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W. S. CHADWICK

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INSULATED ELECTRICAL TOOL

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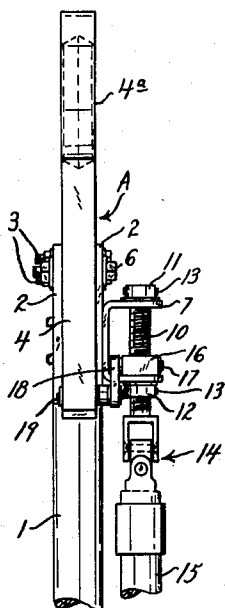
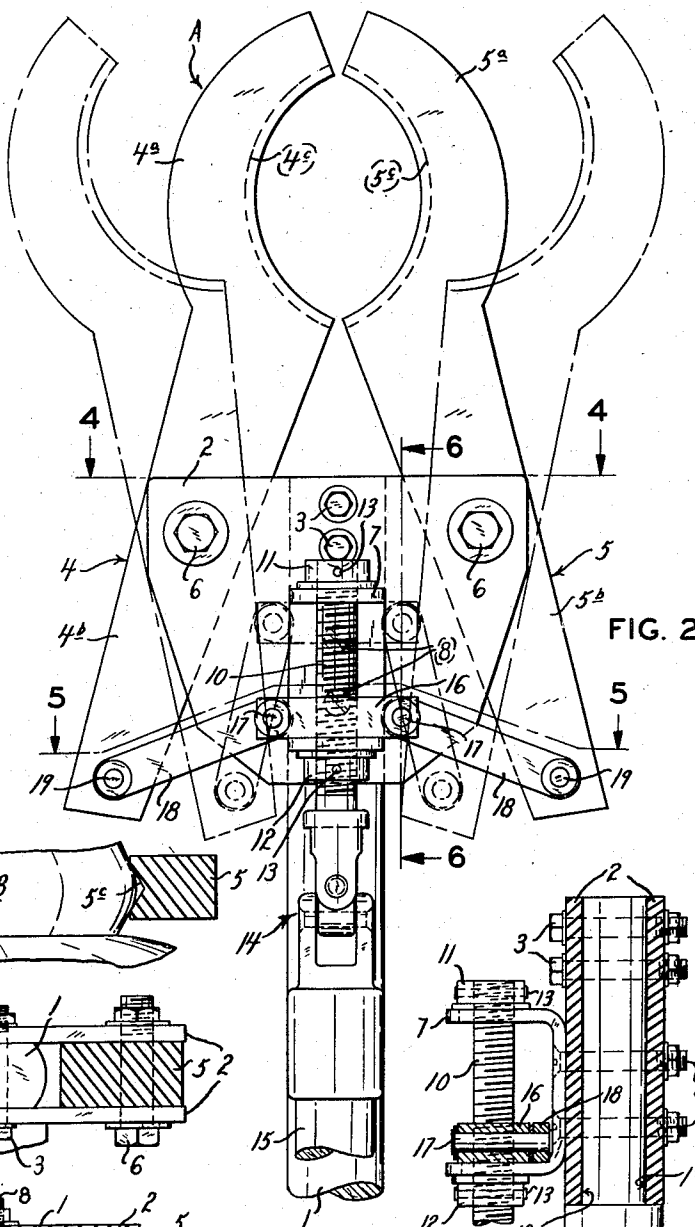
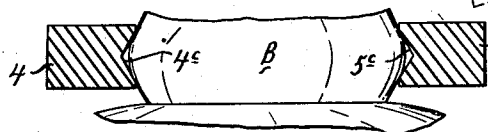
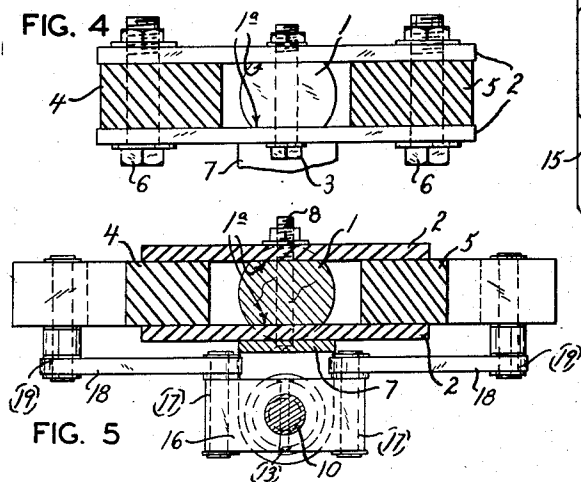
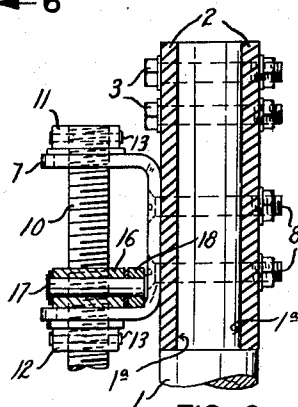


