F. J. BACKSCHEIDER.

PORTABLE ELECTRICAL TOOL.

APPLICATION FILED SEPT. 27, 1907.

908,726. Patented Jan. 5, 1909.

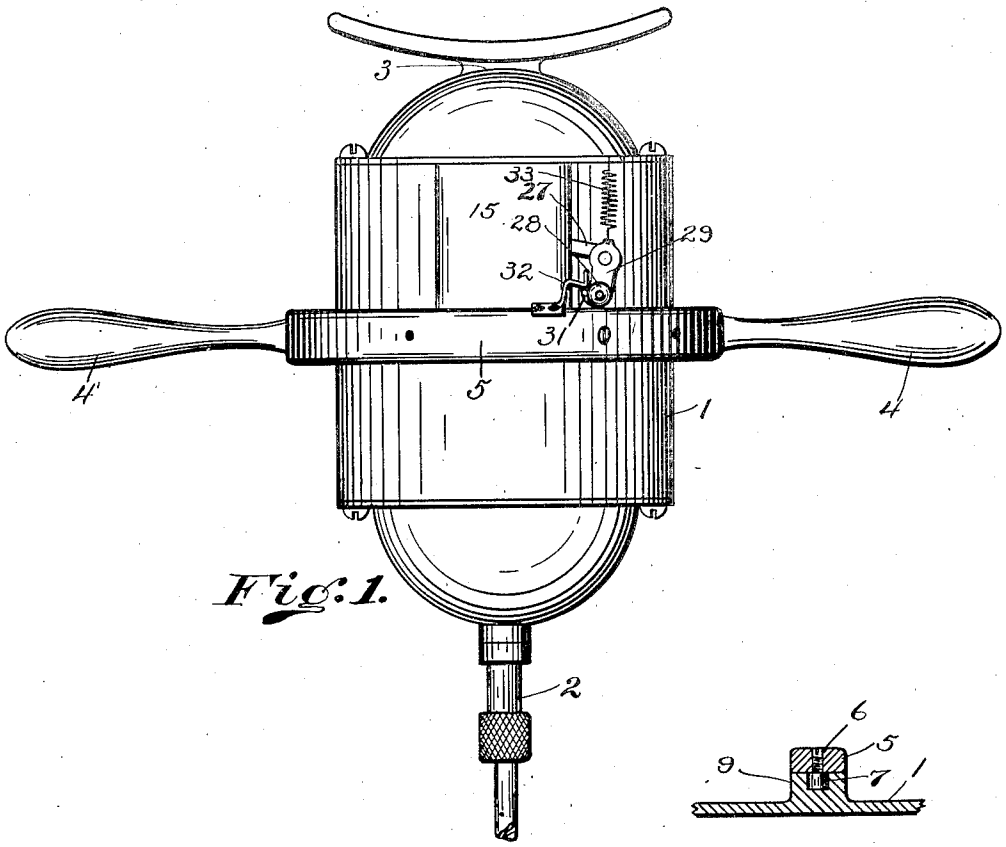



Fig. 1.




Fig. 3.

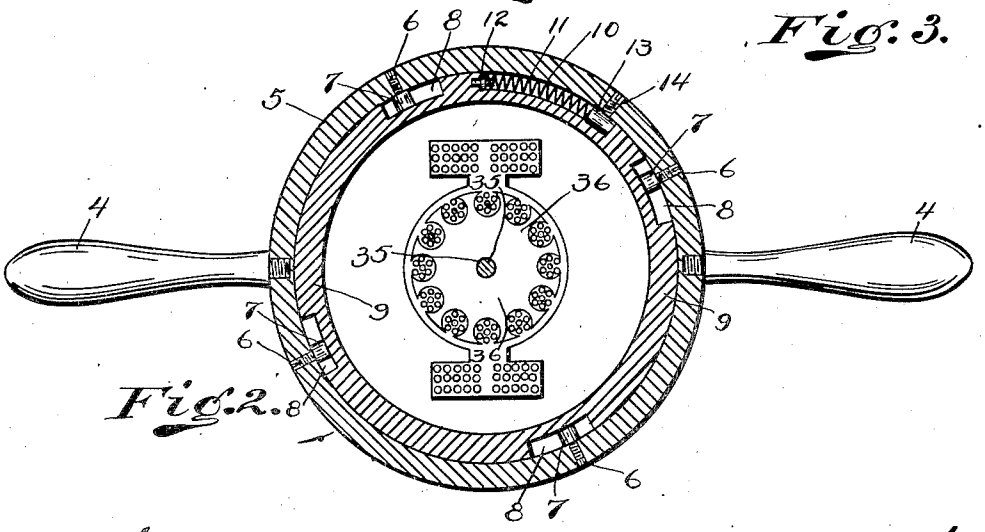



Fig. 2.

Witnesses

C. M. Palmestock

Alfred M. Allen

Inventor

Frank J. Backscheider

By Arthur J. Ewald

Attorney

# UNITED STATES PATENT OFFICE.

FRANK J. BACKSCHEIDER, OF CINCINNATI, OHIO.

## PORTABLE ELECTRICAL TOOL.

No. 908,726. Specification of Letters Patent. Patented Jan. 5, 1909.

Application filed September 27, 1907. Serial No. 395,353.

