Feb. 10, 1925. 1,526,265

E. BERGMAN

ELECTRICAL CONNECTION

Filed June 14, 1922

Fig. 1.

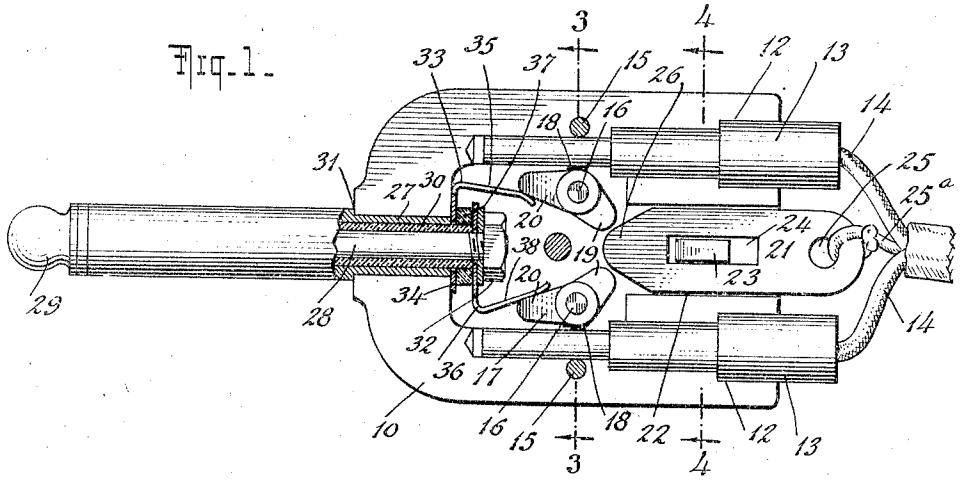


Fig. 2.

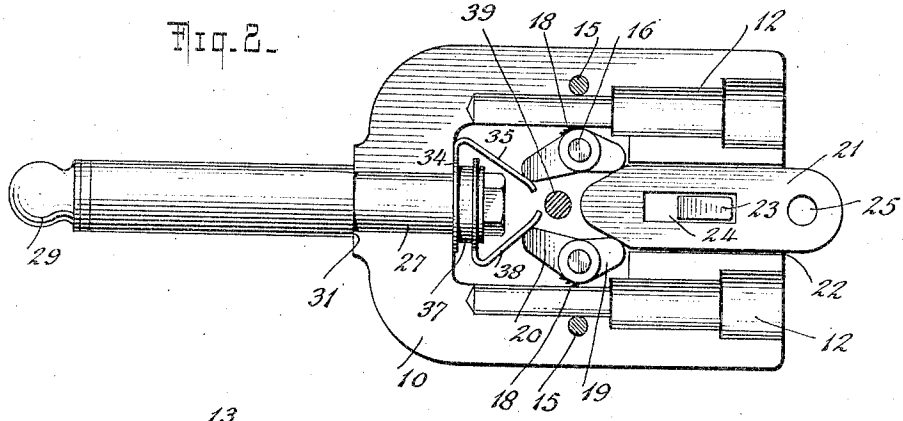


Fig. 3.

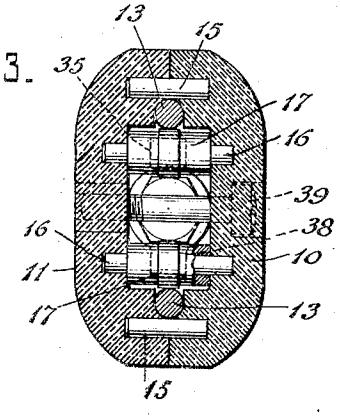
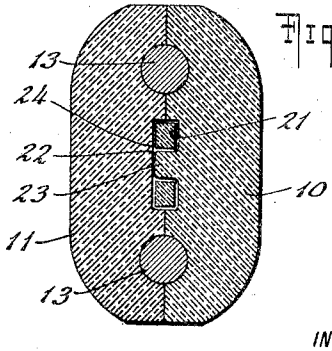


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ELECTRICAL CONNECTION.

Application filed June 14, 1922. Serial No. 568,319.

To all whom it may concern:

Be it known that I, EDWARD BERGMAN, a citizen of the United States, and resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electrical Connections, of which the following is a specification.

The principal object of this invention is to provide a new and improved electrical connection provided with means to permit instantaneous and secure attachment of the lead wires to the connection.

Another object is to provide a connection to which the lead wires can be attached without resorting to the usual binding screws, or nuts, thus obviating the necessity of using a screw driver, pliers or similar tools.

A further object is to provide a device of this character with cam means which will engage with and exert a gripping effect upon the terminals of the lead wires and to so construct the cam means that an increase in the tension placed upon the lead wires tending to pull the wires from the connection will cause a correspondingly increased gripping effect upon the wires.

Another object is to produce in a device of this character gripping cams and spring means cooperating therewith, said cam and spring means adapted to act as conductors through which the electric current passes in its passage through the connection.