FIG. 6

WELLINGTON S. CHADWICK

BY *Em Harrington,*
ATTORNEY

UNITED STATES PATENT OFFICE

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INSULATED ELECTRICAL TOOL

Wellington S. Chadwick, Bucyrus, Ohio

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3 Claims. (Cl. 294—19)

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This invention relates generally to insulated electrical tools and more specifically to insulated tools for handling disc-type insulators when they are being introduced into or removed from insulator strings, the predominant object of the invention being to provide an improved insulated tool adapted for use in performing the function referred to above, which is simple in construction and which is operable with ease and facility to perform such function in a highly efficient manner.

Prior to this invention disc-type insulators were handled, during operations of introducing such insulators into insulator strings, or removing such insulators from insulator strings, with the aid of a tool that comprised a rigid, fork-like casting supported at an end of an elongated wood pole. The rigid fork-like casting was wedged into the gripping relation with respect to portions of the insulator to be handled by it, and the insulator was elevated to, or removed from, the position of the insulator string with the aid of the elongated pole of the tool, with the frictional grip between the fork-like casting of the tool and portions of the insulator being solely relied on to prevent unintended detachment of the insulator from the tool.

The tool of the present invention differs from the earlier tool described above mainly because of the fact that the tool disclosed herein is provided with a pair of adjustable gripping jaws which may be adjusted into positive gripping relation with respect to portions of the insulator being handled. Thus, an insulator being handled with the aid of the tool of the present invention is so securely gripped by the jaws of the tool that any likelihood that the insulator will be unintentionally displaced from the tool during handling thereof, is reduced to a minimum.

Fig. 1 is a side elevation of the improved tool of the present invention, portions being broken away to conserve space.

Fig. 2 is an enlarged front elevation of the upper portion of the tool of the present invention.

Fig. 3 is a horizontal section taken through the jaws of the improved tool as shown in Fig. 2, a fragment of an insulator being shown gripped by said jaws.

Fig. 4 is a horizontal section taken on line 4—4 of Fig. 2.

Fig. 5 is a horizontal section taken on line 5—5 of Fig. 2.

Fig. 6 is a view partly in vertical section and partly in elevation taken on line 6—6 of Fig. 2.

In the drawings, wherein is shown for purposes of illustration, merely, one embodiment of the

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invention. A designates the improved tool generally. The tool A comprises a pole 1, of suitable length, which is formed of wood, or other suitable electrical insulating material, said pole being preferably, though not necessarily, of circular cross-sectional shape and being cut away at its upper portion to provide a pair of opposed flat faces 1a. Secured to the upper portion of the pole 1 at the opposed flat faces 1a thereof is a pair of spaced members 2, said spaced members being formed of Bakelite or other suitable electrical insulating material and being shaped as is shown to good advantage in Fig. 2. The spaced members 2 are secured to the upper portion of the pole 1 by a pair of bolts 3 whose shank portions extend through aligned openings formed through the spaced members and through the upper portion of the pole 1.

Operatively associated with the spaced members 2 is a pair of jaws 4 and 5, portions of said jaws being interposed between opposite end portions of the spaced members 2 and pivot bolts 6 being extended through aligned openings formed through said end portions of said spaced members and through the interposed portions of said jaws so as to support said jaws for pivotal movement relative to said spaced members. The jaws 4 and 5 are shaped as is shown to good advantage in Fig. 2; that is to say said jaws comprise arcuate upper portions 4a and 5a from which extend downwardly projected portions 4b and 5b. The inner faces of the arcuate portions of the jaws 4 and 5 are provided with substantially V-shaped grooves 4c and 5c, which serve a function to be hereinafter set forth, and said jaws are formed of Bakelite, or other suitable electrical insulating material.

Supported by the pole 1 adjacent to the top thereof is a substantially U-shaped bracket 7, said bracket having a vertically disposed leg which parallels the pole 1 and a pair of vertically spaced, horizontal legs, as is shown to good advantage in Fig. 6. The bracket 7 is secured to one of the spaced members 2 by bolts 8 which extend through aligned openings formed through the vertical leg of the bracket, through the spaced members 2, and through the pole, the heads of the bolts being countersunk in the tapered bolt openings formed in the vertical leg of the bracket. Supported by the horizontal legs of the bracket 7 is a screwthreaded operating element 10, said operating element being extended through smooth openings formed through the horizontal legs of the bracket 7 for rotation therein, and said operating element having a collar 11 mounted thereon which contacts with a washer arranged at the top face of the upper hori-

zontal leg of the bracket 7 and a collar 12 mounted thereon which contacts with a washer arranged at the bottom face of the lower horizontal leg of said bracket 7. Preferably, the collars 11 and 12 are provided with pins 13 which secure said collars with respect to said operating element 10. Connected to the lower end of the operating element 10 by means of a suitable swivel joint 14 is an operating stick 15, formed of wood or other suitable electrical insulating material, said stick being normally arranged in parallelism with respect to the pole 1 and being adapted for rotation about its axis so as to subject the operating element 10 to like axial rotation.

