

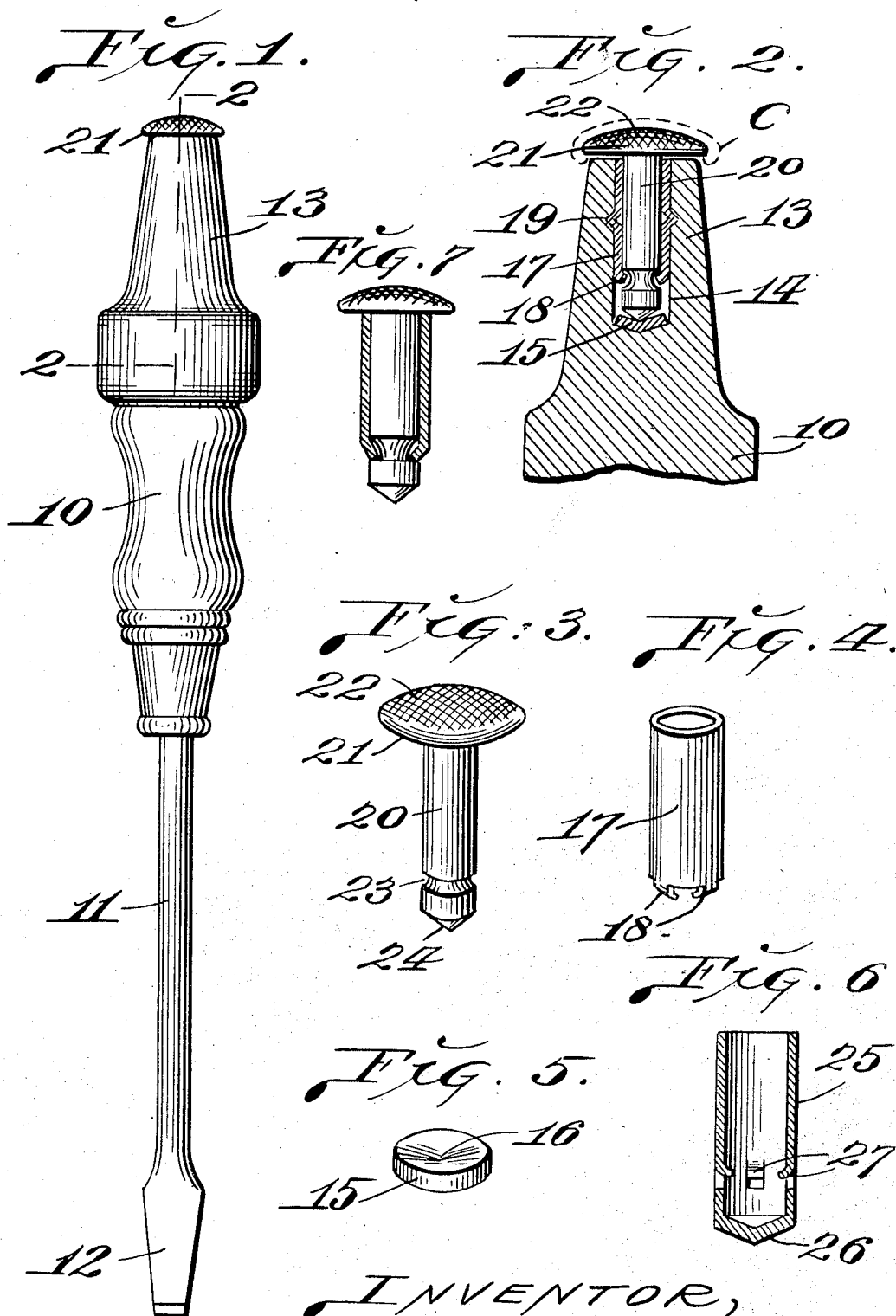
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SCREW DRIVER

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UNITED STATES PATENT OFFICE

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SCREW DRIVER

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My invention relates to improvements in screw drivers and the principal object of my invention is to provide relatively simple means that is seated in the head or upper end of the screw driver handle and which will enable the user of the screw driver to rotate and manipulate the same with greater facility than is possible with the usual or standard forms of screw drivers.

ing drawings, which illustrate a practical embodiment of my invention, 10 designates the body of the screw driver which may be formed of wood, hard rubber, compressed fibre, or the like, and seated in said handle in the usual manner is a metal shank 11 that terminates in the usual bit 12.

