Nov. 22, 1938. F. I. ANDERSON 2,137,325

WIRE TYING TOOL

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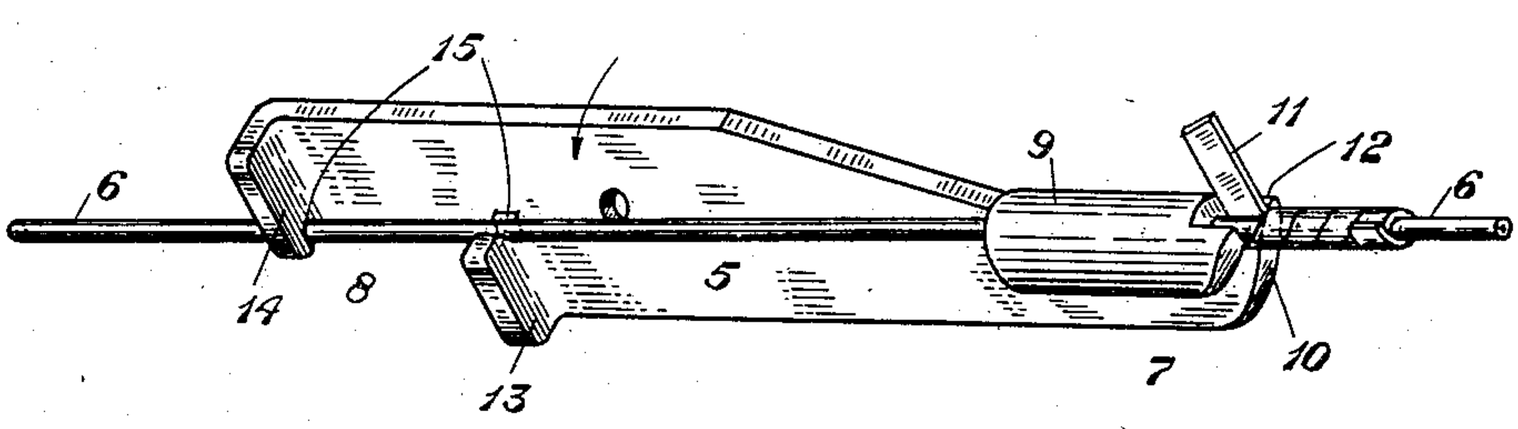
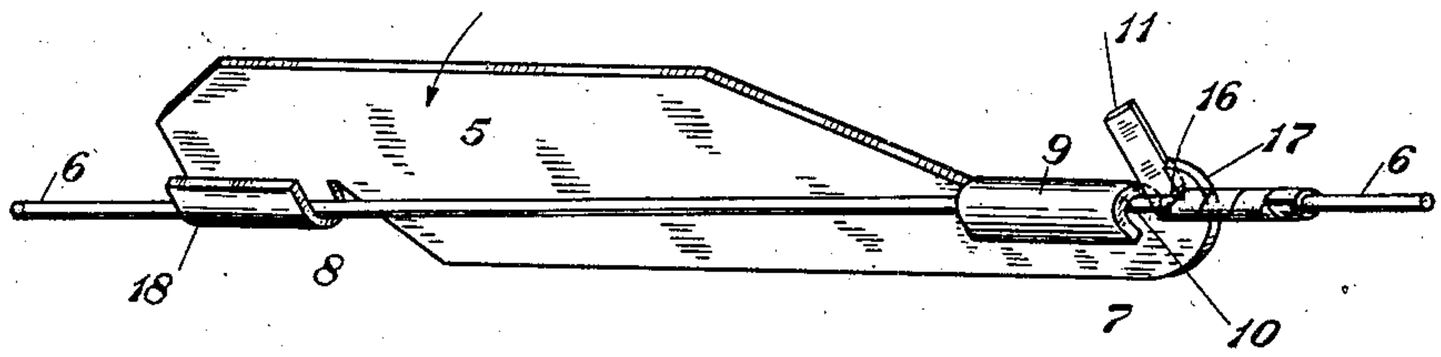


