

July 31, 1928.

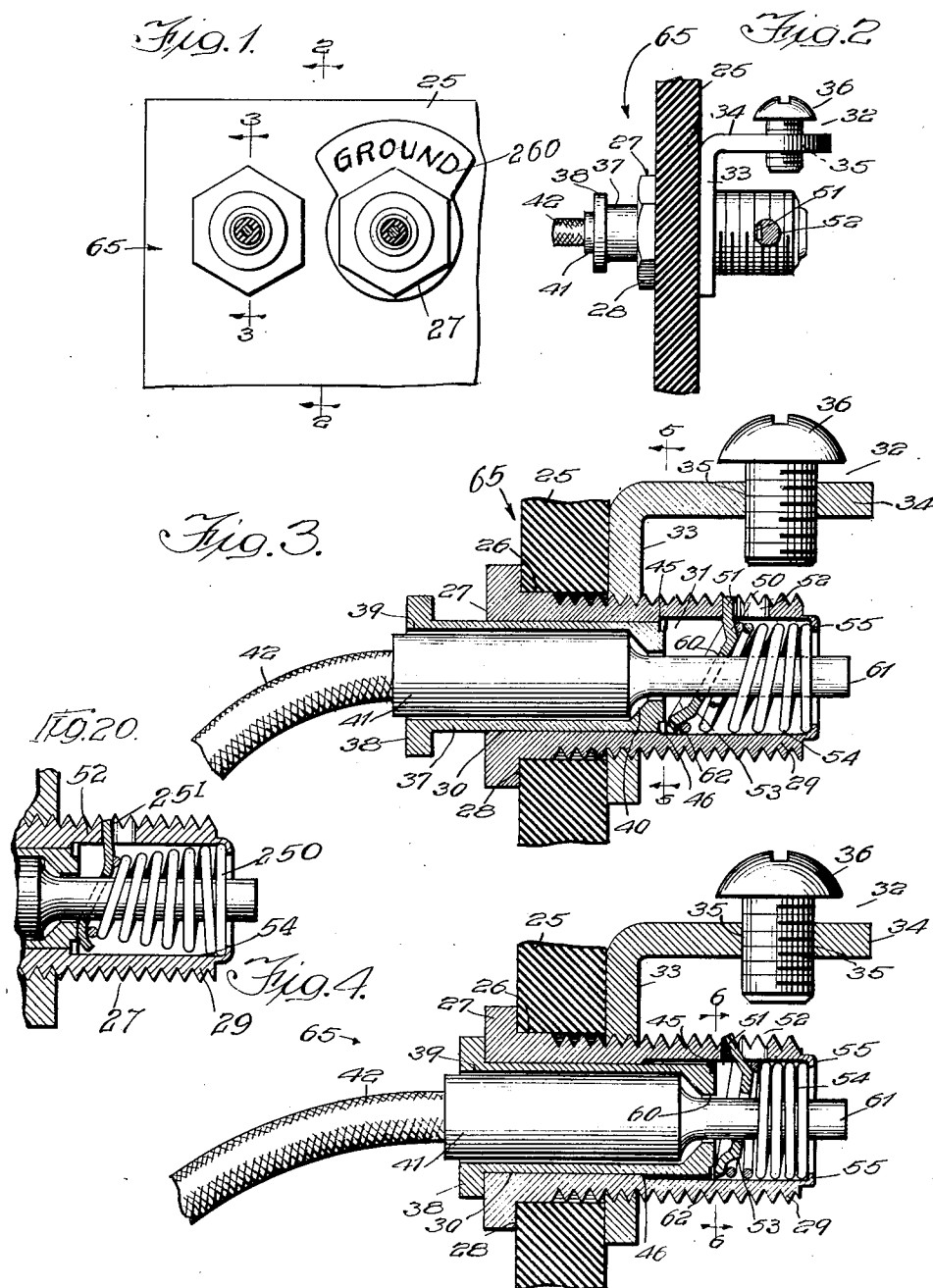
1,678,745

N. C. SCHELLENGER

TERMINAL

Filed Aug. 5, 1925

3 Sheets-Sheet 1



Witnesses:

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Harry R. L. White.

Inventor:

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Freundlichen Grüssen.

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July 31, 1928.

