May 13, 1924. 1,493,517

H. B. BUSH

TELEPHONE CLIP AND HANDLE

Filed March 5, 1919 2 Sheets-Sheet 1

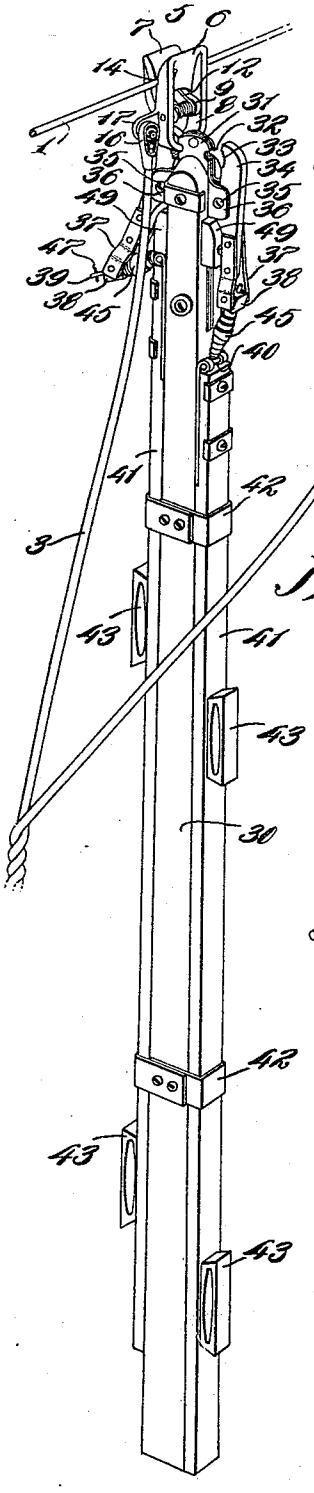


Fig. 1

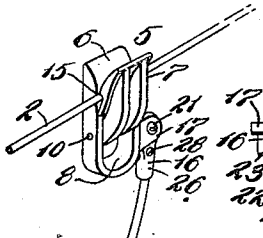


Fig. 2

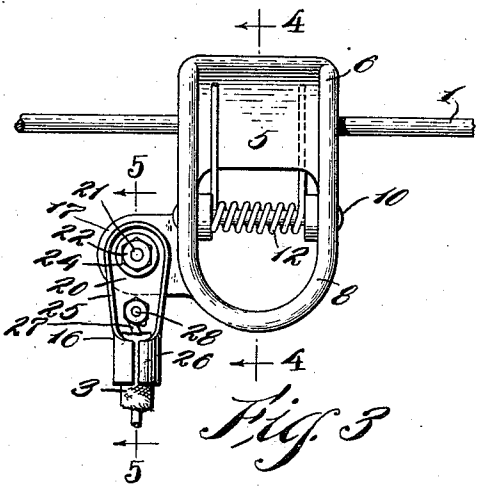


Fig. 3

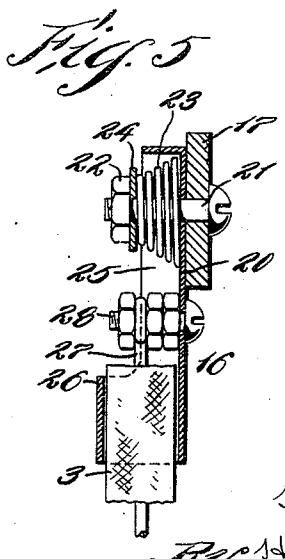


Fig. 5

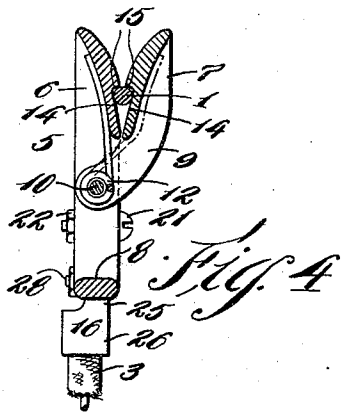


Fig. 4

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Fig. 6

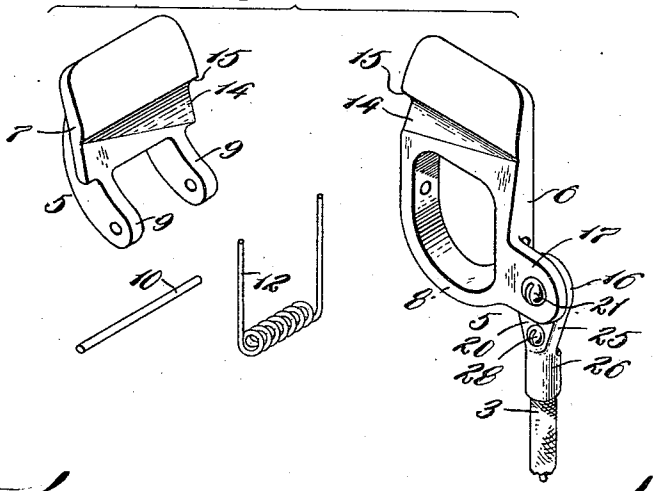


Fig. 7

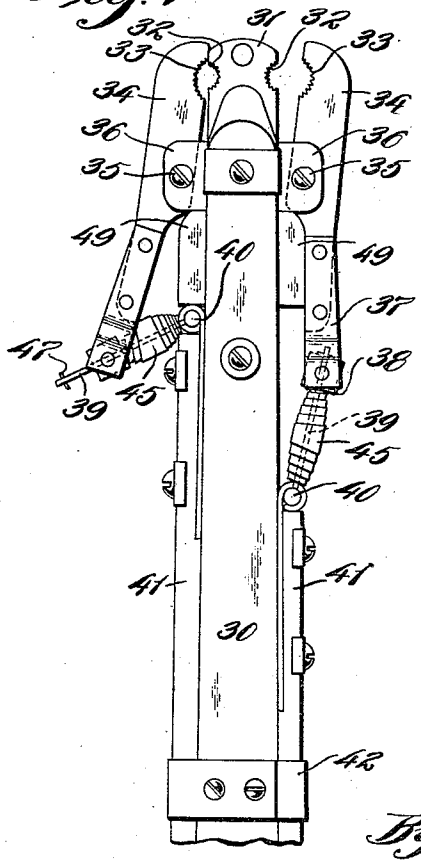
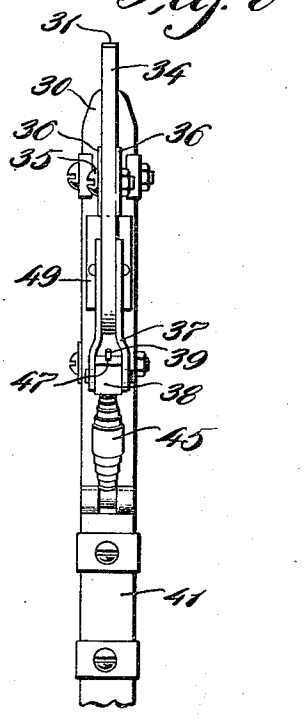


Fig. 8



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Patented May 13, 1924. 1,493,517

UNITED STATES PATENT OFFICE.

HAZEL B. BUSH, OF REDLANDS, CALIFORNIA, ASSIGNOR TO THE BUSH ELECTRIC COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

TELEPHONE CLIP AND HANDLE.

Application filed March 5, 1919. Serial No. 280,820.

To all whom it may concern:

Be it known that I, HAZEL B. BUSH, a citizen of the United States, residing at Redlands, in the county of San Bernardino and State of California, have invented a certain new and useful Improvement in Telephone Clips and Handles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to improvements in clips for attaching the terminal wires of a portable telephone set temporarily to the branches of a telephone line; and has to do also with a safety handle for applying the clips to the line.

