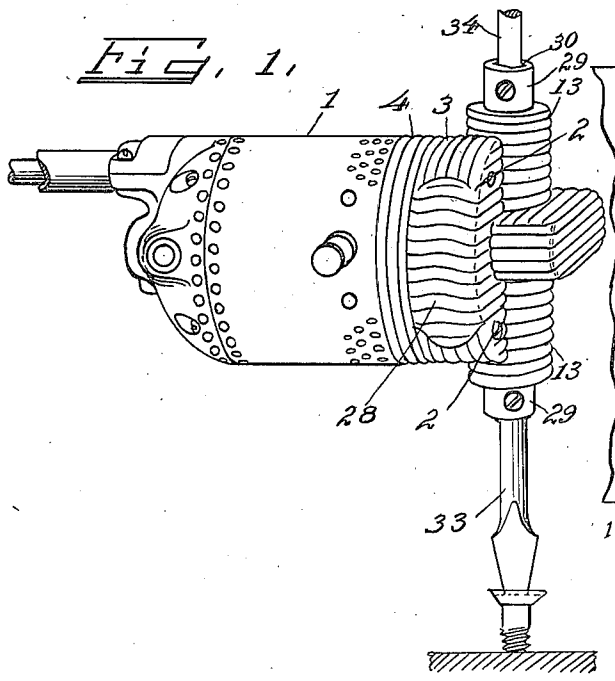
F. J. BACKSCHEIDER, DEC'D.
S. BACKSCHEIDER, ADMINISTRATRIX.
PORTABLE ELECTRIC TOOL.
APPLICATION FILED JAN. 31, 1920.

1,407,622. Patented Feb. 21, 1922.

Fig. 1.



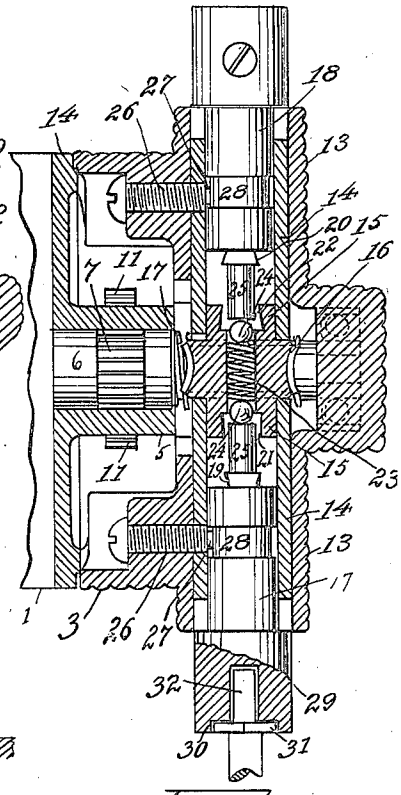


Fig. 2.

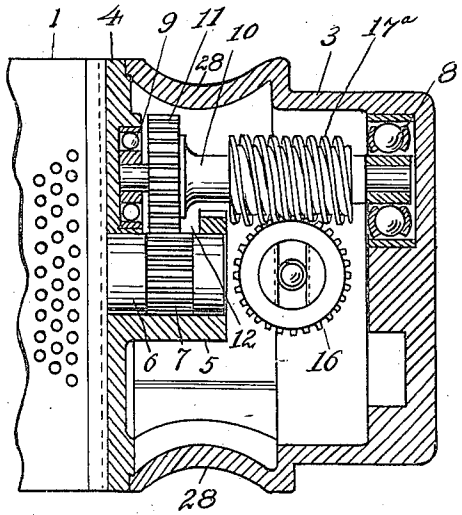


Fig. 3.

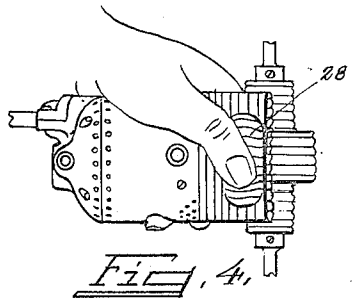


Fig. 4.

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UNITED STATES PATENT OFFICE.

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PORTABLE ELECTRIC TOOL.

1,407,622. Specification of Letters Patent. Patented Feb. 21, 1922.

Application filed January 31, 1920. Serial No. 355,415.

To all whom it may concern:

Be it known that I, FRANK J. BACKSCHEIDER, a citizen of the United States, and resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Portable Electric Tools, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to portable electric tools.

One of the objects of the present invention is to provide in a portable electric tool a spindle disposed at right angles axially to the principal axis of the tool, whereby the device is arranged for more convenient handling and manipulation.

Another object of the invention is to provide in a portable electric tool having spindles arranged as above set forth, a casing so arranged and shaped as to provide a convenient hand grip, whereby the tool may be handled with facility and held during operation in one hand, thus leaving the other hand of the operator free to be used on the work or otherwise.

