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2,845,968

POWER DRIVEN SCREW DRIVER HAVING SCREW HOLDING MEANS

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2 Sheets-Sheet 1

Fig. 1.

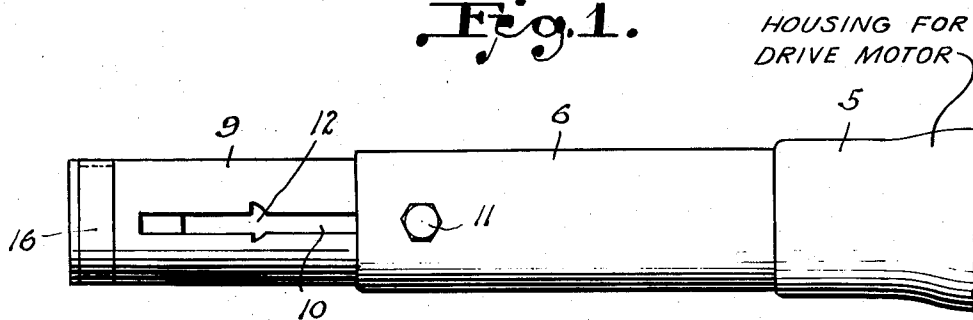


Fig. 2.

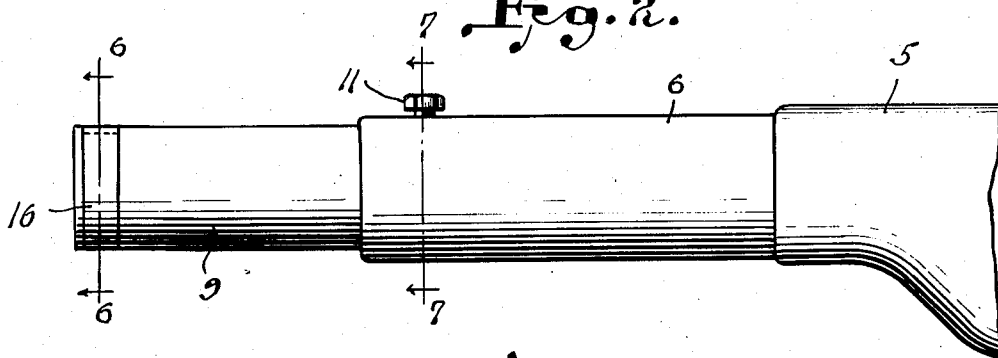


Fig. 3.

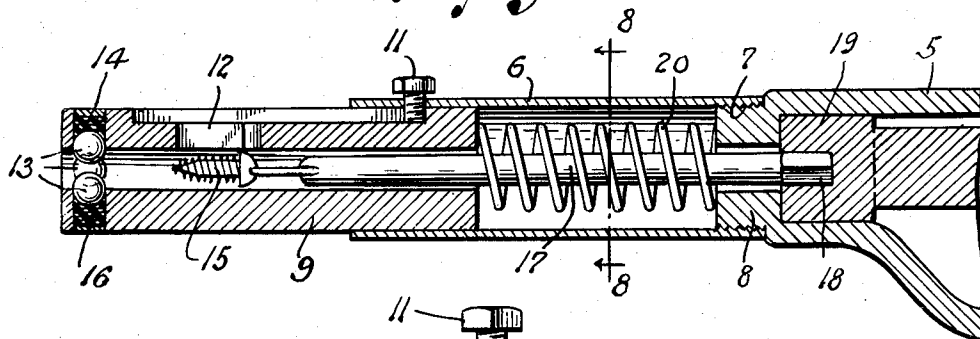
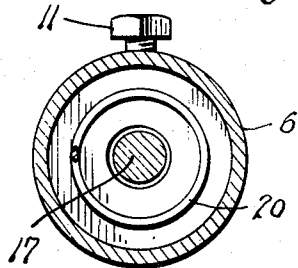


Fig. 8.



