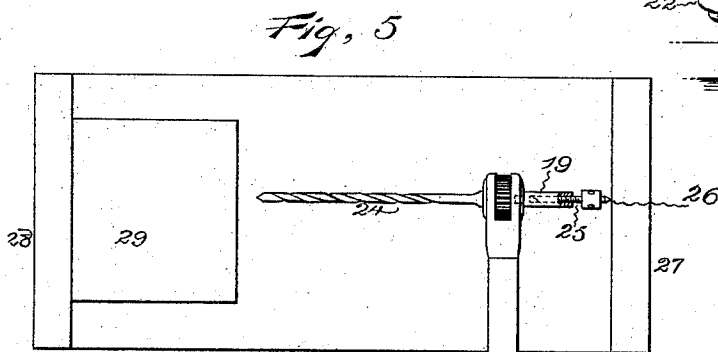
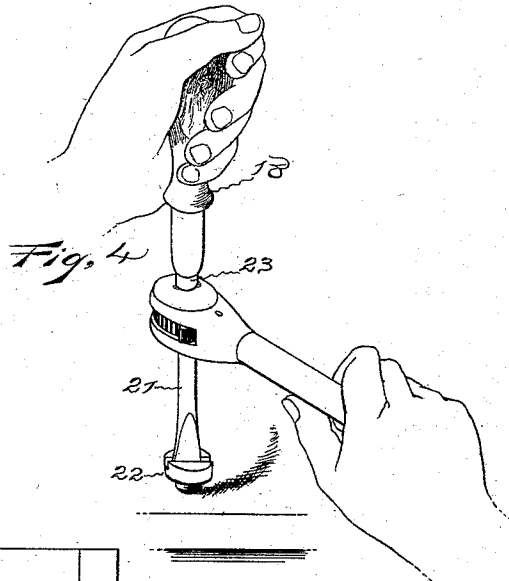
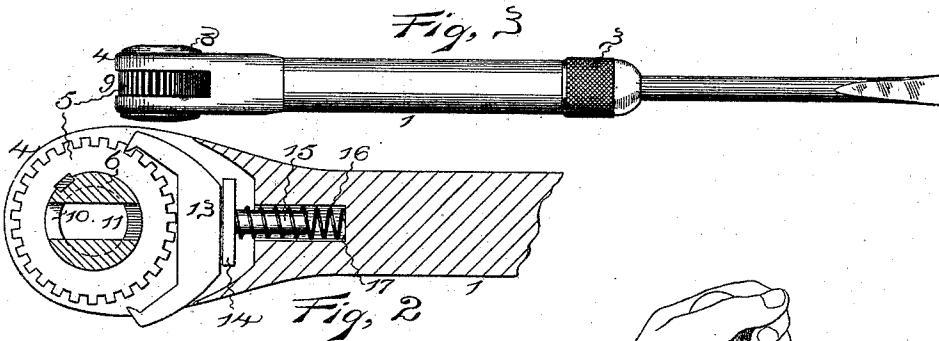
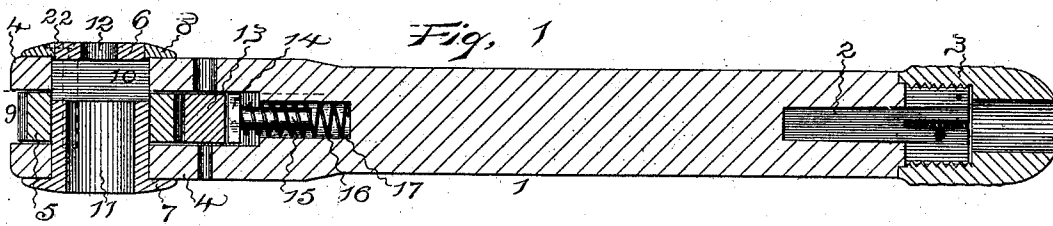


(No Model.)

U. PORSTENDORFER.  
RATCHET TOOL.

No. 505,535.

Patented Sept. 26, 1893.



Witnesses:

C. E. Buckland,  
Arthur P. Day

Inventor:

Urbanus Porstendorfer.  
By his Attorney,  
Willard Eddy.

# UNITED STATES PATENT OFFICE.

URBANUS PORSTENDORFER, OF HARTFORD, CONNECTICUT.

## RATCHET-TOOL.

SPECIFICATION forming part of Letters Patent No. 505,535, dated September 26, 1893.

Application filed November 2, 1892. Serial No. 450,729. (No model.) Patented in Germany February 27, 1893, No. 67,145.

*To all whom it may concern:*

Be it known that I, URBANUS PORSTENDORFER, a citizen of the United States, residing in the city and county of Hartford, in the State of Connecticut, have invented certain new and useful Improvements in Ratchet-Tools, (for which I have obtained a patent in Germany, No. 67,145, dated February 27, 1893,) of which the following is a specification.

Said improvements are described in the following specification, and are illustrated by the accompanying drawings.

This invention relates to that class of tools in which rotation is produced by means of a ratchet wheel and a hand lever. Ratchet braces and ratchet drills are familiar examples of this class of tools.

