A. J. HAGER.

TOOL.

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1,377,829.

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Fig. 2

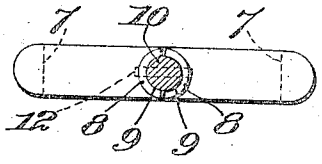



Fig. 1

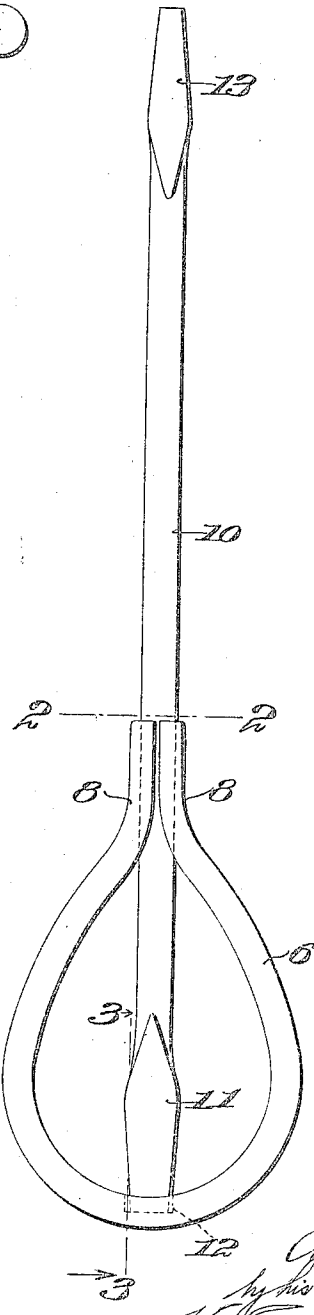



Fig. 5

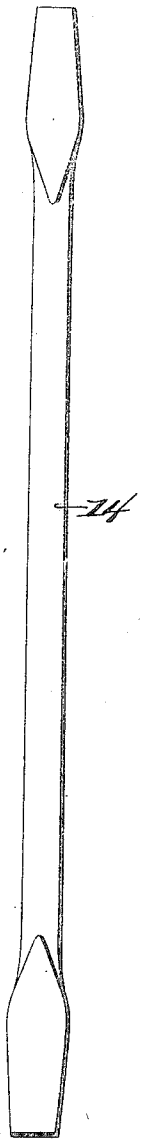



Fig. 4

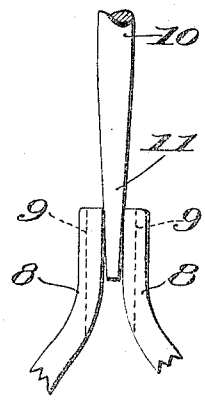
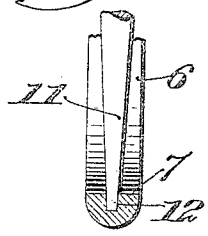



Fig. 3




Witness
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# UNITED STATES PATENT OFFICE.

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## TOOL.

1,377,829. Specification of Letters Patent. Patented May 10, 1921.

Application filed March 27, 1920. Serial No. 369,256.

*To all whom it may concern:*

Be it known that I, ANDREW J. HAGER, a citizen of the United States, residing at Quincy, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved tool and more particularly to screw-drivers although it will be apparent from the following description that the utility of the invention is not limited to screw-drivers alone.

Because of the ease of manufacture it is customary at the present time to supply screw-drivers having but a single bit permanently secured to the handle rendering it necessary for the workman to have in his kit a large number thereof when the variety of his work necessitates the driving of screws of many sizes. The bulk and weight of the number of tools required is inconvenient and the cost is considerable.

One object of the present invention is to provide for the convenience of a great number of sizes of tool bits while reducing the bulk, weight and cost thereof. This object may be secured by providing a single handle capable of holding a large number of double-ended bits which may be reversed at will. This solution of the problem has been proposed heretofore but the constructions suggested have not been such that simplicity and cheapness of manufacture are secured.

A further object of the invention is to provide a tool of the character just referred to which is of extreme simplicity requiring a minimum number of parts *i. e.*, only two, the bit and the handle, and yet provide a tool as strong and as efficient as the tools having the bit permanently secured to the handle.

To the accomplishment of the objects named the invention comprises the features and combinations of parts hereinafter described and then particularly pointed out in the appended claims.

The best form of the invention at present known to the inventor is shown in the accompanying drawings, in which: Figure 1 is an elevational view of the novel tool with a double-bladed screw-driver bit in position for use; Fig. 2 is a sectional plan on the line 2—2 of Fig. 1; Fig. 3 is a section, in plan, on the line 3—3 of Fig. 1; Fig. 4 is a fragmentary view illustrating the mode of inserting a double-bladed bit in working position in the handle; and Fig. 5 is a view of one of several other bits having blades of different sizes which may be inserted in the handle at will.