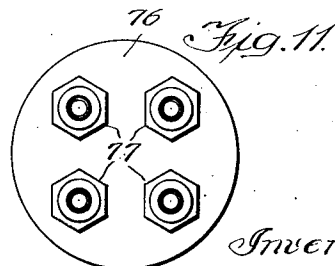
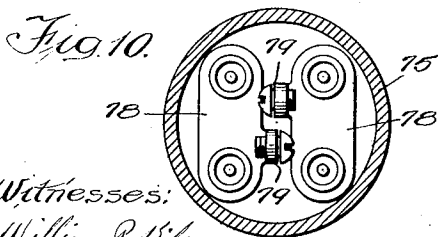
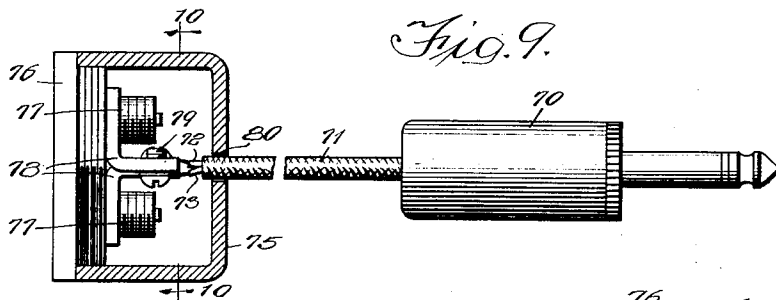
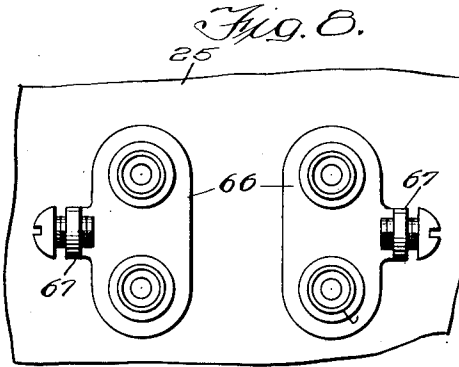
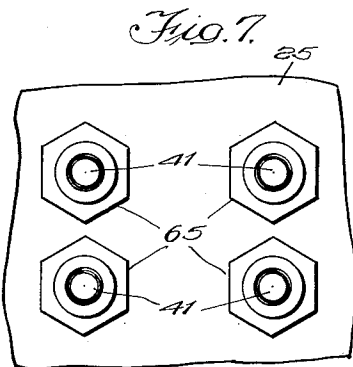
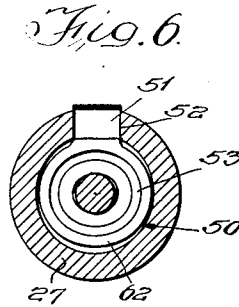
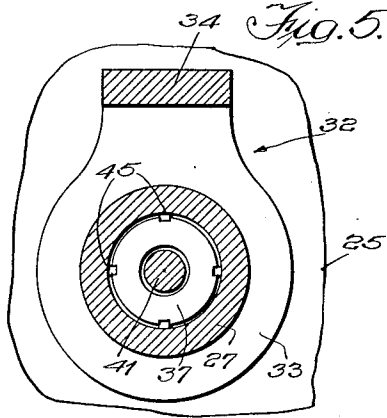
N. C. SCHELLENGER

1,678,745

TERMINAL

Filed Aug. 5, 1925

3 Sheets-Sheet 2



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July 31, 1928.

