

Jan. 17, 1950

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2,494,832

TIE WIRE TWISTING AND TIGHTENING TOOL

Filed May 7, 1947

2 Sheets-Sheet 1

Fig. 1.

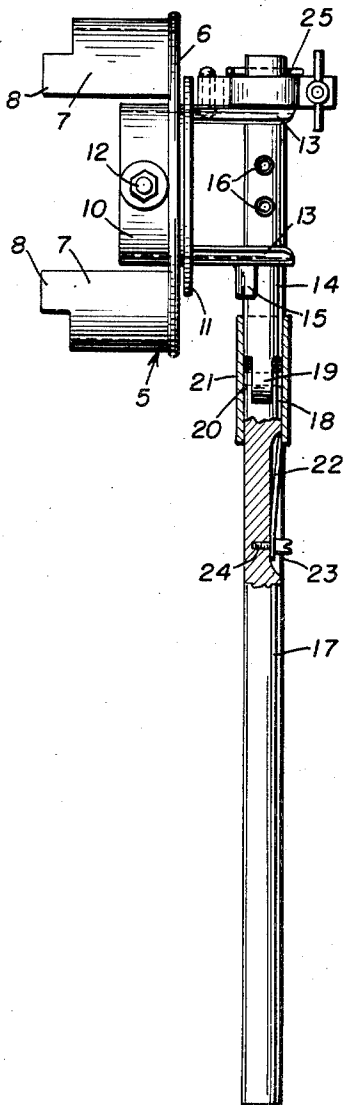


Fig. 2.

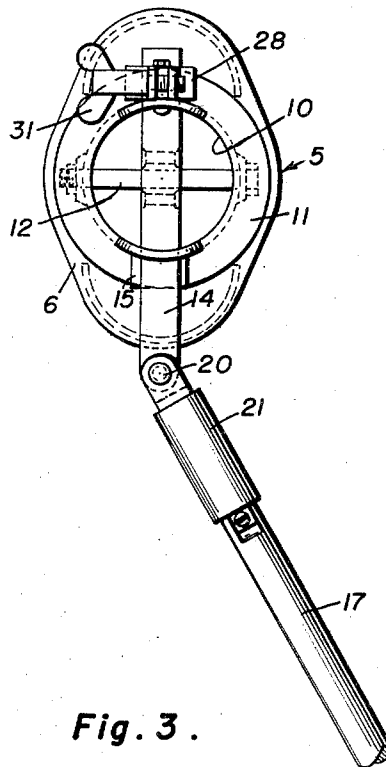
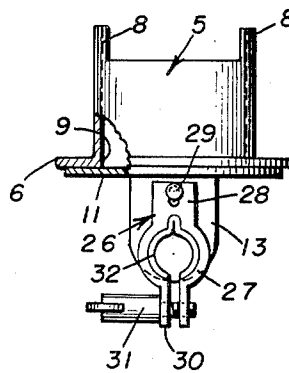


Fig. 3.



