

United States Patent

[11] 3,608,596

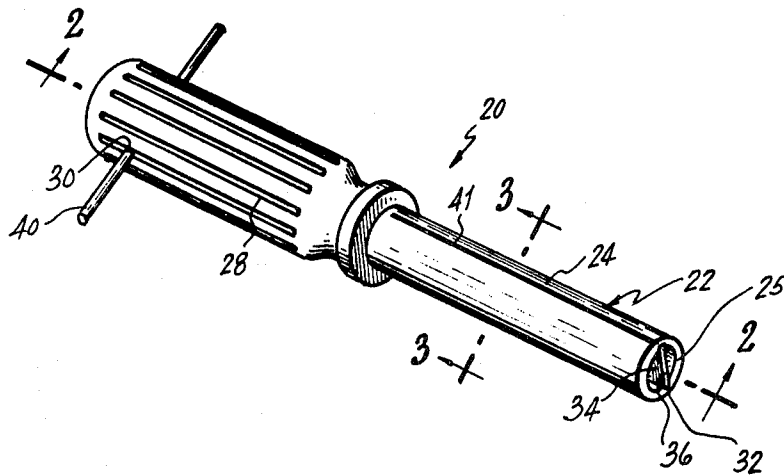
[72] Inventor **Donald A. Yoho**
1306-204 Hancock Drive, Barrington, N.J.
08007
[21] Appl. No. **823,714**
[22] Filed **May 12, 1969**
[45] Patented **Sept. 28, 1971**

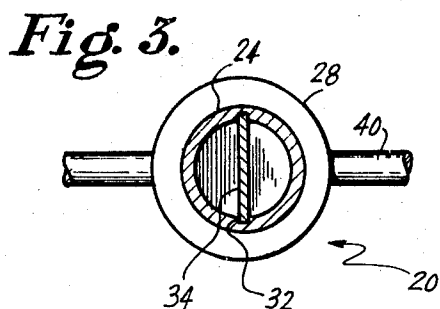
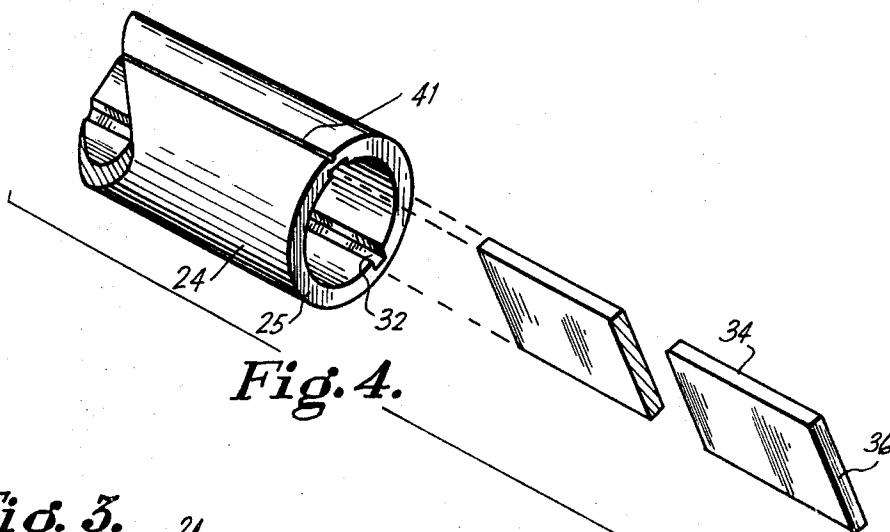
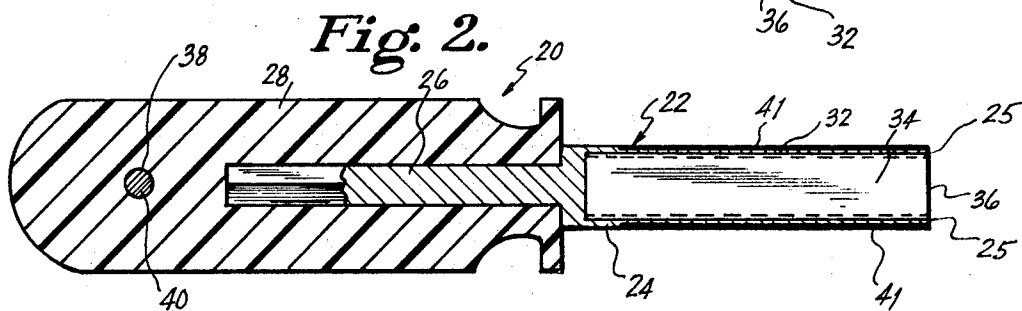
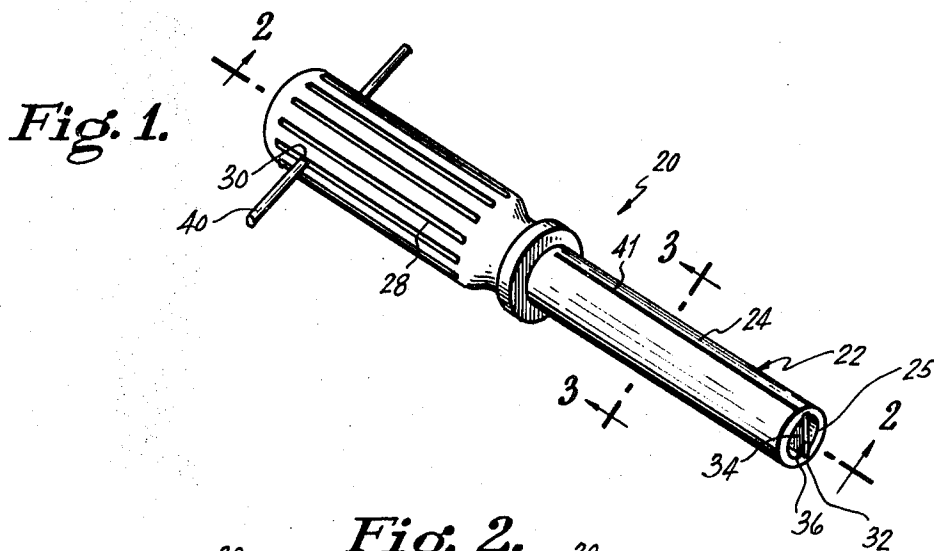
[56] **References Cited**
UNITED STATES PATENTS
1,126,370 1/1915 Borresen 145/51
1,782,448 11/1930 Short 145/50
2,260,055 10/1941 Reardon 145/50
2,637,229 5/1953 Lee 145/50 X
2,794,462 6/1957 Frykman 145/50 X

