April 23, 1957 N. C. FULMER 2,790,024

ELECTRICAL INSULATOR

Filed June 13, 1952

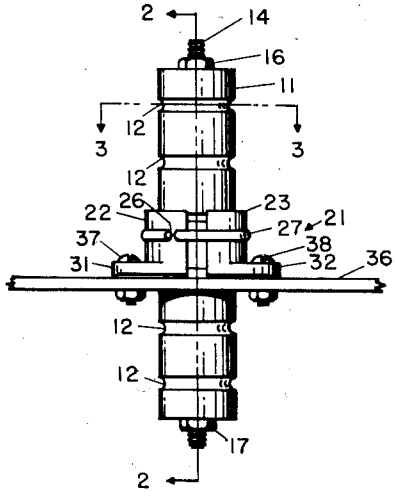


Fig. 1

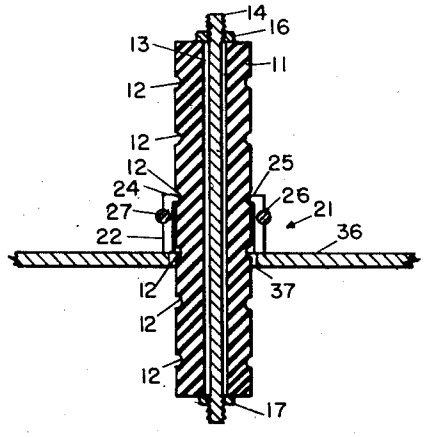


Fig. 2

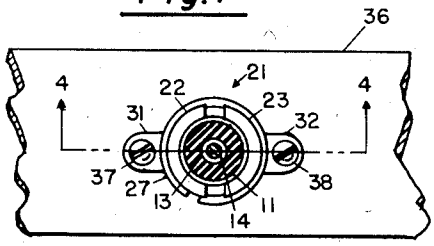


Fig. 3

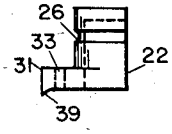


Fig. 5

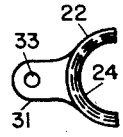


Fig. 6

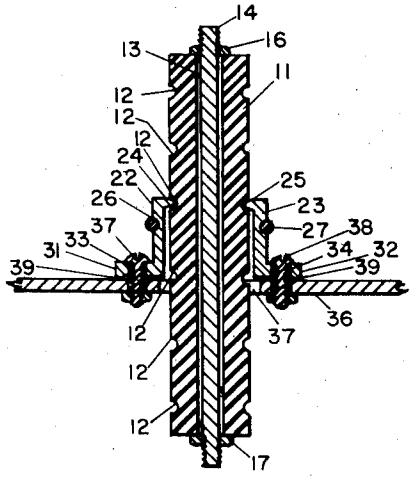


Fig. 4

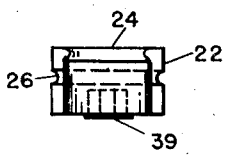


Fig. 7

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ELECTRICAL INSULATOR

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1 Claim. (Cl. 174—151)

This invention relates to electrical insulators, and particularly to electrical feed-through insulators whereby an electrical conductor is insulatively fed through an opening in an electrically conductive panel or chassis.

In electrical feed-through insulators of the type used heretofore, the top of the insulator is positioned at a fixed distance above the panel to which the insulator is attached, and the bottom of the insulator is positioned at a fixed distance below the panel. In various applications for feed-through insulators, the desired distances which the insulator extends above and below the panel will vary considerably. Accordingly, it has been necessary to maintain a large number of stock sizes of such insulators in order to have readily available the proper insulators having the desired extension distances above or below the mounting surface.

It is an object of the present invention to provide an adjustable feed-through insulator which may be rigidly secured in its operating position.

Another object is to provide a versatile feed-through insulator which reduces the number of stock sizes required.

Other objects will be apparent.

In the drawing,

Figure 1 is a side elevational view of a preferred embodiment of the invention,

Figure 2 is a cross-sectional view of the device taken on the line 2—2 of Figure 1,

Figure 3 is a cross-sectional view of the device taken on the line 3—3 of Figure 1,

Figure 4 is a cross-sectional view of the device taken along the line 4—4 of Figure 3, and

Figures 5, 6 and 7 are side, top and end views respectively of a support member which forms a part of the preferred embodiment of the invention.