Mounted on the operating element 10, for vertical movement with respect thereto, is a nut 16, said nut 16 having pivotally attached to its opposite end portions by means of pivot elements 17, a pair of links 18, said links being formed of Bakelite or other suitable electrical insulating material. The ends of the links 18 opposite to the ends thereof which are connected to the nut 16 are pivotally connected to the lower portions of the jaws 4 and 5, such pivotal connection being effected through the instrumentality of elongated pivot elements 19. These elongated pivot elements 19 extend through aligned openings formed through the end portions of the links 18 and through lower portions of the jaws 4 and 5.

In describing the operation of the improved tool of the present invention, let it be assumed that the tool is to be employed to remove a defective insulator from an insulator string and to replace such defective insulator with a perfect insulator. The first step of the operation is to elevate the upper portion of the tool to the position of the insulator to be handled and rotate the operating stick 15 axially in the proper direction to cause the nut 16 to move upwardly relative to the screwthreaded operating element 10, whereby the lower portions of the jaws 4 and 5 will be drawn inwardly and the upper portions of the jaws 4 and 5 will be moved outwardly. The upper portions of the jaws 4 and 5 are then applied to the insulator to be removed and the operating stick 15 is rotated axially to cause the upper portions of the jaws to securely grip the insulator, as shown in Fig. 3 wherein B designates the insulator, portions of the insulator being seated in the V-shaped grooves 4c and 5c of the jaws. A second lineman may then disconnect the tool-gripped insulator from adjacent insulators of the string of insulators, whereupon the tool-gripped insulator may be lowered to the ground with the aid of the tool. The replacement insulator will then be gripped by the upper portions of the jaws of the tool, as has been previously explained, and said replacement insulator is elevated to the insulator string where it is held with the aid of the tool until the second lineman connects it to adjacent insulators of the insulator string, whereupon the jaws of the tool will be disengaged from the replacement insulator and said tool lowered to the ground.

I claim:

1. An insulator handling tool comprising a pole, a pair of jaws having insulator gripping portions, means for mounting said jaws relative to said pole for pivotal movement, and means for subjecting said jaws to such pivotal movement as to move said insulator gripping portions thereof toward and from each other, said jaw moving means comprising a screwthreaded operating

element, bracket means fixed on said pole for supporting said screwthreaded operating element for rotation about its axis, a nut mounted on said screwthreaded operating element for movement in response to axial rotation of said screwthreaded operating elements, said bracket means having a portion which limits movement of said nut links for operatively connecting said jaws to said nut for transmitting movement from said nut to said jaws, and means for subjecting said screwthreaded operating element to axial rotation, the last-mentioned means comprising an operating stick spaced outwardly from said pole and which is normally disposed in substantial parallelism with respect to said pole and is connected to said screwthreaded operating element.

2. An insulator handling tool comprising a pole, a pair of jaws having insulator gripping portions, means for mounting said jaws relative to said pole for pivotal movement, and means for subjecting said jaws to such pivotal movement as to move said insulator gripping portions thereof toward and from each other, said jaw moving means comprising a screwthreaded operating element, bracket means fixed on said pole for supporting said screwthreaded operating element for rotation about its axis, a nut mounted on said screwthreaded operating element for movement in response to axial rotation of said screwthreaded operating element, links for operatively connecting said jaws to said nut for transmitting movement from said nut to said jaws, means for subjecting said screwthreaded operating element to axial rotation, the last-mentioned means comprising an operating stick spaced outwardly from said pole and which is normally disposed in substantial parallelism with respect to said pole, and means for pivotally connecting said operating stick to said screwthreaded operating element.

3. An insulator handling tool comprising a pole, a pair of jaws having insulator gripping portions, means for mounting said jaws relative to said pole for pivotal movement, and means for subjecting said jaws to such pivotal movement as to move said insulator gripping portions thereof toward and from each other, said jaw moving means comprising a screwthreaded operating element, bracket means fixed on said pole for supporting said screwthreaded operating element for rotation about its axis, a nut mounted on said screwthreaded operating element for movement in response to axial rotation of said screwthreaded operating element, links for operatively connecting said jaws to said nut for transmitting movement from said nut to said jaws, means for subjecting said screwthreaded operating element to axial rotation, the last-mentioned means comprising an operating stick spaced outwardly from said pole and which is normally disposed in substantial parallelism with respect to said pole, and a swivel joint for connecting said operating stick to said screwthreaded operating element.

WELLINGTON S. CHADWICK.

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