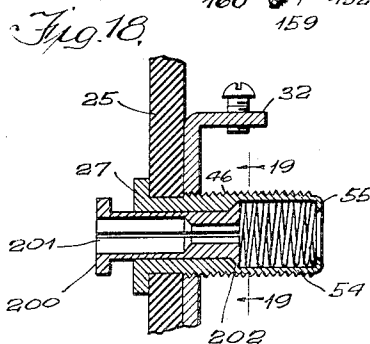
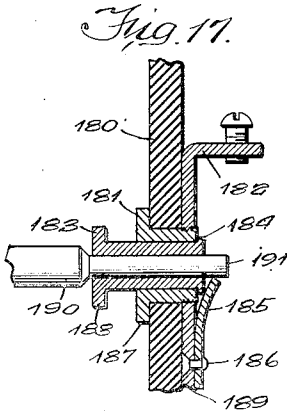
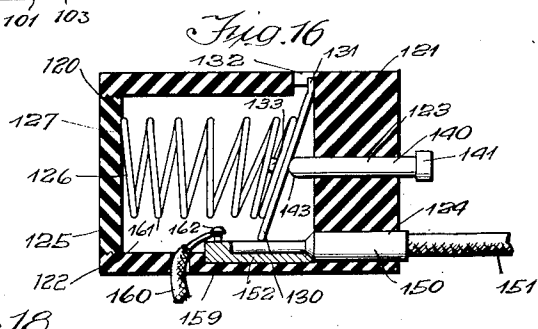
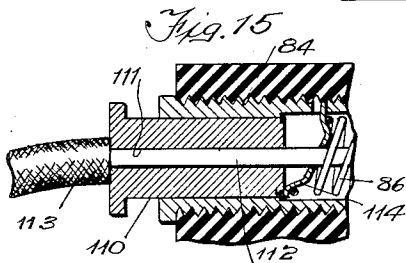
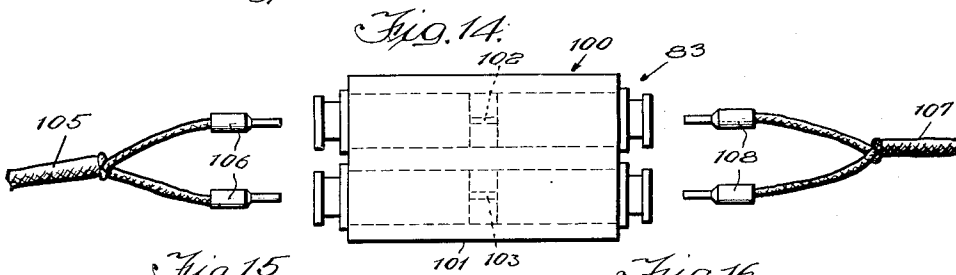
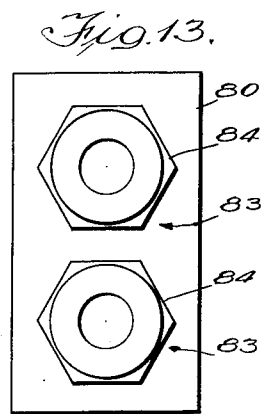
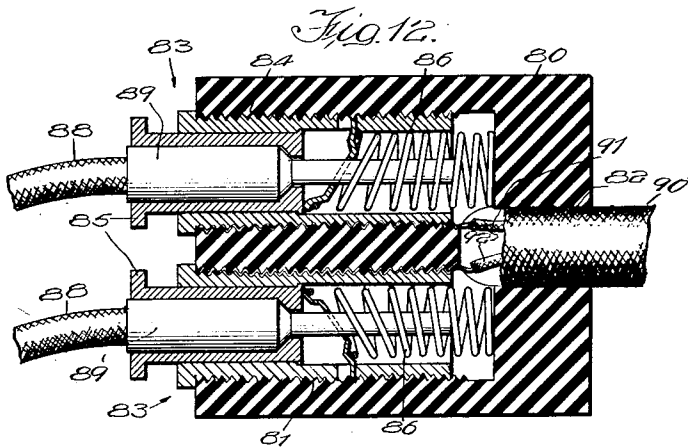
N. C. SCHELLENGER

1,678,745

TERMINAL

Filed Aug. 5, 1925

3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE.

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TERMINAL.

Application filed August 5, 1925. Serial No. 48,265.

My invention, in general, relates to terminals and more particularly to cord tip jacks.

As is well known to those versatile with the present art, it is customary to employ 5 jacks and plugs for connecting electrical conductors. In many cases, certain of these conductors are equipped with tips commonly referred to as cord tips. Obviously, in order to connect the cord tips to the ordinary type 10 of jack, it is essential that these tips first be associated with a plug adapted to enter and cooperate with the jack. This necessitates the provision of two different pieces of electrical apparatus in order to accomplish the 15 desired connection; namely, the plug and jack.

Now with the advance and rapid growth of the art of radio communication simpler and less expensive forms of electrical apparatus are demanded in order to meet the requirements of this art. This is particularly true in the case of portable radio receiving 20 sets where it is desirable to manufacture the sets of minimum size and weight and, hence, of a minimum number of parts.

I propose to eliminate the necessity of a plug and to provide a jack adapted to receive a cord tip instead of a plug.

My invention is unusually advantageous 30 and has considerable utility in connection with the hooking up of head sets and loud speakers with radio receiving outfits. At the present time the head set or loud speaker is connected to the radio receiving set 35 through the means of a suitable plug and jack. Through my invention it is possible to connect the loud speaker and head set to the radio receiving set without the necessity of a plug. The cord tips on the conductors 40 of the cords associated with the head sets and loud speaker are merely inserted into my novel cord tip jacks. Each of my jacks are equipped with a simple locking mechanism which is adapted to tightly hold the 45 cord tip in place. Also, each jack is furnished with an element for releasing the locking means to permit the removal of the cord tip from the jack.

I desire it understood that my invention 50 is not to be limited in its use in connection

with radio receiving outfits, for it may be used with equal advantage wherever it is desired to connect a plurality of conductors to a common terminal. Also, it is adapted for use as a connector between two conductors, as in the case of extension cords. 55

An object of the present invention is to provide improved terminal mechanisms.

Another object of the present invention is to provide a cord tip jack. 60

A further object of the present invention is to provide an improved connector for connecting electrical conductors.

