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S. WALLACE

2,430,091

ELECTRICAL BINDING POST

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Fig. 1.

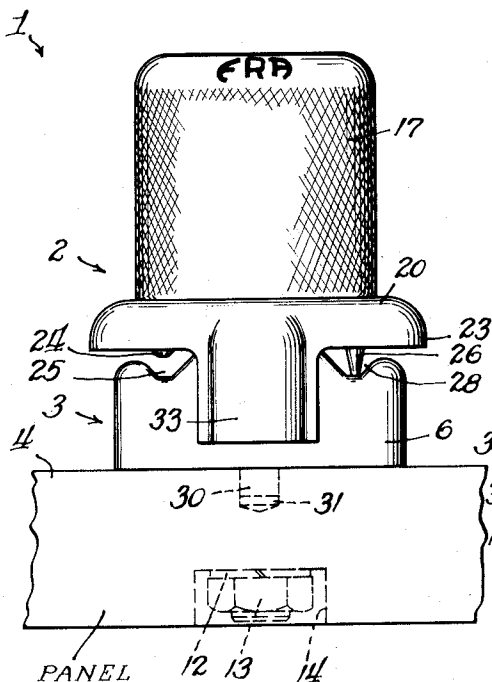


Fig. 2.

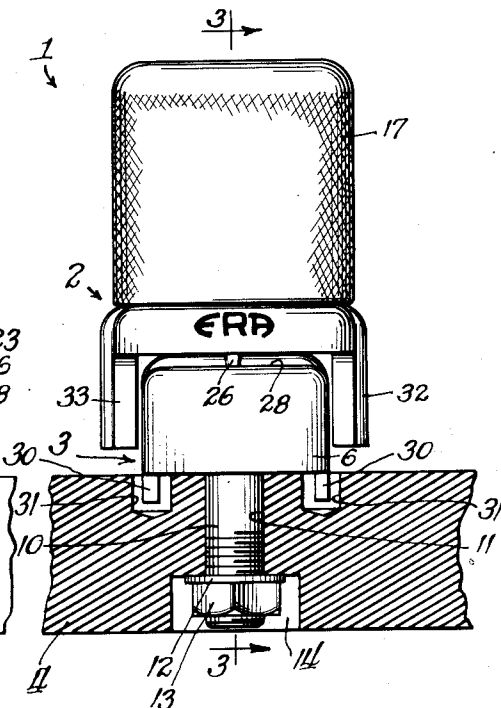


Fig. 3.

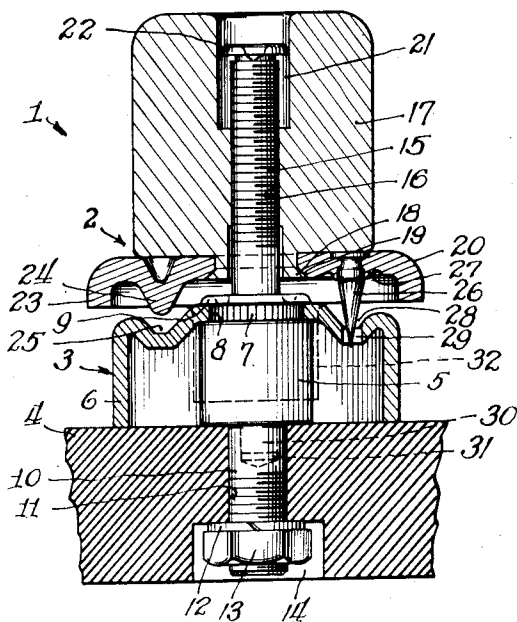
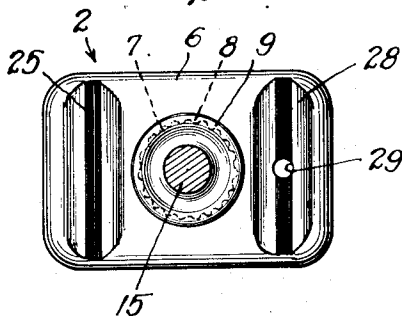


Fig. 4.