In order to better understand the purpose of the invention I may relate briefly circumstances under which devices of this sort are used.

Electrical power and light companies usually have telephone lines strung beneath their high voltage power lines, the latter carrying approximately 30,000 volts in some instances. In case of an accident with the high power lines, it is the custom to send out "trouble" men from adjoining stations between which the accident is known to have occurred to locate the difficulty, and it is their duty, as they advance toward each other from their home stations, to telephone into the stations at intervals and report the conditions which they find until the trouble is finally located. The very nature of the accident often charges the telephone lines with the voltage of the power lines and makes the application of the trouble-man's portable telephone set exceedingly dangerous.

The general objects of my invention are the provision of clips constituting the terminals of a portable telephone set which, by means of an easily manipulated, insulated handle, may be safely and conveniently applied to the branches of the telephone line and which will hold vigorously against dislodgment from any cause other than a peculiar motion given them, preferably, by a pull upon the wires of the portable telephone set, the clips being of such nature as to respond readily to such a motion or pull, thereby to release themselves from the line; and in this connection, it is a further object of the invention to provide a fitting that is pivotally connected to each clip and rigidly attached, with efficient electrical contact, to the end of each wire of a portable telephone set and through which proper electrical connection is constantly maintained between the wire and clip.

Further objects are to provide a handle of the character above referred to incorporating self-adjusting pivoted jaws—preferably two pairs, so that the handle may accommodate both clips of a set—and between which, clips of various sizes may be grasped at different angles and securely locked; and to provide a handle of this nature that may be conveniently manipulated to open and close the jaws at will from different positions along the handle.

To these ends my invention consists in the combinations of elements set out in the claims annexed hereto and illustrated in the drawings accompanying and forming a part hereof and wherein Fig. 1 is a perspective view of my improved clips attached to the wires of a portable telephone set and applied to opposed branches of a telephone line, the view including the safety handle for applying the clips to the line; Fig. 2 is a top view of one of the clips applied to a line; Fig. 3 is a side elevation of the same; Fig. 4 is a sectional view on line 4—4 of Fig. 3; Fig. 5 is an enlarged sectional detail on the correspondingly numbered line of Fig. 3; Fig. 6 shows, in perspective, the elements of the clip in separated condition; and Figs. 7 and 8 are elevational views at right angles to each other of the upper end of the handle.

1 and 2 represent the opposed branches of a telephone line to which the terminals 3 of a portable telephone set (not shown) are connected by means of my improved clips 5.

Each clip consists of jaws 6 and 7, the former incorporating a loop or bail 8 between which the ears 9 of the latter are pivoted upon a pin 10 which extends through aligning apertures in the ears and the sides of the loop or bail. The ends of the pin are riveted or otherwise treated to prevent displacement of the pin. A coil spring 12 encircles pin 10 between ears 9 and its ends extend upward and bear against the web portions of the jaws 6 and 7 and tend to force them into clamping contact with each other. The inner faces of the jaws are grooved transversely, as indicated at 14 and best shown in Fig. 6, and the

grooves gradually diminish in depth and width from one side toward the other of the jaws. This effect is really the result of the opposed surfaces of the jaws diverging gradually from the side of the clip where the grooves are deeper to the side where they are shallower, as will be readily seen from an inspection of Fig. 2. At the deeper ends of the grooves there are abrupt shoulders 15 which form the top walls and which engage the telephone line in such manner as to vigorously resist removal of the clip from the line by a direct or straight pull on the loop or bail 8. The very gradual inclination of the jaws above the grooves 14 permits the clip to be readily attached to a line by the application of a moderate degree of force, the jaws being spread apart by the line as they are forced over the same.