Other objects and advantages of the present invention will more fully appear from 65 the following detailed description, taken in connection with the accompanying drawings which illustrate several embodiments thereof and in which—

Fig. 1 is a front elevational view of a pair 70 of my novel jacks or terminals mounted in a suitable panel;

Fig. 2 is a side elevational view of one of the jacks illustrated in Fig. 1 taken on the line 2—2 of Fig. 1; 75

Fig. 3 is a cross sectional view of my novel jack taken on the line 3—3 of Fig. 1, illustrating my novel locking and releasing mechanism in which the locking mechanism is shown gripping a cord tip; 80

Fig. 4 is a sectional view similar to Fig. 3 illustrating the manner in which my novel releasing mechanism functions to render the locking mechanism ineffective and to permit the cord tip to be removed from the jack; 85

Fig. 5 is a fragmentary sectional view taken on the line 5—5 of Fig. 3, illustrating the novel manner in which the releasing sleeve is prevented from being removed from the associated thimble; 90

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 4 looking in the direction indicated by the arrows illustrating the applicant's novel locking element or shackle;

Fig. 7 is a front elevational view illustrating a novel arrangement of the applicant's jacks in a panel; 95

Fig. 8 is a rear view of the arrangement illustrated in Fig. 7 showing the manner in which four of the applicant's jacks may be 100

connected to a pair of terminals, each of the terminals being common to two of the jacks;

Fig. 9 is a view partly in section of an arrangement whereby my novel jacks may be used in conjunction with a jack plug;

Fig. 10 is a sectional view taken on the line 10—10 of Fig. 9;

Fig. 11 is a front view of the mounting illustrated in Fig. 9;

Fig. 12 is a sectional view illustrating how a pair of cord tips may be connected to a common terminal through the means of my novel jack;

Fig. 13 is a front view of the mounting illustrated in Fig. 12;

Fig. 14 is a more or less diagrammatic view showing how my invention may be used in connection with a connector for extension cords and the like;

Fig. 15 is a fragmentary sectional view showing a modified form of sleeve or releasing mechanism;

Fig. 16 is a sectional view of a modified form of cord tip jack;

Fig. 17 and Fig. 18 are sectional views of two other modifications of my invention;

Fig. 19 is a fragmentary sectional view taken on the line 19—19 of Fig. 18; and

Fig. 20 is a view showing a modified form of spring and binding element for the jack illustrated in Fig. 3.

Referring now to the drawings in detail in which like reference numerals designate similar parts throughout the several views, 25 denotes a mounting plate or panel such as that employed in radio receiving sets. This plate 25 may be made of any suitable insulating material, such, for example, as rubber or the like. In Fig. 1 I have illustrated a pair of cord tip jacks embodied with the features of my invention. Since both of these jacks are identical in construction, a description of one will suffice for both.

Mounted in an aperture 26 in the panel 25 is a thimble 27. One end of the thimble 27 is provided with a shoulder or head 28 which abuts the face of the panel 25. This head is preferably made like a nut and is hexagonal in form. This is to enable it to be gripped by a wrench or the like for tightening, as will more fully appear as the present description progresses. The opposite end 29 of the thimble 27 is threaded (Fig. 3). The thimble 27 is equipped with a central bore 30 which is countersunk at one end 31.

Screwed onto the thimble 27 is a bent element 32 which I term "a terminal nut". One leg 33 of this terminal nut 32, when screwed tightly in place, abuts the rear face of the panel 25. The other leg 34 of this terminal nut 32 is furnished with a threaded aperture 35 in which is disposed a round head bolt 36 which serves as a binding post, as shall be more fully described hereinafter.

The thimble 27 and the terminal nut 32 may be made of any suitable metallic material. In practice I have obtained the best results by making both of these elements out of brass. The terminal nut 32 performs two functions, one of which is to tightly hold the thimble 27 in position in the panel 25, and the other is to serve as a terminal to which an electrical conductor may be attached.

Telescoping the thimble 27 is a sleeve 37 provided with an annular shoulder 38 and a central bore 39 tapered at one end 40 to accommodate a cord tip 41 attached to a cord 42. The cord 42 may be fastened to the cord tip 41 in any desirable manner. The tip 41 may be of any usual construction and may be made of any suitable material. Such tips are well known in the present art and it is thought that no further elucidation need be made thereon. The end of the sleeve 37 within the thimble 27 is peened in four places, as best shown in Fig. 5. The peens or projections 45 are adapted to engage the shoulder 46 on the inner wall of the thimble 27 (Fig. 3). The shoulder 46 is formed by the countersunk portion 31 of the bore 30 of the thimble.

