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SCREW DRIVER BIT AND FINDER

Filed March 8, 1928

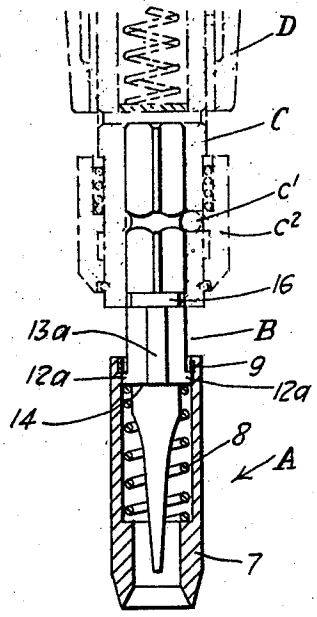


Fig. 1

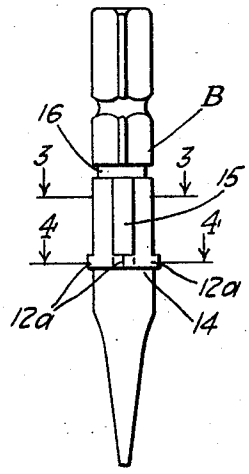


Fig. 2

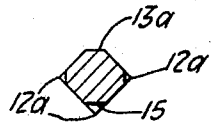


Fig. 3

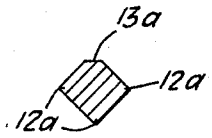


Fig. 4

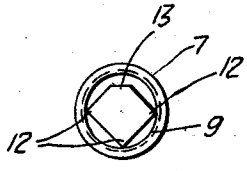


Fig. 5

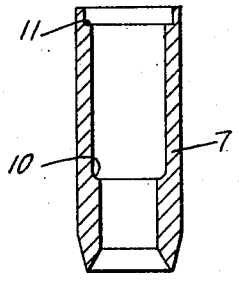


Fig. 6

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1,769,067

UNITED STATES PATENT OFFICE

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SCREW-DRIVER BIT AND FINDER

Application filed March 8, 1928. Serial No. 259,985.

This invention relates to apparatus for driving screws and similar fastening members and has particular application to interchangeable screw driver bits arranged to be operated by power means.

Among the objects of the invention are to provide an improved form of bit and finder assembly therefor, to arrange the finder assembly for quick application to and removal from a bit, and in general to improve prior apparatus of the described type in the interest of more efficient and satisfactory service.

The invention provides a particular form of bit and a finder assembly which is applicable to and removable from the bit as a unit and without the loosening of any part or parts and without the use of any tools.

In order to illustrate the invention one concrete embodiment thereof is shown in the accompanying drawings, in which:

Fig. 1 is a vertical sectional view showing the bit and finder in assembled relation and operatively disposed in relation to a rotary member;

Fig. 2 is a side elevational view of the bit shown in Fig. 1 but viewed from the opposite side;

Figs. 3 and 4 are transverse sectional views substantially on the lines 3—3 and 4—4 of Fig. 2;

Fig. 5 is a top plan view of the finder assembly apart from the bit; and

Fig. 6 is a vertical sectional view of the finder cylinder before the top of the cylinder is crimped over to hold the guide plate 9.

In the embodiment of the invention chosen for the purpose of illustration, the finder assembly A is shown in Fig. 1 as mounted upon the screw driver bit B whose shank portion is detachably secured to a rotative member C. The member C may take the form of a spindle projecting from the transmission case D of any suitable machine, the extreme forward end of spindle C forming a chuck into which the shank end of spindle B is received and held by any suitable means, such as a ball retainer c' controlled by a spring pressed sleeve c^2.

The finder assembly A is arranged to be applied to and removed from bit B as a unit and preferably comprises but three parts, namely, the finder cylinder 7 shown by itself in vertical section in Fig. 6, a coil spring 8 and a guide member or washer 9. Finder cylinder 7 has a long counterbore providing an annular shoulder 10 against which the lower end of spring 8 seats and the upper end of the finder has a second and shallower counterbore receiving guide member 9 and providing a shoulder 11 against which guide 9 is clamped by crimping or riveting over the outer end of the finder cylinder 7 after spring 8 and guide 9 are disposed within the first and second counterbores respectively. The three elements comprising the finder assembly are thus permanently united. Assembly A is arranged for telescoping engagement with the bit by providing guide member 9 with a perforation or opening in line with the open end of cylinder 7. This opening in the guide member is such as to cooperate with the contour or form of the shank of the bit intermediate that portion of the bit which is received within the chuck and that portion which is normally enclosed by the finder assembly. In the present instance the opening in the guide member 9 is polygonal, having a plurality of pointed corners 12 and a flat corner 13. Bit B has a portion shown in cross section in Fig. 4 conforming in all respects to the opening in guide member 9 to permit the latter to telescope thereover. Thus the bit provides three sharp corners 12^a, and a flat corner 13^a. The bit is reduced toward the working end thereof to provide a shoulder 14, which is engaged by the outer end of spring 8 of the finder assembly when the latter is mounted upon the bit (Fig. 1). Beyond the 12^a, 13^a portion of the bit toward the shank end, the bit is somewhat reduced in size by removing the sharp corners (Fig. 3) and providing a second longitudinal flat surface 15. Therebeyond bit B has an annular recess or groove 16 positioned so as to be at least partly covered by the chuck of the rotatable spindle when the bit is in position for use (Fig. 1).