Primary Examiner—Granville Y. Custer, Jr.
Attorney—Polachek & Saulsbury

[54] **SAFETY SCREWDRIVER**
9 Claims, 12 Drawing Figs.
[52] U.S. Cl. **145/50 F**
[51] Int. Cl. **B25b 15/02**
[50] Field of Search **145/50 R,**
50 A, 50 D, 50 F, 51

ABSTRACT: This screwdriver has a cylindrical tube in which is a flat thin blade. The blade is formed with a rectangular edge which lies in a plane coplanar with the end of the tube. The blade is frictionally and securely fitted in diametrically opposed grooves inside the tube. The exterior of the tube has axially extending marks etched at diametrically opposed positions coplanar with the blade in the tube.





INVENTOR
DONALD A. YOHIO
BY *Polachet & Saulsbury*
ATTORNEYS.

Fig. 5.

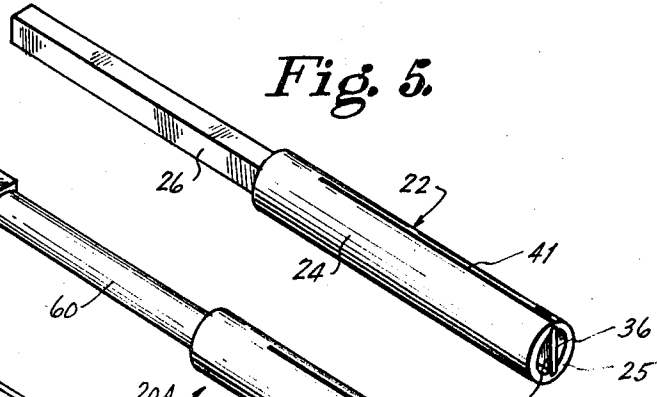


Fig. 6.