The sleeve 37, in practice, is first placed within the thimble 27 with its annular shoulder 38 adjacent the shoulder or head 28 of thimble 27. Then a suitable instrument is inserted in the countersunk end 31 of the thimble and the sleeve is peened in the four places previously discussed. This construction permits of the sleeve being moved back and forth within the thimble, but prevents it from being completely withdrawn therefrom. That is to say, upon the peens or projections 45 coming in contact with the annular shoulder 46 of the thimble, further outward movement of the sleeve is stopped.

The sleeve 37 may be made of any desirable metallic material having the required electrical qualities. I find that brass is the most suitable material to make this sleeve out of. The tip 41 is also preferably made of brass and may be nickel plated as is the common practice. The other parts I have previously discussed, namely, the terminal nut 32 and the thimble 27, as well as the sleeve 37, may be also nickel plated, if it is so desired.

It should be noted that the leg 33 of the terminal nut 32 is preferably arcuate in contour, as is clearly shown in Fig. 5, and that by gripping the hexagonal nut portion 28 of the thimble 27 with a suitable tool and turning it, the thimble is tightly gripped to the panel 25 by the said leg portion 33. The other leg 34 of the terminal nut 32 is not circular in shape, but preferably a short straight portion.

Disposed within the countersunk portion

31 of the bore 30 of the thimble 27 is a binding element or shackle 50 having integral therewith a lug or projection 51 (Fig. 6). Although the binding element or shackle of my novel jack may be made of any suitable material, I have obtained the best results by making it out of steel and then copper plating it to give it the desired electrical qualities especially as to resistance. This lug or projection 51 extends into a small circular aperture 52 in the threaded portion 29 of the thimble 27. The shackle or binding element 50 is also equipped with a raised portion or boss 53 which provides a seat for one end of a compression spring 54, also disposed within the countersunk portion 31. The other end of the spring 54 bears against the turned-down portion or peened edge 55 of the thimble 27. In practice, the shackle 50 is first inserted in the bore 31 with its projection 51 in place in the aperture 52. Then the spring is placed in the bore 31 and the edge 55 of the thimble 27 is peened by a suitable instrument as, for an example, a small hammer.

The shackle or binding element 50 is equipped with a central aperture 60 through which the end 61 of the tip 41 is adapted to pass. It should also be noted that the end 61 of the tip is adapted to pass through the spring 54. A small part of the lower portion of the binding element 50 is bent into a curve and rounded, so as to prevent it from being caught by the peens on the end of the sleeve 37. I have indicated this rounded portion of the shackle by the reference numeral 62, as best shown in Figs. 3 and 4.

The operation of my cord tip jack or terminal, which I shall hereinafter refer to in its entirety by the reference numeral 65, is believed to be obvious. Normally, due to the manner in which the shackle is positioned within the bore 31, the spring will urge it towards the end of the sleeve 37, as shown in Fig. 3. The lower edge of the shackle or binding element 50 through the urging force of the compression spring 54, will force the sleeve 37 outwardly as far as the peens 45 will permit it to go. (Fig. 3.) When a cord tip 41 is inserted into the sleeve 37, the end 61 of the cord tip engages the slanting aperture 60 in the slanting binding element or shackle 50. In order to enter this aperture 60, it will naturally have to slightly compress the spring 54. After it is once in position within the aperture 60 and the spring 54, the shackle or binding element 50 is urged again towards the sleeve 37 by the spring 54. This results in the wall defining the aperture 60 binding the end 61 of the tip to prevent it from being withdrawn from the sleeve 37.

In order to remove the tip 41 from the sleeve, the urging tendency of the spring 54

must be overcome and the shackle or binding element 50 must be moved out of its slanting position. This may be accomplished by slightly pressing on the end or head 38 of the sleeve 37 and pushing it inwardly toward the spring 54. The peened edge of the sleeve thereupon engages the turned end 62 of the binding element or shackle 50, pushing it towards the spring 54 and compressing the spring. This naturally relieves the end 61 of the binding effect previously mentioned. That is to say, by moving the binding element 50 out of its slanting position, it no longer binds the tip 41 and, hence, the tip may be very easily withdrawn.

Thus it will be seen that not only have I provided a very efficient cord tip jack, but I have provided novel means for locking it in the jack, as well as novel means for releasing the lock when it is desired to remove the tip from the jack.

In Figs. 7 and 8 I have illustrated how four cord tips may be connected through my novel cord tip jack to two terminals. One pair of tips may belong to a cord of a loud speaker and the other pair of tips may belong to a cord of a head receiver, or both pairs may belong to two sets of head receivers. Now, as was mentioned in the fore part of the present application, it is desirable to connect a plurality of such electrical instruments to a radio receiving outfit with a minimum number of parts having a minimum amount of weight. In Fig. 7 I have illustrated four of my novel jacks 65 mounted in the panel 25. It is evident that by connecting the terminal nuts of one pair of jacks to a common conductor and by connecting the terminal nut of the other pair of jacks to a common conductor, it is possible to connect the cord tips associated with the jacks to a single pair of conductors.

