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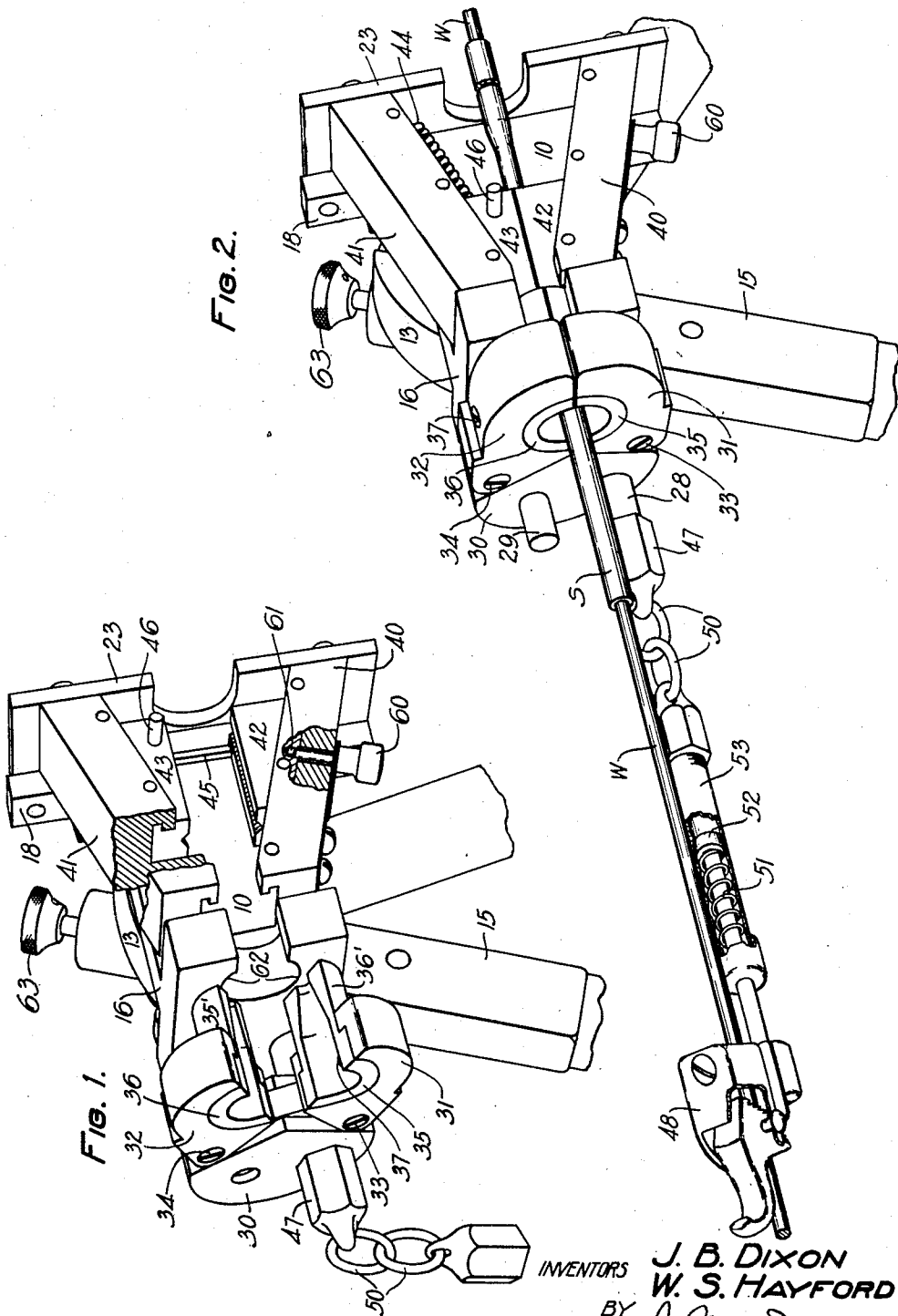
J. B. DIXON ET AL