A further object of the invention is to provide in a portable electric tool a pair of spindles driven in opposite directions, whereby one of the spindles may be used, for instance, for driving screws, and the other for withdrawing screws, thus obviating the necessity for reversing the operation of the tool, and facilitating its use.

Further objects will appear from the following detailed description of the invention.

In the drawings:

Figure 1 is a perspective of the tool.

Figure 2 is a sectional view of the gear case illustrating the spindle arrangement.

Figure 3 is a sectional view of the gear and spindle arrangement, taken on a plane at right angles to the plane of Figure 2.

Figure 4 is a perspective showing the tool in use.

The numeral 1 indicates the motor casing of a portable electric tool in accordance with this invention. Arranged to be secured to the motor casing 1 by bolts 2 extending throughout the length of the device, is a gear casing 3. A division plate 4 separates the gear chamber from the inside of the motor casing. The plate 4 is provided with a sleeve 5 within which the outer end 6 of the motor shaft operates. The shaft 6 is provided with a pinion 7. Mounted in suitable bearings 8 and 9, in the gear case 2 and division plate 4 respectively, is a worm shaft 10, on one end of which a gear 11, arranged to intermesh with the pinion 7 through an opening 12 in the sleeve 5, is fixedly mounted.

The gear casing 3 is provided with spindle extensions 13 disposed at right angles to the motor or principal axis of the device. Mounted in the extensions 13 are bushings 14. Rotatably mounted by means of clutch shoulders or extensions 15 between the inner ends of the bushings 14 is a worm gear 16 arranged to be driven by the worm 17^a integrally formed on the worm shaft 10. Mounted in the bushings 14 are spindles 17 and 18, the inner ends of which are provided with clutch members or shoulders 19 and 20 respectively, arranged to engage in slots 21 and 22 respectively of the clutch shoulders 15. The clutch member 20 and the slot 22 within which it is arranged to engage are slightly undercut as shown, for the purpose hereinafter set forth.

The gear 16 and shoulders 15 have a central opening, within which a compression spring 23 and balls 24 are mounted. The spindles 17 and 18 are provided with projecting pins 25 arranged to bear upon the balls 24, normally to force the respective spindle outwardly and keep the clutch members out of engagement, the spindles being of course, slidable in their bearings. Screws 26 having short pins 27 arranged to engage in annular slots or depressions 28 in the spindles, limit the outward movements of said spindles.

The outer surface of the gear casing 2 is formed with depressions 28 at the sides, axially parallel with the spindles 17 and 18, the said depressions forming hand grips for the handling of the tool, and adapting the same to be conveniently manipulated by the use of only one hand of the operator.

The outer ends of the spindles 17 and 18 are provided with chucks 29, each of which have a square socket 30 to engage a shoulder 31 of a tool. The chucks are cylindrically bored beyond the sockets 30 to receive shanks 32 of the tools.

The operation of the device and its use will be apparent to those skilled in the art to

which the same appertains, from the foregoing description. The worm gear 16 is driven by the motor through the gearing described. Assuming that the tool is to be used for the purpose of driving and withdrawing screws, screw drivers 33 and 34 are inserted in the chucks 29 of the spindles. In order to drive the screw, the driver 33 is disposed in the ordinary manner in the screw slot and the tool forced downwardly; this causes the spindle to be forced inwardly against the pressure of spring 23 until the clutch member 19 is in engagement in the slot 21, whereupon the tool operates and drives the screw in the ordinary manner. For the purpose of withdrawing screws, the driver 34 and the spindle 18 are employed, the device merely being reversed in the hands of the operator. The spindle 18 is driven in a direction counter to that of spindle 17, and when the tool is forced downwardly against the screw-head, the undercut clutch shoulder 20 is forced into the corresponding slot 22 and the tool is operated withdrawing the screw. By reason of the undercutting of the clutch shoulder 20 and corresponding formation of the slot 22, said clutch members are prevented from becoming disengaged so long as there is any torsional stress upon the spindle, even though the hand pressure of the operator is relieved. Thus the withdrawing of the screw is effected without the necessity of any counter downward pressure brought to bear by the operator.

The matter disclosed herein relating to the clutch engagement between the spindles and the gear 16 is claimed in application by me, Serial Number 472,614, filed May 25th, 1921.

Having thus fully described my invention that I claim as new and desire to secure by Letters Patent is:—

1. In a portable electric tool, the combination with the casing, of a spindle mounted in said casing on an axis substantially at right angles to the axis of said casing, means for actuating said spindle, said casing having depressions on opposite sides thereof, said depressions being axially parallel with said spindle to form hand-grips on said casing.

2. In a portable electric tool, the combination with the casing, of a pair of spindles mounted in said casing on an axis substantially at right angles to the axis of said casing, means for actuating said spindles, said casing having depressions on opposite sides thereof and axially aligned with said spindles to form hand grips for holding said casing with either of said spindles in operative position.

FRANK J. BACKSCHEIDER.