In Fig. 8 a new form of terminal nut 66 is shown. Two of these nuts 66 are adapted to take the place of four of the other type of terminal nuts 32. The terminal nut 66 is much the same as the terminal nut 32, with the exception that one of its legs is provided with two threaded apertures instead of one. Each terminal nut is adapted to clamp two thimbles in place and to connect two jacks to a common terminal 67.

In Figs. 9, 10 and 11 I have illustrated the manner in which two or more pairs of tips or conductors may be connected to a common plug. Plug 70 may be of any usual construction and is provided with a cord 71 which may have two conductors 72 and 73. The plug 70 is adapted to enter a suitable two terminal jack. Associated with the end of the cord 71 is a housing 75 provided with a panel 76 made of rubber or the like. Mounted in the panel 76 are four jacks 77, which are the same as my jacks 65 with the

exception of the terminal nut. In this embodiment I have provided a terminal nut 78 which is adapted to receive two thimbles and to hold them in place instead of one.

5. Each terminal nut, however, has only one terminal or binding post 79. The conductor 72 is connected to one binding post and the conductor 73 is connected to the other. The panel 76 may be fastened to the housing or casing 75 in any desirable manner and the plug cord 71 is preferably inserted into the housing through an aperture 80 in the wall of the casing or housing. By inserting the ends of four conductors into the four jacks 77, they may all be connected to a common plug 70. I desire it understood, however, that although I have shown four jacks as being the preferred number, it is to be understood that I intend to cover any other analogous arrangement which may accommodate four or more tips and that the present invention is to be limited only in so far as defined by the scope and spirit of the appended claims.

25 In Figs. 12 and 13 I have illustrated a novel connector by which a pair of jacks substantially like that disclosed in the first figures of the present case may be connected to a common conductor. The conductor is designated in its entirety by the reference numeral 80. This connector comprises a block of some suitable insulating material having a pair of holes 81 at one end and a single hole 82 intermediate the holes 81 at the other end. Since both of the jacks illustrated in this embodiment of my invention are substantially alike, a description of one will suffice for the other. The jack shall be hereinafter referred to by the reference numeral 83. This jack comprises a thimble 84 threaded into the hole or aperture 81. Telescoping the thimble is a sleeve 85 which is held in the thimble in the same manner as the sleeve 37 is held in the thimble 27. Disposed within the thimble is a binding element or shackle which is identical to that illustrated in my jack 65. A spring 86 is disposed within the thimble and differs from the spring 54 of my jack 65 only in that one of its ends abuts the insulating block instead of the edge of the thimble, as in the case of my jack 65. Associated with the jacks 83 are cords 88 and tips 89. A cord 90 is inserted in the aperture 82 and its conductors 91 and 92 have their ends bared of the insulation. In assembling this connector I preferably first pull one of the conductors into each of the holes or apertures 81. Then the thimbles are screwed into place, tightly holding the conductors in place and establishing an electrical connection therewith. The ends of the conductors sticking out of the apertures 81 of the block are then cut off. The operation of these two jacks 83 is substantially like that of my jack 65 and it is therefore thought

that no further elaboration need be made thereon.

The connector provides an ideal way of connecting a pair of cord tips to a common conductor, such as 90.

In Fig. 14 I have illustrated more or less diagrammatically how a pair of conductors may be connected to another pair of conductors. I have indicated the connector in its entirety, by reference numeral 100. The connector comprises an insulating block 101 in which are mounted four jacks such as the jack 83 illustrated in Fig. 12. The upper pair of jacks are electrically connected together in any desirable manner by a wire 102 and the lower pair are connected by a wire 103. A cord 105 has a pair of cord tips 106 adapted to enter one pair of jacks on one side of the connector 100, and a cord 107 has a pair of tips 108 adapted to enter the other pair of jacks. Thus it will be seen that I have provided a very novel way of connecting two pairs of cord tips.

In Fig. 15 I have illustrated fragmentarily a slight modification of the jack 83 illustrated in Fig. 12. The modification has to do with the sleeve 110. The sleeve 110 is practically the same as the sleeve 37 of my jack 65, with the exception that it has a straight bore 111. The sleeve in this case is adapted to receive a conductor rather than a cord tip. That is to say, the jack in this particular instance, by a slight modification of the sleeve, is enabled to receive an ordinary conductor without any tip thereon. Therefore, it is evident that by a slight modification, my novel jack may be adapted to receive conductors other than cord tips.

