Nov. 24, 1925. 1,562,543

S. J. COX

SCREW DRIVER

Filed June 27, 1925

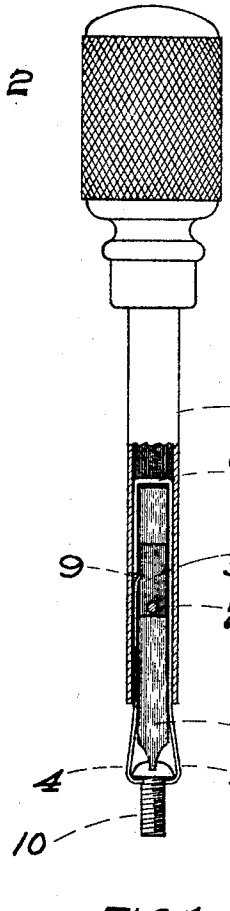


FIG. 1.

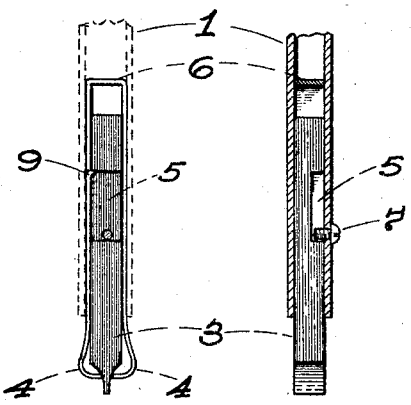


FIG. 2. FIG. 3.

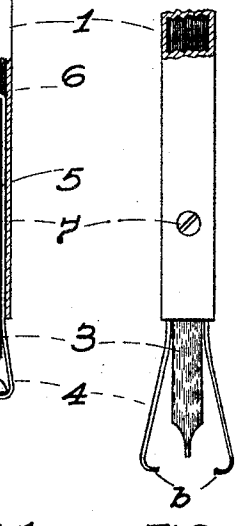


FIG. 4.

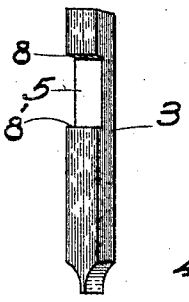


FIG. 5.

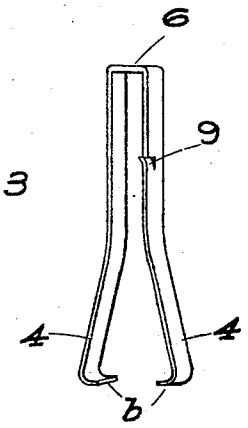


FIG. 6.

INVENTOR

Seth J. Cox

BY

Edward R. Inman

ATTORNEY

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UNITED STATES PATENT OFFICE.

SETH J. COX, OF FRANKLIN, PENNSYLVANIA.

SCREW DRIVER.

Application filed June 27, 1925. Serial No. 40,034.

To all whom it may concern:

Be it known that I, SETH J. COX, citizen of the United States, residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Screw Drivers, of which the following is a specification.

This invention relates to improvements in screw drivers and more especially to improvements upon the particular screw driver shown and described in Letters Patent of the United States, No. 1,412,550, dated April 11, 1922, of which I am the sole owner.

The improvement herein set forth relates to a construction whereby the screw driver shown and described in said Letters Patent is adapted for general use, whereas, that disclosed in said Letters Patent is adapted only for the purpose of partly inserting a screw into its service position, or, removing a screw after it has been loosened or partially unscrewed by means of a common screw driver. Such limited use of the screw driver shown in said Letters Patent is due to the fact that the screw-holding jaws thereof cannot be moved longitudinally relative to the bit, hence they cannot be positioned back of the point of the bit and out of their screw-engaging relation. Whereas, in the instant invention, the screw-engaging jaw structure may be moved to a non-engaging position wherein they are free from contact with the screw to be driven.

The construction of the instant invention is clearly illustrated in the accompanying drawings in which:

Fig. 1 is an elevation, partly in section showing my improved screw driver with the bit and the jaws thereof in the position in which they are arranged when holding a screw.

Fig. 2 is a side view of an assembled bit and the co-operating jaw structure showing them in the relative position in which they are arranged when the screw driver is being used as a common screw driver.

Fig. 3 is a view at a quarter turn, to that of Fig. 2.