Another object is to provide in a device of this character means for instantly releasing the gripping effect of the cams upon the lead wires, and

A further object is to incorporate in said releasing means, a means for anchoring the lead wires to prevent a direct pull being placed upon the connecting terminals of the wires.

For the accomplishment of these and such further objects as will hereinafter be apparent to those skilled in the art to which this appertains, the invention consists in the construction, combination and arrangement of parts herein specifically described and illusrated in the accompanying drawings, wherein is shown a preferred embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the claims hereunto appended.

In the drawings forming a portion of this specification—

Fig. 1 is a plan view of a section of a connection in the form of a telephone jack plug embodying my invention, the cam members being shown in their operative or gripping postion.

Fig. 2 is a view similar to Fig. 1 with the cams in disengaged or inoperative position.

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

Fig. 4 is a section on the line 4—4 of Fig. 1.

In the drawings in which my invention is shown as applied to a telephone jack plug, the body portion of the plug consists of a block of any suitable insulating material comprised of the two sections 10 and 11. The sections are preferably molded into the desired shape and are provided with the cooperating stepped recessed portions 12 in which is adapted to be snugly but slidably received the terminal pieces 13 which are secured to the ends of the lead wires 14 in any suitable manner.

Secured in the block section 10, on the outer side of and immediately adjacent each of the inner smaller portions of the recesses 12 is a backing pin 15 preferably of hardened steel while in transverse alignment with the pins 15 is a pair of pins 16 each of which is spaced a short distance inwardly from the recesses.

Pivotally mounted upon each of the pins 16 is a cam lever 17 having a plurality of teeth or serrations 18 formed upon the side facing the adjacent recess and which serrations are adapted to contact with and engage the inner reduced portion of the terminal piece 13. The cam levers 17 are provided with the arms 19 and 20, the arms 19 being inclined inwardly towards the center of the block so as to lie in the path of a cam releaser 21, of any suitable insulating material which is slidably mounted within a guide way 22 formed by cooperating grooves provided in each of the block sections 10 and 11. The block section 10 is provided with a rib or stop 23 which is adapted to project into a longitudinal slot 24 intermediate the ends of the cam releaser 21, and which serves as a stop to limit the longitudinal motion of the cam releaser. The outer end of the cam releaser is provided with an aperture 25 to which the usual

strain cord is secured to prevent a direct pull being placed upon the lead wire terminals, while the inner end of the cam releaser terminates in the reduced rounded end 26 which is adapted to engage the ends 19 of the cam lever 17 for a purpose which will hereinafter appear.

The usual contact plug passes through a suitable aperture in the end of the insulating block and consists of an outer metallic sleeve 27, an inner metallic rod 28 terminating in the ball shaped end 29, said sleeve and rod being separated by the insulating sleeve 30. The sleeve 27 is slightly reduced in diameter to provide a shoulder 31 and the end of the rod 27 is threaded to receive the nut 32 by means of which the plug is secured to the insulating block. A flat spring 33 is provided with an annular portion 34 which is placed over the rod 28 and contacts with the end of the metallic sleeve 30, the annular portion merging into a spring contact arm 35 which engages under tension with the arm 20 of one of the cam levers 17 and normally forces said arm 20 outwardly to urge the serrations 18 into engagement with the terminal piece 13. A similar spring 36 is placed upon the rod 28, an insulating washer 37 being placed between the springs, and both springs and washer are held securely in position by the nut 32. The contact arm 38 of the spring 35 contacts with the end 20 of the other cam lever in the same manner as the contact arm 35.

The pins 15 project sufficiently from the block section 10 to serve as dowels for locating the section 11 in proper alignment while any suitable means such as a headed screw 39 is used to secure the block sections together.

The operation of the device is as follows. Assuming that the terminal pieces 13 of the lead wires 14 are to be connected to the jack plug it is only necessary to insert them into the recesses, the reduced ends of the terminal pieces rotating the cam levers against the pressure of the spring arms 35 and 38 and permitting the terminal pieces to be pushed home to the position shown in Fig. 1. If it is desired to remove the terminal pieces the cam releaser 21 is pushed inwardly until the reduced end 26 thereof engages the inclined arms 19 of the cam levers and rotates the cam levers against the action of the springs thus moving the serrations 18 out of engagement with the reduced ends of the terminal pieces, the parts occupying the positions shown in Fig. 2. When the parts are in the positions shown in Fig. 1, it will be obvious that any outward movement or tension upon the terminal pieces 13 will cause the serrations 18 upon the cam levers to be pressed more tightly in engagement with the terminal pieces.

The backing pins 15 it will be noted are arranged in alignment with and upon the opposite side of the terminal pieces to the cam levers 16 and serve to form a rigid support to prevent any transverse movement of the terminal pieces away from the clamping action of the cam levers.

All of the pins as well as the cam levers are preferably constructed of hardened steel.