The conductor 112 of a wire 113 is inserted into the bore 111 of the sleeve 110 and is held in place by the binding element or shackle 114 in the same way as the way the cord tip is held in place in my jack 65.

In Fig. 16 I have illustrated a modified form of jack, indicated in its entirety by the reference numeral 120. The jack 120 comprises a block 121 of insulating material equipped with a central bore 122 and two apertures 123 and 124. The end of the aperture 122 is threaded and is closed up by a small cap 125 threaded therein. The cap 125 is provided with a lug 126 around which is disposed a spring 127. Disposed within the bore 122 is a shackle or binding element 130 preferably circular in contour. This shackle has a lug 131 projecting into an aperture 133 in the wall of the block 121.

The element 130 is equipped with a stud 133 around which the end of the spring 127 is disposed. Disposed within the hole or aperture 133 is a pin or rod 140 equipped with a small knob 141 on one end. The other end of this rod or pin projects into the bore 122. The end of the pin within the bore 122 is peened at 143 to prevent the pin

from being drawn out of the aperture 123. The peened end 143 of the pin 140 abuts the face of the binding element or shackle 130.

Upon the insertion of a cord tip 150 of a cord 151 into the aperture 124, the end 152 of the cord tip encounters the lower portion of the binding element 130, moving it upwardly slightly. This movement is permitted due to the way in which the binding element is positioned within the bore 122, and due to the lug 131 projecting into the aperture 132. After the cord tip is once in place the spring 127 urges the binding element into engagement therewith, causing it to bind the cord tip and to prevent its removal therefrom. Whenever it is desired to remove the cord tip from the jack, by exerting a slight pressure upon the knob 141, the peened end of the pin 140 engages the face of the binding element, moving it inwardly and compressing the spring 127, thereby permitting the removal of the cord tip from the jack. It should be noted that the lugs 128 and 133 serve to maintain the spring 127 in position intermediate the cap 126 and the inner face of the binding element of the shackle 130.

The end of the cord tip 150 when in locked position, abuts a small metallic stud 159 suitably fastened to the inner wall of the block 121. This stud serves the double purpose of providing a stop for the end of the cord tip and for establishing an electrical connection between the cord 151 and a cord 160. The cord 160 enters the block 121 through an aperture 161. The conductor of the cord 160 is suitably fastened to a binding post 162 on the stud 159.

The operation of this jack is substantially like that of my previously described jack 65. Upon the insertion of a cord tip in the aperture 124, the binding element 130 firmly grips it in a locked position. Whenever it is desired to remove the cord tip, it is necessary to overcome the binding effect of the shackle 130. I accomplish this through the pin 140, which may be made of a suitable insulating material, if it is so desired. By pressing on the knob 141 of the pin 140, the tension of the spring may be overcome and the binding element moved out of engagement with the end of the cord tip, thereby permitting the easy removal of the cord tip.

In Fig. 17 I have illustrated still another form of a jack. This form of jack is much the same as the one illustrated in the first figures of the drawing matter with the exception that the spring has been omitted and a simpler construction provided. In this embodiment 180 denotes a panel or mounting and 181 a thimble mounted in the panel and securely held in place by a terminal nut 182 threaded thereon. One end of the thimble has a nut shaped head 187 for engaging the front face of the panel. The

other end of the thimble is threaded for receiving the terminal nut 182.

Mounted in the thimble 181 is a sleeve 183 provided with a head portion at one end 188 and a plurality of peens or projections 184 at the other end for preventing its removal from the thimble. Secured to the leg 189 of the terminal nut 182 by a screw 186 is a flexible binding element 185. The end of this flexible element is adapted to engage the end 191 of a cord tip 190 when it is inserted in the sleeve 183. Due to the binding action set up by the element 185, the cord tip 190 is locked in the jack. When it is desired to remove the cord tip from the jack, the sleeve 183 must be pushed inwardly to move the end of the flexible element 185 out of engagement with the end 191 of the cord tip, thereby preventing the binding action and permitting the tip to be easily removed from the sleeve.

In Fig. 18 I have illustrated still another modification of my invention. In this form of my invention, the binding element is omitted entirely and a split sleeve is used in place of the sleeve 37 used in my jack 65. The other parts being the same as those used in my jack 65, I shall employ the same reference numerals to designate them. The thimble 27 is mounted in the panel 25 and held in place therein by the terminal nut 32. Mounted in the thimble 27 is a split sleeve 200 comprising two parts. A slight space 201 is provided between the parts, as shown in Fig. 19. The inner end of the sleeve is peened at 202 so as to permit it to engage the shoulder 46 on the inner wall of the thimble to thus prevent it from being removed from the thimble. Disposed intermediate the peened end of the sleeve 200 and the peened edge 55 of the thimble is the spring 54.

