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TWIST-ON BUS SUPPORT CLAMP

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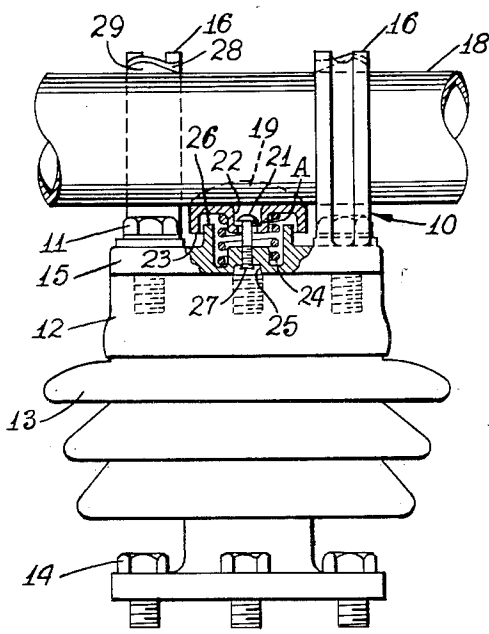


Fig. 2.

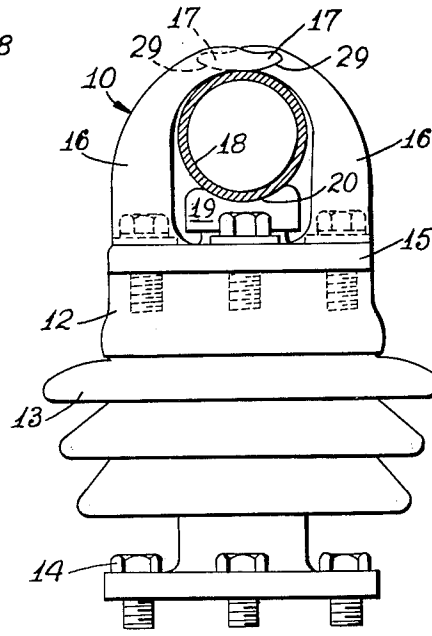


Fig. 1.

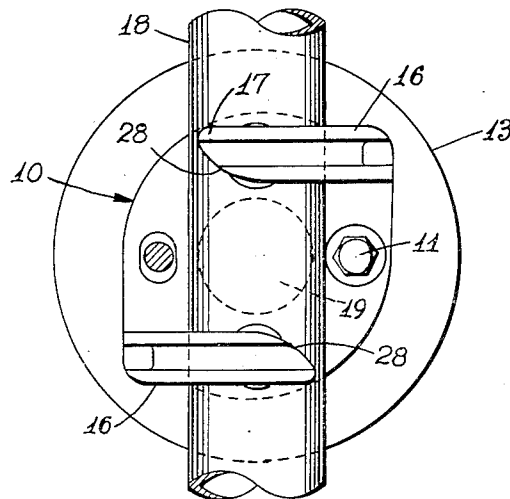


Fig. 3.

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TWIST-ON BUS-SUPPORT CLAMP

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1

My invention relates to a bus-support clamp and more particularly to a clamp having spaced-apart extending fingers between which the bus-bar is positioned, before twisting the clamp onto the bus to secure the two together.

A high voltage bus line, frequently in the form of metal tubing is usually supported by bus support clamps bolted to porcelain insulators. The occasion frequently arises when such insulators must be removed for cleaning or renewal and it is not feasible to de-energize the bus line for this purpose. Ordinarily in these instances, the necessary bolts on the bus support clamps are removed with hot line tools before the insulator can be removed, which is both dangerous and difficult.

Therefore it is the primary object of my invention to provide a bus support clamp which may be readily removed from an energized bus and replaced without the necessity of hot-line tools and without danger to personnel or equipment.

Since high voltage bus lines are subjected to temperature changes, it is necessary that the supporting clamps permit variations in dimensions during use. Therefore it is a further object of my invention to provide a clamp that will permit longitudinal motion of the bus line and yet grip the bus with sufficient force to prevent chattering or vibrations causing radio interference.

Still other objects, therefore, are to provide a movable clamping seat which engages the bus-bar when in open position and permits twisting the supporting clamp thereon, with the clamping seat in contact with the bus-bar during the closing operation; to provide a clamping seat which is spring-biased to cause the bus-bar to be resiliently supported thereon against the extending fingers of the clamp, to provide a cam surface on the fingers of the clamp to permit the clamp to be cammed into position on the bus; and to provide an adjustable holding pin for the clamping seat which acts as the axis of rotation, controls the amount of resilient pressure applied to the clamping seat, and limits the vertical motion in the axis of rotation.

I accomplish these and other objects and obtain my new results as will be apparent from the device described in the following specification, particularly pointed out in the claims, and illustrated in the accompanying drawing, in which—

Fig. 1 is an end elevation view of device shown clamped to a bus.