Further objects of my invention are to construct the head or outer portion of the handle of the screw driver so that it may be conveniently held or engaged by the palm of the user's hand and to provide a hand bearing member that is mounted for rotation in the head end of the handle and which bearing member is relatively simple in construction, in expensive of manufacture and which enables the screw driver to which it is applied to be readily manipulated with one hand.

With the foregoing and other objects in view, by invention consists in certain novel features of construction and arrangement of parts that will hereinafter be more fully described and claimed and illustrated in the accompanying drawing, in which—

Fig. 1 is a side elevational view of a screw driver of my improved construction.

Fig. 2 is an enlarged longitudinal section taken approximately on the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the combined hand bearing member and stem that is arranged for rotation in the upper end of the screw driver handle.

Fig. 4 is a perspective view of the sleeve or tubular bearing that is positioned in the end of the screw driver handle and which receives the rotary stem.

Fig. 5 is a perspective view of the bearing member that is engaged by the inner end of the rotary stem.

Fig. 6 is a sectional view taken lengthwise through the center of a modified form of the tubular bearing.

Fig. 7 is a vertical section taken lengthwise through the center of a modified form of the tubular bearing for the rotary stem that is employed in my improved screw driver.

Referring by numerals to the accompany-

The upper or head end of the handle 10 of the screw driver is materially reduced in diameter to form a short cylindrical body 13 that is preferably tapered to a slight degree toward its upper end so that it will fit conveniently within the palm portion of the hand and give as much clearance as is possible between the handle and the hand when the latter is partially closed for engaging and manipulating the screw driver and formed in this portion 13 of reduced diameter, is an axially disposed bore or recess 14. Seated at the inner end of the bore 14, is a disk 15, preferably of hardened metal such as steel or bronze, and which disk is slightly dished in order to provide a depressed center 16 and which latter serves as a thrust bearing for a rotary stem.

Permanently seated in the bore 14 above the disk 15, is a short tubular member 17, the lower end of which is provided with a plurality of relatively short inturned lips 18. Tubular member 17 is preferably formed of relatively thin metal having a certain degree of resiliency end, in order to permanently secure said tube in the handle, a suitable tool is inserted in said tubular member after it has been seated in the handle and the wall of said tube is indented or pressed outwardly at one or more points to form short projections 19 that enter the body of the screw driver handle and effectually prevent the tube from being accidentally withdrawn.

A short cylindrical rod or shank 20 extends through and is arranged to rotate freely within the bearing formed by the tubular member 17 and formed integral with or fixed to the upper end of this rod or shank, is a disk 21 having a knurled or milled upper face 22 and said disk normally occupies a position just above the upper ends of the portion 13 of the screw driver handle and the outer end of tubular member 17, which latter is

preferably flush with the end of the portion 13 of the handle. I prefer to make the disk 21 of such size as that its edges extend slightly beyond the upper edge of the portion 13 of the handle and in some instances it may be found desirable to provide disk 22 with a covering member C of rubber or analogous material, as illustrated in Fig. 2 by dotted lines.

Formed in the lower portion of the shank 20, is a circumferential groove 23 that is occupied by the lips 18 on the lower end of tube 17. The lower end of shank 20 is pointed, as designated by 24 and this pointed end engages in the depressed center 16 of disk 15, thus providing a thrust bearing for the lower end of the shank or stem 20.

In assembling the parts of my improved screw driver, disk 15 is positioned in the bottom of bore 14, after which, tube 17 is inserted in said bore and anchored therein by pressing the wall of said tube outwardly to form the projections 19. Shank or stem 20 is now inserted in tube 17 and pressed downwardly therein and, as the lower end of said stem passes the inturned ears 18, the resiliency of the metal forming said ears will permit the same to spring outwardly and then to spring inwardly as the groove 23 is brought into position to receive said ears and with the ears positioned in the groove, the rotary member comprising the shank or stem 20 and disk 21 will be retained in assembled relation with the bearing tube 17.

In the use of my improved screw driver, the handle thereof is grasped in the hand with the milled surface of disk 22 engaging against the rear portion of the palm of the hand and when the hand is closed about the handle of the screw driver, the relatively small diameter of the portion 13 of the handle will enable the rear portion of the palm of the hand to conveniently receive and engage the disk 21. With the hand of the screw driver so held in the hand, the thumb and fingers of the hand may be utilized for rotating the handle 10 and shank 11 and during such rotary motion, the disk 21, which is pressed against the palm of the hand and the shank 20 will be held against rotation.

