H. B. BUSH, DEC'D.
M. D. DOUGLAS, ADMINISTRATOR.
FUSE GRIPPING DEVICE.
APPLICATION FILED AUG. 21, 1919.

1,430,053.

Patented Sept. 26, 1922.

2 SHEETS—SHEET 1.

Fig. 1

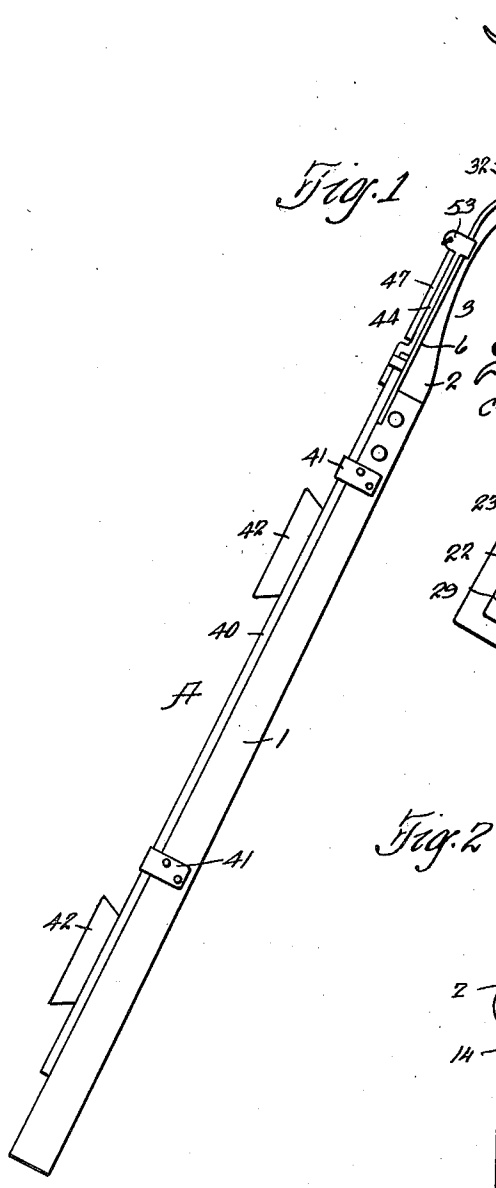


Fig. 2

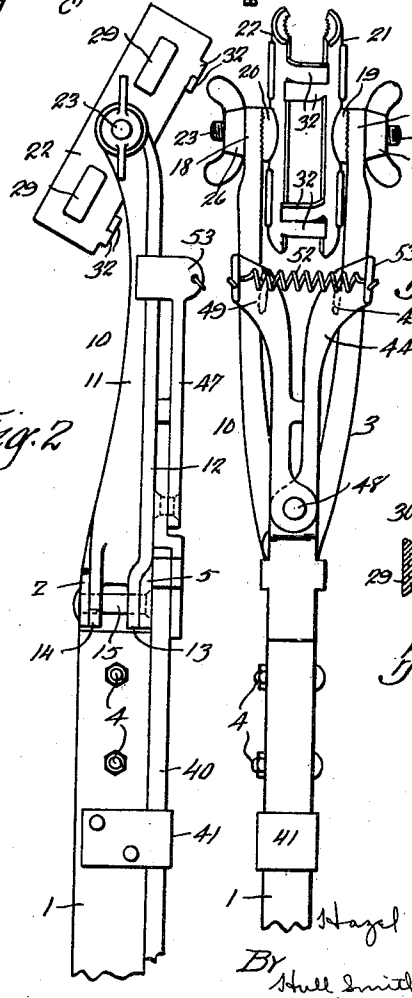


Fig. 3

Fig. 4

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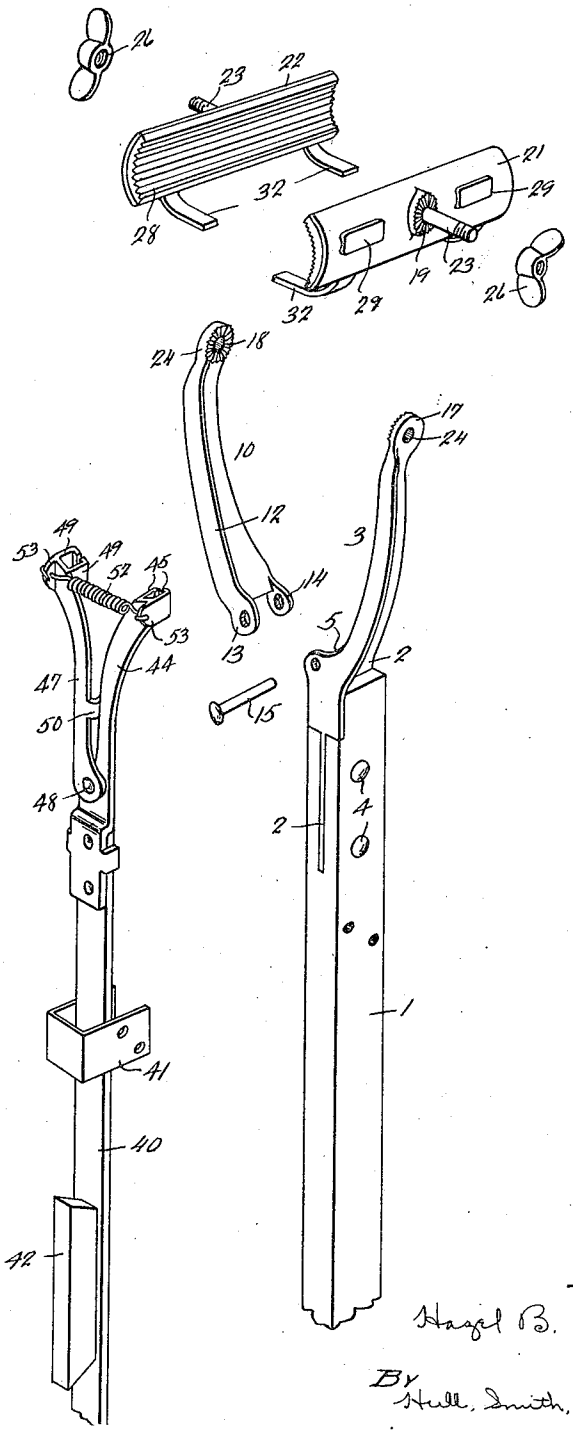
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Fig. 5



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UNITED STATES PATENT OFFICE.

HAZEL B. BUSH, OF SAN BERNARDINO, CALIFORNIA; M. D. DOUGLAS ADMINISTRATOR OF SAID HAZEL B. BUSH, DECEASED.

FUSE-GRIPPING DEVICE.

Application filed August 21, 1919. Serial No. 318,859.

To all whom it may concern:

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

This invention relates to a gripping device that is designed especially for handling fuses in high voltage electrical systems, and its primary object is to provide an instrument by means of which an electrician may, from a safe distance without danger of shock and at any convenient angle with respect to the fuse, remove a fuse from a holder or place one therein, the gripping plates being adjustable with respect to the jaws in the present embodiment of my invention to accomplish the variation of angle referred to.

Further aims are the provision of an instrument of the foregoing nature by means of which a fuse may be conveniently gripped with a positive action yet without liability of damaging the fuse, or, in the case of removing a fractured fuse of certain of the cartridge types, without disturbing the severed parts thereof, thus avoiding the loss of clips or other attachments carried by the fuse; to equip the fuse gripping plates with readily replaceable liners of pliable material; to provide an arrangement whereby the gripping action of the instrument may be maintained in set condition as long as desired without effort on the part of the user thereby relieving him of having to hold the same in gripping condition while otherwise manipulating the device; and to provide a fuse handling instrument wherein the gripping means may be operated from various points along the handle thereby enabling the user to very conveniently manipulate the jaws from a point adjacent thereto when inserting a fuse in the device, and with equal facility from a point remote therefrom when releasing the fuse it has been placed within the holder.

