

UNITED STATES PATENT OFFICE

2,144,484

ELECTRICAL CONNECTION MEANS

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Application June 5, 1935, Serial No. 25,116

2 Claims. (Cl. 173—328)

My invention relates to electrical connection means, and more particularly to electrical terminal posts adapted for the reception of plug conductor terminals of the snap type, and the principal object of my invention is to provide new and improved electrical connection means of that type. In the drawing accompanying this specification and forming a part of this application, I have shown for purposes of illustration, one form which my invention may assume, and in this drawing:

Figure 1 is an elevational view of a terminal post embodying my invention, mounted on a base fragmentarily shown, the post being partly in vertical section,

Figure 2 is a section taken on the line 2—2 of Figure 1, looking in the direction of the arrows, and

Figure 3 is a section taken on the line 3—3 of Figure 1, looking in the direction of the arrows, a plug conductor terminal, cooperable with the terminal post, being added.

In the illustrated embodiment of my invention a terminal post 10 comprises a metallic solid body portion 11, here shown as of square cross-section through the lower part 12 of its length, the upper part 13 being generally frusto-conical.

The body portion 11 is provided with a chamber 14 adapted to receive a detent means 15. The chamber 14 may be formed in part by drilling a cylindrical longitudinally extending hole into the body portion thereby forming a longitudinal bore 16. The chamber 14 communicates with a transverse bore or aperture 17 which may be formed by drilling through the body portion 11 from one side through the other. The longitudinal bore 16 of the chamber 14 is put in communication with the transverse aperture 17 by means of a longitudinally extending communicating bore 18 concentric with the bore 16 but of lesser diameter than the bore 16. The communicating bore 18 may be formed as a continuing operation of the formation of the bore 16, and the transverse bore 17 may be formed subsequently to formation of the bores 16, 18.

The detent means 15 here shown comprises a generally hemispherical portion 19 provided with a circular flange 20. The flange 20 fits with a sliding fit in the bore 16. The detent means 15 is desirably also provided with a projection or shank 21, here shown as of cylindrical form with a rounded end 22. The shank 21 is concentric with the flange 20 and with the hemispherical portion 19, and extends away from the flange in a direction opposite from that of the hemispheri-

cal portion 19. The detent means 15 is disposed in the chamber 14 of the body portion of the post so that the flange 20 is seated on an annular shoulder 23 formed at the lower end of the longitudinal bore 16. The flange 20 also serves as a seat for one end of a helical spring 24, disposed about the shank 21, for biasing the flange 20 against the shoulder 23. The spring 24 is shown as so proportioned that its inner periphery and its outer periphery fit with a sliding fit the shank 21 and the bore 16 respectively. The other end of the spring 24 may abut a seat 25 here shown as formed by closing in the upper marginal portion 26 of the metal surrounding the longitudinal bore 16, the seat 25 so formed being annular and in this instance margined on its inner periphery by the axially downwardly extending free end of the portion 26. The formation of the seat 25 is facilitated and crushing of the metal surrounding the bore 16 is prevented by making the end part 13 frustro-conical. The detent means 15 may be made of a single piece of solid metal.

The spring 24 biases the detent means 15 to a position in which the hemispherical portion 19 projects a predetermined amount into the transverse aperture 17.

The terminal post 10 may be mounted on a support 27 in any desired manner, the post 10 being here shown as having a portion 28 of reduced diameter passing through an aperture 29 in the support 27, the end 30 of the reduced portion being spread, in any suitable way, over the underside of the support 27 to tightly hold the post to the support. The end 30 may serve as a contact for a switch member (not shown) or the post may be connected to an electrical conductor in any suitable manner.

The terminal post 10 is adapted to cooperate with a plug conductor terminal, such for example as shown in Figure 3, having a cylindrical portion 31 provided with an annular furrow 32 and a frustro-conical end 33. The plug conductor terminal may be fastened to a conductor 35 disposed therein by swedging, as indicated by swedge indentations 34. When the plug conductor terminal is inserted into the aperture the frustro-conical end 33 acts as a cam against the hemispherical portion 19, thereby moving the entire detent means 15 longitudinally against the bias of the spring 24. Further inserting movement causes the hemispherical portion 19 to snap into the annular furrow 32.

Inasmuch as the spring 24 is related to the shank 21 and to the bore 16 as hereinbefore described, the shank 21 and spring 24 and bore 16

cooperate to hold the detent means in axial alignment with the communicating bore 18. The detent means is thereby prevented from cocking over and is guided for approximately longitudinal movement only. The construction of the detent means 15, having the shank 21, also is adapted for rapid automatic picking up from bulk of the detent means for assembly with terminal posts.