Referring to the various figures of the drawing, an insulator post 11, preferably made of ceramic or plastic material, and preferably having a cylindrical shape, is provided with a plurality of annular grooves 12 which are spaced apart at predetermined positions on the surface of the insulator. An opening 13 extends axially therethrough. An electrical conductor 14 extends through the opening 13 and is secured at the ends of the insulator post 11 by means of securing devices 16, 17 which may be, for example, nuts threaded onto the ends of the conductor 14.

A mounting bracket 21 comprises a pair of support members 22 and 23 each shaped and arranged to extend approximately ½ the distance around the circumference of the insulator post 11 and each containing an annular lip 24, 25 extending inwardly and into one of the grooves 12. Each support member is provided with a outer annular groove 26. A clamping ring 27 is positioned in the annular groove 26 thereby clamping the support members 22 and 23 onto the insulator post 11 and against the surface thereof, the lips 24 and 25 thereof being in engagement with one of the annular grooves 12. Mounting tabs 31 and 32 are respectively attached to each

support member and each contains, respectively, an opening 33 and 34 through which mounting screws may be inserted.

In the preferred embodiment shown in the drawing, the novel insulator is mounted onto a panel member 36 and extends through an opening 37 therein. The support members are attached to the panel member by means of suitable screws 37, 38, or rivets or the like.

In practice, when a feed-through insulator is desired having certain predetermined dimensions of extent above and below the panel or chassis to which it is to be attached, the support members 22 and 23 are adjusted, by sliding them axially along the insulator post until the lips 24 and 25 engage an annular groove 12 in the desired position. The clamping ring 27 holds the assembly in this position. The insulator assembly may then be inserted through the opening 37 in the panel 36, and the support members 22 and 23 attached to the panel 36 as has been described.

Preferably, the support members 22 and 23 are each provided with a downwardly extending flange 39 extending from the outer edge of the bottom surface thereof. This flange provides a fulcrum projection beyond the mounting screws 37 and 38 and thus, when the support members are attached to the panel 36, the clamping surfaces tend to pivot inwardly about the point of contact of the fulcrum projection 39 against the panel 36, thus forcing the support members tightly and securely against the surface of the insulator post 11. This rigidly fixes the insulator post in the desired position with the proper extension distances above and below the panel 36. Electrical wires or components may be attached to the ends of the feed-through conductor 14.

The annular grooves 12 may be located at convenient distances along the insulator post 11. For example, an insulator post which is about 5 inches long, may have annular grooves thereon spaced about ½ inch apart, thus providing adjustment increments of ½ of an inch. The support members 22 and 23 may be of identical shape and may be made of metal, plastic, or other suitable material. The feed-through conductor 14 need not necessarily be a rigidly fixed member, but may, if desired, comprice a flexible wire threaded through the insulator opening 13. The insulator 11 may conveniently be shortened, if desired. by breaking off a portion, the grooves 12 providing convenient scoring for such an operation.

Instead of providing annular grooves on the insulator post and a corresponding lip on the bracket, in certain applications it may be desirable to provide annular lips on the insulator and a groove on the bracket. The grooves and lips may be referred to generically as engagement members. In applications where extreme rigidity is not required, the engagement members may be eliminated, and the insulator post may be held in place by friction of the support members against the insulator post. The surfaces of the insulator post and bracket may be roughened to facilitate the gripping friction.

While a preferred embodiment of the invention has been shown and described in detail, various modifications thereof will occur to those skilled in the art, which modifications will fall within the scope of the invention as defined in the appended claim.

What is claimed is:

An electrical insulator comprising an elongated cylindrical insulative member, a plurality of annular grooves in spaced-apart relationship on the surface of said member, a support bracket comprising a plurality of support members arranged around the periphery of said insulative member, a resilient clamping ring positioned around said support bracket to hold said support members in peripheral alignment and resiliently urging said support members against the surface of said insulative member, said

support members being slidable longitudinally along the surface of said insulative member in either direction, and a plurality of lips extending respectively from said support members and circumferentially against said surface to engage said grooves selectively when said bracket is slid along said insulative member.

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