It will be observed that the terminal wires 3 of the portable telephone set are pivotally attached, through fittings 16, to ears 17 that extend from the sides of the clip adjacent the shallow ends of grooves 14. Consequently, by a pull upon the wires 3, a sort of rotary or turning motion is imparted to the clips in the planes of the supporting lines, and inasmuch as only a very slight overhang of the shoulders 15 occurs on the sides of the clips to which the pull is applied, the clips readily yield and dislodge themselves. In this turning or rotating action, the clips swing about a point on the telephone line inward from their edges adjacent the deeper ends of the grooves, it being observed, especially in Fig. 4, that the opposed walls of the grooves converge gradually below the shoulders 15 so that no appreciable resistance is offered to the elevation of the sides of the clips adjacent the deeper ends of the grooves, as the opposite sides of the clips descend in response to the pull. This turning motion completely removes the shoulders 15 from linear engagement with the line, leaving only a frictional engagement between the clip and line, and the only force now tending to hold the clip to the line is the action of spring 12. Consequently, it is a very easy matter to withdraw the clips from the branches of the line by a comparatively slight pull on the wires of the telephone set.

The fitting 16 through which each wire of the portable telephone set is secured to its respective clip is preferably formed of sheet metal having a flat web portion 20 that bears against the ear 17 of the clip and is pivoted thereto by means of a bolt 21. A nut 22 is shown as applied to the end of the bolt and is spaced from the web 20 of the fitting, and a spring 23 is confined between said web and a washer 24 that is backed by the nut 22 and constitutes a stop for the spring. This provides an easy-acting pivotal connection between the fitting 16 and the ear of the clip and one which insures positive electrical connection between the two parts. The web portion 20 is surrounded by a flange 25 which merges at the free end of the fitting into a split sleeve 26 through which the end of the wire 3 of the portable telephone set is inserted. Inwardly of the sleeve, the exposed portion 27 of the wire is connected to a binding post 28 that is carried by the fitting. This permits the wires 3 to turn readily with respect to the clip, as in the operation of removing the clips from the telephone line, yet it avoids any abrupt bending of the wires where they have connection with the clip.

The safety handle, hereinbefore referred to and by means of which the clips are applied to the branches of the telephone line, comprises a staff 30 within the upper end of which is rigidly supported an element 31 having, in its opposite edges, recesses 32 that are opposed to recesses 33 of jaws 34, pivoted at 35 on opposite sides of the staff 30. The element 31 is shown as having opposed pairs of ears 36 between which the jaws 34 are pivoted. The lower ends of the jaws are branchd at 37, and guide blocks 38 are swiveled between the branches of the jaws. These blocks have bores within which pins 39 are guided, the ends of the pins opposite the blocks being pivotally connected at 40 to the upper ends of slides 41 and are applied to the opposite sides of the staff 30 and extend substantially throughout the length thereof, the slides being held to the staff by means of loops 42. The slides have lugs 43 that may be engaged by the thumb or finger of the operator to assist him in manipulating the slides. Comparatively strong springs 45 are compressed between the blocks 38 and the upper ends of the slides; and it will be noted that small pins 47 are passed through the ends of the former pins 39 to prevent their withdrawal from blocks 38.

In the operation of the handle, the user grasps the same at any convenient position along the staff 30 and places the loops or bails 8 of the clips between the jaws 34 and the opposed portions of element 31 and pushes upward on the slides 41. The initial movement of the slides throws the upper ends of the jaws into contact with the loops or bails of the clips, and further movement results in a compression of springs 45 until their inner ends pass "over center," so to speak. As the slides continue to move upward they permit a slight relaxation of the springs until the upper ends of the slides engage stops 49. The springs now tend to hold the slides against displacement, and the jaws 34 in firm biting engagement with the bails of the clips. Because of the yielding con-

nection between the jaws and slides afforded by springs 45, clips having bails of different dimensions may be grasped by the same handle. It will be observed, also, that the clips may be engaged with the handle at various positions about their bails thus permitting the operator to hold the clips in a position best adapted to the circumstances under which he is working. Also, by reason of the shape and serrated character of the clip engaging portions of the jaws 34 and element 31, the clips may be held firmly in any position in a plane at right angles to the plane of the former adjustment. Thus a universal adjustment is provided between the handle and the clips.