Fig. 1



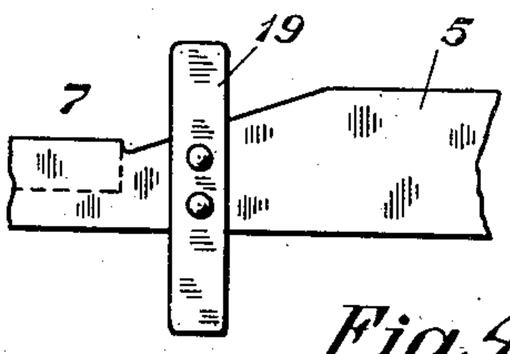


Fig. 2

Fig. 4

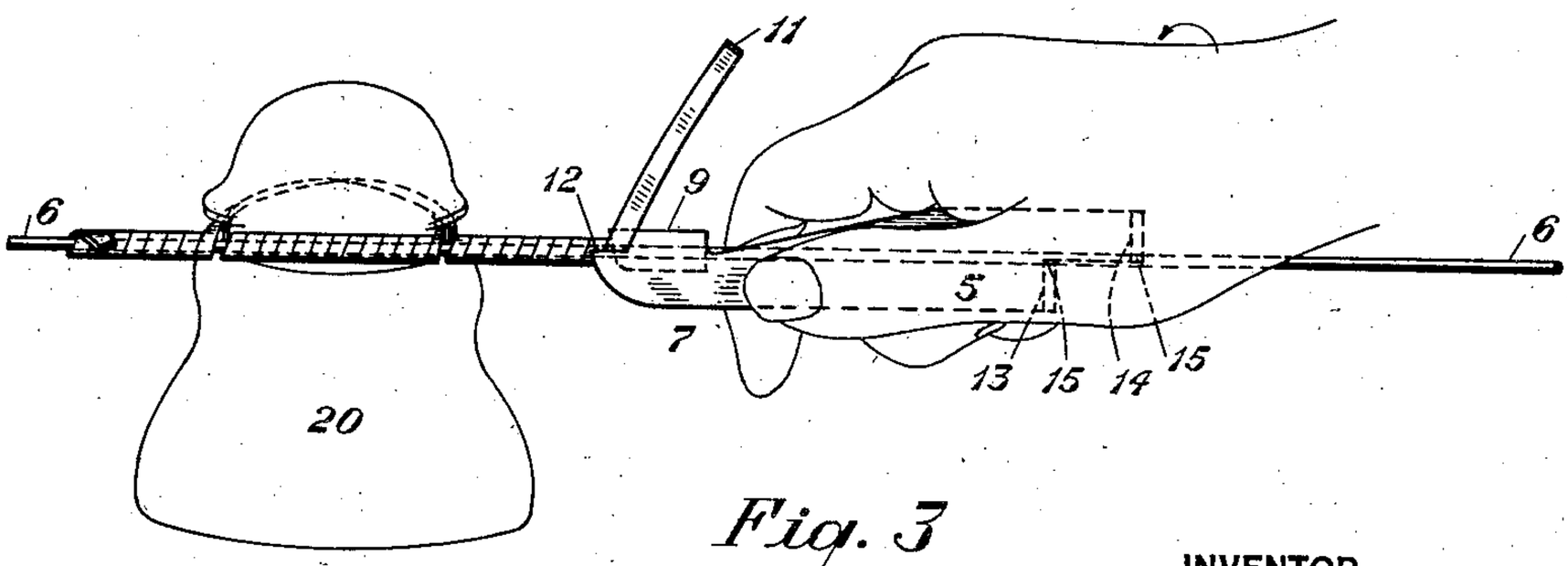


Fig. 3

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WIRE TYING TOOL

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7 Claims. (Cl. 117—37)

This invention relates to hand tools and more particularly to wire-tying tools or wrenches for securing line conductors to insulators.