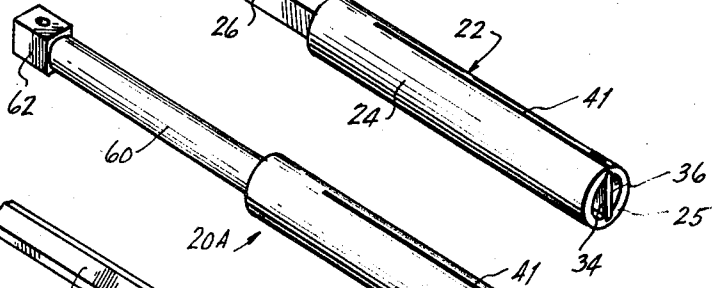


Fig. 7.

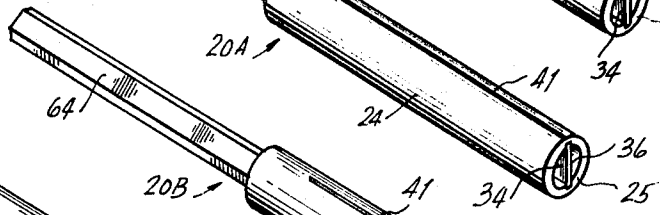


Fig. 8.

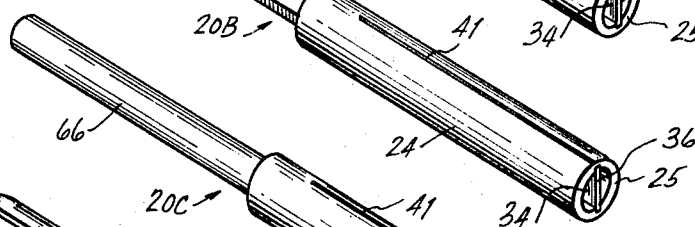


Fig. 9.

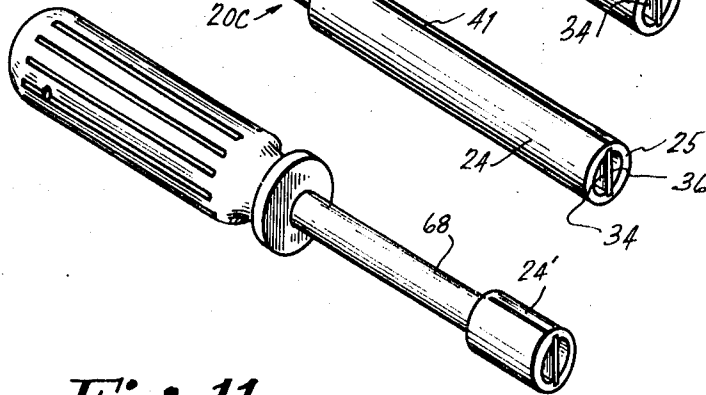


Fig. 10.

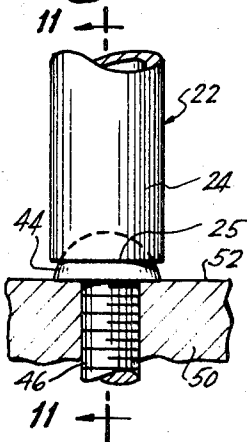


Fig. 11.

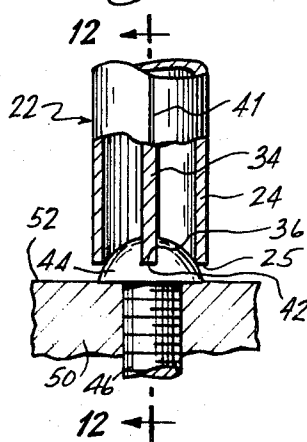
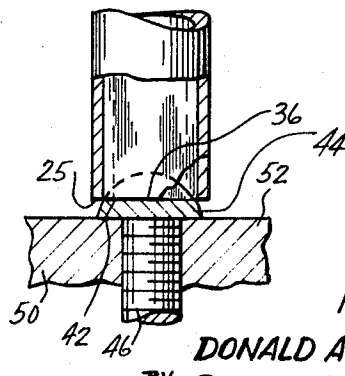


Fig. 12.



INVENTOR

DONALD A. YOHO

BY *Polach & Saulsbury*

ATTORNEYS.

SAFETY SCREWDRIVER

This invention concerns an improved safety screwdriver.