It is the object of my invention to produce rotation in either direction at will, and to vary the function of the tool by using interchangeable blades.

To accomplish these objects I use a ratchet wheel of special construction, in combination with an adjustable, spring-seated, double pawl.

The best manner in which I have contemplated applying the principle of my invention, is illustrated in said drawings, in which—

Figure 1 is a central longitudinal section of the body of my improved tool. Fig. 2 is a central, longitudinal section of the same, on a sectional plane which is at right angles with that of Fig. 1. Fig. 3 is an edge view of the same, together with a blade which is inserted in the end of the shank. Fig. 4 is a perspective view of my improved tool, in use as a ratchet screw-driver. Fig. 5 is an elevation of the same, in use as a ratchet drill.

In these views, and particularly in Figs. 1 and 3, the numeral 1 denotes a hand lever, which is the handle of the tool. One end of handle 1 has an axial hole 2 for the shank of a gouge, chisel, screw-driver, or other blade, to be inserted therein. About this axial hole, the terminal portion of handle 1, is split lengthwise, and is provided with an external screw thread, and with a thumb-nut 3, as seen in Fig. 1. By turning up this nut, the blade, inserted in hole 2, is secured in position for use. A screw-driver blade is shown so secured, in Fig. 3. The other end, or the head,

of handle 1, is divided by a deep slot 9 into two parallel and like cheeks 4. This slot contains a square-toothed ratchet wheel 5, which is keyed upon a hub, or shaft, 6. This shaft has its bearings in holes through cheeks 4, and is held rotatably in position therein by terminal flanges 7 and 8. Flange 7 is an integral part of shaft 6, while flange 8 is secured to that shaft by screws, which are countersunk in the face of shaft 6 and flange 8, as seen at 22 in Fig. 1. Shaft 6 is hollow, its aperture being uniformly cylindrical at one end of the shaft and for the greater part of its length, as seen at 11 in Fig. 1. At the opposite end of shaft 6, its aperture is also cylindrical, but smaller, as seen in the same figure, at numeral 12. Between the described cylindrical portions 11 and 12 of the aperture through shaft 6, is a slot-like opening 10 whose width is less than the diameter of the described larger aperture 11. Slot 9, which separates cheeks 4 and 4, is deepest in the middle, and accommodates and confines, back of wheel 5, a double pawl 13. The latter, being rudely crescent-shaped, is provided with terminal re-entrant points, which are adapted to engage the ratchet wheel successively, but not simultaneously. The bottom face of pawl 13 is flat, and is adapted to slide upon the contiguous flat face of plate 14. Plate 14 has a stem 15, surrounded by a coiled spring, 16, and seated in a tubular well 17, which is bored in the bottom of slot 9.

The operation of the described mechanism is such that pawl 13, when moved by hand, slides upon plate 14, and engages the ratchet by either of the engagement points of the pawl, as may be desired. So the direction of rotation of shaft 6 is reversed at will by merely sliding pawl 13 upon plate 14. At the same time, the pawl is held up to its given engagement by the pressure of spring 16, acting through plate 14.

To produce a ratchet-screwdriver by the use of the described mechanism, it is necessary that the tail of blade 21 being formed to enter aperture 11, and flattened to enter slot 10, should be inserted in the lower side of the head, as seen in Fig. 4. At the same time a round rod 23, provided with a handle 18, and being slightly smaller than aperture 12, is inserted in the upper side of the head, as seen

in the same figure. The manner of using the ratchet-screwdriver, so put together, is obvious from the drawing last mentioned.

To produce a ratchet drill, the blade 24, 5 either with or without the aid of a chuck or holder, must be fitted and inserted into hole 11 and chamber 10, in the position shown on Fig. 5; while a spindle 19, provided with an adjusting screw 25 and a center-point 26, is 10 inserted in hole 12, as seen in Fig. 5, to receive the counter-thrust of the drill.

A bit may be inserted in place of blade 21, in Fig. 4, to produce a ratchet brace; and by the use of other interchangeable blades, which 15 are not shown in the drawings, a variety of other ratchet tools may be produced, rotating in either direction or successively in both directions, as may be desired.

Such being the construction and operation 20 of my invention, I claim—

1. A hand lever, whose head is divided by

a slot, and a ratchet wheel, rotatable in said slot, in combination with a spring-seated plate, and a loose two-pointed pawl, having a flat back, whereby said pawl may slide on the 25 surface of said spring-seated plate, substantially as and for the purpose specified.

2. A lever, whose head is separated by a slot into two cheeks, and a ratchet wheel, whose shaft is journaled in said cheeks, in combination with the spring-seated plate 14, and 30 the loose double pawl 13, having a flat back, whereby said pawl may slide on the surface of said plate, substantially as and for the purpose specified.

In testimony whereof I hereunto set my 35 name in the presence of two witnesses.

URBANUS PORSTENDORFER.

Witnesses:

WILLARD EDDY,

JENNIE PORSTENDORFER.