March 25, 1930. T. C. WEISS 1,751,781

MOTOR DRIVEN TOOLS SWITCH

Filed April 20, 1929

Fig. 1.

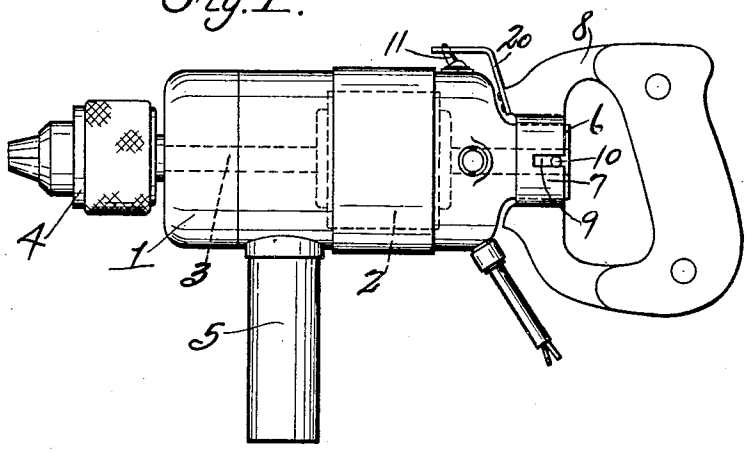
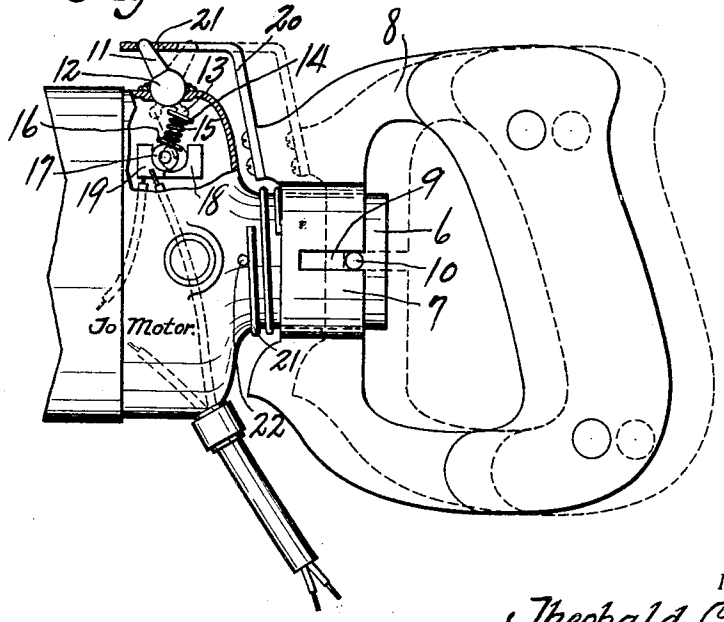


Fig. 2.



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MOTOR-DRIVEN-TOOLS SWITCH

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The invention relates to motor driven tools, and more particularly to portable electric drills, and has for its object to provide a device of this character in which the pressure handle for manually applying force to the tool in the drilling operation has a sliding engagement with the tool casing to permit movement of the handle relative to the casing upon the application of force thereto, said handle movement being adapted to actuate the motor controlling means to start and stop the motor.

A further object is to provide a device of this character having a pressure handle slidably mounted on the tool casing and adapted for manually imparting a push and pull movement thereto and with relation to the casing, said handle having connection with a switch controlling the motor whereby said switch will be moved to close the motor circuit incident to a push on the handle, and to break the circuit incident to a pull on the handle in withdrawing the tool.

With the above and other objects in view, the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:

Figure 1 is a view of the electric drill in side elevation.

Figure 2 is a fragmentary view of the drill in side elevation, showing part of the casing broken away to illustrate the switch construction.

Referring to the drawing, in which the invention is shown as applied to an electric drill, the numeral 1 designates a casing in which is shown in dotted lines a conventional type of motor 2, the armature shaft 3 of which drives the chuck 4 of the drill. A handle 5 is secured to the side of the casing intermediate the ends thereof, said handle forming means by which the weight of the drill may be supported. The rear end 6 of the casing 1 carrying the bearing of the armature shaft is of reduced diameter and has slidably mounted thereon a collar member 7, said collar member being integrally formed with the pressure handle 8 of the drill. The collar member 7 has slots formed therein on either side of and parallel to the axis of the casing, said slots being adapted to cooperate with the studs 10 projecting from the sides of the end 6 of the casing to guide the collar in its sliding movement with relation to the casing, and to limit the amount of outward movement which it may have relative to the casing.