The reduction in the diameter of the upper or head end of the handle is of decided advantage during manipulation of the screw driver, for the hand bearing on the disk at the head of shank or stem 20 may be readily reversed without imparting reverse motion to the tool. In this connection it will be understood that where the head or body of the screw driver handle is of considerable diameter and no provision is made for the mounting of a rotary member in said handle, there is a decided tendency of the tool to remain in contact with the palm of the hand and thereby be reversely rotated when the hand is rotated to take a new grip on the handle.

The bearing between the shank 20 and the handle is taken up by the thrust bearing between the pointed end 24 of shank 20 and the disk 15 and any side thrust or strains that may be developed by the shank 20 and the handle will be taken up by the tubular member 17.

In Fig. 6, I have illustrated a modified form of the tubular bearing member that receives the rotary shank and in such modified structure, the lower portion of a tubular member 25 has a thrust bearing plate 26 formed integral with its lower end and the inwardly projecting ears 27 that engage in the groove in the rotary shank are pressed inwardly from the wall of said tubular member.

In some instances the tubular bearing member for the rotary shank may take the form of a band or ring that is arranged in the end of the screw driver handle and thus there is a space between said bearing member and the thrust bearing disk at the inner end of the shank.

Thus it will be seen that I have provided an attachment for screw driver handles that is relatively simple in construction, inexpensive of manufacture and which is very effective in performing the functions for which it is intended.

Inasmuch as the upper or rear end of the handle is materially reduced in diameter and tapers slightly toward its outer end, the handle may be conveniently and comfortably positioned in the palm of the hand and, by mounting the stem and disk so that they will rotate freely in the handle, the screw driver may be readily manipulated by the hand in which it is held, thereby saving much time and labor in the driving and setting of screws and likewise the withdrawal thereof.

The thrust bearing comprising the plate 15 and the conical end 24 of shank 20 provides simple and efficient means whereby practically all of the inward thrust pressure upon the rear portion of the screw driver handle is transmitted to, or very near to, the axis and thus confining the rotational friction to said axis. The cap or cover C of resilient or relatively soft material is non-slipping in effect and insures ample frictional contact between the head 21 of the rotary shank 20 with the palm of the hand.

It will be understood that minor changes in the size, form and construction of the various parts of my improved screw driver may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. As a new article of manufacture, a screw driver handle having its rear portion materially reduced in diameter relative to its intermediate and forward portions and a hand bear-

ing member mounted for rotation in the reduced rear end portion of said handle.

2. As a new article of manufacture, a screw driver handle having its rear portion materially reduced in diameter relative to its intermediate and forward portions, a shank mounted for rotation in the reduced rear end portion of said handle and a hand bearing disk carried by said shank and overlying the rear end of the reduced portion of said handle.

3. The combination with a screw driver handle having its rear end portion materially reduced in diameter relative to its forward portion, of a hand bearing member mounted for rotation at the rear end portion of said handle.

4. The combination with a screw driver handle having its rear end portion materially reduced in diameter relative to its forward portion, of a shank mounted for rotation at the rear end portion of said handle and a hand bearing disk carried by the outer end of said shank.

5. The combination with a screw driver handle having a reduced rear end portion in which is formed an axially disposed bore, of a tubular bearing member seated in said bore, a shank mounted for rotation in said tubular bearing member and a hand bearing disk carried by the outer end of said shank.

6. The combination with a screw driver handle having a reduced rear end portion in which is formed an axially disposed bore, of a tubular bearing member seated in said bore, a shank mounted for rotation in said tubular bearing member, a hand bearing disk carried by the outer end of said shank and a thrust bearing for the inner end of said shank.

7. The combination with a screw driver handle having its rear end portion reduced in diameter to provide clearance for the hand in grasping and manipulating the screw driver of a tubular bearing member arranged in the reduced rear end portion of said handle, a shank journaled in said tubular bearing member, means for retaining the shank therein, a hand bearing disk carried by the outer end of said shank and a thrust bearing at the inner end of said shank.

Los Angeles, California, May 20, 1927.

JOHN M. DUNLEA.