1,845,077

DRAWING TOOL

Filed May 10, 1930

2 Sheets-Sheet 1



INVENTORS

J. B. DIXON

W. S. HAYFORD

BY

J. Mac Donald

ATTORNEY

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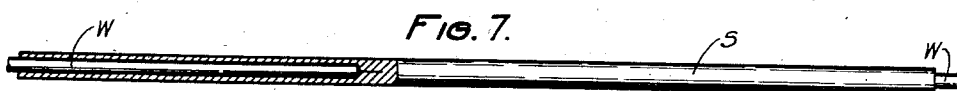
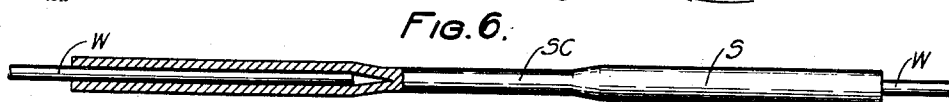
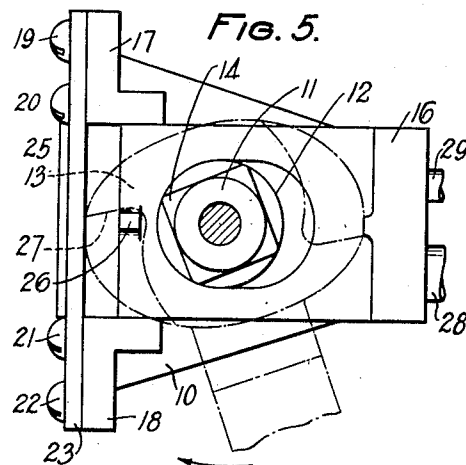
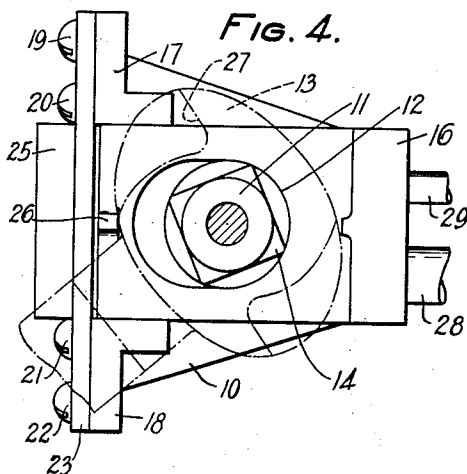
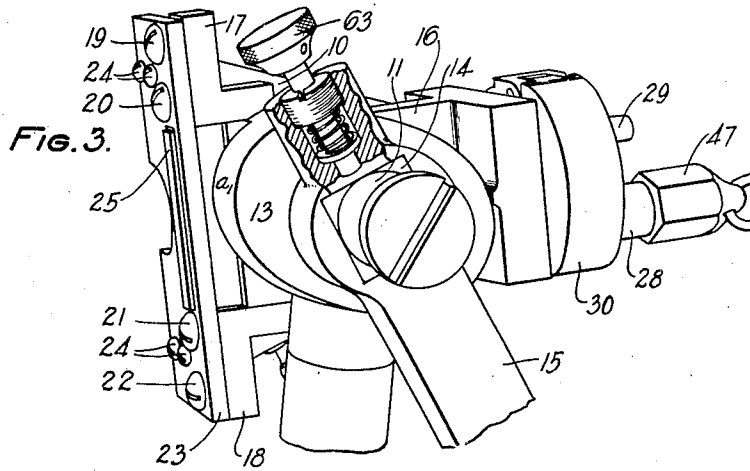
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INVENTORS
J. B. DIXON
W. S. HAYFORD
BY
J. Mac Donald
ATTORNEY

UNITED STATES PATENT OFFICE

JOHN B. DIXON, OF RED BANK, AND WALTER S. HAYFORD, OF MORRISTOWN, NEW JERSEY, ASSIGNORS TO BELL TELEPHONE LABORATORIES, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

DRAWING TOOL

Application filed May 10, 1930. Serial No. 451,336.

This invention relates to drawing tools for making joints in wire, and is particularly adapted for use in the field.

The object of this invention is the provision of a tool of this character which will be simple, cheap to manufacture, convenient in use and efficient in operation.