The springs 33 and 36 serve not only to urge the cam levers into engagement with the terminal pieces, but also act as conductors the current passing from the terminal pieces through the cam levers, and springs 33 and 36 respectively to the metallic sleeve 27 and rod 28.

While I have shown my invention as embodied in a telephone jack plug, it is obvious that it is equally applicable to almost any type of an electrical connection such as lamp sockets two part plugs, etc. As shown herein the cam releasing means comprises a sliding member having an end projecting outside of the casing. Such construction may be modified however, if desired, and other means having an end projecting outside the casing and operatively associated with the cams may be substituted to release the cams from engagement with the terminals.

Instead of using the pins 15 as abutments to hold the terminals against lateral displacement, in one direction abutments of other construction may be used instead if desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an electrical connection, means to secure a pair of wire terminals thereto, comprising a pair of cam levers pivoted intermediate their ends, resilient means contacting with said cam levers at one side of their pivotal points, and adapted to normally urge said levers into engagement with said terminals, and a cam releaser adapted to simultaneously engage said cam levers upon the other side of their pivotal points and move said levers against the action of said resilient means and out of engagement with said lever.

2. In an electrical connection, means to connect a wire terminal to said connection comprising a pivoted cam adapted to engage said terminal, and resilient means to normally urge said cam into engagement with said terminal, said cam constructed and arranged to be moved by outward movement of said terminal into tighter engagement therewith, and means comprising a slidable cam releaser to engage and move said cam out of engagement with said terminal piece against the action of said resilient means.

3. In an electrical connection, an insulating block provided with recesses to receive a wire terminal therein, a cam pivotally

mounted on said block, resilient means to normally urge said cam into engagement with said terminal, and a cam releaser slidably mounted in said block and adapted to be moved into engagement with said cam and force it out of engagement with said terminal.

4. In an electrical connection, an insulating block provided with recesses to receive a wire terminal therein, a cam pivotally mounted on said block, resilient means to normally urge said cam into engagement with said terminal, and a cam releaser slidably mounted in said block and adapted to be moved into engagement with said cam and force it out of engagement with said terminal, said block and cam releaser provided with cooperating means to limit the travel of said releaser.

5. In an electrical connection, an insulating block provided with recesses to receive a wire terminal therein, a cam pivotally mounted on said block, resilient means to normally urge said cam into engagement with said terminal, and a cam releaser slidably mounted in said block and adapted to be moved into engagement with said cam and force it out of engagement with said terminal, said block and cam releaser provided with cooperating means to limit, the travel of said releaser and said cam releaser projecting outwardly beyond said block and provided with means to anchor the connecting wires thereto.

6. In an electrical connection, an insulating block provided with recesses to receive a wire terminal therein, a cam pivotally mounted on said block, resilient means to normally urge said cam into engagement with said terminal, a backing pin adapted to engage said terminal and oppose the thrust of said cam, and a cam releaser slidably mounted in said block and adapted to be moved into engagement with said cam and force it out of engagement with said terminal.

7. In an electrical connection, an insulating block provided with a pair of recesses to receive a pair of wire terminals therein, a pair of cams pivotally mounted on said block resilient means to normally urge said cams into engagement with one side of said terminals, backing means to engage the opposite side of said terminals, a cam releaser slidably mounted in said block adapted to be moved into simultaneous engagement with both of said cams and move them out of engagement with said terminals against the action of said resilient means.

8. In an electrical connection an insulating block provided with a pair of recesses to receive a pair of wire terminals therein, a pair of cam levers pivotally mounted to said block intermediate their ends, contacting with said cam levers at one side of their pivotal points, resilient means to normally urge said cams into engagement with said terminals, backing pins to engage said terminals opposite to said cam levers, and a cam releaser slidably mounted in said block adapted to simultaneously engage said cam levers upon the opposite side of their pivotal points and move said levers against the action of said resilient means out of engagement with said terminal pieces.

9. In an electrical connection, an insulating block provided with recesses to receive wire terminals and with abutments adjacent sides of said recesses to hold said terminals against lateral displacement in one direction, cams pivotally mounted in said block and provided with gripping edges arranged adjacent the opposite sides of said recesses, means to normally urge said cams into engagement with said terminals, means within said block for electrically insulating said terminals one from the other, and means projecting from said block and operatively associated with said cams to release said cams from engagement with said terminals.

10. In an electrical connection, an insulating block including two substantially similar sections provided with recesses to receive wire terminals, cams pivotally mounted in said block and provided with gripping edges each capable of engagement with one of said terminals, means associated with each of said cams for normally pressing the gripping edge thereof into engagement with one of said terminals, means within said block for electrically insulating said terminals one from the other and means projecting from said block and operatively associated with said cams to release said cams from engagement with said terminals.

Signed at New York, in the county of New York and State of New York, this 3rd day of June A. D. 1922.

EDWARD BERGMAN.