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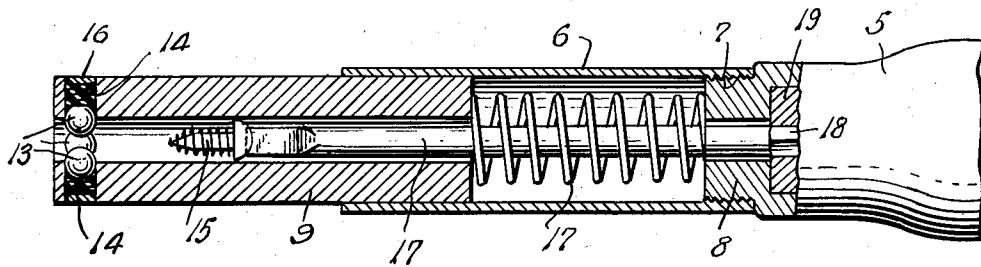
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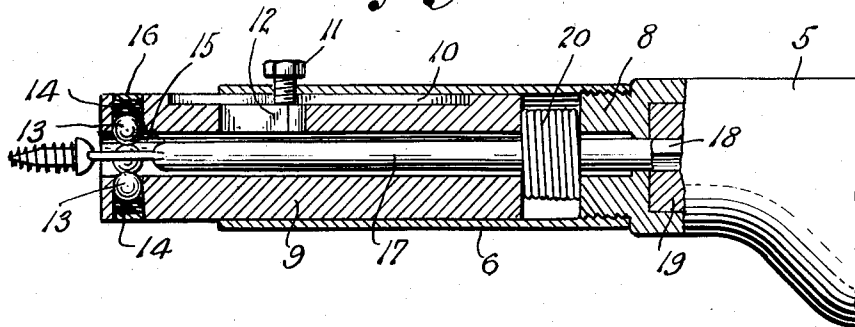
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2 Sheets-Sheet 2

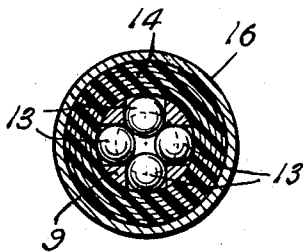
*Fig. 4.*



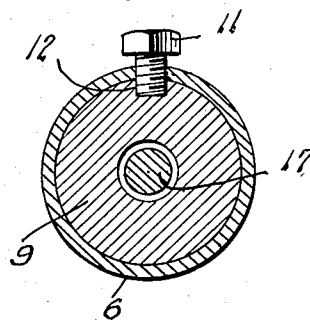
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



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1

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## POWER DRIVEN SCREW DRIVER HAVING SCREW HOLDING MEANS

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Application January 23, 1957, Serial No. 635,838

1 Claim. (Cl. 144—32)

This invention relates to screw drivers, and more particularly to screw drivers of the power operated type, means being provided for holding a screw in position for contact by the blade of the power operated screw driver for properly centering the screw.

An important object of the invention is to provide means for holding the screw within the barrel of the screw driver, so that when power is applied to the driving blade, the screw will act to bore an opening in the material in which the screw is to be applied, and then be forced into the opening, securing the elements together.

An important object of the invention is to provide a tool of this character wherein the barrel in which the screws are positioned is formed with an opening in the wall thereof so that a screw may be dropped into the barrel in direct alignment with the blade of the screw driver, the blade of the screw driver being so arranged that it will follow the screw into its work during the operation of the motor of the screw driver.

A further object of the invention is to provide screw holding means in the form of ball bearings which are forced into frictional contact with the screw, so that the screw although it is being held in position to receive the screw driver may rotate freely under the action of the motor driven blade of the screw driver.

Other and further objects and advantages of the invention will be hereinafter described and the novel features thereof defined in the appended claim.

Referring to the drawings:

Fig. 1 is a plan view of a screw driver of the torque type, constructed in accordance with the invention.

Fig. 2 is a side elevational view thereof.

Fig. 3 is a longitudinal sectional view through the screw driver illustrating the screw retaining barrel and screw supporting mechanism.

Fig. 4 is a longitudinal sectional view through the barrel of the screw driver taken at right angles to Fig. 3.

Fig. 5 is a longitudinal sectional view through the barrel of the screw driver illustrating the position of the barrel and screw as the screw is being set.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 2.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 2.