Having thus described my invention, what I claim is:—

1. A clip for application to a wire, said clip comprising opposed jaws connected together and yieldingly urged toward each other for clamping engagement with the wire, one of the jaws having a part overhanging the wire, the overhang of said part becoming gradually less from one side of the jaw toward the other whereby the clip may be readily disengaged from the wire by first withdrawing that side where the overhang is less.

2. A clip for application to a wire, said clip comprising opposed jaws connected together and yieldingly urged toward each other for clamping engagement with the wire, one of the jaws having an abutment which extends along and overhangs the wire and strongly resists withdrawal of the clip from the wire by force applied in a direction perpendicular to the abutment, the overhang of the abutment becoming gradually less in the linear direction of the abutment so that the clip may be readily removed from the wire by turning it in the plane of the wire to first disengage the portion of the abutment of lesser overhang.

3. A clip for application to a wire, said clip comprising opposed jaws resiliently maintained in operative relation to each other, the jaws having each a groove that is opposite the groove of the other, the grooves becoming gradually deeper as they progress from one side of the clip toward the other, and a conductor connected to the clip on the side adjacent the shallow ends of the grooves.

4. A clip of the character set forth comprising opposed jaws resiliently maintained in operative relation to each other, said jaws incorporating holding means for cooperation with a wire, said holding means being less effective at one side of the clip than at the other, and a conductor connected to that side of the clip where the holding means is of lesser effect.

5. A clip of the character set forth, comprising opposed jaws resiliently maintained in operative relation to each other, one of the jaws having an abutment which extends along and overhangs the wire and strongly resists withdrawal of the clip from the wire by force applied in a direction perpendicular to the abutment, the overhang of the abutment becoming gradually less in the linear direction of the abutment so that the clip may be readily removed from the wire by turning it in the plane of the wire to first disengage the portion of the abutment of lesser overhang, and means for attaching a member to the side of the clip so that when a pull is exerted upon said member it will impart such turning motion to the clip and dislodge the same from the wire.

6. A clip of the character set forth comprising opposed jaws resiliently maintained in operative relation to each other, the jaws being designed for application to a wire, one of the jaws having an abutment which extends along and overhangs the wire and strongly resists withdrawal of the clip from the wire by force applied in a direction perpendicular to the abutment, the overhang of the abutment becoming gradually less in the linear direction of the abutment, so that the clip may be readily removed from the wire by turning it in the plane of the wire to first disengage the portion of the abutment of lesser overhang, the clip having a lateral extension, and means for pivotally connecting a conductor of a suitable electrical apparatus to said extension whereby when a pull is exerted on the conductor it will turn the clip as aforesaid and dislodge it from the wire.

7. A clip of the character set forth comprising jaws resiliently maintained in operative relation to each other, the opposed surfaces of the jaws diverging gradually from one side of the clip towards the other, each jaw having a transverse groove that is opposed to the groove of the other, the bottom walls of said grooves being substantially parallel to each other.

8. A clip of the character set forth comprising jaws resiliently maintained in operative relation to each other, the opposed surfaces of said jaws diverging from one side of the clip toward the other, a transverse groove in each jaw that is opposite the groove of the other, the bottom walls of said grooves being substantially parallel to each other, the clip having a lateral extension on the side where the opposed surface of the jaws are spaced farthest from each other.

9. A clip of the character set forth comprising a jaw incorporating a handle attaching means, a second jaw pivotally connected to the first, a spring tending to force the jaws toward each other, the jaws being designed for application to a wire, one of the jaws having an abutment that extends along and overhangs the wire and resists

withdrawal of the clip from the wire by force applied in a direction perpendicular to the wire, the overhang of the abutment becoming gradually less toward one side of the clip, the first mentioned jaw including an extension which projects laterally from said side, and means for attaching a member to said extension.

