No. 729,004. PATENTED MAY 26, 1903.

L. S. STARRETT.

SCREW DRIVER.

APPLICATION FILED OCT. 28, 1901.

NO MODEL.

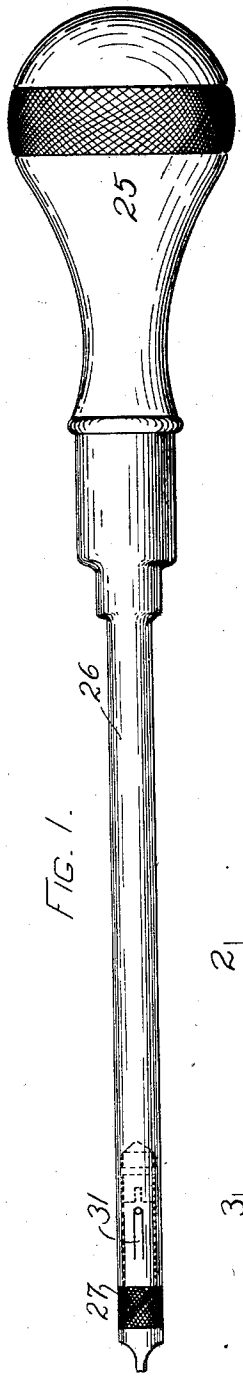


FIG. 1.

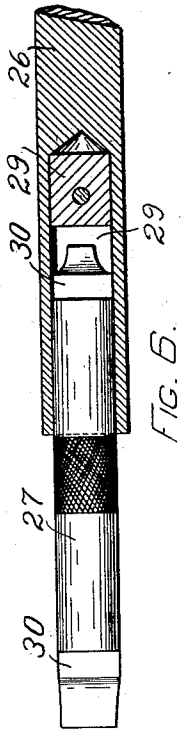


FIG. 6.

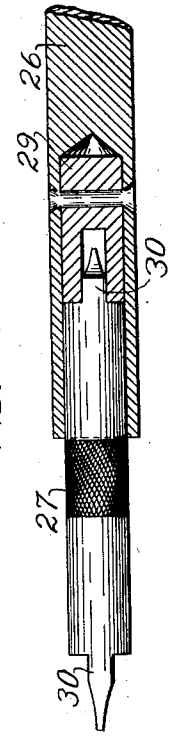


FIG. 7.



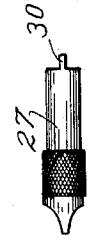


FIG. 5.



FIG. 3.

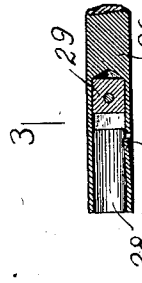


FIG. 2.

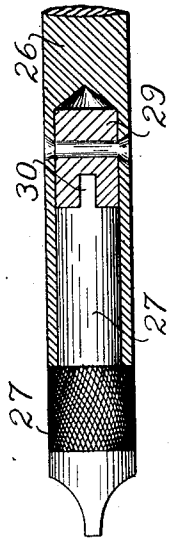


FIG. 4.



WITNESSES

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No. 729,004. Patented May 26, 1903.

UNITED STATES PATENT OFFICE.

LAROY S. STARRETT, OF ATHOL, MASSACHUSETTS, ASSIGNOR TO THE L. S. STARRETT COMPANY, OF ATHOL, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SCREW-DRIVER.

SPECIFICATION forming part of Letters Patent No. 729,004, dated May 26, 1903.

Application filed October 28, 1901. Serial No. 80,226. (No model.)

To all whom it may concern:

Be it known that I, LAROY S. STARRETT, of Athol, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Screw-Drivers, of which the following is a specification.

The object of this invention is to provide a screw-driver the shank of which is formed with a tubular terminal socket to receive and frictionally hold successively a series of dissimilar tips, each fitting said socket and engaging a fixed locking device therein, but each readily removable therefrom, so that a tip of different size or shape at its outer end may be substituted therefor. The stems of the various tips are of uniform character and of a generally cylindrical form, with a milled portion to grasp in removing them from the socket, their inner ends having a flattened prolongation shaped to fit into a slot or recess in a locking-piece fixed in the bottom of the sockets. The tips are held in place by a yielding or indented friction device, preferably a tongue integral with the socket-wall, slightly depressed inwardly, and bearing on the side of each stem. These tips may be made reversible or double-ended, the part formed to engage in the nick or slot of the screw-head entering when reversed into the slot of the locking-piece.

