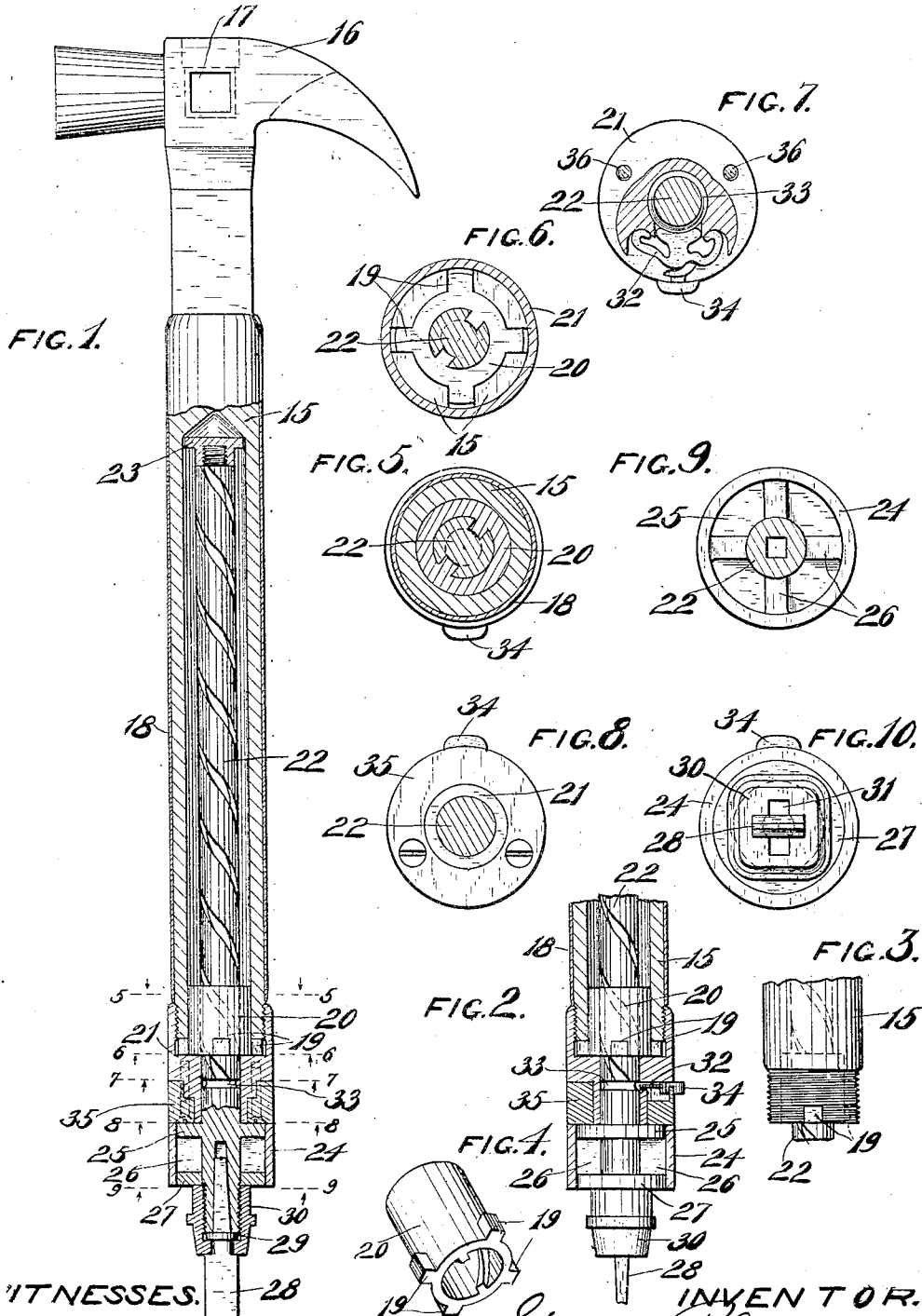


1,054,142.

Patented Feb. 25, 1913.



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GROVER PLEIN, OF RACINE, WISCONSIN.

SPIRAL TOOL-DRIVER.

1,054,142.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GROVER PLEIN, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Spiral Tool-Drivers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide a tool consisting of an automatic screw driver, the spirally grooved spindle of the screw driver being normally housed within the hollow handle of a hammer and causing the bit to turn when it is moved in or out of the hammer handle, the hammer head forming a convenient handle by means of which the screw driver may be operated.

With the above and other objects in view the invention consists in the spiral tool driver herein claimed its parts and combinations of parts and all equivalents.

Referring to the accompanying drawings in which like characters of reference indicate the same parts in the different views; Figure 1 is a detail view, partly in section of a spiral tool driver constructed in accordance with this invention; Fig. 2 is a sectional view of the end thereof on a plane at right angles to the sectional plane of Fig. 1; Fig. 3 is an outside view of the end of the hammer handle, showing the engagement of the spindle nut therewith; Fig. 4 is a perspective view of the spindle nut; Fig. 5 is a sectional view on the plane of line 5—5 of Fig. 1; Fig. 6 is a similar view on the plane of line 6—6 of Fig. 1; Fig. 7 is a similar view on the plane of line 7—7 of Fig. 1; Fig. 8 is a similar view on the plane of line 8—8 of Fig. 1; Fig. 9 is a similar view on the plane of line 9—9 of Fig. 1 with the end washer removed from the guide; and, Fig. 10 is an end elevation of the end of the tool.