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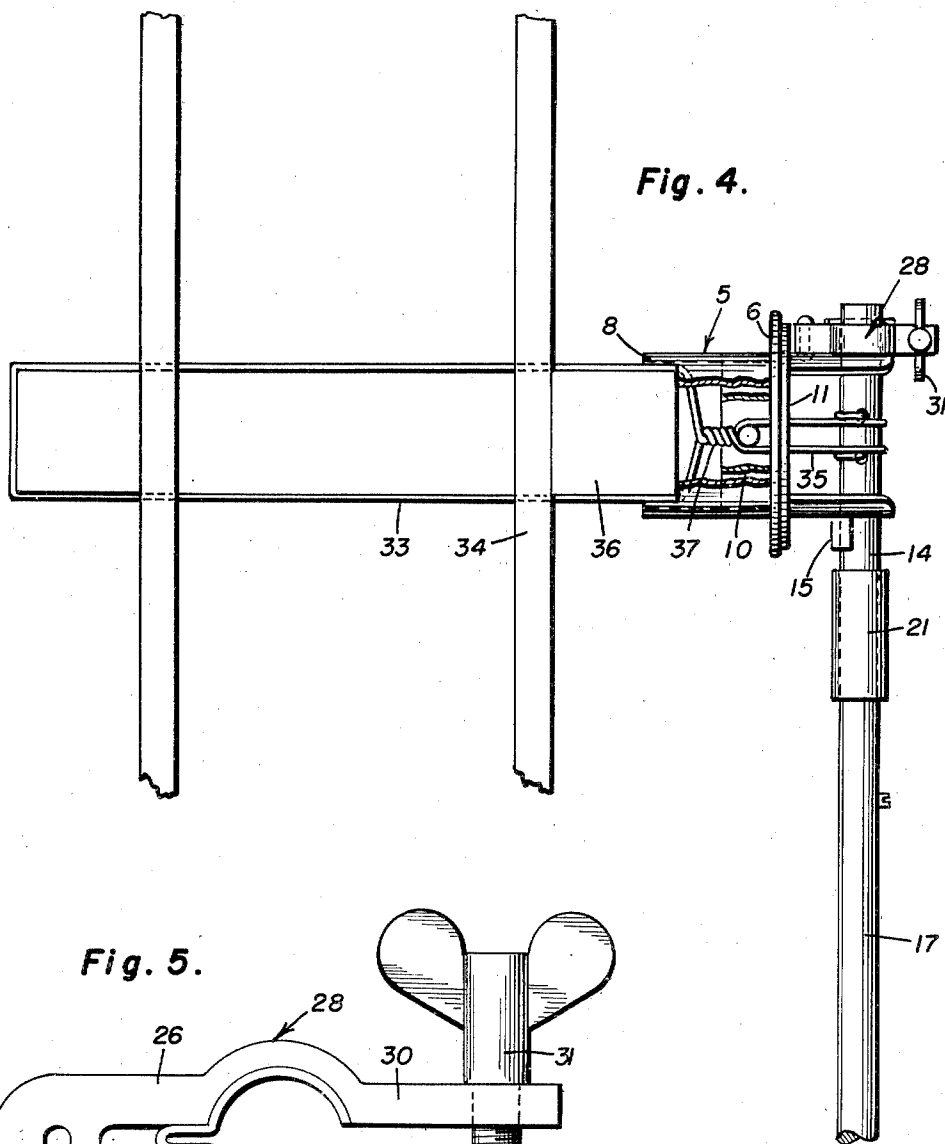
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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TIE WIRE TWISTING AND
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Application May 7, 1947, Serial No. 746,573

1 Claim. (Cl. 140—123.5)

1

The present invention relates to new and useful improvements in tool for twisting and tightening tie-wires used in assembling and reinforcing wooden forms for the construction of concrete walls or building foundations.

An important object of the present invention is to provide a tool of this character for tensioning and twisting the extending ends of a tie-wire in a practical and efficient manner.

More specifically the invention embodies the provision of a tool by means of which a tie-wire may be first tensioned and subsequently twisted to secure its ends together in a simple and convenient manner.

A further object of the invention is to provide a tie-wire tool including a rotatable shaft on which the ends of the wire are wound for tensioning of the wire and a rotatable mounting for the shaft by means of which the shaft may be bodily rotated on an axis transversely thereof for twisting and tying the wire together with a brake or the shaft for holding the shaft against rotation during the twisting action and providing a simple and practical means whereby the shaft may be rotated in a reverse direction for unwinding the ends of the twisted wire therefrom.

A further object of the invention is to provide a device of this character of simple and practical construction, which is strong and durable, efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view with parts broken away and shown in section;

Figure 2 is a rear elevational view;

Figure 3 is a side elevational view showing the brake for the shaft;

Figure 4 is a side elevational view showing the invention in use with parts broken away and shown in section; and

Figure 5 is an enlarged side elevational view of the brake removed from the tool.

Referring now to the drawings in detail wherein for the purpose of illustration I have disclosed a preferred embodiment of the invention the numeral 5 designates an anchoring base generally and which includes a substantially oval-

2

shaped plate 6 from the end portions of which and at one side thereof project a pair of semi-circular members 7 each having a pair of spaced parallel lugs 8 projecting outwardly at the ends of said members.

The plate 6 is formed with a central opening 9 in which a sleeve 10 is rotatably mounted, the inner end of the sleeve having a flange 11 bearing against one side of the plate 6 and a pin or bolt 12 projects transversely of the sleeve 10 at a relative opposite side of the plate 6 to thus retain the sleeve in position in the opening of said plate.