These and other objects which will become apparent as this description proceeds are attained in the exemplification of my invention illustrated in the drawings accompanying and forming a part hereof and wherein Fig. 1 shows the instrument in side elevation and illustrates its manner of use; Figs. 2 and 3 are enlarged elevational views at right angles to each other of the end of the instrument incorporating the fuse gripping means; Fig. 4 is a section through one of the gripping plates; and Fig. 5 is a perspective view showing the elements of the instrument in separated condition.

In Fig. 1 I have shown the instrument, which is designated generally by the reference character A, applied to a fuse B having clips C through which it is attached to a fuse holder D of ordinary type.

The handle 1 of the instrument is preferably formed of a specially treated wood that, being so treated, constitutes an effectual insulator; and what I shall refer to as its upper end is provided with a kerf for the reception of the web 2 of a jaw 3, the jaw being shown as held to the handle by means of bolts 4. A flange 5 is formed along one edge of the web 2, and at a point immediately above the handle it is provided with an aperture which aligns with an aperture in a lug 7 that projects laterally from the opposite edges of the web 2 in a plane parallel to that of the flange 5.

The foregoing jaw I shall refer to as the fixed jaw, and the other, designated 10, I shall refer to as the pivoted or movable jaw. The latter comprises a web 11 along one edge of which extends a flange 12 that terminates at its lower end in a boss 13 having an aperture aligning with an aperture in a lug 14 that is formed at the other side of the inner end of the jaw and in a plane parallel to the boss 13. The boss 13 is inset sufficiently to bring it and lug 14 closely enough together to fit between the flange 5 and lug 7 of jaw 3, and the jaws are pivoted together through a pintle 15 which passes through the aligning apertures of these parts.

The upper ends of the jaws 3 and 10 terminate in bosses 17 and 18, respectively, the bosses being shown as cylindrical and in axial alignment, with their adjacent circular faces serrated for co-action with the correspondingly treated faces of bosses 19 and 20 of gripping plates 21 and 22 that are applied to the upper ends of the respective jaws 3 and 10 by studs 23 of the plates that extend through holes 24 in the bosses 17 and 18, and have applied to their threaded ends

which protrude beyond the bosses, nuts 26, preferably in the form of thumb nuts.

The gripping plates 21 and 22 are preferably substantially semi-cylindrical in form, and their inner faces are shown as provided with liners 28 of pliable material, such as rubber, the liners being removably attached to the plates by means of knobs or buttons 29 made integral with the liners and which are adapted to be compressed through openings 30 of the plates, the openings and knobs being of such shape as to cause the latter to interlock within the former and hold the liners firmly in place (see Fig. 4). One of the lateral edges of each of the plates is provided with a pair of fingers 32 which overlie the corresponding edge of the other plate. These fingers maintain the plates in parallelism when the nuts 26 are loosened and the plates are adjusted angularly upon their axes and with respect to the jaws, to fit the instrument for use at various angles depending on the disposition of the fuses with respect to the workmen's positions. A further object of the fingers 32 is to prevent the clamping plates from passing beyond the scope of the fuse, the fingers engaging the fuse and stopping the plates in proper relation to the fuse. This is a marked advantage when having to work in poor or subdued light.

I shall now describe the means for opening and closing the jaws. 40 is a slide, preferably of the same material as the handle 1, that is attached to the handle by U-clips 41, the slide having a plurality of finger holds 42 by means of which it may be reciprocated. Secured to the upper end of the slide is an arm 44 which has a pair of spaced lugs 45 that embrace jaw 3, the lugs being preferably turned over slightly about the flanges of the jaws so as to be held in proper relation thereto at all times. An arm 47, similar to 44, is pivoted at 48 to the former arm, and its upper end has lugs 49 which embrace the flange 12 of the pivoted arm 10. These arms are restrained against approaching each other beyond a given distance by the engagement of a lug 50 of arm 47 with an adjacent part of arm 44; and they are yieldingly maintained in this condition by a comparatively strong tension spring 52 which has its opposite ends anchored to projections 53 of the opposed arms. Consequently, when the slide 40 is reciprocated, the pivoted jaw 10 will be moved toward and from the fixed jaw 3, such action following from the curvature and convergence of the lower ends of the jaws. As the jaw actuating arms 44 and 47 approach the upper ends of the jaws they co-act with portions which are nearly parallel to each other so that the camming action becomes reduced almost to a locking action (except for the yielding of the spring 52). The spring 52 affords sufficient yieldingness in the action of the jaws to avoid damage to the fuse, and compensates for fuses of different diameters.

