

(No Model.)

T. EDWARDS, JR. & J. J. EDWARDS.
SCREW DRIVER.

No. 568,341.

Patented Sept. 29, 1896.

Fig. 1.

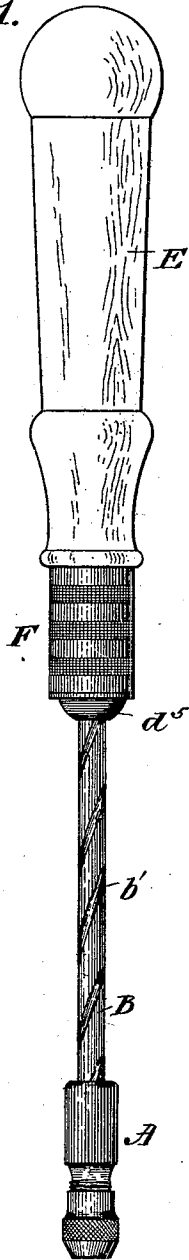


Fig. 2.

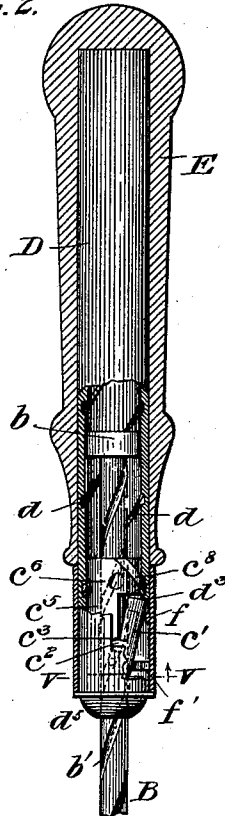


Fig. 4.

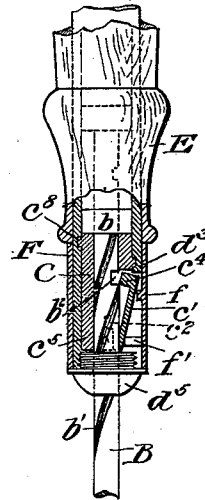


Fig. 5.

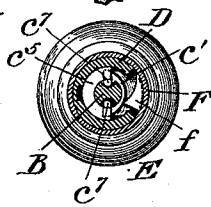


Fig. 3.

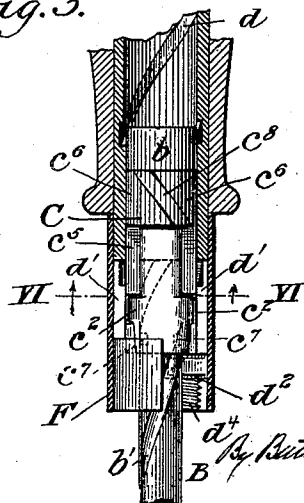
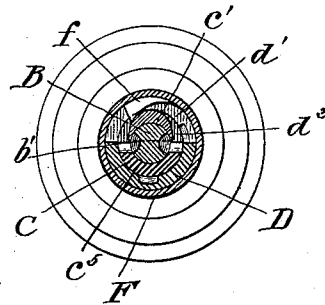


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

THOMAS EDWARDS, JR., AND JOHN J. EDWARDS, OF GRAND RAPIDS,
MICHIGAN.

SCREW-DRIVER.

SPECIFICATION forming part of Letters Patent No. 568,341, dated September 29, 1896.

Application filed March 31, 1894. Serial No. 505,806. (No model.)

To all whom it may concern:

Be it known that we, THOMAS EDWARDS, Jr., and JOHN J. EDWARDS, citizens of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Screw-Drivers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to screw-drivers and like tools; and its object is to provide improved devices for causing the stock or spindle to rotate either to the right or to the left at the will of the operator by reciprocating but without rotating the handle.

A further object is to adapt the tool to be locked, if desired, to form a rigid connection between the stock and the handle, as will be hereinafter described.

The invention consists, essentially, of a stock provided with non-intersecting or parallel spiral grooves, a reciprocating handle having an internal spiral groove or grooves, a device of peculiar construction engaging the stock and handle, and a sleeve or its equivalent capable of causing the engaging devices to positively engage the handle and the stock in such manner that the reciprocating motion of the handle may be transformed into a rotary motion of the stock in either a forward or backward direction, as may be desired.

This invention further consists in certain features of construction and combinations of parts, all as will be hereinafter more fully described, and then pointed out in the claims.