The use of flat tie wires for securing line conductors to insulators of electric transmission lines has been found in practice to be particularly efficient and desirable. With the extended and general use of this form of tie wire it has become necessary, in order to facilitate tying operations, that suitable means be employed for performing this work expeditiously.

It is, therefore, one of the objects of this invention to provide a tool which will perform the above mentioned operations in an effective manner.

Another object is to provide a wire-tying tool of simple construction and by which a workmanlike job will be produced in a minimum amount of time and with a minimum amount of labor.

These and further objects will be apparent from the following description when considered in connection with the accompanying drawing in which certain embodiments of the invention are illustrated.

Referring to the drawing, Figure 1 is a perspective view of one form of the improved tool shown in position on a line conductor; Fig. 2 is a similar view showing another form of the tool; Fig. 3 is a view showing the tool in the operation of applying the flat tie wire about a line conductor whereby it is attached to an insulator, and Fig. 4 is a fragmentary view of the tool showing a crossbar applied thereto by which its rotation may be more readily effected.

The tool is preferably made of metal, and steel of proper gauge has been found for this purpose. As shown in the drawing the tool is provided with a handle portion **5** which is preferably flat and of such contour as to provide a suitable gripping surface for the hand.

In practice the tool is mounted on a line conductor **6** and is adapted to be rotated thereon. Extensions are provided on the ends of one side of the tool, as shown in Figs. 1 and 2, while the other side of the tool presents a flat or plane surface, as may be seen in Fig. 3.

A nose portion **7** is provided at one end of each of the forms of tools illustrated, and a tail portion **8** is provided at the opposite end.

In Fig. 1 the nose portion involves a turned-over flange **9**, the inner portion of which forms a groove **10** in which the line conductor **6** is seated. The flange **9** is cut away at its outer end to provide sufficient surface on the flat portion of the tool against which the flat tie wire **11** is placed. This flat portion is provided with a beveled rolling edge which forms a lip **12** for engaging and turning the flat tie wire as the tool is rotated. To further increase the area of this rolling edge, a slot may be cut in the turned over flange **9**, as shown. The beveled surface and rolling edge or lip **12** are cut on such an angle as to cause the tie wire to leave the tool in the proper angular direction to form connecting spiral layers of tie wire about the line wire.

The tail portion **8** of the tool illustrated in Fig. 1 has part of its stock cut away and the end of this cut-away portion is bent outwardly from the handle. The end of the uncut portion of the tail **8** is likewise bent outwardly, as shown at **14**. Coinciding slots or grooves **15** are cut on the inner edges of these angularly bent portions and the line wire **6** is engaged in the slots or grooves. The line wire also passes through the groove **10** in the nose portion of the tool. The slots or grooves **15** and groove **10** are so arranged in alinement with respect to each other that a clamping or self-locking action is produced by the line wire when the tool is applied thereto, and it is held securely in position, but adapted to rotate about the line wire during the tying operation.

In the form of tool illustrated in Fig. 2, the intermediate portion or handle **5** is similar to that described in connection with Fig. 1. In Fig. 2, however, the nose portion differs slightly, in that there is slot **16** provided between the outer end of the groove **10** and the hook portion **17** on the outer end of the nose portion **7**. The edge and approaching surface of this slot is slightly beveled cut on the proper angle and the flat tie wire passes thereover and is adapted to be turned when the tool is rotated, as previously described in connection with Fig. 1. The tail end of the tool in Fig. 2 is shown as being provided with a groove **18** which is in axial alinement with the groove **10** in the nose portion of the tool, but in reverse position with respect thereto on the handle. The line wire is seated in these grooves, and the tool is adapted to be rotated about said wire.

In the fragmentary view illustrated in Fig. 4 a cross-bar **19** is suitably applied by welding, riveting or the like to the handle portion **5**. This cross-bar is engaged by the thumb and index finger which assist the hand to rotate the tool.