In the drawings, Figure 1 is a side view of a screw-driver embodying my invention. Fig. 2 is a longitudinal section of the socket-tip of the shank on line 2 2 of Fig. 3, and Fig. 3 is a transverse section at line 3 3 of Fig. 2. Fig. 4 is an enlarged section of the socket, showing the tip in position. Fig. 5 represents a series of different-sized removable tips having uniform stems to fit the socket. Figs. 6 and 7 show the socketed shank in section with reversible tips therein, each adapted to fit different-sized screws at opposite ends and each end engaging successively the slot of the locking-piece.

In Fig. 1 the handle 25 and shank 26 are shown of suitable size and shape, and near the point dotted lines indicate the tubular terminal socket in which is inserted the cylindrical stem of the removable tip 27. Figs. 2 to 7 show the construction clearly in full lines. The shank may be tubular throughout, but is represented as solid with the short socket 28 drilled in its end. In the bottom of this socket I fix a locking-piece 29, formed with an endwise slot or recess to receive the extreme inner end of the tip 27. The various sizes or shapes of tips have stems uniform in diameter, so as to fit readily into the socket, and each has a flattened endwise prolongation 30 adapted to enter the slot in the locking-piece, so that the tip must turn with the handle. The locking-piece also presents a square shoulder for the end of the tip to bear against when pressure is applied in inserting a screw. Each tip, as shown, has a milled or roughened portion to enable the operator to hold it more firmly in inserting or removing it. This also gives an ornamental finish to the tip.

In Figs. 6 and 7 the tips are shown reversible or double-ended, with different sizes or shapes of blade or point at opposite ends, so that each tip is adapted for two widely-different sizes of screws. With this construction the endwise prolongation 30 of the other figures is shaped terminally to fit the nick in the screw-head and has proper breadth to fit the recess in the socket-piece, such recess being somewhat deeper than the blade or prolongation requires, so that it will not bottom therein. In making these reversible tips the milled portion will be central.

The various tips are held in the tubular socket by a friction device consisting, as shown in Figs. 1 and 2, of a longitudinal tongue 31, formed from the tube-wall and sprung slightly inward at the free end, so as to bear with an elastic pressure against the stem of the tip to prevent losing it, and yet to permit its ready removal and the insertion of another when desired.

I am aware of the patent to Aiken, No. 19,901, dated April 13, 1858, showing a tool-handle having a chuck adapted to receive each of a series of tools having uniform square serrated shanks, such chuck being screwed in or out by a wrench to tighten or loosen the grip on the tool. Spiral screw-drivers of expensive and complicated construction have also been proposed, in which

the chuck or tool-holder is gripped upon the stem of the blade by a rotary screw-threaded thimble.

My improved tool is distinguished from all others by its peculiar construction, securing extreme simplicity, cheapness, and efficiency. The shank-socket is a cylindrical tube in which the several tips fit easily and are held automatically against falling out by the integral spring 31, forming part of the socket-wall, and each tip engages by its flattened prolongation with the slot in the fixed locking-piece. Symmetry, lightness, and durability are thus admirably combined with economy of construction.

I claim as my invention—

1. In a screw-driver, the handle and the shank formed with a plain cylindrical terminal socket, the wall of which has, at one point, an inwardly-depressed integral portion, adapted to bear with a yielding friction on the inclosed tip-stem, in combination with a recessed locking-piece secured in such socket and a series of dissimilar tips having cylindrical stems of uniform diameter, fitting the socket and each formed, at its inner end, with an angular projection to engage the locking device in the bottom of said socket.

2. In a screw-driver, the handle and the shank with a plain cylindrical terminal socket and a slotted locking-piece fixed therein, in combination with a reversible screw-driving tip having a cylindrical body and at each end abutting shoulders with a projecting flattened blade or point to enter the screw-head slot, each blade being also adapted, when reversed, to enter and engage in the slot of the locking-piece, substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

LAROY S. STARRETT.

Witnesses:

FRANK E. WING,

WILLARD G. NIMS.