Mounted in the casing 1 at the rear end thereof is the motor controlling switch having its operating lever projecting outside of the casing. The motor controlling switch is preferably of the well known toggle type, and is comprised of the lever 11 having a ball portion 12 integrally formed therewith and adapted to fit into and pivot in a socket formed by the casing and washers threaded thereto, said lever having a rounded protuberance or portion 13 formed at the inner end thereof. A bearing plate 14 having a recess formed therein is held in contact with the protuberance 13 by means of the coil spring 15, the protuberance 13 fitting into said recess and being adapted for pivotal movement with relation thereto. The spring 15 is supported at its lower end by the bearing plate 16 carried by the switch roller contact member 17 having an arm projecting through the plate 16 and into the coil spring 15. The contact member 17 rests upon the semi-elliptical inner face of the porcelain supporting member 18, one side of said member carrying the switch terminals 19 which the contact member 17 is adapted to engage. The switch as shown in full lines in Figure 2 is in closed circuit position, the contact member 17 engaging the terminals 19, and upon movement of the lever 11 to dotted line position the spring 15 is thrown off center and acts to move the contact member 17 to the right out of contact with the terminals 19 to open the circuit. A forwardly projecting arm 20 is carried by the handle 8, said arm having a hole 21 formed therein at the outer end thereof and adapted to receive the upper free end of the lever 11 which is rounded to provide free bearing contact between the periphery of the hole and the lever. If de-

sired, a coil spring 21, as shown in Figure 2, encircling the reduced end 6 of the casing and interposed between the pin 22 and the collar member 7 may be provided to automatically return the pressure handle to switch opening position upon release of pressure from said handle.

It will thus be seen that upon forward movement of the handle 8, as in the application of force to the drill, the arm 20 actuates the switch which is auomatically turned to "on" position by the arm without the necessity of a separate operation, and which starts the operation of the motor at the time desired. Upon a backward movement of the handle, as in withdrawing the drill, the switch will be moved to "off" position, so that the push and pull movement imparted to the handle in the application or withdrawal of force to or from the drill in the use thereof automatically opens and closes the switch as required in the use thereof. It will be seen, however, that in cases requiring the rotation of the drill during the withdrawal thereof, as where the drill is stuck, the withdrawal force may be applied to the handle 5, leaving the switch in "on" position. It is also obvious that the principle of providing a motor driven tool with a slidable handle connected to the controlling switch whereby the sliding movement thereof actuates the switch, may be used in connection with other types of electrically driven tools; and also with motor driven tools in which the motor is of the compressed air or other type, the movement of the handle in such cases being adapted to actuate the valves or other controlling means.

The invention having been set forth, what is claimed as new and useful is:

1. In a motor driven tool, a casing, a motor, means for actuating said motor, control means for said motor actuating means, and a pressure handle for manually applying force to said tool, said handle having a sliding relation with respect to said casing whereby to actuate said control means to start and stop the motor.

2. In a motor driven tool, a casing, a motor, means for actuating said motor, a pressure handle for manually applying force to said tool, and control means for said motor actuating means having a connection with said handle, said handle being adapted for a push and pull movement with relation to said casing.

3. In a motor driven tool, a casing, a motor, means for actuating said motor, control means for said motor actuating means, a pressure handle for manually applying force to said tool, and a link connection between said handle and said control means, said handle being adapted to have a push and pull movement with relation to said casing whereby to actuate said control means.

4. In a motor driven tool, a casing, an electric motor, a switch controlling said motor, and a pressure handle for applying force to said tool, said handle being slidably mounted on said casing and adapted for push and pull movement with relation thereto, said switch having a connection with said handle whereby movement of said handle actuates the switch.

5. In a motor driven tool, a casing, an electric motor, a switch controlling said motor, a pressure handle for applying force to said tool, and a link connection between said handle and said switch, said handle being slidably mounted on said casing and adapted for push and pull movement with relation to the casing whereby to actuate said switch.

6. In a motor driven tool, a casing, an electric motor, a toggle switch controlling said motor, a pressure handle for applying force to said tool, and a link connection between said handle and said switch, said handle being slidably mounted on said casing and adapted for reciprocal movement with relation to the casing whereby to actuate said switch.

7. In a motor driven tool, a casing, an electric motor, a toggle switch controlling said motor, a pressure handle for applying force to said tool, a connection between said handle and said switch adapted to actuate said switch upon the application of pressure to said handle, and means for automatically opening said switch upon release of pressure from said handle.

8. In a motor driven tool, a casing, an electric motor, a toggle switch controlling said motor, a pressure handle for applying force to said tool, a connection between said handle and said switch adapted to actuate said switch upon the application of pressure to said handle, and a spring adapted to automatically open said switch upon release of pressure from said handle.

In testimony whereof I affix my signature.

THEOBALD C. WEISS.