Jan. 16, 1934. H. A. DOUGLAS 1,943,590

SNAP TERMINAL

Filed March 14, 1932

Fig. 1

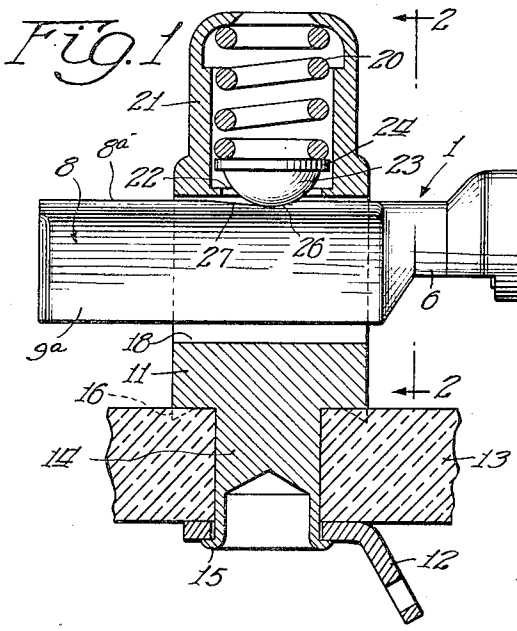


Fig. 2

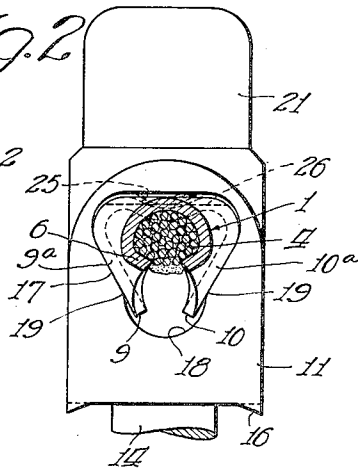


Fig. 3

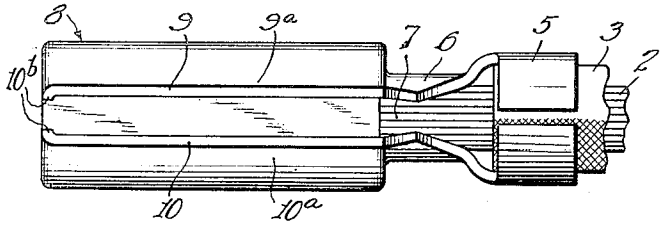


Fig. 4

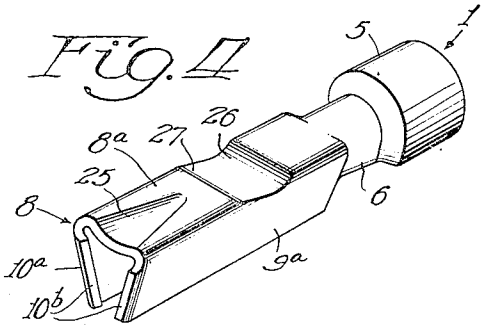
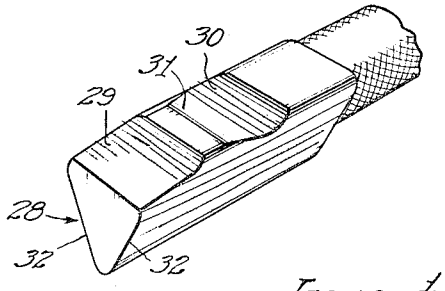


Fig. 5



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UNITED STATES PATENT OFFICE

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SNAP TERMINAL

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8 Claims. (Cl. 173—328)

This invention relates to so-called snap terminals more particularly for electrical conductors, and among other objects aims to provide an improved connection for current conducting elements.

The invention is of particular service in providing a connection between a rigid current conducting element and a current conducting wire.

My invention is desirably inclusive of two metallic interengaging members, one member embodying a plug and the other member embodying a block adapted to receive said plug by a wedging action, the block having a member associated therewith for gripping the plug.

One object of the invention is to provide improved means for enhancing the intimacy of contact between substantial portions of the block and the plug, whereby the voltage drop between the terminals is reduced.