Screwdrivers heretofore known have had a number of objectionable features. Among them are the difficulty or impossibility of being resharpened, safety hazards presented by exposed sharp edges, damage to heads and slots of screws by slipping of the screwdriver blade, damage to surfaces of work by the screwdriver blade, complexity of construction, high cost of manufacture, without centering means for round-headed screws, without markings for indicating position of the blade end so that only blind application of the screwdriver to the screwhead is had, and so on.

The present invention is directed at overcoming the above and other disadvantages and difficulties of prior screwdrivers by providing a screwdriver construction in which:

1. The screwdriver has a more secure engagement with the screw and particularly with roundheaded screws.
2. The full length of the slot in the head of the screw is utilized regardless of the size of the screw.
3. The head of the screw is surrounded by the screwdriver to the depth of the slot so that the screwdriver cannot slip off the screw and damage the finish of the work in which the screw is being driven.
4. The screwdriver blade is concealed so that it cannot injure the user.
5. The head of the screw and its slot cannot be damaged or defaced by the blade since it fills the slot in the head of the screw completely.
6. The screwdriver has an outer tube which fits over the screwhead and rotates with the screwhead to keep the blade in the slot.
7. The screwdriver can easily be resharpened.
8. The screwdriver is simple in construction.
9. The screwdriver can be manufactured at low cost by mass production machinery.
10. The screwdriver is durable in construction.

In its basic form the screwdriver has a tube in which are formed diametrically opposed inside grooves. Securely set in these grooves is a flat, thin, strong blade. The outer edge of the blade is flat and rectangular and is coplanar or flush with the flat annular edge of the tube. The blade reaches to the bottom of the slot in the head of a screw to be driven. The screwdriver can be made of magnetizable material to aid in engaging the screw to be driven. It can be manufactured in plastic such as a phenolic or acrylic for use where a nonmetallic screwdriver is required. It can be manufactured of nonsparking material to prevent fire and explosion hazards caused by sparks emitted when conventional metal screwdrivers slip while in use.

The outside of the tube is etched with parallel marks to show the exact angular location of the blade and thus precludes the blind application of the screwdriver upon the screwhead. This facilitates fitting the screwdriver blade into the slot in a screwhead. The tube strengthens the blade by engagement with opposite long edges of the blade. Thus, the blade and tube can be made of softer, less expensive, more easily machinable material.

Other and further advantages of the invention will become apparent from the following detailed description taken together with the drawing wherein:

FIG. 1 is a perspective view of a screwdriver embodying the invention.

FIG. 2 is an enlarged longitudinal sectional view taken on line 2—2 of FIG. 1.

FIG. 3 is an enlarged fragmentary cross-sectional view taken on line 3—3 of FIG. 1.

FIG. 4 is an exploded enlarged perspective view of parts of the screwdriver.

FIG. 5 is a perspective view of the screwdriver of FIG. 1 without the handle.

FIGS. 6-9 are perspective views of other forms of screwdrivers according to the invention.

FIG. 10 is a fragmentary side view of a screwdriver shown engaged on a screw for driving the same.

FIG. 11 is an axial sectional view taken on line 11—11 of FIG. 10.

FIG. 12 is a central vertical sectional view taken on line 12—12 of FIG. 11.

Referring first to FIGS. 1-5, a screwdriver 20 has a cylindrical body 22 formed with a tube 24 terminating in a flat annular end 25. A solid rectangular shank 26 is formed at the other end of body 22. This shank is set in cylindrical handle 28 which has longitudinally extending, circumferentially spaced grooves 30 to serve as a handgrip. Tube 24 is formed with diametrically opposed internal grooves 32 in which are set opposite edges of a flat blade 34. The blade terminates at its outer end in a flat rectangular edge 36 which is coplanar with the annular end 25 of the tube. A transverse diametral hole 38 may be formed in the handle to receive a cross rod or bar 40 to aid in turning the handle. Bar 40 can be removable if desired. Long engraved, etched, or scribed marks or grooves 41 are formed in opposite outer sides of tube 24 adjacent opposite edges of blade 24.

FIGS. 10, 11 and 12 show how the edge 36 fits snugly into the bottom of slot 42 in the roundhead 44 of a screw 46. The end 25 of the tube 24 surrounds the head 44 to the depth of slot 42. In turning the screw, tube 24 serves as a guide and stabilizer to prevent the blade from slipping out of the slot. When the screw is fully driven into the work 50, both the edge 36 of the blade and the end 25 of the tube are spaced from the upper surface 52 of the work. The end edge of the blade does not extend out of the tube and thus cannot injure the hand of the user, nor can it damage surface 52, nor can the blade slip off the head 44. The long marks or grooves 41 on opposite outer sides of tube 24 parallel to adjacent edges of blade 34 indicate orientation of the plane of the blade so that the blade can easily be inserted into slot 42.