In the drawing tool of this invention a forming die is mounted on a frame arranged to be reciprocated by a camming member carried at the end of a manually operable lever arm which is in turn pivotally mounted on a stud extending from one side of a stationary frame. This frame is provided on the other side with two slide members disposed in a V formation in which a pair of clamping blocks are slidably mounted. These blocks are normally held in contact with the sleeve by a compression spring and are drawn toward their converging point through their engagement with the sleeve which is then held positively upon the movement of the die in the direction for drawing the sleeve onto the conductors, which movement is effected under control of the camming member. The movement of the movable frame and the die carried thereby in the opposite direction is effective to retract the clamping blocks a small distance along their slides against the resistance of the spring to cause the opening of the clamping blocks and thus permitting the feeding of the sleeve in the die during a subsequent movement of the movable frame for drawing the sleeve onto the conductors. Means is provided for holding the wire in place in the sleeve during the drawing operation. Means is also provided for latching the clamping blocks in the open position for facilitating the insertion and removal of the sleeve from the tool and means is provided whereby the forming die which is made of two similar shaped parts may be locked in their closed position and removable from their locking means for easily mounting and removing the connected wires from the tool.

In the drawings, Fig. 1 is a perspective view of the tool shown with the forming die in the open position and with a portion of the supporting frame cut away. Fig. 2 is a per-

spective view showing a sleeve in position in the die. Fig. 3 is a rear view of the cam actuating mechanism shown in perspective. Fig. 4 is a diagrammatic view showing the camming member in its non-operated position. Fig. 5 is another diagrammatic view showing the camming member in its operated position. Fig. 6 is a view of a sleeve placed on conductors preparatory to the drawing operation and Fig. 7 shows two conductors connected by a sleeve drawn by this tool.

In the several figures, 10 is a frame which carries on one side a laterally extending stud 11 shown in Figs. 3, 4 and 5. This stud is provided with a cylindrical portion 12, for rotatably mounting a camming member 13 and a square portion 14 for engagement with a hand lever 15.

On the stud 11 and in position intermediate the frame 10 and the camming member 13 there is mounted a movable T-shaped frame or carriage 16. This carriage is slidably mounted on the stud 11 and is guided at one end between angle pieces 17 and 18 in turn held in place on a plate 23 by screws 19—20 and 21—22 respectively. The plate 23 is secured to the frame 10 by screws 24 shown in Fig. 3 and has a longitudinal slot 25 in which the carriage 16 extends when moved in its non-operated position under the action of camming member 13 as will be hereinafter described in detail. The carriage 16 carries a pin 26 which cooperates with a stop 27 formed by an undercut portion of the cam 13 for controlling the movement of this cam upon its movement in the operated position as shown in Fig. 5.

On the head portion of carriage 16 there are mounted the studs 28 and 29 provided for slidably mounting an auxiliary frame 30 shown in Figs. 1, 2 and 3 on which the jaw members 31 and 32 are mounted. These jaw members are hinged on pins 33 and 34 and on these jaw members are mounted the die portions 35 and 36 which are held securely thereon by screws such as 37 shown in Figs. 1 and 2. The die elements 35 and 36 have each a reduced end portion 35' and 36' arranged to register with an opening 62 in the head portion of carriage 16 provided to hold the die

elements 35 and 36 closed during the drawing operation.

The frame 10 is provided with angularly disposed slide members 40 and 41 in which the clamping blocks 42 and 43 are mounted. These blocks are normally held in the closed position or conveying point by a compression spring 44, shown in Fig. 2. The block 43 has an arm 45 which engages a registering groove on the side of the block 42 for imparting movement to this block. A pin 46 carried by the block 43 is provided for manually actuating these blocks against the resistance of spring 44. A spring pressed plunger 60 which registers with a hole 61 in the side of block 42 is provided for locking the blocks 42 and 43 in their open position as shown in Fig. 1 in order to permit the placing of the sleeve S and wires W—W in position in the tool.

On the end of stud 28 there is mounted a nut screw 47 to which a clamping device 48 is connected. This clamping device is provided for holding the wire in place in the sleeve and to prevent it from being pushed out of the sleeve during the drawing operation, the connection between the clamping device 48 and the nut screw 47 being effected through a number of chain links 50 and a spring 51 arranged to be compressed through the movement of piston 52 in cylinder 53.