The invention may be understood by reference to the illustrative constructions shown in the accompanying drawing in which—

Figure 1 is a side elevation of a plug embodying my invention and a current conducting block for receiving the same, the block being shown in section;

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

Figure 3 is a bottom plan view of the plug shown in Figure 1;

Figure 4 is a perspective view of the plug; and

Figure 5 is a view of a modified form of plug embodying my invention.

In the illustrative construction shown in Figures 1 to 4 I have shown a metallic plug 1 which is adapted to provided a terminal for a current conducting wire 2 having the insulation 3 thereon. The wire 2 may be composed of a number of strands as shown at 4 (Fig. 2). The plug 1 is conveniently formed of sheet metal, one portion of which may be formed into a sleeve 5 to receive therethrough the wire 2 with its insulation 3 thereon. Adjoining the sleeve 5, the plug may be contracted as at 6 and soldered to the bared end 7 of the wire 2 to secure the wire to the plug. The remainder of the plug may be formed into a hollow triangular plug portion proper 8, the free edges 9 and 10 of this portion being desirably spaced apart so as to permit a spring action between the sides of the plug adjoining these edges.

The metallic block 11 is adapted to receive the plug portion 8 and provide a current conducting element between the wire 2 and a current conductor 12, for example. The metal block 11 and current conductor 12 may be carried by an insulating mounting 13, the block 11 having a reduced portion 14 which passes through the mounting and through the current conductor 12 and is clinched over the current conductor 12 as at 15 to firmly secure both the block 11 and the current conductor 12 to the mounting 13. To prevent rotation of the block 11 on the mounting 13, I may form prongs 16 at the corners of the block 11 and which bite into the insulating mounting 13.

In accordance with my invention the block 11 has a substantially closed triangular slot therethrough to telescopically receive the plug portion 8, said slot being so shaped as to permit the plug to be wedged therein by lateral movement under pressure of means carried by the block. The plug is desirably of triangular cross-section and has two sides symmetrical.

As here shown, the slot 17 is triangular or somewhat V-shape the V however being closed along the top in this case and is desirably open or laterally extended at its vertex as at 18 so that the free edges 9 and 10 of the plug portion 8 may be received in this lateral extension 18, said extension being large enough to cause the free edges 9 and 10 to be spaced from the wall of the block. In this instance, the sides of the V-shape slot 17 are substantially symmetrical with the sides of the plug portion 8 adjoining the free edges 9 and 10 or may be slightly of less angle than the sides of the plug adjoining the edges 9 and 10. In either event as the plug portion 8 is pressed upon its third or non-symmetrical side, by means presently pointed out, laterally of the slot 17 in the direction of the extension 18 a wedging action is set up between the plug portion 8 and the block 11 and the intimacy of contact between the plug and the block becomes very great, particularly at the points 19 where a shoulder occurs between the sides of the slot 17 and its extension 18. The spring character of the walls 9*a* and 10*a* of the plug 8 adjoining the free edges 9 and 10 contributes to this intimacy. The forward ends of the walls 9*a* and 10*a* may be inturned as shown at 10*b* to provide cam surfaces to facilitate insertion in the slot 17.

The plug is desirably pressed in the direction to be thus wedged by a relatively strong coil spring 20 housed in a spring chamber 21 formed integrally with the block 11 and opening into the slot 17 through the aperture 22. The coil spring 20 acts upon the plug through the intermediation of a dome-shape detent 23 which has a flange 24 limiting the movement of the detent outwardly of

the aperture 22. The flange 24 is desirably spaced from the margins of the aperture 22 when the plug 8 is received in the slot 17, so that the full force of the spring 20 acts upon the plug. The detent 23 presses upon the non-symmetrical sides 8a of the plug 8 and to facilitate entry of the plug 8 into the slot 17 against the action of the spring 20, I have provided a cam surface here shown as a groove 25 on the tip of the plug over which the detent 23 rides. In the vicinity of the base of said cam surface, I desirably provide a transverse groove 26 into which the detent enters with a snap action, thus providing a shoulder 27 which resists withdrawal of the plug, but even when received in the groove 26, the spring 20 still exerts swedging pressure upon the plug, since the flange 24 is at this time spaced from the margins of the aperture 22. The plug being yieldingly retained, however, it may be withdrawn by pulling upon the plug or otherwise exerting pressure which will cause the detent 23 to pass back over the shoulder 27.

