Aug. 29, 1967 A. B. GUNTHEL, JR 3,339,015

INSULATOR AND BUS ASSEMBLY WITH SPRING PLATE AND BOLT LOCK PLATE

Original Filed April 8, 1965

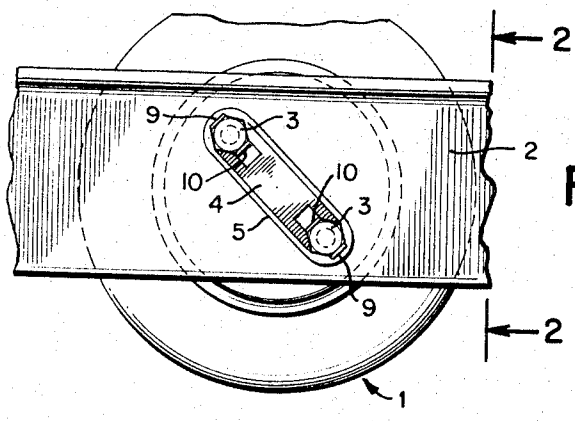


FIG. 1

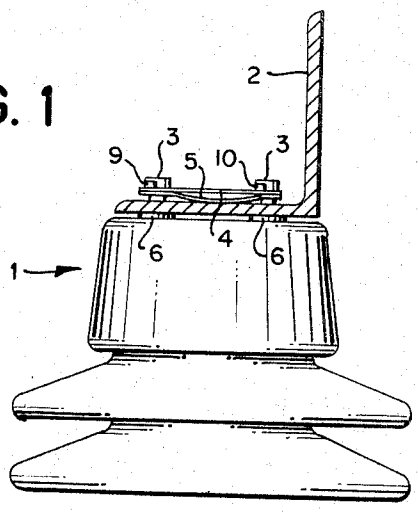


FIG. 2

FIG. 3

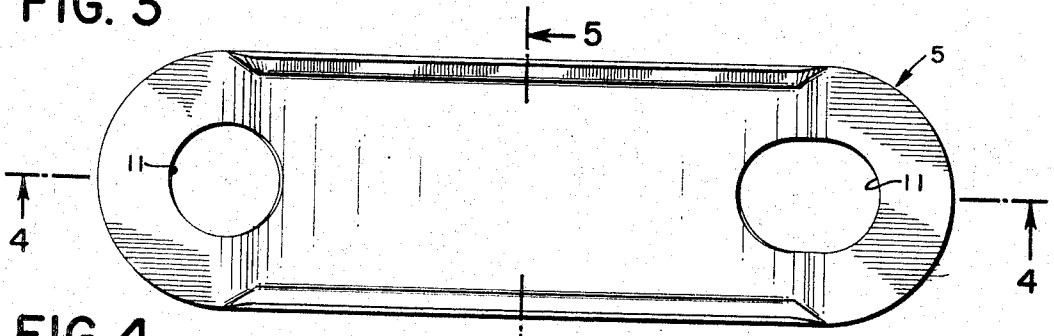


FIG. 4

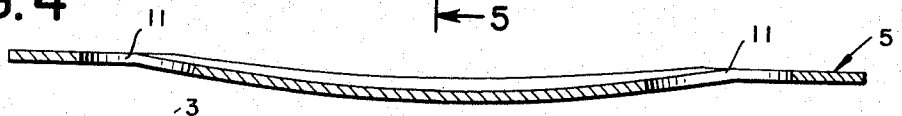


FIG. 6

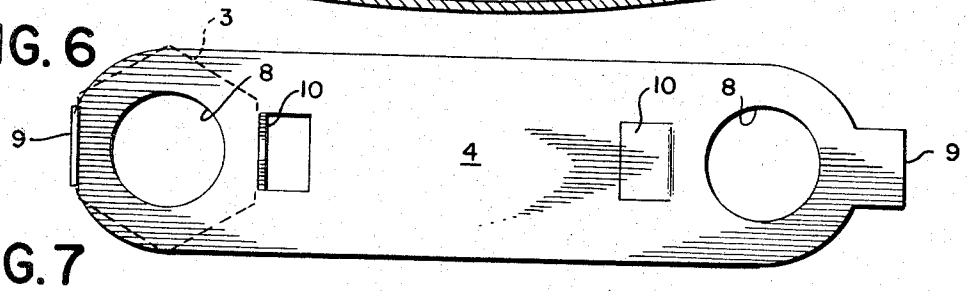


FIG. 7

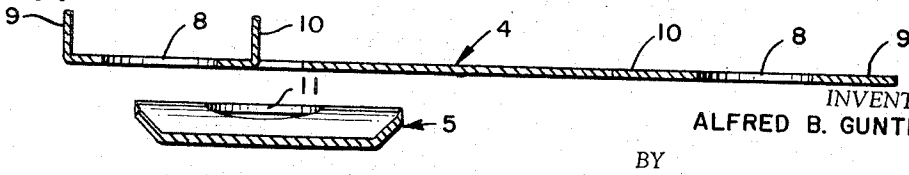


FIG. 5

INVENTOR.
ALFRED B. GUNTHEL JR.

BY

Nolte and Nolte

ATTORNEYS

United States Patent Office 3,339,015
Patented Aug. 29, 1967

3,339,015

INSULATOR AND BUS ASSEMBLY WITH SPRING PLATE AND BOLT LOCK PLATE

Alfred B. Gunthel, Jr., Sea Cliff, N.Y., assignor to Dossert Manufacturing Corp., Brooklyn, N.Y., a corporation of New York

Continuation of application Ser. No. 446,656, Apr. 8, 1965. This application Sept. 23, 1966, Ser. No. 581,662

5 Claims. (Cl. 174—168)

ABSTRACT OF THE DISCLOSURE

An electrical assembly in which a bus is secured to an insulator by two bolts. A resilient spring plate and a bolt lock plate are positioned between the bolt heads and the bus in order to provide a secure attachment of the bus to the insulator yet allow limited movement of the bus with respect to the insulator to accommodate expansion and contraction of the bus.

This application is a continuation of application Ser. No. 446,656, filed Apr. 8, 1965 and now abandoned.

This invention relates to a device for mounting a bus to an insulator.

It is a purpose of this invention to provide an inexpensive and simple device which offers secure and long lasting retention of a bus to an insulator.

For a better understanding of this invention, reference may be had to the following drawings in which:

FIG. 1 is a top plan view of the insulator and an angular bus having one flange connected to the insulator showing a preferred embodiment of this invention;