The lever arm 15 which is provided for holding the tool in position during the movement of camming member 13 is provided at one end with a spring pressed plunger 63 shown in Fig. 3 which registers with holes in the square portion of the spindle 11 for holding it securely from axial movement on the spindle 11.

In a sleeve forming operation, the constricted portion SC of the sleeve S shown in Fig. 6 is placed between the die elements 35 and 36 which are then closed and pushed in position between the holding arms of the T-shaped carriage as shown in Fig. 2. The blocks 42 and 43 are moved in engageable relation with the sleeve S upon the disengagement of plunger 60 from the block 42. The movement of cam 13 from the position shown in Fig. 4 to the position shown in Fig. 5 is effective to move the carriage 16 a distance equal to the height of the cam 13 and thus forces the die along the sleeve for pressing it against the conductor, the movement of the cam in the opposite direction being effective to return the carriage to normal through the engagement of pin 26 with the under cut portion of cam 13 and to disengage the clamping blocks 42 and 43 from the sleeve due to the obliquity of the slides 40 and 41 which permits the blocks to come in engagement with the previously drawn portion of the sleeve preparatory to a subsequent operation of the cam, the continued reciprocating movement of the cam being

effective to successively feed the sleeve into the die.

The other end portion of the sleeve is formed by placing the tool for movement in the other direction and operating the cam 13 in the manner above described. However it is to be noted that if desired, the cam 13 may be moved 180° in order to place the portion a_1 of this cam in operable relation with the head of the carriage 16 in order to maintain the same operating angular relations of arm 15 with respect to the arm of the cam 13.

What is claimed is:

1. In a drawing tool, a stationary frame, a movable frame, a die carried by said movable frame, a camming device for imparting a two-way movement to said movable frame, gripping means operable upon the movement of said movable frame in one direction for forcing the die onto a sleeve enclosing the conductor ends, said gripping means operating automatically upon the reversing of said movable frame for feeding the sleeve in said die upon a successive movement of said movable frame in the first mentioned direction, and means for holding the tool on the sleeve during the operation of said device.

2. In a drawing tool, a stationary frame, a movable frame, an auxiliary frame carried by the movable frame, a pair of normally open jaw members mounted on said auxiliary frame, cooperating die elements carried by said members, means for latching said jaw members in the closed position in said movable frame, means for actuating the movable frame for forcing the die on the sleeve enclosing the conductor ends and a device operable for feeding the sleeve into said die.

3. In a drawing tool, a supporting frame having means for gripping the material, a carriage including a die, means carried by said supporting frame for actuating said carriage, and a hand lever for holding said supporting frame against the action of said means.

4. In a sleeve drawing tool, a supporting frame, a carriage including a die, a cam mounted on said supporting frame for actuating said carriage for forcing said die along the sleeve enclosing conductor ends, means for holding the sleeve during the operation of said carriage, and a hand lever for holding said supporting frame with respect to the conductors against the action of said cam.

5. In a sleeve drawing tool, a supporting frame, a reciprocable carriage mounted on said frame, a die mounted on said carriage, gripping means carried by said frame, an operating arm having a cam pivoted on said frame for forcing said die along the sleeve enclosing conductor ends during the movement of said carriage in one direction, means for causing the release of said gripping means during the movement of the carriage in the opposite direction under control of

said cam, and a lever arm for holding said frame in position with respect to the sleeve during the movement of said operating arm.

6. In a tool for making joints in conductors, in combination, a stationary frame, a carriage mounted on said frame, an auxiliary frame mounted on said carriage, a normally open die pivoted on the auxiliary frame, said die in its closed position engaging said carriage, means mounted on the stationary frame for actuating the carriage for forcing the die along the sleeve enclosing the conductor ends, and a clamping device for holding the conductors in the sleeve during the operation of said means.

In witness whereof, we hereunto subscribe our names this 8th day of May, 1930.

JOHN B. DIXON.

WALTER S. HAYFORD.