*To all whom it may concern:*

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

In portable electrical tools, especially for such tools when used in drilling, it very frequently happens that the drill, or other tool, becomes stalled in the work, and as a result, the operating motor becomes overloaded, and a short circuit is formed, burning out the armature. To prevent the overload, fuses are generally employed, and if a short circuit is not formed in the armature with the stalling of the drill, or other tool, the fuse is burned out, and has to be replaced. To prevent the frequent annoyance of replacing a burned-out fuse, the tendency is to make use of a fuse that will not burn out readily, and consequently with the stalling of the tool, the overcharge falls on the armature. Electrical devices have frequently been used to prevent any overload damaging the armature of the motor, by means of which when any more than the normal current is furnished, the tool, resistance shall be automatically shunted into the circuit to prevent damage to the armature. But these electrical devices are not found to work with sufficient rapidity, and the short circuit is apt to occur before the current can be cut down by the resistance.

It is one of the objects of my invention to provide a mechanical construction which shall automatically operate the switch controlling the current, to throw off the current the moment the tool becomes stalled, and the motor is obliged to carry more than the normal current.

In the drawings, Figure 1 is a plan view of my improved electrical drill construction. Fig. 2 is a central cross section through the ring, upon which the handles of the drill are secured. Fig. 3 is a detail cross section of same, taken through one of the attaching screws.

1 represents the casing of a portable electrical drill, with the chuck 2 and breast plate 3, and handles 4—4 for holding the drill. These handles are secured to a ring 5, which encircles the casing 1 of the drill, the handles and ring corresponding to the standards and support for the casing of any electrical tool used for similar purposes. The ring 5, instead of being rigidly secured to the motor casing is mounted, so as to slide or turn on the casing, and in the construction shown, the ring and casing are secured together, so as to permit of this movement by means of screws 6, which pass down through the ring, as shown in Figs. 2 and 3, and carry rollers 7, which run in slots 8 cut in the outer surface of the flange 9 of the casing. This construction holds the ring frame securely to the motor casing, while at the same time it permits a rotary movement of the ring on the casing. Mounted in a slot 10 in the motor casing underneath the ring at any suitable point is a coiled spring 11, which bears between the washer 12, secured to the casing at one end of the slot, and the washer 13, which is secured by the screw 14 to the ring 5, at the other end.

The switch 27 for controlling the current is inclosed in the box 15 on the motor casing 1, and this switch is manually operated by the finger button 28 on the short arm 29 pivoted on the end of the switch lever 27. This arm 29, is provided with a hook 31 which engages the catch 32, secured to the ring 5, thus locking the switch. 33 is a spring engaging the switch lever 27, to throw the switch as soon as the catch is released. The spring 11 is sufficiently powerful, so that when the drill, or other tool is working normally, the ring 5, which carries the handles 4, 4, by means of which the tool is used is held with the washer 13 against the shoulder in the slot 10. Should, however, for any reason, an overload occur, and the armature shaft 35 carrying the armature 36 become stalled, or the drill stop in the work, the resistance to the normal operation of the tool, will at once be transferred to the motor casing, and will tend to rotate the casing in the opposite direction. As the operator is holding the handles of the tool in fixed position, or where the tool is mounted on supports, the supports are in fixed position, the result will be that the motor casing will turn in the handle or supporting ring, and this movement will release the switch operating lever 27, which is mounted in box 15 on the motor casing from the catch 32, which is secured to the handle ring, the spring 33 will throw the switch and the current will at once be cut off. The tension of the coiled spring 11 is adjusted of ample strength to resist any normal opera-

tion of the tool, but the moment that the work required to be done goes beyond the adjusted horse-power capacity of the tool, the casing will turn in the ring, and throw off the current. So far as this part of my invention is concerned, it is immaterial the kind of switch construction that may be employed for regulating and controlling the current. All that is necessary is that the switch shall be mounted on one part, and the catch on the other, so that the moment the tool is called upon to exert more than its normal capacity, the parts will rotate slightly on each other, and the switch controlling the current will be released and thrown to automatically cut off all current from the machine.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:

1. In a device of the character specified, a casing, and a support for the casing, said parts being reciprocally movable with reference to each other under mechanical reaction, and a switch for controlling the current, actuated in disconnecting by the reciprocal movement of said casing and support, substantially as described.

2. In a device of the character specified, a casing, and a support for the casing, said parts being reciprocally movable with reference to each other under mechanical reaction, with means for holding said casing and support normally in a fixed relation to each other.

3. In a device of the character specified, a casing, and a support for the casing, said parts being reciprocally movable with reference to each other under mechanical reaction with means for holding said casing and support normally in a fixed relation to each other, and a switch for controlling the current actuated by the movement by said casing and support.

4. In a device of the character specified, a casing, and a support for the casing, said parts being reciprocally movable with reference to each other under mechanical reaction, a switch for controlling the current, with operating handle, and catch to lock the operating handle, said switch and operating handle being mounted on one of said parts, with said catch mounted on the other part.

5. In a device of the character specified, a casing, and a support for the casing, said parts being movable with reference to each other, a switch for controlling the current, with operating handle, and catch to lock the operating handle, said switch and operating handle being mounted on one of said parts, with catch mounted on the other part with a spring acting between said casing and support to hold same normally in a fixed relation to each other.

6. In an electric drill, a rotating armature carrying a drill chuck, a casing for the armature, and an annular support with handles, within which support the armature casing is mounted, said casing and support being arranged to turn on each other, a spring for holding said parts normally in a fixed relation to each other, and a switch for controlling the current, with a catch on the annular support for locking the switch whereby upon the movement of said parts against the pressure of said spring the switch will be operated.

In testimony whereof I have hereunto signed my name in the presence of two witnesses.

FRANK J. BACKSCHEIDER.

Witnesses:

ALFRED M. ALLEN,

BESSIE A. BEALL.