July 1, 1930. E. P. SEGHERS 1,768,936

ELECTRIC CONTACT CLIP

Filed Oct. 16, 1922

FIG. 1

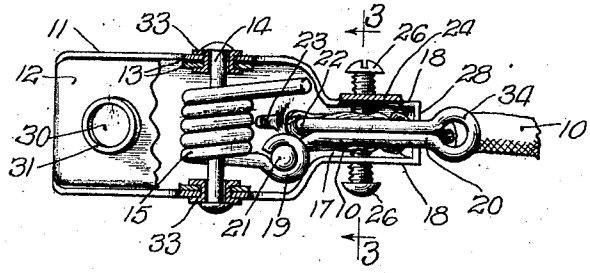


FIG. 2

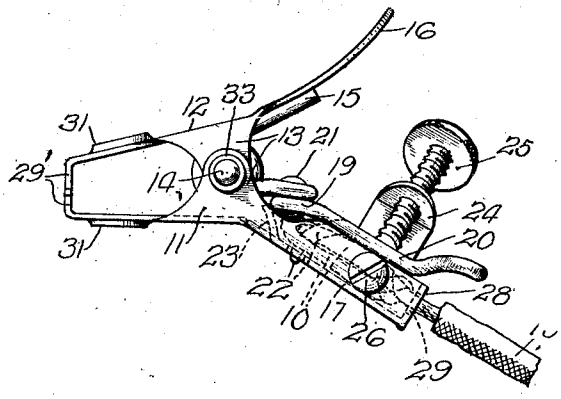


FIG. 3

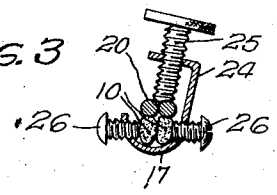


FIG. 4

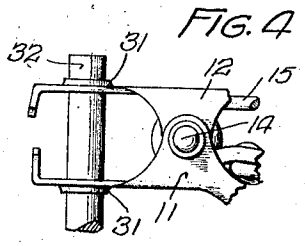
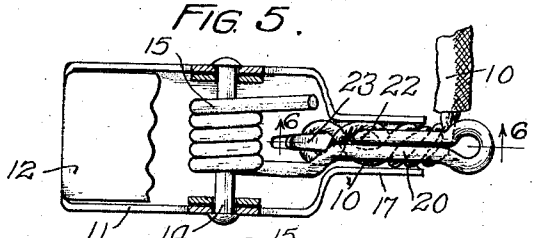


FIG. 5.



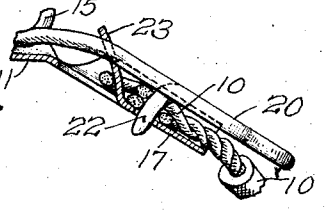


FIG. 6

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UNITED STATES PATENT OFFICE

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ELECTRIC CONTACT CLIP

Application filed October 16, 1922. Serial No. 594,744.

This invention relates to a device for making electrical connections between conductors, and has for its object the provision of a contact clip which shall be of improved construction, economical to manufacture and convenient and efficient in operation.

The invention is exemplified in the combination and arrangement of parts shown in the accompanying drawing and described in the following specification, and it is more particularly pointed out in the appended claims.

In the drawing,—

Fig. 1 is a plan view of one form of clip embodying the present invention, parts being broken away.

Fig. 2 is a side elevation of the device shown in Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary view of the device shown in Fig. 1 as applied to a screw or rod.

Fig. 5 is a view similar to Fig. 1, showing a somewhat modified form of the invention.

Fig. 6 is a section on line 6—6 of Fig. 5.

Many kinds of electrical construction and operation require conveniently operated means for providing electrical contact between a conductor and some form of terminal member. Spring clips have been heretofore used for this purpose, but in the forms previously employed difficulty has been experienced in securing convenient and efficient connection between the conductor and clip and in connecting the clip to some forms of terminals. The present invention provides improved means for securing these results.

The numeral 10 designates an electrical conductor such as an insulation covered wire. This conductor is secured to one of the jaws 11 of a spring clip, the opposite jaw 12 of which is pivotally connected to the jaw 11 by means of ears 13 and a pivot pin 14. A helical spring 15 surrounds the pin 14, one end of the spring bearing against the finger piece 16 of the jaw 12. The jaw 11 is provided with a rearwardly extending shank portion 17, to which the conductor 10 is secured and which provides a finger piece for that jaw. The shank 17 is provided with inwardly bent side portions 18, which form a channel for receiving the end of the conductor. One end of the spring 15 is shaped to form an eye 19 to which a tongue 20 is pivotally connected by means of a rivet 21. This rivet permits lateral movement of the tongue 20, but holds the spring and tongue against relative movement in a vertical direction as viewed in Fig. 2. The resiliency of the spring 15 presses the tongue 20 into the channel formed by the members 17 and 18 so that the conductor 10 is resiliently pressed against the bottom of the channel and thus held in place, at the same time forming electrical contact with the clip. The tongue 20 may be made of a piece of wire bent upon itself, the parts being soldered or otherwise secured to one another where they come into contact. The free end of the wire may be bent downwardly to provide a point 22 around which the conductor 10 is looped to prevent its being withdrawn from the channel 17. The tongue 23 may be struck inwardly from the jaw 11 to form a further anchorage for the conductor 10 if it is found desirable.