Referring to the drawings, which form a part of this specification, and in which similar letters of reference are used to denote similar parts in each of the several views, Figure 1 is an elevation of the tool. Fig. 2 is a vertical section through the handle, illustrating the positions of the parts when removing a screw. Fig. 3 is a view similar to Fig. 2, showing the position the parts assume for driving a screw. Fig. 4 is an elevation, partly in section, illustrating the position of the parts when it is desired to reverse the direction of rotation of the stock or spindle.

Fig. 5 is a cross-section taken on the line V V of Fig. 2, looking in the direction of the arrow; and Fig. 6 is a cross-section taken on the line VI VI of Fig. 3, looking in the direction of the arrow.

A denotes a chuck of any suitable construction for holding the screw-driver or bit, and which is attached in any approved manner to the lower end of a stock or spindle B. This stock may be made of metal and is provided at its upper portion with a collar *b*, rigidly secured thereto, and on the body thereof with high-pitched spiral grooves *b'*, preferably extending from the chuck A to said collar. These grooves extend in one direction and consequently do not intersect each other at any point.

At C is a nut or thimble comprising two separable members or parts *c* and *c'*, which encompass the body of the stock B. The member *c'*, preferably semicircular, is removably pivoted to the other member by the projections *c²* engaging slots or indentations *c³* in said member. The part *c* has at its upper end a tooth or projection *c⁴*, which engages a notch or indentation *b²* in the stock or spindle and at its lower end is sufficiently relieved to tilt upon its pivot, the said member serving to lock the thimble or nut to the handle or to the stock, according to its position, as will hereinafter appear. The member *c* has a portion *c⁵*, to which the member *c'* is pivoted, as already described, and the circular boss or collar *c⁶*, preferably formed integrally therewith, both the boss *c⁶* and the portion *c⁵* being provided with inwardly-extending studs or projections *c⁷*, which enter the spiral grooves of the stock. The boss or collar *c⁶* of the thimble has upon the exterior portion thereof projections *c⁸*, preferably spiral, adapted to enter the internal spiral grooves *d* of the shell or casing D, which grooves are oppositely arranged to the grooves of the stock or spindle.

The shell or casing D is made of metal and may have an outer covering of wood or other suitable material E, in which case the shell or casing forms an internal lining, as shown in the drawings, making a light and convenient handle. The casing or shell D is somewhat lower than the covering E, and at the

lower portion thereof is cut away at d' , and is provided near its lower end with a slot d^2 , so that the thimble may be examined without entirely removing it from the casing and to allow a sleeve F to partially rotate on the casing, as will be presently described. The casing has also an abutting surface d^3 , formed by the casing being cut away at d' and provided at its lower end with an internal thread d^4 , into which the screw-threaded portion of a cap d^5 is adapted to be secured, the said cap serving to rotatably hold the sleeve F upon the casing and between the covering E and said cap.

The sleeve F has upon its interior surface two cam-like projections f and f' , located, respectively, in the upper and lower portion of the sleeve and extending in opposite directions in the plane of rotation of said sleeve. The cut-away portion d' and the slot d^2 of the casing will allow the sleeve F to rotate about one-quarter of a revolution, the faces of the cam-like projections f and f' preventing further rotation by the abutting of said projections against the portion d' and the end of slot d^2 . The cam-like projections f and f' engage the surface of the member c' of the nut or thimble above or below the pivot, according to the way the sleeve is rotated, as best shown in Figs. 2 and 4. In these figures the sleeve has been turned to the extreme left, at which time the cam projection f' will engage the surface of the member c' of the thimble below its pivotal point, thus disengaging the tooth or projection c^4 from the notch b^2 of the stock or spindle. The reverse movement of the sleeve will, by means of the cam projection f , throw the tooth c^4 of the part c of the thimble C into positive engagement with the notch b^2 of the stock, thus locking the thimble and spindle together.

In operation, the parts being in a position as shown in Fig. 4, the cam projection f' of the sleeve will disengage the tooth c^4 from the notch b^2 of the stock, at which time the upper face of this tooth will abut against the portion d^3 of the casing D, as illustrated, thus preventing the upward movement of the thimble C or rotation of the same in the casing. By reciprocating or pressing downwardly on the handle the stock B will pass into the handle, as shown in Fig. 2, and at the same time the projections c' on the thimble engaging the spiral grooves b' of the stock will cause the same to rotate according to the arrangement of the spiral, which in the drawings, would be toward the left. Should the parts again be in the position shown in Fig. 4 and the sleeve moved in the opposite direction, the cam projection f will cause the engagement of the tooth c^4 with the notch b^2 of the stock, thus locking the thimble and stock together. When the handle is pressed downward, the thimble C and the stock will pass into the casing D, and by means of the projections c^8 of the thimble C engaging the internal spiral grooves d of said casing, will ro-

tate both the stock and thimble in the opposite direction.