FIG. 2 is a section taken along view 2—2 of FIG. 1;

FIG. 3 is a plan view of a spring pressure plate;

FIG. 4 is a section taken on line 4—4 of FIG. 3;

FIG. 5 is a section taken on line 5—5 of FIG. 3;

FIG. 6 is a plan of a bolt lock strip, and;

FIG. 7 is a side elevation thereof.

In a preferred embodiment of this invention, holes in the angle bus **2** are aligned with matching tapped holes in an insulator **1**, of standard structure and composition.

For the purpose of securing the insulator **1** to the angle bus **2** a pair of bolts **3** are threaded through the openings in the angular bus flange into the tapped holes in the insulator. A pair of washers **6** may be supplied intermediate the upper surface of the insulator and the bottom surface of the flange of the bus **2**.

In order to allow for a limited movement of the bus with respect to the insulator, for the purpose of providing for expansion and contraction of the bus, or alternatively to provide a rigid connection between the insulator **1** and the bus **2**, the device shown in FIGS. 3–7 is employed beneath the heads of the bolts **3**. This comprises two sheets of metal of particular configurations. The plate **5** consists essentially of a piece of spring material having openings **11** at each end thereof, one or both of which may be elongated as shown. This plate is characterized by a downward lengthwise convexity so that the center portion will contact the upper surface of the bus flange when the device is installed.

It will be noted from reference to FIG. 5 that in addition to this downward bowing there is a sideways dishing of the portion of the plate **5** between the openings **11**. The resulting structure is thus constituted as an extremely stiff spring which nevertheless can be flattened into substantially a straight condition from end to end by sufficient tightening of the bolts **3**.