In the embodiment of the invention illustrated in the drawings, the tool handle 6 is preferably pear shaped to better fit the hand of the workman and is bent to this shape from a rod of semi-circular cross section (see Fig. 3), the flat face of which forms the interior wall 7 of the handle. The two free ends 8, 8 of the handle are brought to a parallel position and the inner wall 7 throughout each of the ends 8 is concavely grooved at 9, 9, the two grooves together forming a circular opening (see Fig. 2) for the reception of the cylindrical shank of the bit 10. The metal of the handle 6 is spring steel so that the ends 8, 8 are continually forced toward each other to grip the bit, when in place, with considerable pressure.

To insert a double-bladed bit 10 in the handle 6, one blade 11 is inserted in the crack between the handle ends 8, as shown in Fig. 4, and by inward pressure the two ends are wedged apart by the blade as the bit is forced inward. After the blade has passed between the ends 8 these ends snap into position against the cylindrical shank of the bit and provide a bearing of considerable length to maintain the working position of the bit. The bit is then turned on its own axis through 90 degrees and the blade 11 stepped into a slot 12 formed for its reception in the inner wall 7 of the handle (see Fig. 3) opposite the opening between the ends 8, which effectually holds the bit from rotation by engagement with the sides of said blade.

It will be observed that the notch 12, which is elongated to fit the screw-engaging edge of the blades (this notch being of course sufficiently long to receive the largest size of screw-driver the tool is adapted for) runs longitudinally of the handle-member, to thereby avoid weakening this member at the center of the bowed portion thereof, as would be the case if the notch were extended transversely of the member. This manner of arranging the notch requires, as is obvious, that it shall lie at right-angles to the crack

between the clamping members 8, so that, inasmuch as it is necessary that the clamping members 8 shall be pried apart by the wedge portion of the blade while inserting the tool in the handle, as shown in Fig. 4, it is essential that the shank 10 shall be capable of rotation within the clamping members 8 to permit the shank to be turned quarter around to enable the blade to be stepped into the notch 12. This is the only purpose for providing for rotating the shank within the clamping members of the handle.

It will be observed that the bit 10 has a second blade 13 at its opposite end, differing in size from the blade 11. To fit the tool for use of the blade 11 the bit is removed from the handle by a reversal of the steps just described for inserting it therein. The bit is then turned end for end and reinserted in the handle, this manipulation for obtaining a tool of a different size requiring but a few seconds of time.

In commercial use the handle will be supplied with a number of other double-bladed bits 14 (Fig. 5) the blades of which are graded in size to suit the requirements of any workman using a tool of this character. The slot 12 will be cut of such length as to enable it to receive the largest blade on any bit furnished for use with the handle.

Particular attention is drawn to the simplicity of manipulation and small number of parts, the design being such that no separate clamp which is liable to be mislaid or lost is necessary, and yet the bit is held firmly and securely on the handle. Furthermore the securement of the bit is such that there is no danger of a blade not in use slipping out of the handle and injuring the hand of the workman. The nature of the improvements is such as to adapt them to use upon a great many tools, other than screw-drivers, of various kinds which will readily suggest themselves to the mechanic who has use for tools of this nature.

The nature and scope of the invention having been indicated and its preferred embodiment having been specifically described, what is claimed as new, is:—

1. A hand-tool of the screw-driver type, consisting of a bowed metal handle whose end portions are brought together in parallel relation to form a spring clamp whose proximate faces are longitudinally grooved, these grooves being semi-circular in cross-section, the inner face of the bowed part of the handle being provided with an elongated notch extending longitudinally of the handle member, and a double-ended reversible shank whose body is cylindrical in cross-section and either of whose screw-engaging blades is adapted to seat in the aforesaid notch when the shank is clamped in place, said shank being adapted for rotation within the clamping members before its screw-engaging blade is seated in said notch.

2. A screw-driver of the reversible bit type consisting of two parts only, to wit: a handle comprising a bent rod of metal having its two ends arranged in parallel relation and concavely grooved at their proximate faces to form a spring clamp, and further provided with a notch of a length to receive a variety of sizes of blade-ends in its inner wall opposite the opening between said ends, and a double-bladed bit having a cylindrical shank extending through said grooves with one blade thereof seated in said notch, said notch being so shaped as to oppositely engage the blade and thereby prevent the bit from revolving within the handle under torsional strain from resistance offered by insertion of a screw.

ANDREW J. HAGER.