It will be seen from this description that my invention provides a comparatively cheap and simple yet highly efficient instrument by means of which the objects hereinbefore set out are effectually attained, and from the explanation herein given its mode of operation is apparent. I may reiterate, however, that the gripping plates 21 and 22 may be readily adjusted to a convenient angle and, by manipulating the slide 40, the jaws may be opened and closed to grip a fuse, and then by means of the instrument the same may, at a safe distance, be easily set within a holder or removed therefrom.

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

1. An instrument of the character set forth comprising a handle, a pair of jaws carried by the handle for movement toward and from each other, a pair of gripping plates designed to embrace an object, said plates being adjustably carried by the jaws so that the axes of the plates may be altered with respect to the axis of the handle, means for locking the gripping plates to the jaws in any adjusted position and means for moving the jaws toward and from each other.

2. An instrument of the character set forth comprising a handle, a pair of gripping plates designed to embrace an object, means through which each plate is adjustably connected to the handle so that the axes of said plate may be altered with respect to the axis of the handle, said plates having cooperating parts which cause them to be adjusted in unison, and means for moving the gripping plates toward and from each other.

3. An instrument of the character set forth comprising a handle, a pair of gripping plates designed to embrace an object, means through which each plate is adjustably connected to the handle so that the axes of said plate may be altered with respect to the axis of the handle, operative connections between the plates causing them to be adjusted in unison, and means for moving the gripping plates toward and from each other.

4. An instrument of the character set forth comprising a handle, a pair of jaws carried by the handle and one of which is movable toward and from the other, said jaws having diverging portions, a slide carried by the handle and extending substantially the length thereof and means operatively connected with the slide and having spaced portions capable of yielding with respect to each other embracing the diverging portions of the jaws.

5. An instrument of the character set forth comprising a handle, a pair of jaws carried by the handle and one of which is

movable toward and from the other, said jaws having diverging portions, a slide carried by the handle and extending substantially the length thereof, and means operatively connected with the slide and having spaced portions embracing the diverging portions of the jaws, said diverging portions merging into substantially parallel portions toward one end of the course of movement of said means.

6. An instrument of the character set forth comprising a handle, a pair of jaws carried by the handle, one of said jaws being movable toward and from the other, the jaws having diverging portions, an element movable longitudinally of the handle, a pair of hingedly connected members operatively connected to said element, each of said members having a part embracing the aforesaid portion of one of the jaws, and yielding means tending to maintain the members in a given relation to each other.

7. An instrument of the character set forth comprising a handle, a jaw fixed to one end of the handle, a second jaw pivoted to the first jaw, said jaws having diverging portions, a slide carried by the handle and operable from various positions therealong, a member secured to the slide and having a part embracing the aforesaid portion of the fixed jaw, a second member pivoted to the first and having a part embracing the corresponding portion of the pivoted jaw, said members having parts cooperating to prevent the approach of the pivoted member toward the other beyond a given distance, and yielding means tending to move said members toward each other.

8. An instrument of the character set forth comprising a pair of movably connected jaws, means for moving one of said jaws toward and from the other, said jaws having opposed serrated faces, a gripping plate adjustably attached to each jaw and having a serrated face for cooperation with the corresponding face of the respective jaw, and means for clamping each gripping plate to its respective jaw.

9. An instrument of the character set forth comprising a pair of movably connected jaws, means for moving one of said jaws toward and from the other, said jaws having opposed bosses the adjacent faces whereof are serrated, a gripping plate adjustably attached to each jaw and having a serrated face for cooperation with the corresponding portion of the respective jaw, the bosses having apertures and the gripping plates threaded studs extending through said apertures, and nuts applied to the studs.

In testimony whereof, I hereunto affix my signature.

HAZEL B. BUSH.