grooves O, hence when the insulating material M is molded about the members A and B and their flanges N the material flows into the grooves O and under the overhanging flanges N in such manner that the insulating material and the flanges N become securely interlocked with each other, and they cannot separate even though the insulating material becomes cracked. In order to make it more convenient and easy to make the molds for and to cast the male and female members A and B I prefer to make these flanges so that their faces N′ will lie in planes substantially at right angles to the longitudinal axis of the device. By constructing them in this manner the members A and B may be readily removed from their molds. After the members A and B have been cast and assembled the flanges may be turned or bent over, as shown in Fig. 3, by any suitable means or in any desired manner, such as the well known spinning operation.

The insulating material C and C′ has a high dielectric strength but if the insulation were cut off at the outer edge of the lip L the distance from the edge L to the member B would be very short and easily broken down under the stress of electrical tension when in use; especially when used with 500 or 600 volts or more, and in case of lightning storms, and in the present device the insulation is extended considerably past the edge L and along the shank of the member B. In forming the insulators the insulating material M is pressed about the members A and B by hydraulic pressure of many tons. When this insulation is heated and molded about the parts A and B it is slightly plastic to cause it to flow and compress into final shape, as shown in Fig. 4. If the flange N were omitted from the member B the forming dies would tend to force the insulation material M under the projecting edges of the insulating material C away from the shank B and would tend to curl it over, split it up or distort it, thereby impairing the insulation. If, however, the flange N is bent over, as shown in Fig. 3, the plastic insulation M will be diverted from entering between the insulation C and the member B and the direction of flow of the plastic insulation due to the action of the forming dies makes the insulation C cling much tighter to the shank member B and at the same time tends to lock the insulation material M more firmly in place on the members A and B, as already set forth.

It will be obvious to those skilled in the art, after obtaining an understanding of my invention from the disclosures herein made, that my invention is capable of modification without departing from the spirit thereof and I wish it so understood.

What I claim is:

1. A strain insulator comprising conducting members one formed with a projecting head, a shank and a flange at a distance from the head, and the other having sides bendable only over the head, and sheet insulating material interposed between the members and pressed into the cup when the bendable edges are bent over the head, the insulating material extending beyond the bent edges along the shank adjacent the said flange.

2. A strain insulator comprising a headed member with an extending shank and a flange bendable toward the head at a distance therefrom, a cup-shaped member having edges bendable over the head only, and sheet insulating material interposed between the two members before the edges are bent over the head and extending along the shank to a point below the inwardly bent flange.

3. A strain insulator comprising a member with an enlarged head, an extending shank and inwardly extending flange at a distance from the head, a cup member with edges bendable over the head and an inwardly bendable flange at a distance from the cup, sheet insulating material insertible between the members and extending from the bent edges of the cup member along the shank of

the other member adjacent the bendable flange, and other insulating material molded over the joint and over the sheet insulating material and additionally held to the members by means of an inwardly bent flange at a distance from the joint between the said members.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 25 day of February, A. D. 1914.

CLETUS N. ALLERDING.

Witnesses:
JOHN L. YOUNG,
C. C. BECK.