The tool is applied to the line conductor **6** to wrap the flat tie wire **11** about it, as more clearly illustrated in Fig. 3. In this operation, the line conductor is engaged in the groove in

the nose portion of the tool, and in rotatable position in the groove or slots in the tail portion of the tool. As previously described, the slots provide a self-locking arrangement which holds the tool securely on the line conductor. The tie wires are cut in lengths sufficient for the purpose of tying the line conductor to an insulator. When the tool is in position upon the line conductor, a free end near a mid-portion of one of these lengths is placed in the beveled and angular slot in the nose portion of the tool and the tool is rotated on the line conductor in the direction indicated by the arrows in the drawing. The line conductor should be pulled away or outwardly a sufficient distance from the insulator during this operation to provide clearance for the ends of the tie wire. The application of this mid-portion of the tie wire is at a point on the line wire adjacent to an insulator. When sufficient turns of the mid-section of the tie wire have been applied by the tool, it is removed temporarily and the line conductor is then free to be placed in position against the insulator. The free or tail ends of the "length" of tie wire are bent back to cross each other and passed around the opposite portion of the insulator groove from that engaged with the portion of tie wire wrapped about the line wire. The opposite ends of the tie wire are drawn taut and then wrapped by means of this invention as just described about opposite ends of the first wrapped portion of the tie wire. The line wire is thus tightly secured to the insulator.

While the arrangements of this invention have been illustrated as embodied in certain specific forms which have been deemed desirable, it will be understood that they are capable of embodiment in many and widely varied forms without departing from the spirit of the invention as defined in the appended claims.

What is claimed is:

1. Means for wrapping flat tie wire about a line conductor to secure it to an insulator comprising a hand tool provided at one end with a lip having a rolling edge and at the other end with a portion for rotatably engaging the line conductor, said rolling edge so engaging the flat tie wire that as the tool is rotated the flat tie wire is wound in uniform spiral layers about the line conductor.

2. A tie wrench for wrapping flat wire about a line conductor to secure it to an insulator, said wrench having a nose end for engaging both the flat wire and line conductor and a tail end for rotatably engaging the line conductor, and a handle portion intermediate said ends whereby the wrench may be rotated to wind the flat wire in uniform spiral layers about the line conductor.

3. A tie wrench for wrapping flat wire about a line conductor to secure it to an insulator, said wrench having a nose end including a groove in which the line wire is seated and a rolling edge which engages the flat wire, means at the opposite end of the wrench for rotatably engaging the line conductor, and a handle intermediate said ends whereby the wrench may be rotated to cause said rolling edge to wrap the flat wire about said conductor in uniform spiral layers.

4. Means for wrapping flat wire about a line conductor in helical formation to secure it to an insulator comprising a hand tool having one end in common engagement with the contacting flat wire and line conductor and the other end in engagement with the line conductor, a handle portion intermediate said ends adapted to be turned to rotate about the line conductor to wind the flat wire thereon in uniform spiral layers and means for retaining the hand tool in rotatable position upon the line conductor.

5. A device of the class described for wrapping wire onto a line, comprising line retaining means, means for retaining the wire adjacent the line, means for winding the wire onto the line and means for progressing the device along the line during the wrapping process, said last named means comprising a shoulder shaped to substantially fit the pitch of and abutt against the wrapping wire.

6. A device of the class described for wrapping wire onto a line, comprising an elongated body member, a plurality of grooved projections on the body member for retaining the line therein, a space being formed between the line and the body member to receive and retain the wrapping wire adjacent the line and means for winding the wire onto the line.

7. A tie wrench for wrapping flat wire about a line conductor to secure it to an insulator, said wrench having a slotted and grooved nose end for engaging both the flat wire and line conductor and a grooved tail end for rotatably engaging the line conductor, a raised grooved portion intermediate said ends for assisting in the support of the wrench on the line conductor, and a handle portion intermediate said ends whereby the wrench may be rotated to wind the flat wire in progressive uniform spiral layers about the line conductor.

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