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2,604,912

SCREW DRIVER

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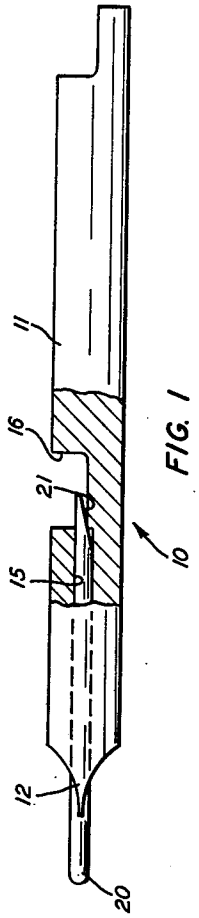


FIG. 1

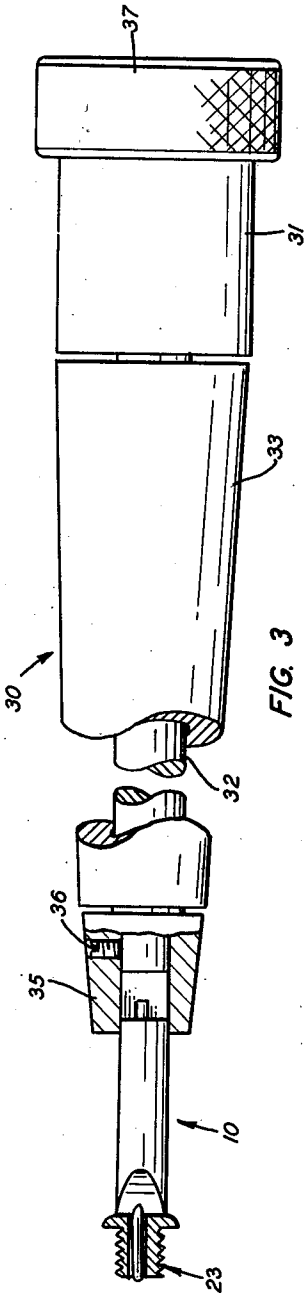


FIG. 3

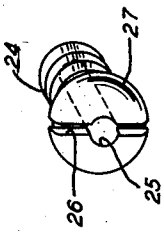


FIG. 2

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SCREW DRIVER

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2 Claims. (Cl. 144—32)

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This invention relates to screwdrivers, and more particularly to screwdrivers for use in connection with small screws.

The manufacture and assembly of small parts require the use of small screws, which in many instances are too small to be started into a tapped hole by hand. To facilitate the handling of such screws it has been suggested that a small pilot be formed integrally on the end of the screwdriver bit, and that a complementary hole be provided in the head of the screw so that the screw may be positioned on the bit and held in position as the bit is turned to thread the screw into a tapped hole. The pilot formed on the end of the bit also enables an operator of the tool to pick up small screws merely by dipping or pushing the end of such a screwdriver bit through a mass of the screws contained in a suitable receptacle. While this type of screwdriver bit greatly facilitated the handling of small screws, the pilot formed integrally thereon tends to break off after being used only a short period of time due to the fact that the pilot has a very small diameter and formerly was made of a relaitvely brittle grade of steel. When the pilot of bits of this design broke off it was necessary to discard the entire bit.

An object of the invention is to provide new and improved screwdrivers.

Another object of the invention is to provide a screwdriver with means for readily picking up and holding small screws, and for centering and guiding such screws into tapped holes.

An apparatus embodying certain features of the invention, comprises a screwdriver bit provided with a central bore along its longitudinal axis and a length of resilient wire positioned in the bore so that one end thereof extends beyond the blade of the bit to form a pilot.

A clear understanding of the invention will be had from the following detailed description of a specific embodiment thereof, when read in conjunction with the appended drawing, in which:

Fig. 1 is an enlarged view of a screwdriver bit embodying certain features of the invention;

Fig. 2 is an enlarged, perspective view of a screw which the improved screwdriver bit shown in Fig. 1 is designed to engage, and

Fig. 3 illustrates one type of screwdriver with which the bit shown in Fig. 1 may be used.

Referring now to the drawing, and more particularly to Fig. 1, there is shown a screwdriver bit indicated generally by the numeral 10, which is of the type that may be inserted in a power tool or other suitable means by which the bit may

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be rotated when desired. The bit 10, comprises a body 11 having a blade portion 12 provided on one end thereof, which is adapted to engage the slot provided in the head of a screw to be operated by the bit 10.

The body 11 is provided with a central bore 15, which extends from the blade 12 and communicates with a notch 16 provided in the body. The notch 16 is of such depth that the bottom thereof is aligned with the central axis of the bore 15. A pilot 20 made of a highly resilient wire, such as, music wire, is positioned in the bore 15. The inner end of the pilot 20 is tapered at 21 so that it may be wedged between the side of the bore 15 and the bottom of the notch 16.