In applying the finder assembly A to the bit B, the guide member 9 of the assembly is telescoped over the 12^a, 13^a portion of the bit and the telescoping movement is continued

with a consequent compression of spring 8 until guide member 9 is disposed in the plane of groove 16. Since this groove is of greater width than guide 9, the latter together with the entire finder assembly A may be rotated or angularly adjusted relative to bit B. When the second flat 15 of bit is diametrically opposite the flat 13^a, as shown, the finder assembly is rotated one-half turn or 180°. This brings the flat 13 of guide 9 opposite the sharp corner projection 12^a at the base of flat 15 (Fig. 2), thus interlocking the finder assembly with the bit and preventing their disengagement. To remove the assembly the previous operation is reversed, the assembly being forced back until guide 9 registers with groove 16, the assembly is given a half turn and can then be slid off the bit.

From the above, it will be apparent that the present invention provides improved and cooperating forms of bit and finder assembly, that the finder assembly is conveniently applied to or removed from the bit without loosening any of the parts of the assembly and without the use of any tools, and that accidental disengagement of the finder assembly from the bit is prevented when the bit is in operative position within the chuck of a spindle for rotating the same.

While the invention has been disclosed herein in what is now considered to be its preferred form, it is to be understood that the invention is not limited to the specific details thereof, but covers all changes, modifications and adaptations within the scope of the appended claims.

I claim as my invention:

1. The combination with a rotatable member having a chuck, of a bit adapted to engage said chuck, and a finder assembly on said bit, means including a reduced portion on said bit permitting relative rotation of said assembly and its removal as a unit from said bit, said portion being so positioned as to be rendered inoperative when said bit is operatively positioned within said chuck.

2. In combination, a bit and a finder assembly therefor, said assembly having a guide plate having a polygonal opening therethrough with a plurality of sharp corners and at least one flat corner, said bit having a portion conforming to said opening slidably to receive said assembly and guide plate, and means on said bit beyond said portion permitting rotation of said assembly to dispose said flat corner above a sharp corner or projection on said bit thereby to prevent disengagement of said assembly from said bit.

3. In a combination, a bit and a finder assembly therefor, said assembly having a guide plate having a polygonal opening therethrough with a plurality of sharp corners and at least one flat corner, said bit having a portion conforming to said opening slidably to receive said assembly and guide plate, and an annular groove beyond said portion of a size to receive said guide plate and permit rotation thereof relative to said bit thereby to dispose the flat corner of said plate above a sharp corner or projection on said bit thereby to effect an interlocking engagement of said assembly with said portion.

4. A bit arranged for interlocking engagement with a readily detachable finder assembly, said bit having a portion polygonal in cross section and providing a plurality of sharp corners and one flat corner, the shank of said bit beyond said portion being provided with two flat corners and with an annular groove in said shank portion.

5. A bit arranged for interlocking engagement with a finder assembly, said bit having a portion polygonal in cross section and providing a plurality of sharp corners and one flat corner, the shank of said bit beyond said portion being provided with opposed flat corners and with an annular groove in said shank portion.

6. A keeper assembly for a screw driver bit having a polygonal shank and radial projections adjacent the blade end thereof, said assembly comprising a keeper cylinder having an internal shoulder, a coil spring within said cylinder and engaging said shoulder, and a guide plate across the end of said cylinder for retaining said spring in place, said plate having a polygonal opening therethrough providing a plurality of sharp corners slidably to receive the bit projections and one flat corner to engage one of the projections after a partial rotation of the assembly on the bit thereby to maintain the former on the latter.

Signed by me at Cleveland, in the county of Cuyahoga and State of Ohio this 25th day of February, 1928.

LEON F. MEUNIER.