For connecting heavy conductors it is sometimes desirable to provide a positive clamp for pressing the tongue 20 against the conductor in addition to the force of the spring 15. This may be done by extending an ear 24 upwardly from the side 18 for supporting the screw 25 in position to bear upon the top of the tongue 20, as shown in Figs. 2 and 3. Screws 26 may also be threaded through the side of the channel shank 27 to clamp the conductor 10 from opposite sides where this is found desirable. The end of the channel shank 17 may be closed by a web 28 having an opening therethrough as shown at 29, Fig. 2, for the passage of the conductor 10. This will prevent any upward strain upon the conductor from lifting it out of the channel shank 17. The clip is attached to the terminal by opening the jaws and causing the teeth 29′ to engage opposite portions of the terminal member. Sometimes a more convenient and efficient contact can be secured with a small cylindrical terminal such as battery screws by means of openings 30 formed in the jaws 11 and 12. These openings are provided with outwardly struck collars 31 which are slightly

out of alignment when the jaws are closed, but which are brought into alignment when the jaws are open, as shown in Fig. 4. To connect the device with a cylindrical terminal 32 the jaws are opened as shown in that figure and the openings 30 are slipped over the cylindrical member. When the jaws are released they will tend to return to their closed position and the collars 31 will bind closely against the terminal with a wedging movement that will provide a firm connection and good electrical contact. As shown in Fig. 1, the ears 13 may be held together by hollow rivets 33 through which the pivot pin 14 passes. The rivets 33 will retain the jaws in assembled relation irrespective of pin 14. This is of material assistance in assembling the parts, since it is a difficult matter to hold the openings in the ears 13 in alignment and the coiled spring 15 so compressed as to permit insertion of the rivet 14. Where hollow rivets 33 are used, however, this operation is rendered less difficult, as the jaws are first secured in proper relation and the spring 15 is the only part that then requires attention at the same time that the pin 14 is inserted.

In the form of the invention shown in Figs. 5 and 6, the screws 25 and 26 are omitted and the tongue 20 is relied upon for holding the conductor 10 in place. This arrangement will usually be found satisfactory where light conductors are employed. The conductor 10 in this figure is shown looped about the tongue 23 and crossed to provide a second loop through which the pin 22 extends. The shank 17 is perforated to permit the pin 22 to extend entirely through the sheet metal. In this connection the pivot 21 is also omitted. The purpose of the pivot 21 is to permit lateral movement of the tongue 20 to uncover the channel 17 when it is desired to remove the conductor 10. It will be seen that this removal may be readily accomplished by lifting on the loop 34 at the end of the tongue until it is free of the side walls 18 and then swinging the tongue laterally to free the wire, the screws 25, 26 having been first released. The conductor may then be readily removed or inserted and when in place the tongue may be swung back in position and the spring 15 will press it into contact with the conductor, thus holding the conductor securely without the use of solder or other attaching material which is difficult to apply and requires special equipment.

The same operation may be performed with the form of clip shown in Figs. 5 and 6, the lateral movement of the tongue 20 being permitted by the resiliency of the wire from which the spring 15 is formed.

For a very heavy construction the pivot 21 makes a more convenient arrangement, but for light wire the battery tongue will answer the same purpose.

Where it is desired to secure the clip to a battery terminal and at the same time grasp the end of a loose conductor this may be done in any one of a number of different ways. One of the openings 30 may be slipped over the battery terminal and the nut threaded onto the terminal so as to occupy a position between the two spring jaws. This will clamp the lower jaw to the battery terminal and leave the upper jaw free to be operated to grasp a loose conductor. A similar result can be secured by throwing the extension 20 of the spring to one side and removing the conductor 10 from its socket. The opening 29 may then be placed over the battery terminal and the nut screwed down upon the web 28, the nut being arranged in the socket for the conductor 10. This may be more readily effected by placing the nut within the socket and clamping it in position by the screws 25 and 26 after which the entire device may be screwed to the battery terminal. In place of using a nut in the socket the battery terminal may be passed through the opening 29 and clamped in place by the threaded members 25 and 26.