In using the tool as a rigid screw-driver or the like the sleeve is rotated only so far as will cause the tooth c^4 of the thimble C to enter the notch just far enough to permit it to also abut against the portion d^3 of the casing D. This will secure the parts together and prevent the rotation or movement of any of the parts separately.

It is obvious that either right or left spiral grooves may be used on the stock or in the casing, as desired, or that the casing D may be of such formation as to form a suitable handle, thereby dispensing with the covering E, and that further modifications may be made without departing from the spirit of our invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a tool of the character described, a casing having internally arranged spiral grooves, a stock or spindle provided with oppositely-arranged spiral grooves thereon, a thimble engaging the grooves of the stock and the casing and having a pivotal member adapted to engage either the stock or said casing, and means for tilting said member of the thimble on its pivot so that said thimble may be locked either to the stock or to the casing, whereby the said stock may be caused to rotate either forward or backward, substantially as described.

2. A tool of the character described, comprising a casing having spirally-arranged grooves therein extending throughout its length, a stock having spiral grooves oppositely arranged to the grooves of the casing, a thimble normally in engagement with the grooves of the stock and the casing and provided with a member adapted to be thrown into or out of engagement with the casing, and means for actuating said member, whereby the said stock may be caused to rotate when the casing is forced downward, substantially as described.

3. In a tool of the character described, the combination with a casing having spirally-arranged grooves therein extending throughout its length, of a stock or spindle having spiral grooves oppositely arranged to the grooves of the casing, and a thimble comprising two members one of which is normally in engagement with the grooves of the casing and the stock and the other pivotally connected to the first-mentioned member, said pivotal member serving to engage either the stock or a portion of the casing, and means for throwing the pivotal member out of or into engagement with the stock so as to prevent or allow movement of the thimble, substantially as described.

4. In a tool of the character described, a casing having internally arranged spiral grooves, a stock or spindle provided with oppositely-arranged spiral grooves thereon, a

thimble engaging the grooves of the stock and the casing and having a pivotal member adapted to engage with either the stock or said casing, and a sleeve rotatably held on the casing and provided with cam-surfaces adapted to throw said pivotal member into or out of engagement with said stock or casing when given a partial rotation, substantially as described.

5. In a tool of the character described, a casing having non-intersecting spirally-arranged grooves therein, a stock or spindle having non-intersecting spiral grooves thereon, a thimble consisting of two members one pivotally connected to the other, one of said members engaging the grooves of the stock and the grooves of the casing, the pivotal member serving to engage either the stock or a portion of the casing, and means for throwing the pivotal member out of or into engagement with the stock to prevent or allow movement of the thimble, substantially as described.

6. In a tool of the character described, a casing having internally - arranged spiral grooves, a stock having a collar secured to the upper portion thereof and provided with non-intersecting spiral grooves, a thimble comprising two separable members pivotally connected together, one of the members being provided with projections which enter the grooves of the casing and the grooves of the stock, the other member adapted to engage a portion of the stock or the casing, and means for locking the thimble to the stock, substantially as described.

7. In a tool of the character described, a casing having non-intersecting spiral grooves internally arranged, a stock having non-intersecting spiral grooves upon the body thereof, a thimble engaging the grooves of the casing and the grooves of the stock, the said thimble consisting of two members one of which is pivotally connected to the other, and a sleeve rotatably held on the casing and adapted to throw the pivotal member of the thimble into or out of engagement with the stock, substantially as described.

8. In a tool of the character described, a casing having non-intersecting spiral grooves internally arranged, a stock having non-intersecting spiral grooves upon the body thereof, a thimble consisting of two parts or members one pivotally connected to the other, one of said members being provided with projections which enter the grooves of the casing and the grooves of the stock, the other member adapted to engage a notch in the stock or a portion of the casing, and a sleeve rotatably held upon the casing and carrying internal cam-like projections which operate one of the members on its pivot and limit the extent of rotation of the sleeve, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

THOS. EDWARDS, JR.
JOHN J. EDWARDS.

Witnesses:

JAMES E. MCBRIDE,
JOHN SCHOTTEY.