Fig. 4 is an elevation of the lower portion of my improved screw driver with the bit and jaws in the extended position.

Fig. 5 is a perspective view of the bit.

Fig. 6 is a perspective view of the jaw structure.

Referring to said drawings, the construction there illustrated is substantially as follows:

For the purpose of receiving, holding and actuating the bit and its co-operating jaw structure, a tubular shank 1 is employed, one end of which may be provided with a handle 2 for manipulation, or said shank may be inserted in the common form of hand brace and operated in the same manner as any brace screw-driver. Within the other end of said shank 1 is inserted a bit 3 and the co-operating jaw structure 4 and wherein they are adapted to have both a longitudinal movement relative to said shank and a longitudinal movement relative to each other.

As clearly illustrated in the drawings, especially Fig. 5, said bit 3 is of rectangular cross section and in one side thereof is formed a stop-notch 5 which is utilized for two purposes, namely, that of limiting the longitudinal movement of the bit relative to said shank, and the longitudinal movement of said bit and said jaw structure relative to each other.

Said jaw structure,—see Fig. 6—is formed of thin metal of a resilient quality, and is preferably spring steel, of bifurcated form comprising the arms 4, 4, the head 6 and the claws *b*, *b*. Said arms 4 are so curved as to diverge outwardly adjacent their free ends. The distance between said arms is substantially equal to the width of the bit 3, but slightly greater, in order that said bit may have longitudinal movement therebetween.

When said bit and said jaw structure are in their assembled relation, their cross-sectional area is nearly equal to, but slightly less than the cross-sectional area of the bore of said shank 1 in order that said bit and jaw structure may be moved longitudinally within said shank.

After said bit and jaw structure have been assembled within said shank, a stop-screw, 7, is inserted through the wall of said shank with its inner end extending into said stop-notch 5, as shown in Fig. 3, whereby the designated longitudinal movement of said bit, relative to said shank is limited by reason of the shoulders 8 and 8′ contactng with said stop-screw.

As previously stated, said jaw structure is adapted and arranged to have longitudi-

nal movement relative to said bit, so that said jaws may occupy either the screw-engaging position shown in Figs. 1 and 3, or be moved backward so as to occupy the non-engaging position relative to the screw as shown in Fig. 2. The outward movement of said jaw structure relative to said bit is limited by the contact of head 6 with the adjacent end of said bit 1, as shown in Fig. 1, and the reverse or inward movement of said jaw structure is limited by contact of the stop-projection 9 contacting with shoulder 8 of said bit.

When it is desired to utilize the screw-holding function of my improved screw driver, as indicated in Fig. 1, the bit 3 and jaws 4 are drawn outwardly to the position shown in Fig. 4,—this being accomplished by seizing said bit and jaws with the thumb and fingers and pulling them outward. The slot of the screw is then placed in engagement with the point of the bit, and, by means of the screw, the bit and the thereby-actuated jaw structure are pushed backward to the position shown in Fig. 1, which causes the jaws to engage the screw and to secure same in the desired actuative position. By pulling the screw driver backward by means of its handle 2, said jaws automatically release the head of the screw, provided the screw has not been driven in so far as to clamp the claws *b* between the head of the screw and the adjacent face of the material into which the screw is being inserted, and for this reason the screw driver should be released from the screw previous to said clamping juncture, whereupon, the jaws should be placed in the position shown in Fig. 2 and the screw fully driven home with the screw driver in this condition.

I claim the following:

In a screw driver which comprises a tubular shank of rectangular cross-section adapted to receive and carry the screw-driving bit in such manner as to rotatively actuate the same and so that said bit may have longitudinal movement within said shank, and a longitudinally-moveable, rectangular bit carried within and adapted to be rotatively actuated by said shank; the combination with the foregoing structure of a screw-engaging jaw member of bifurcated formation composed of spring steel arranged to receive said bit between the legs thereof, said bit and said jaw member being adapted to be carried within and to be retained in their relative position by said shank, also to have longitudinal movement therein and longitudinal movement relative to each other, whereby said jaw member is caused to engage a screw and to hold the same in actuative relation to said bit, also to be moved and positioned rearwardly of the point of said bit out of such engaging relation, means arranged to limit said longitudinal movement of said bit within said shank, and means limiting the relative longitudinal movement of said bit and said jaw member.

In testimony whereof I affix my signature.

SETH J. COX.