Normally the sleeve will be urged outwardly by the spring 54 until its peened edge engages the shoulder 46 on the thimble. Upon the insertion of a cord tip in the sleeve, the parts are spread away from each other. This is permitted due to the slot or space 201 between the two parts of the sleeve. After the cord tip is once in place, the spring 54 urges the peened edge of the sleeve into contact with the shoulder 46, drawing the two parts at their inner ends together, causing them to tightly embrace the inner end of the cord tip, holding it in place. The cord tip may be very easily removed by slightly pressing on the sleeve 200 and pushing it inwardly against the urging tendency of the spring 54, thereby permitting the inner ends of the two parts of the sleeve to separate and enable the ready removal of the cord tip.

In Fig. 20 is shown a fragmentary section of the thimble 27 illustrated in Fig. 3. In this thimble I have substituted a con-

cal shaped spring 250 for the spring 54 and another form of binding element 251 for the element 50. The spring 250 has this advantage over the spring 54, namely, of more clearance between it and the inner wall of the thimble. Hence, less of its effectiveness is dissipated due to friction and it can function both more freely and positively. In other words, it has a nicety of action not to be found in the case of spring 54. The binding element 251 is substantially like the element 50 with the exception that it does not have a boss 53 for the spring.

In Fig. 1 I have illustrated an identification tag 260 associated with one of the jacks. The tag is provided with a suitable aperture (not shown) through which the thimble passes. The head 27 serves to tightly hold it against the panel 25. Any suitable data may be inscribed on the tag as, for example, ground antenna and so forth. Such a tag will enable the insertion of a cord tip in its proper jack.

Although I have disclosed and described in detail several of the embodiments of my invention, it is of course to be understood that it is only to be limited in so far as defined by the scope and spirit of the claims hereto attached.

I claim:—

1. In a jack, a tubular member for receiving a conductor, and binding means including a relatively thin ring-like element through which the conductor is adapted to extend, arranged to tightly grip a portion of said conductor to prevent the removal of the conductor from the jack.

2. In a jack, a tubular member for receiving a conductor, shackling means including a binding washer-like element connected to the member arranged to tightly grip a portion of said conductor to prevent the removal of the conductor from the jack, and resilient means disposed in said tubular member for urging said element into gripping engagement with said conductor.

3. In a jack, a tubular member for receiving a conductor, binding means including a relatively thin ring-like element through which the conductor is adapted to extend, arranged to tightly grip a portion of said conductor to prevent the removal of the conductor from the jack, and release means extending into said tubular member for overcoming the gripping action of said element to permit removal of the conductor from the jack.

4. In a jack, a tubular member for receiving a conductor, shackling means including a binding washer-like element connected to the member arranged to tightly grip a portion of said conductor to prevent the removal of the conductor from the jack, resilient means disposed in said tubular member for urging said element into gripping en-

gagement with said conductor, and release means extending into said tubular member for overcoming the urging action of said resilient means and for moving the said element out of gripping engagement with the said conductor to permit removal of the conductor from the jack.

5. In combination, a tubular member for receiving a conductor, a ring-like element disposed in said member through which the conductor is adapted to extend, said element having a lateral extension projecting into an aperture in said tubular member to prevent rotation of said element, and resilient means connected to the tubular member for urging said element into a tilted position, said element when in said tilted position being adapted to tightly embrace and grip said conductor to prevent its removal from the member.

6. In combination, a tubular member for receiving a conductor, a ring-like element disposed in said member through which the conductor is adapted to extend, said element having a lateral extension projecting into an aperture in said tubular member to prevent rotation of said element, resilient means connected to the tubular member for urging said element into a position at a slight angle to the vertical, and to cause said element to tightly grip said conductor, and releasing means extending into the tubular member for overcoming the urging tendency of said resilient means and for moving said element into its vertical and release position.

7. In combination, a support, a thimble extending therethrough having a shoulder on one end for engaging one side of the support, a terminal nut associated with the side of the support threaded on the thimble for securing the same to the support, a sleeve member extending into said thimble and having its outer end provided with a shoulder to engage the shoulder end of said thimble, said sleeve shoulder limiting the movement of the sleeve into the thimble, means associated with the inner end of the sleeve for limiting its outward movement, said thimble having an aperture in its wall on the terminal side of the support, a shackling element disposed in said thimble provided with an opening for the reception of a conductor, said shackling element having a lateral ear extending into said aperture in the thimble and resilient means disposed in the thimble for at all times urging the shackling element in a direction toward said shoulders, the inner end of said sleeve being disposed to move the shackling element toward the resilient means to place it in its released position.

In witness whereof, I hereunto subscribe my name this 30th day of July, 1925.

NEWTON C. SCHELLENGER.