A pair of arcuate-shaped bearings 13 project from the flange 11 at the side thereof opposite from the sleeve 10, and in which a shaft 14 is journaled. A semi-cylindrical bearing 15 projects laterally from one of the bearings 13 and in which the shaft is seated. The shaft 14 is provided with a pair of transversely extending openings 16 therein positioned between the bearings 13.

A handle 17 is formed with a bifurcated inner end 18 in which an eye 19 projecting longitudinally at one end of the shaft 14 is received for pivotally mounting the bifurcated end 18 of the handle to the shaft by means of a transverse pin or rivet 20. A sleeve 21 is slidably mounted on the inner end of the handle into an outer position over the adjacent end of the shaft 14 to lock the handle in longitudinally extending position and in a longitudinally aligned position with respect to the shaft. The sleeve 21 is secured in a slidably adjusted position by means of a leaf spring 22 which is recessed in a groove 23 in the handle and secured at one end to the handle by a screw 24 while the free end of the spring bears against the inside of the sleeve to secure the same against idle sliding movement.

The shaft 14 is secured against separation in the bearings 13 by means of a transverse pin or cotter key 25 at the end of the shaft opposite from the handle 17. The shaft 14 is held against rotation by means of a brake designated generally at 26 and which comprises a split clamp 27 having a plate 28 at one end secured to one of the bearings 13 by a rivet, pin or the like 29, the ends of the clamp having parallel apertured ears 30 in which a bolt and wing nut 31 is threaded for closing the clamp in binding engagement with the shaft. A brake lining or band 32 is secured in position in the clamp 27, the band 32 being constructed of copper or other suitable material to provide an effective frictional engagement with the shaft 14.

3

In operation of the tool a tie-wire 33 for a concrete form 34 has its ends 35 inserted through the openings 16 of the shaft 14 and with the lugs 8 of the base member 6 in position at opposite sides of one of the uprights 36 of the form to hold the base anchored to the form against rotary movement.

The sleeve 21 is then moved outwardly on the handle 17 as shown in Figure 2 whereby the handle is then used as a crank for rotating the shaft 14 and winding the ends of the wire on the shaft to tighten or place the tie-wire under tension.

After a desired tension has been placed on the wire the brake 25 is tightened on the shaft by the nut 31 to prevent reverse rotation of the shaft. The sleeve 21 is then moved inwardly on the handle 17 to connect the handle in longitudinal alignment with the shaft 14 to facilitate bodily rotation of the shaft and to rotate the sleeve 10 in the base 5 and with the bolt or pin 12 positioned between the ends 35 of the wire the rotary movement of the sleeve will twist the wire as shown at 37 to thus tie the ends of the wire together. Tension of the wires may be adjusted by the brake during the tying operation to prevent breaking of the wire.

By releasing the brake 28 the shaft 14 may then be rotated in a reverse direction to free the ends 35 of the wire therefrom and the tool may then be removed and moved to a new location for tightening additional tie-wires.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully compre-

4

hended by the spirit of the invention as herein described and the scope of the appended claim.

I claim:

A tie-wire tightening and twisting tool comprising a stationary member, a rotary member journaled thereon, a second rotary member journaled on the first rotary member and having its axis at right angles to the axis of the first rotary member, a pivoted handle carried by the second rotary member, locking means securing the handle at right angles to the second rotary member for use as a crank for rotating the same to initially wind the ends of a tie-wire thereon, or for securing the handle in longitudinally aligned position with the second rotary member to rotate the first rotary member, a transverse pin carried by the first rotary member engaging the wire to twist the wire during rotation of the first rotary member, and locking means for the second rotary member during the twisting operation.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
57,656	Alden	Sept. 4, 1866
313,272	Archer	Mar. 3, 1885
849,256	Moore	Apr. 2, 1907
919,893	Larson	Apr. 27, 1909
1,169,496	Knauff	Jan. 25, 1916
1,254,813	Lake	Jan. 29, 1918
1,391,820	Boenning	Sept. 27, 1921
1,736,585	Fehlhaber	Nov. 19, 1929
2,280,500	Reyburn	Apr. 21, 1942

FOREIGN PATENTS

Number	Country	Date
18,341	Great Britain	Aug. 9, 1909