10. A clip of the character set forth comprising a jaw incorporating a handle attaching portion, a second jaw pivotally connected to the first, a spring tending to force the jaws toward each other, the jaws being designed for attachment to a wire, one of the jaws having an abutment that extends along and overhangs the wire and resists withdrawal of the clip from the wire by force applied in a direction perpendicular to the wire, the overhang of the abutment becoming gradually less toward one side of the clip, one of the jaws having a lateral extension on said side, and a member connected to said extension.

11. A clip of the character set forth comprising a jaw incorporating a handle attaching loop, a second jaw having ears that are spaced apart and arranged to repose within the loop of the first jaw, a pintle passing through aligning apertures of the loop and ears, and a spring coiled about the pintle between said ears, the end portions of the spring cooperating with the jaws in such manner as to force the jaws toward each other, the jaws being designed for application to a wire, one of the jaws having an abutment that extends along and overhangs the wire and resists withdrawal of the clip from the wire by force applied in a direction perpendicular to the wire, the overhang of the abutment becoming gradually less toward one side of the clip, one of the jaws having a lateral extension projecting toward said side.

12. A clip of the character set forth comprising a jaw incorporating a handle attaching loop, a second jaw having ears that are spaced apart and which repose within the loop of the first jaw, a pintle passing through aligning apertures of the loop and ears, a spring surrounding the pintle between the ears and having an end engaged with each jaw in such manner as to force said jaws towards each other, the adjacent surfaces of the jaws diverging from one side of the clip towards the other, the first mentioned jaw having an extension projecting from the latter side, each jaw having a transverse groove that is opposite the groove of the other, and a member attached to the aforesaid extension.

13. A clip of the character set forth comprising jaws resiliently maintained in operative relation to each other, each jaw having a transverse shoulder that is opposed to the shoulder of the other, the shoulders converging from one side of the clip towards the other.

14. A clip designed for attachment to a wire, said clip comprising opposed jaws connected together and yieldingly urged toward each other for clamping engagement with the wire, one of the jaws having an abutment that extends along and overhangs the wire and resists withdrawal of the clip from the wire by force applied in a direction perpendicular to the wire, the overhang of the abutment becoming gradually less toward one side of the clip, the clip incorporating a lateral extension projecting from said side, and a member pivotally connected to said extension.

15. A clip of the character set forth designed for attachment to a wire, said clip comprising opposed jaws connected together and yieldingly urged toward each other for clamping engagement with the wire, one of the jaws having an abutment that extends along and overhangs the wire and resists withdrawal of the clip from the wire by force applied in a direction perpendicular to the wire, the overhang of the abutment becoming gradually less toward one side of the clip, said clip having a lateral extension projecting from said side, a member applied to said extension, a pivot element extending through aligning apertures of the extension and member, a stop applied to the element and spaced from said member, and a spring interposed between said stop and said member and serving to resiliently retain the member in contact with the extension.

16. A clip of the character set forth designed for attachment to a wire, said clip comprising opposed jaws connected together and yieldingly urged toward each other for clamping engagement with the wire, one of the jaws having an abutment that extends along and overhangs the wire and resists withdrawal of the clip from the wire by force applied in a direction perpendicular to the wire, the overhang of the abutment becoming gradually less toward one side of the clip, the clip having a lateral extension projecting toward said side, a member applied to said extension, a pivot bolt extending through aligning apertures in said member and the extension, a stop applied to the bolt and spaced from said member, a spring interposed between the stop and member to maintain the latter in contact with the extension, the free end of said member terminating in a sleeve for the reception of an electrical conductor, and a binding post carried by said member and spaced inward of said sleeve.

In testimony whereof, I hereunto affix my signature.

HAZEL B. BUSH.