The pilot 20 is of such length that, when the tapered end 21 is wedged against the bottom of the notch 16 so that the pilot will not fall out of the bore 15, the other end thereof extends beyond the end of the blade 12 a distance required to support a screw to be used with the bit 10, such as a screw 23 shown in Fig. 2. The screw 23 has an externally threaded shank 24, a central bore 25 to receive the outer end of the pilot 20, and a transverse slot 26 provided in a head 27 thereof to receive the end of the blade 12.

The bit 10 is of the type intended to be used with a suitable driving tool, such as a manually operated tool or a small power tool equipped with a chuck adapted to receive small bits. The bit 10 may be used in a special tool 30, such as is shown in Fig. 3, which is essentially a chuck arranged to be selectively engaged by a suitable driving means, so that the operator thereof is not required to hold a bulky or heavy power tool while assembling small screws, like the screw 23, in parts to be secured together.

The tool 30 consists of a head 31, which is secured to a shaft 32 rotatably mounted in a body 33. A socket 35 is secured to the opposite end of the shaft 32, in which the bit 10 is rigidly held by a set screw 36. The head 31 is provided with a friction ring 37, which may be placed in contact with a revolving surface to turn the head 31, which in turn, rotates the socket 35 and the bit 10 secured therein. The operation of the tool 30, as well as a suitable means for driving the head 31, are fully disclosed and claimed in C. J. Hackbarth et al. Patent 2,331,468, granted October 12, 1943. Therefore, a more detailed description of the tool 30 is unnecessary.

Operation

In using the bit 10, let it be assumed that it is secured in the socket 35 of the tool 30. A screw,

like the screw 23, is positioned on the pilot 20 by hand or the tool may be manipulated so as to pass the pilot 20 through a mass of screws, like the screw 23, in order to pick up a screw on the pilot so that it enters the central bore 25 thereof with the head of the screw positioned adjacent to the blade 12 of the bit 10 (Fig. 3). The tool 30 then is manipulated so as to position the end of the threaded portion 24 of the screw in a tapped hole provided in a part into which it is to be threaded. The tool and the part then are moved together so that the friction ring 37, on the head of the tool 30, may be engaged by a suitable driving means, such as the driving means described in the aforementioned Patent 2,331,468. As the head of the tool is rotated to drive the bit 10, the blade 12 engages the slot 26 of the screw, whereby the screw is rotated and threaded into the tapped hole adapted to receive the screw. When the screw is fully secured in the tapped hole, the part having the hole therein is moved to disengage the pilot 20 from the screw, and the tool is moved to disengage the ring 37 from the driving means.

The above operations are repeated many times in the manufacture of small parts on a mass production basis. The pilot 20, being made of a highly resilient wire, such as music wire, is sufficiently resilient to withstand the shock encountered in operations of this type, even though it has a very small diameter. Should the pilot 20 break off, it is a relatively simple matter to pry the tapered end of the pilot loose from the bottom of the notch 16 so that it may be removed from the bore 15, and to insert another pilot in the bore 15. This type of screwdriver bit is a substantial improvement over bits having the pilot formed integrally therewith, because the entire bit is not rendered useless when the pilot breaks off.

What is claimed is:

1. A screwdriver bit designed to operate small screws having a central bore therein communicating with a slot provided in the head of the screw, which comprises a steel body having a thin blade formed on one end thereof for engaging the slot in the head of such screws, said body having a notch cut therein intermediate the ends thereof and a central bore extending from the blade to the notch, and a highly resilient wire positioned in the central bore so that one end extends beyond the blade to form a pilot adapted to engage the central bore of a screw to be operated by the blade, said notch being designed to communicate with a substantial portion of the central bore so that a portion of the opposite end of the wire extends into the notch and is wedged between the bottom of the notch and the bore, whereby the end of the wire may be pried loose from the bottom of the notch when it is desired to remove the wire from the central bore in the body.

2. A screwdriver bit designed to operate small screws having a central bore therein communicating with the slot provided in the head of the screw, which comprises a steel body having a thin blade formed on one end thereof for engaging the slot in the head of such screws, said body having a notch cut therein intermediate the ends thereof and a central bore extending from the blade end of the body to the notch, said notch being of such depth that the bottom thereof is aligned with the longitudinal axis of the bore, a wire having a resiliency substantially greater than that of the body positioned in said bore, said wire having its end adjacent to the notch tapered to permit a portion of the end of the wire to pass into the notch and wedge the wire between the bore and the bottom of the notch, said wire being of such length that a portion thereof extends beyond the blade to form a pilot adapted to engage the central bore provided in screws to be operated by the blade.

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