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ELECTRICAL BINDING POST

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4 Claims. (Cl. 173-259)

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This invention relates to fastening devices, and is particularly concerned with a new binding post assembly for securing and interconnecting electrical wires.

The principal object of the invention resides in the provision of a binding post for use with braided or stranded wires as well as for use with solid stripped wires.

Specific objects and novel features of the new binding post include simplification in production, therefore less expenditure in materials and costs, greater adaptability for service and ease in manipulation, therefore better utility, and greater certainty in operation with improved coaction between stationary and movable parts, whereby damage to the wires is avoided.

The invention will be better understood from the detailed description of a practical embodiment which is presented below with reference to the accompanying drawings. In these drawings,

Fig. 1 represents an elevational view of an example of the new binding post in attachment with a suitable panel;

Fig. 2 shows an elevational view of the binding post taken at right angles to the view shown in Fig. 1, with the panel in section, indicating how the base or stationary part of the binding post is attached to the panel;

Fig. 3 illustrates a sectional view of the assembly taken along lines 3-3 in Fig. 2; and

Fig. 4 shows an elevational top view of the base or clamping portion of the base with the shank of the binding post in section.

Like parts are indicated in the drawings by like reference numerals. Known elements and details will be discussed only to the extent required for an understanding of what is considered new.

The binding post as a whole is indicated by reference numeral 1. Its movable part, including the nut 17 and the clamping cap 20, is shown generally by reference numeral 2, and its stationary part, including the base 6, is indicated by reference numeral 3. The panel to which the binding post is attached is indicated by the reference numeral 4.

The panel may be made of suitable insulating material or, if conductive interconnection is desired between some or all of the binding posts mounted on it, the panel may be made correspondingly in part or in whole of conductive material. The latter case may arise, e. g., when it is desired to connect a plurality of binding posts to a common potential.

The stationary part or base of the binding post

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comprises a hollow body or shell 6 which may be drawn, stamped, extruded or die-cast from suitable material. This base is attached to a stud having an enlargement 5 forming a shoulder 7 which may be corrugated or provided with vertical grooves, as indicated at 8, extending through a punched hole in the base, as shown. The section 7 is pined or spun over as noted at 9 so as to form a unit with the stud. A threaded shank 10 extends from the enlargement 5 for insertion into a hole 11 in the panel 4. The shank 10, and therewith the entire assembly, is secured in position on the panel 4 by means of a washer 12 and a nut 13 disposed in a suitable cavity 14 in the rear of the panel 4. Lips or ears 30 depend from the base and engage suitable cavities 31 in the panel so as to prevent angular displacement of the assembly on the panel.

The enlargement 5 forms within the base 6 a centrally disposed body which acts in the manner of a stop or shoulder resting on the panel in alignment with the ends or edges of the overhanging flange-like walls of the base. Expressed in other words, the stationary part or base of the device is provided with a centrally disposed member acting in the manner of a spacer means forming a shoulder disposed in a common plane with the ends or edges of the walls of the base and spacing the face of the base with respect to the face of the panel and in proper alignment therewith. The structure prevents undesired stresses on the base incident to the mounting thereof, and holds the base against axial displacement, while the lips or ears 30 operate to secure the base against angular displacement. The openings or cavities 31 which receive the lips 30 are shown somewhat enlarged in the drawing Fig. 2 in order to bring out their relationship. The actual size of these cavities will depend on the size of the lips, and is preferably chosen just a trifle larger than the lips to assure easy insertion thereof.

The base 6 thus forms a member projecting from the panel in the form of an inverted cup. The face of the base is provided with two parallel grooves 25 and 28 for receiving the wire or wires to be attached thereto. One or both of the grooves may be provided with an opening 29.

The mounting stud carries a threaded extension 15 for engagement with a threaded hole 16 in the nut 17. The latter is provided with a counter-bore 21 and the end of the studded extension 15 is pined or spun over as shown at 22.