Superimposed upon spring plate **5** there is a strip of softer material having suitable openings **8** corresponding to the openings **11** in spring strip for passage of

bolts therethrough. At each end of the strip **4** there is provided an ear **9** and intermediate the openings in the strip there are provided a pair of cut out and struck up portions **10** when the strip **4** is assembled on top of spring **5** and the whole is assembled to the angle bus and the insulator by means of bolts **3**, the bolts may be tightened down sufficiently to substantially straighten out the spring member **5** or alternatively they may be tightened only sufficiently to hold the bus and insulator together while permitting motion under the influence of expansion or the like of the bus. After the bolt has been properly adjusted in each case, it is turned to the position shown in dot-dash lines on the left hand end of FIG. 6 and the ears **9** and struck up portions **10** bent up to contact side to the bolts and thus secure them against dislocation.

It will be noted from FIGS. 2 and 6 that the tabs **9** and **10** do not extend upwardly beyond the heads of the bolts **3**, inasmuch as the thickness of these heads is greater than the length of the tabs **9** and **10**. These tabs are situated directly next to the bolt heads and are bent only through 90° to a position where the entire areas of the tabs **9** and **10** engage flat side surfaces of the bolt heads. These flat side surfaces are all longer than the width of the tabs **9** and **10**, so that in this way while the tabs **9** and **10** securely hold the bolts **3** in position they nevertheless do not project beyond the bolt heads so that they have no exposed sharp edges capable of injuring personnel and so that the portions of the bolt heads which project upwardly beyond the tabs are at all times available to be engaged by a wrench, so that the turning of the bolt itself may be used to bend the tabs back to their initial positions when disassembly is required.

What is claimed is:

1. An electrical assembly comprising a bus having holes extending therethrough and an insulator having threaded holes aligned with said bus holes, respectively, an elongated resilient plate, said plate being dished longitudinally and transversely and having holes respectively adjacent its ends spaced apart by the distance between the holes in the bus, part of said bus being situated between said resilient plate and said insulator and said longitudinally and transversely dished resilient plate having a convex surface engaging said bus, a second plate also having holes adjacent the ends thereof, respectively, said holes of said second plate respectively coinciding with said holes in said resilient plate, and said second plate being in registry with said resilient plate, a pair of tabs integrally formed in said second plate adjacent said holes thereof, respectively, and adapted to be bent out of the plane of said second plate adjacent said holes thereof, and bolts having polygonal heads thicker than the lengths of said tabs and situated directly next to said tabs, each bolt head having flat side surfaces each of which has an area greater than the total area of each tab, said bolts extending through the holes in the bus and the holes in said resilient and second plates and threaded into said threaded holes of said insulator, whereby said resilient plate may be at least partly straightened upon tightening of the bolts to hold the bus resiliently on the insulator and said tabs being bent through approximately 90° into engagement at their entire areas with a pair of said flat surfaces of said polygonal heads of said bolts, respectively to prevent turning of the latter, at least one of said resilient plate holes being of an elongated configuration and extending longitudinally of said resilient plate.

2. A device as recited in claim **1** and wherein said resilient plate is dished longitudinally and transversely in the region of said resilient plate which extends between said holes thereof.

3. A device as recited in claim 2 and wherein said resilient plate terminates in a pair of opposed elongated flat end portions situated beyond the region of the resilient plate which is longitudinally dished and extending beyond said openings of said resilient plate.

4. The device of claim 3 and wherein said second plate has an additional pair of tabs adjacent said holes thereof bent out of the plane of said second plate through approximately 90° into engagement at their entire areas with flat surfaces, respectively, of said polygonal bolt heads at portions thereof opposed to those portions which are engaged by said first-mentioned pair of tabs, said additional pair of tabs being approximately of the same size as said first-mentioned pair of tabs.

5. A device as recited in claim 1 and wherein said second plate has an additional pair of tabs integrally formed therewith bent out of the plane thereof through approximately 90° into engagement at their entire areas respectively with flat surfaces of said polygonal bolt heads at portions of the latter opposed to those portions engaged by said first-mentioned pair of tabs, said additional pair of tabs being of approximately the same size as said first-mentioned pair of tabs.

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LARAMIE E. ASKIN, *Primary Examiner.*