It will be evident that I have provided a terminal post, adapted for the reception of plug conductor terminals of the snap type, which can be so constructed as to provide a gauge plane or point, the shoulder 23, which can be used as a gauge plane or point in drilling the transverse aperture 17, thereby accurately relating the transverse aperture to the shoulder 23. At the same time the shoulder 23 accurately and definitely positions the flange 20, and therefore the hemispherical portion 19, so that the hemispherical portion 19 extends transversely into the transverse aperture 17 a predetermined amount. Moreover, the flange 20, in cooperation with the bore 16 centers the hemispherical portion 19 in the communicating bore 18.

It will be further evident that gauging or positioning of the detent means 15, by engagement of the under side of the flange 20 with the shoulder 23, and by gauging of the outer periphery of the flange 20 in the bore 16, enables the communicating bore 18 to be made considerably larger than the diameter of the hemispherical portion 19 so that burrs or fins which may be produced in the machining operation for forming the bores 17, 18, for example, will not interfere with the detent means 15, nor with the plug conductor terminal. The communicating bore 18, and the transverse aperture 17, are customarily drilled at different times, and therefore the last bore drilled will result in a burr or burrs (not shown) at various places along the line of intersection 36 of these bores. The relation between the diameter of the communicating bore 18 and the diameter of the hemispherical portion 19 of the detent means 15 is so selected that any burr or fin formed at the intersection 36 between the communicating bore 18 and the transverse aperture 17 will not interfere with the movement of the hemispherical portion into or out of its position shown in Figure 1, in which the flange 20 is seated on the shoulder 23, and which position the detent means 15 should assume when no plug conductor terminal is inserted in the transverse aperture 17.

From the foregoing it will be apparent to those skilled in the art that the illustrated embodiment of my invention provides a new and improved electrical connection means, readily and conveniently constructed and assembled, and accordingly, accomplishes at least the principal object of my invention. On the other hand, it also will be obvious to those skilled in the art that the illustrated embodiment of my invention may be variously changed and modified, or features thereof, singly or collectively, embodied in other combinations than those illustrated, without departing from the spirit of my invention, or sacrificing all of the advantages thereof, and that accordingly, the disclosure herein is illustrative only, and my invention is not limited thereto.

I claim:

1. A terminal post, comprising: an elongated solid metal body, having its lower end adapted to be secured to a support, and being provided with

a transverse aperture intermediate its ends for receiving a snap-type plug conductor terminal, said body at its free end being of conical formation and tapered to a smaller diameter at its extremity, and having a longitudinal bore extending inwardly from said free extremity, the size of the bore being such that the marginal defining surface of said body adjacent its free end is reduced to a thin bendable condition, and said body having a second smaller longitudinal bore axially aligned with said first bore, forming a shoulder between said first and second bores, and establishing communication between said first bore and said transverse aperture; a detent member, disposed within said body, comprising a circular flange of a size to closely but freely fit within said first bore, and a rounded projection extending from one side of said flange and freely extending through said second bore, and an elongated shank extending from the opposite side of said flange and disposed within said first bore; a helical spring disposed about said shank; said free extremity of said body having defining walls of tapering cross-section bent annularly inwardly to provide an interior trough against which one end of said spring abuts, the other end of said spring abutting said opposite side of said flange, and urging said one side of said flange to abutment with said shoulder, and urging also said rounded projection into position to electrically engage in snap-relation with a plug conductor terminal disposed with said transverse aperture.

2. A terminal post, comprising: an elongated solid metal body, having its lower end adapted to be secured to a support, and being provided with a transverse aperture intermediate its ends for receiving a snap-type plug conductor terminal, said body at its free end being of conical formation and tapered to a smaller diameter at its extremity, and having a longitudinal bore extending inwardly from said free extremity, the size of the bore being such that the marginal defining surface of said body adjacent its free end is reduced to a thin bendable condition, and said body having a second smaller longitudinal bore axially aligned with said first bore, forming a shoulder between said first and second bores, and establishing communication between said first bore and said transverse aperture; a detent member, disposed within said body, comprising a circular flange of a size to closely but freely fit within said first bore, and a rounded projection extending from one side of said flange and freely extending through said second bore, and an elongated shank extending from the opposite side of said flange and disposed within said first bore; a helical spring, the inner peripheral surface of the coils of said spring closely but slidably fitting about said shank, one end of said spring abutting said opposite side of said flange, and the other end of said spring being positioned adjacent said free extremity of said body; said free extremity having defining walls of tapering cross-section bent annularly into the space defined by the inner periphery of the adjacent coils of said spring, said adjacent end of said spring bearing against said bent extremity, and said one end of said spring urging said one side of said flange to abutment with said shoulder, and urging also said rounded projection into position to electrically engage in snap-relation with a plug conductor terminal disposed with said transverse aperture.

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