In these drawings 15 indicates a hollow hammer handle with the hammer head 16 on its end, said hammer head being provided with square recesses or sockets 17 on its several faces of different sizes to form wrench holes to receive nuts for turning them in the manner of an ordinary wrench. The hammer handle, which is preferably of metal, may be provided with a covering 18 of cork, fiber or rubber or the like which will be more comfortable to the operator when using the tool in cold weather than the unprotected metal handle would be, and also

serves as a cushioning covering to prevent the hammer from slipping from the hand and to relieve the hand of the stinging vibration due to the jar of the blow.

The lower end of the hollow or tubular handle is notched to receive outwardly projecting lugs 19 of a tubular nut member 20 which fits within the end of the handle and is prevented from turning with relation thereto by means of this engagement of its lugs 19 in the notches of the handle. A sleeve member 21 is threaded on the outside of the end of the hammer handle and has a somewhat smaller bore than the handle within which a spirally grooved spindle 22 fits, the internal shoulder of said sleeve member bearing against the end of the nut 20 to hold it in place against longitudinal movement. The spirally grooved spindle 22 has the internal threads of the nut member 20 fitting within its spiral grooves so that a longitudinal movement of the spindle with relation to the nut will cause the spindle to turn in a well known manner. The inner end of the spindle 22 is prevented from passing through the nut 20 by having a cap 23 threaded on its end to engage the end of the nut 20 and limit the outward movement of the spindle.

To enable the spindle to be moved longitudinally without interfering with its rotary movement a guide 24 is loosely mounted thereon, the spindle being provided with a flange 25 which fits within one end of the guide which is of a ring shape with inwardly extending radial ribs 26 bearing at one end against the flange and at the other end against a washer 27 which surrounds the spindle and fits within the ring portion of the guide. A bit 28 has a square tapering shank fitting within a correspondingly shaped opening in the end of the spindle and is provided with a round neck portion and a flange or collar 29. A ferrule 30 has a slot 31 in its end to pass over the bit and this ferrule threads on the end of the spindle by turning around the neck portion of the bit and clamps the bit in place by bearing against a collar 29 thereof. The end of the ferrule 30 engages the washer 27 to hold it in place and confine the guide 24 to its position on the spindle without interfering with its free turning movement on the spindle. By holding the guide 24 with one hand and grasping the hammer head with the other hand and forcing it toward or away from

the guide the nut 20 causes the spindle to turn in one direction or the other and thereby operate the bit as a screw driver.

In order to prevent the spindle sliding out of the hammer handle at the time the tool is used as a hammer, the sleeve 21 is slotted to provide a recess in which a spring dog 31 is housed and bears at its bent end against pockets formed for them in the recess to normally hold the central engaging portion of the dog out of the path of the spindle 22. The spindle, however, is provided with a groove 33 in a position to be engaged by the central portion of the dog 31 when the spindle is in its innermost position and a slide button 34 working in a slot between the sleeve 21 and a collar 35 which fits on the reduced portion of the sleeve to complete the housing for the dog, is adapted to engage a cam projection on the central portion of the dog to force the dog into the groove 33 and thereby lock the spindle against outward movement. When it is again desired to use the screw driver it is only necessary to slide the button 34 back to its other position when it rides off of the cam portion of dog 31 and allows the spring ends of said dog to withdraw it from the groove 33. A pair of screws 36 connect the collar 35 to the sleeve 21.

By means of this invention the tool is comprised in substantially the size and shape of the ordinary hammer, and besides performing all of the uses of a hammer, it further serves as a wrench for turning nuts and becomes an automatic screw driver, the hammer head then forming a convenient handle for moving the nut on the spirally grooved spindle to cause said spindle to turn and operate the bit for driving or removing screws.

What I claim as my invention is:

1. A spiral tool driver, comprising a hollow handle, a nut fitting in the end of the hollow handle and having lugs engaging notches in the end of the handle to lock it against turning, a spindle contained within the hollow handle and having a spiral groove fitting the threads of the nut, a sleeve forming a bearing for the spindle and threaded on the end of the hollow handle, a flange on the spindle bearing against the end of the sleeve, a guide comprising a ring fitting on the flange and having inwardly ex-

tending ribs bearing against the flange, a washer surrounding the spindle and fitting within the ring portion of the guide and against the ribs thereof, a ferrule threaded on the end of the spindle bearing against the washer to hold the guide in place, and a bit secured to the spindle by means of the ferrule to constitute a screw driver operated by the movements of the handle on the spindle.

2. A spiral tool driver, comprising a hollow handle, a nut fitting within the end of the handle and provided with lugs engaging notches in the end of the handle to prevent the nut from turning, a sleeve forming a bearing for the spindle and threaded on the end of the handle to hold the nut in place, a flange on the spindle, a guide comprising a ring mounted on the flange and provided with ribs bearing against the flange, a washer on the spindle fitting within the ring portion of the guide and bearing against the ribs thereof, a ferrule having a slot in its ends and threaded on the end of the spindle to engage the washer and hold the guide in place, and a bit adapted to pass through the slot in the end of the ferrule and having a rounded neck portion to permit it to turn therein and a flange to be engaged by the ferrule, said bit having a tapering square shank fitting in a corresponding recess in the end of the spindle.

3. A spiral tool driver, comprising a hollow handle, a nut fitting within the end of the handle and provided with lugs engaging notches in the end of the handle to prevent the nut from turning, a sleeve forming a bearing for the spindle and threaded on the end of the handle to hold the nut in place, a bit carried by the spindle, a guide loosely mounted on the spindle, a recess in the sleeve, a spring dog housed within the recess and normally held out of the path of the spindle by its spring action, a collar fitting on the sleeve and inclosing the housing for the dog, and a slide button working in a slot between the collar and the sleeve and adapted to engage the dog to force it inwardly, there being a groove in the spindle to be engaged by the dog for locking the spindle within the handle.

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Witnesses:

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