FIG. 5 shows the rectangular shank of the screwdriver body 22. If desired, this ferrule can be engaged in a suitable wrench for driving the screwdriver. FIGS. 6, 7 and 8 show screwdrivers having shanks of different shapes. In FIG. 6, screwdriver 20A has a cylindrical shank 60 which terminates in a rectangular head 62. This head can be engaged in the socket of a suitable wrench. Screwdriver 20B in FIG. 7 has a shank 64 which is hexagonal in cross section. Screwdriver 20C in FIG. 8 has a cylindrical shank 66. The shanks of all the screwdrivers 20A-20C can be embedded in handles like handle 28 in FIG. 1.

FIG. 9 shows screwdriver 20D in which tube 24' is relatively shorter than tube 24 of the other screwdrivers. In screwdriver 20D part of cylindrical shank 68 extends forwardly of handle 28'. In screwdriver 20 by contrast, the shank 26 is wholly concealed and embedded in the handle.

In all the screwdrivers described, the exposed ends of the tube and blade can be cut or filed for resharpening the screwdriver. This will renew blade edge 36. At all times blade edge 36 will be kept flush or coplanar with the flat annular end 25 of tube 24 or 24'.

As previously mentioned, the tube and blade can be made of different materials for different purposes. The screwdrivers described will fulfill a longfelt need in many industries and arts. The screwdrivers can be made up in very small sizes for use by jewelers and watchmakers and can be made up in a complete range of larger sizes up to the largest size used in building and construction industries.

What is claimed is:

1. A screwdriver comprising a body having a cylindrical tube at one end terminating in a flat annular edge and having a shank at its other end shaped for turning said body; and a flat blade set in said tube and extending axially thereof, opposite long edges of said blade being engaged at diametrically opposite sides of the blade, the tube having at least one slot extending within an inner wall of the tube along the tube's longitudinal axis for engagement and locking with one of said engaging sides of the blade, the slot extending less than the thickness of the tube's wall in the slot's depth, said blade having a flat end edge disposed coplanar with said annular edge of the tube, whereby the end of the blade can normally fit fully into a slot in a screwhead while the tube fits over the sides of the screwhead and is rotatable with the screw as the screw is

3

4

being turned by rotation of the screwdriver, said screwdriver further comprising a substantially cylindrical handle, said shank being set in said handle in axial alignment with the handle's longitudinal axis, and linear-line indication means extending along said tube's outer wall and extending along said tube's longitudinal axis parallel to and adjacent to said inner wall longitudinal slot such that said linear-line indication means is indicatable of the blade's side mounted within the inner wall slot.

2. A screwdriver according to claim 1, including a second inner wall slot opposite the other inner wall slot, such that an opposite side of said blade is engaged fixedly within said second slot, a second linear-line indication means along an opposite side from the other linear-line indication means, the second linear-line indication means being indicatable of the blade's other mounted side within the second slot, and in which said blade and said tube each consist of nonsparking material.

3. A screwdriver according to claim 2, in which said material is magnetized, in which said handle includes an aperture extending transversely through the handle and a rod means ex-

tends said aperture beyond said handle's surface, and in which said linear-line indication means are a marking line imparted to said tube.

4. A screwdriver as defined in claim 3, wherein the shank is cylindrical in form.

5. A screwdriver as defined in claim 3, wherein the shank is rectangular in cross section.

6. A screwdriver as defined in claim 3, wherein the shank is cylindrical and terminates in a rectangular head adapted for engagement by a driving tool.

7. A screwdriver as defined in claim 3, wherein the shank is hexagonal in cross section.

8. A screwdriver as defined in claim 3, wherein the shank is cylindrical in form and extends axially out of the handle, said tube being materially shorter than said shank.

9. A screwdriver as defined in claim 3, wherein the tube is formed with diametrically opposed long grooves inside the tube, the opposite long edges of the blade being securely engaged in the long grooves.

25

30

35

40

45

50

55

60

65

70

75