Fig. 8 is a sectional view taken on line 8—8 of Fig. 3.

Referring to the drawings in detail, the handle of a torque screw driver is indicated generally by the reference character 5, the handle being of the conventional structure in which the motor of the screw driver is housed. The reference character 6 indicates a tubular housing that is formed with internal threads 7 disposed at one end thereof, which threads afford means for attaching the tubular housing to the threaded extension 8 of the handle 5.

Operating longitudinally of the tubular housing 6, is a barrel 9 which is formed with a slot 10 in which the threaded end of the bolt 11 moves, the bolt 11 passing

2

through a threaded opening in the tubular housing 6, as better shown by Fig. 3 of the drawings.

The barrel 9 is also provided with an opening 12 in the wall thereof, which opening 12 establishes communication between the interior of the barrel 9 and atmosphere, so that a screw may be readily positioned in the barrel 9, in a manner as shown by Fig. 3 of the drawings.

Disposed within the outer end of the barrel 9, are openings in which the ball bearings 13 are positioned, and as shown, an annular groove is formed in the barrel 9 directly over the outer ends of said openings in which rubber cushioning members 14 in the form of bands are positioned in the annular groove to bear against the ball bearings 13, normally urging the ball bearings inwardly towards each other providing a restricted area through which the screw, which in the present showing is indicated by the reference character 15, passes when the screw moves through the barrel 9 and is finally positioned by the implement.

Also positioned in said annular groove, is a split spring band 16 which closes the groove and bears against the cushioning members 14 biasing the cushioning members and ball bearings 13 inwardly for gripping the screws as they are being applied.

The power driven screw driver blade is indicated by the reference character 17 and has the squared end 18 of its shank fitted in a square opening of the motor driven drill shank 19. The screw driver blade 17 operates through the barrel 9 which slides through the tubular housing 6, the inner end of the barrel 9 providing a stop against which the coiled spring 20 rests, the opposite end of the coiled spring 20 engaging the end of the threaded extension 8, as better shown by Figs. 4 and 5 of the drawings. It is obvious that the spring 20 under normal conditions, will be sufficient to offset or balance the action of the ball bearings 13 and will hold the screw 15 therebetween until additional pressure is exerted on the handle 5, whereupon the screw which is being seated, will be forced between the ball bearings, during the action of the screw driving blade 17 to seat the screw.

It is obvious that after the screw has been ejected from the end of the barrel 9, the cushioning bands or members 14 will act to force the ball bearings 13 inwardly and into the path of travel of the next screw to be positioned, so that when the screw passes into a position between the ball bearings, the ball bearings will again hold the screw in proper position for action by the power driven screw driver blade 17.

From the foregoing it will be seen that due to the construction shown and described, I have provided a torque screw driver having means for holding a screw in its proper position for locating the screw properly in the material into which the screw is to be embedded.

The screw will be dropped into the barrel 9, through the opening 12, wherein the tool will be forced forwardly, the blade of the screw driver entering the slot in the screw head. The screw will now be rotated by the screw driver blade under the power motor supported in the handle, and the screw properly seated.

After the screw has been properly seated, the tool is removed, and the ball bearings will again be lined up for contact with the next screw to be positioned by the tool.

Having thus described the invention, what is claimed is:

A torque screw driver, comprising a handle in which a motor having a drive shaft is mounted, a tubular housing secured at one of its ends to said handle, and extending laterally therefrom, a screw retaining barrel mounted within said housing for movement longitudinally of said housing, said barrel having a slot in the side thereof

adapted for the reception of a screw into said barrel, a set screw extending through said housing into said slot, a screw driving blade secured to said drive shaft, extending into said barrel and adapted to engage and set a screw deposited in said barrel, said barrel having a plurality of bores formed therein adjacent to the discharge end thereof and arranged opposite to each other, balls mounted in said bores, rubber cushioning bands overlying said bores against which said balls engage, said bands normally biasing said balls into the path of travel of a screw positioned by the screw driver and moving through said barrel, and supporting said screw in a position to be engaged by said screw driver blade.

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