Fig. 2 is a side elevation view thereof, a por-

2

tion in section to show details of the clamping seat member.

Fig. 3 is a plan view of my device.

Referring more particularly to the drawing, the bus support clamp 10 is shown mounted by bolts 11 to a cap 12 of a standard insulator 13, having attaching bolts 14. The clamp 10 comprises a base member 15 and oppositely positioned integral arms 16 having free ends 17 extending upwardly toward and beyond each other over the bus 18 which they support. Arms 16 are spaced apart a distance sufficient to permit the bus to laterally pass between them during installation or removal.

A clamping member 19 having a semi-cylindrical clamping seat 20 for supporting the bus is pivotally mounted to the base 15 by means of a pin 21. The pin freely projects through the clamping member and is threadedly secured to the base. A centrally depressed area 22 in the clamping member receives the head of the pin and with the depending peripheral flange 23 forms a housing for one end of spring 24, which spring forces the clamping member to resiliently engage the bus and prevent chattering.

The base 15 has a depressed area 25 threadedly apertured to receive the end of the pin and together with the peripheral flange 26 extending upwardly and within the peripheral flange 23, forms a housing for the other end of the spring.

The overlapping flanges 23 and 26 function to limit the lateral movement of the clamping member and prevent a stress on the pin when there is a longitudinal movement of the bus, as well as a limit stop to prevent excess compression of the spring.

The pin 21 performs three functions, namely as an axis of rotation for the clamping member, secondly as a means for adjusting the pressure of the spring by screwing the pin the desired amount and peening the threaded end at 27 or providing a retaining element, and thirdly, as a retaining means to limit the vertical movement of the clamping member.

Each arm 16 is provided with cam surfaces 28 and 29. Cam 28 is positioned on the inner edge of free end 17 to initially align the bus between the arms. Cam 29 is positioned on the under side of the free end, extending in a smooth curve from a point tangential to the bus upwardly to the end and functions to convert the twisting torque around the vertical axis to a vertical force in the spring to enable the arms to be clamped over the bus.

The device is installed on the bus by grasping

the assembly of clamp and insulator and aligning the arms parallel to the bus, the cams 28 assisting in the alignment, and then placing the bus between the arms to rest on the clamping seat member. Rotating the assembly approximately 90 degrees, forces the arms over the bus through cams 29, which compresses the spring and securely positions the clamp in position on the bus. The clamping seat member is free to rotate with respect to the clamp, so that while the clamp is being rotated, the clamping seat member remains stationary with respect to the bus, which remains in the seat 20. The attaching bolts 14 of the insulator are then secured.

To free the clamp from the bus for cleaning or replacement of the assembly, the attaching bolts are removed and the assembly is rotated about the vertical axis through a 90° angle, where the arms are free and in a position parallel with the bus. It is to be noted that the clamping seat member has remained in a fixed position with respect to the bus, so that it is in a position to receive the bus when re-installed.

The pressure of the spring is adjustably controlled by the pin which when rotated compresses the spring to a point where the action of assembling the clamp on the bus results in only a small additional compression of the spring, as indicated by distance "A" in Figure 2, which is made as small as possible, allowing for sufficient travel and considering manufacturing tolerances and any deflection of the arms under the stresses that might be imposed. Thus on removal of the clamp from the bus, the head of the pin restrains the clamping seat member from moving vertically under the action of the spring more than the distance "A." In this manner, the minimum amount of effort is required for installation and disassembly.

I have thus described my invention, but I desire it understood that it is not confined to the particular forms or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and, therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which, objects of my invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

I claim:

1. A bus support for clamping a conductor to a supporting structure which comprises a base member, means for mounting the base member to the supporting structure, a plurality of spaced

arm members fixedly mounted to said base member and each having a free end extending over and engaging the conductor, said free ends spaced from said fixed ends and spaced from adjacent arms respectively a distance greater than the diameter of the conductor to receive the conductor, adjacent free ends of the arm members disposed in opposite directions, a rotatable clamping seat member mounted to said base member independently of said arm members whereby the conductor may be supported on the clamping seat member between and parallel to said arm members and the bus support rotated so that the arms extend transversely of the conductor to secure the conductor between the arm members and the clamping seat member.

2. A bus support for clamping a conductor to a supporting structure which comprises a base member, means for mounting the base member to the supporting structure, a plurality of spaced arm members mounted to said base member and each having a free end extending over and engaging the conductor, an adjustable grooved clamping seat member spring-mounted to said base member and positioned intermediate the spaced-apart arm members, whereby the conductor may be resiliently supported on the clamping seat member, and the clamping seat member adjusted to secure the conductor between the arm members and the clamping seat member.

3. The device of claim 2 wherein said clamping seat member is secured to the base member by a centrally-positioned pin about which it is free to rotate, and a spring is positioned between the clamping seat member and the base.

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