The nut 17 can thus be moved up and down along the stud extension 15 within the depth limits of

the counter-bore 21. The peined end 22 of the stud coacts with the shoulder formed by the counter-bore 21 in the manner of a limit stop for the disengaging threading operation of the nut 17. The nut therefore forms on the assembly an axially movable member which, however, cannot be permanently detached except by forcible removal of the spun or peined over portion 22. Inadvertent loss of the nut or clamp portion of the assembly is thus avoided.

The nut 17 carries an extension which projects through a center opening in the clamping cap 20 and is lightly spun or peined over as shown at 18 and 19, so as to permit free rotation of the nut 17 with respect to the clamping cap.

The clamping cap may be drawn, extruded, stamped or die-cast from suitable material and carries a flange 23 forming a shallow inverted cup, and within the cavity of such cup is formed a clamping post 24 for coaction with the groove 25 in the stationary base 3 and a pin 26 for coaction with the hole 29 in the groove 28 provided on the other side of the base. The clamping post 24 is provided for securing solid stripped wire in the groove 25 and the pin 26 serves the purpose of making contact with braided or stranded wire disposed in the groove 28 of the base. The piercing pin 26 is staked together with the clamping cap 20. It serves the purpose of piercing stranded wire placed in position of attachment in the groove 28, thus establishing contact with the conductor without requiring removal of the insulation thereof.

Extensions 32 and 33 are provided on the clamping cap 20, one at either side thereof. These extensions may be made of the material of the cap and form a unit therewith. Each of these extensions is edgewise embossed or shaped so as to form a raised central portion, which may be of convex configuration, and flat contact surfaces along the inner edges thereof for axial gliding or sliding engagement with the corresponding outer flange surfaces of the stationary base.

The extensions 32, 33 hold the clamping cap against rotation with respect to the nut 17; they also guide the clamping motion of the cap axially with respect to the base 6 and assure the application of clamping forces perpendicularly with respect to the wires which are to be secured in position. Twisting and grinding forces which may cause dislocation of the wires and damage thereto, are avoided. The inner sliding surfaces of the extensions 32, 33 are shown in Fig. 2 spaced from the outer flange surfaces of the base 6 on a somewhat exaggerated scale. A loose slide fit is provided in practice.

It should be noted that all parts of this binding post assembly may be produced by simple operations which can be efficiently and economically executed. The mounting stud or shaft may be made of one piece by simple lathe or screw machine operations. The stationary base 6 and the clamping cap 20 may each be made by simple drawing, extruding or die-casting operations. The assembly of the base 6 with the stud is made by a very simple peining operation. The same holds true of the movable attachment between the nut 17 and the clamping cap 20. The piercing pin 26 can be efficiently and cheaply produced by well known lathe operation and its attachment accomplished by a simple staking operation to secure it in position in the clamping cap 20. The final securing of the movable por-

tion of the device is also obtained by a simple peining operation at the end of the threaded extension 18 which is spun over to produce the shoulder required for preventing inadvertent detachment of the nut and its associated clamping cap. It is understood, of course, that the base 6 and the mounting stud with its enlargement 5 and its extensions 10 and 15 may be made of one piece by any well known and approved process, including casting and extruding operations.

The operation of the device is as simple as its structure. The attachment on the panel 4 requires merely well known insertion of the lock washer 12 and attachment of the nut 13. Angular displacement or turning of the stationary base on the panel is prevented by the ears or lips 30 which engage the apertures 31, and undesired stresses are avoided by the spacer function of the enlargement 5. The device may be placed at any angle on the panel 4 and provides the grooves 25 and 28 for receiving the corresponding wires which are put in place by rotating the nut 17 so as to move the cap 20 away from the base, while the side walls or extensions 32 and 33 keep the clamping cap 20 in proper alignment with the base. If it is desired to attach a solid wire, such wire is inserted in groove 25, whereupon the nut 17 is tightened to clamp down the post 24 and secure it in place. A stranded or braided wire is simply inserted in the groove 28 and the nut 17 is tightened. The pin 26 pierces the insulation and provides for the required electrical contact. The clamping motion of the cap 20 and the clamping post 24, as well as the contact pin 26, is always perpendicular, all twisting and grinding forces being avoided by the guide extensions 32, 33, and damage to the wires is therefore avoided. The wires attached as described are electrically interconnected.