I claim:

1. An electrical connector comprising a pair of spring-pressed jaws for engaging a terminal member, and resilient means for holding a conductor in electrical engagement with one of said jaws independently of the other jaw.

2. An electrical connector comprising a pair of pivot jaws, a spring for closing said jaws, and means actuated by said closing spring for holding a conductor in electrical engagement with one of said jaws independently of the other jaw.

3. An electrical connector comprising a pair of pivot jaws, a spring for closing said jaws, a socket member for receiving a conductor, and a device for holding said conductor in said socket member, said device being resiliently actuated by said closing spring.

4. An electrical connector comprising a pair of pivot jaws, a pivot pin for said jaws, a coiled spring surrounding said pin and having extending ends for engaging said jaws to yieldingly close said jaws, a socket member formed on one of said jaws for receiving an electrical conductor, and means connected with one of the extended ends of said spring for pressing said conductor in said socket member.

5. An electrical connector comprising a pair of pivotally connected jaws, a spring for closing said jaws, extensions formed on said jaws by which said jaws may be opened, one of said extensions having a channel therein for receiving an electrical conductor, and means connected with said spring and actu-

ated thereby for pressing said conductor into said channel.

6. An electrical connector comprising an attaching device having a projection thereon for receiving the looped end of a conductor, and a spring for engaging said conductor to clamp said conductor to said attaching device for providing electrical contact and for retaining said conductor on said projection.

7. An electrical connector comprising an attaching means having a socket for receiving an electrical conductor, a spring tongue for pressing said conductor in said socket, and a projection for receiving a loop in said conductor to resist longitudinal strain on said conductor.

8. An electrical connector comprising an attaching device having a projecting finger thereon for receiving the looped end of a conductor, and a spring member for engaging said conductor, said spring having a point thereon for entering a loop in said conductor.

9. An electrical connector comprising a pair of spring-pressed jaws, one of said jaws having a socket for receiving an electrical conductor, and a spring member for holding said conductor in said socket arranged to close said socket, said member being movable into position to permit removal of said conductor from said socket.

10. An electrical connector having a groove therein for receiving a conductor, and a spring tongue extending longitudinally of said groove for holding said conductor therein.

11. An electrical connector having a groove for receiving a conductor, and a spring tongue extending longitudinally of said groove for retaining said conductor in said groove, said tongue being movable laterally to open said groove and permit removal of said conductor therefrom.

12. An electrical connector comprising a pair of pivoted jaws, a spring for closing said jaws, one of said jaws having a groove therein for receiving a conductor, and a tongue connected with said spring for pressing said conductor in said groove, said tongue being movable laterally relative to said groove to permit removal of said conductor.

13. An electrical connector comprising a pair of pivotally connected jaws, a spring for closing said jaws, one of said jaws having a groove for receiving a conductor, an anchor finger for engaging a loop on said conductor to hold said conductor against longitudinal strain, and a tongue actuated by said spring for pressing said conductor in said groove.

14. An electrical connector comprising a contact member, and means for connecting a conductor to said contact member comprising a spring-pressed device for engaging said conductor and a screw for holding said device in contact with said conductor.

15. In an electrical connector, a spring member for engaging a conductor, and a clamp for holding said member against said conductor.

16. In an electrical connector, a spring member for engaging a conductor, a clamp for holding said member against said conductor, and a supplemental screw in said connector for engaging said conductor.

17. In an electrical connector, a socket member for receiving a conductor, a spring member for holding said conductor in said socket member, and a screw for pressing said spring member against said conductor.

18. An electrical connector having a channel for receiving a conductor, a spring tongue for holding said conductor in said channel, an anchor finger for engaging a loop in said conductor, and a supplemental threaded device for holding said conductor.

19. An electrical connector having a channel for receiving a conductor, an anchor finger for engaging a loop in said conductor, a spring tongue for resiliently pressing said conductor in said channel, a screw for clamping said spring against said conductor, and supplemental screws for engaging opposite portions of said conductor at the sides of said channel.

20. An electrical connector comprising a pair of pivotally connected jaws, a spring for holding said jaws in closed relation, one of said jaws having a channel therein for receiving a conductor, an extension on said spring movable into and out of position to engage a conductor in said channel, an anchor device for holding said conductor against longitudinal movement in said channel, a screw clamp for holding said extension against said conductor, and supplemental screws extending through the sides of said channel for engaging said conductor.

In testimony whereof I have signed my name to this specification on this 14th day of October, A. D. 1922.

EMIEL P. SEGHERS.