In Figure 5 I have shown a modified form of plug 28 which functions similarly to the plug 8, but is formed of solid metal. In the case of the plug 28, the plug may be tapered at its tip to provide a cam surface 29 which functions similarly to the cam surface 25. Also a groove 30 and shoulder 31 of the plug 28 functions similarly to the groove 26 and shoulder 27 on the plug 28.

The sides 32 of the plug 28 are desirably symmetrical as are the sides adjacent the free edges 9 and 10 of the plug 8.

So constructed and arranged, I provide a very secure and intimate connection between two current conducting elements, such that the voltage drop therebetween is substantially reduced. My improved connection is of particular utility for wires carrying a substantial quantity of current. The size of the spring 20 may be varied to produce a pressure corresponding to the current carrying capacity of the wire to be connected to the block 11.

Such changes may be made as fall within the scope of the following claims without departing from the invention.

I claim:

1. In a structure of the class described, the combination with a sheet metal plug bent to triangular form to provide spring sides thereon; of a metallic block having a V-shape slot therein to receive said plug; and a resilient member associated with the block and wedging the spring sides of the plug in said slot.

2. In a structure of the class described, the combination with a triangular metallic plug; of a metallic block having a triangular slot therethrough to telescopically receive said plug, said slot having an opening at one vertex of the triangle to receive one corner of the triangular plug; and a resilient detent carried by the block pressing the plug laterally into the opening and wedging the plug in said slot.

3. In a structure of the class described, the combination with a triangular metallic plug; of a metallic block having a V-shape slot therethrough to receive said plug, said slot being laterally extended at the vertex of the V to cause one corner of the plug to be out of contact with the walls of the block; and a yielding detent carried by the block and pressing the plug in the direction of said extension, whereby the plug is wedged in said slot.

4. In a structure of the class described, the combination with a triangular metallic plug; of a metallic block having a V-shape slot therethrough to receive said plug, said slot being laterally extended at the vertex of the V to cause one corner of the plug to be out of contact with the walls of the block; and a yielding detent carried by the block and pressing the plug in the direction of said extension, whereby the plug is wedged in said slot, the plug having a tapered surface at its tip over which the detent rides.

5. In a structure of the class described, the combination with a triangular metallic plug having a tapered tip portion and a transverse groove at the base of the tip; of a metallic block having a V-shape slot therethrough to telescopically receive said plug, said slot being laterally extended at the vertex of the V to cause one corner of the plug to be out of contact with the walls of the block; a yielding detent carried by the block and received in said groove and pressing the plug laterally in the direction of said extension, whereby the plug is wedged in said slot.

6. In a structure of the class described, the combination with a triangular metallic plug having a tapered tip portion; of a metallic block having a triangular slot therein to telescopically receive said plug, said slot being laterally extended at one vertex of the triangle to permit one corner of the plug to be out of contact with the walls of the block; a transverse groove in said plug at the base of said tapered tip portion; and a spring pressed dome shaped detent carried by the block and projected into the slot midway of its length opposite the laterally extended vertex of the slot and pressing the plug in the direction of said vertex, said detent being receivable in the groove and being under spring pressure when so received, whereby the plug is firmly maintained wedged in said slot.

7. The structure of claim 6 wherein the plug is of sheet metal and two of the sides thereof have free separated edges receivable in the laterally extended vertex, whereby said sides are yieldable under the wedging action of the detent.

8. In a structure of the class described, the combination of a sheet metal plug bent to substantially triangular form, two sides of the triangle having free separated edges, a metallic member having a triangular slot therein telescopically receiving the plug, said slot being laterally extended at its vertex which receives the free edges of the plug, and a resilient detent carried by the member and projected into the slot upon its side opposite said vertex.

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