Changes may be made within the scope and spirit of the appended claims wherein is defined what is considered new and desired to have protected by Letters Patent of the United States.

I claim:

1. A binding post for securing a plurality of electrical wires comprising a generally cup-shaped body forming a base for inverted edgewise attachment to the face of a suitable panel and carrying a plurality of parallel wire-receiving grooves in the face thereof which extend in parallel with but spaced from the face of said panel when said base is attached thereto, a stud carried by said base in fixed relation therewith and projecting therefrom on either side thereof, means for securing one end of said stud in said panel to obtain attachment of said base in fixed engagement therewith, means extending from said base into said panel to prevent angular displacement of the base thereon, a body forming a clamping cap for coaction with said base, means depending downwardly from said clamping cap on opposite sides thereof and forming guide surfaces for sliding engagement with the sides of said base, and means including the other end of said stud for mounting said clamping cap in movable relation with respect to said base.

2. A binding post for securing a plurality of electrical wires comprising a generally cup-shaped body forming a base for inverted edgewise attachment to the face of a suitable panel and carrying a plurality of parallel wire-receiving grooves in the face thereof which extend in parallel with but spaced from the face of said panel when said base is attached thereto, a stud carried by said base in fixed relation therewith and project-

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ing therefrom on either side thereof, means for securing one end of said stud in said panel to obtain attachment of said base in fixed engagement therewith, means extending from said base into said panel to prevent angular displacement of the base thereon, a body forming a clamping cap for coaction with said base, means depending downwardly from said clamping cap on opposite sides thereof and forming guide surfaces for sliding engagement with the sides of said base, an extension projecting from the floor of said clamping cap forming a clamping post for coaction with one of said grooves in said base, and a pin-like member depending from the floor of said clamping cap for coaction with another one of said grooves in said base.

3. A binding post for securing a plurality of electrical wires comprising a generally cup-shaped body forming a base for inverted edgewise attachment to the face of a suitable panel and carrying a plurality of parallel wire-receiving grooves in the face thereof which extend in parallel with but spaced from the face of said panel when said base is attached thereto, a stud carried by said base in fixed relation therewith and projecting therefrom on either side thereof, means for securing one end of said stud in said panel to obtain attachment of said base in fixed engagement therewith, means extending from said base into said panel to prevent angular displacement of the base thereon, a body forming a clamping cap for coaction with said base, means depending downwardly from said clamping cap on opposite sides thereof and forming guide surfaces for sliding engagement with the sides of said base, a nut disposed on the other end of said stud in threaded relation therewith, said nut carrying an extension which is disposed in rotatable engagement with said clamping cap for the purpose of slidably moving said clamping cap with respect to said base responsive to rotation of said nut on said stud.

4. A binding post for securing a plurality of electrical wires comprising a generally cup-shaped body forming a base for inverted edgewise attach-

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ment to the face of a suitable panel and carrying a plurality of parallel wire-receiving grooves in the face thereof which extend in parallel with but spaced from the face of said panel when said base is attached thereto, a stud carried by said base in fixed relation therewith and projecting therefrom on either side thereof, means for securing one end of said stud in said panel to obtain attachment of said base in fixed engagement therewith, means extending from said base into said panel to prevent angular displacement of the base thereon, a body forming a clamping cap for coaction with said base, means depending downwardly from said clamping cap on opposite sides thereof and forming guide surfaces for sliding engagement with the sides of said base, an extension projecting from the floor of said clamping cap forming a clamping post for coaction with one of said grooves in said base to establish connection with a solid stripped wire disposed therein, and a pin-like member depending from the floor of said clamping cap for coaction with another one of said grooves in said base to establish connection with a braided or stranded wire disposed in such other groove.

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