Oct. 27, 1942. E. OJALVO 2,300,308

SCREWDRIVER

Filed Jan. 13, 1941

Fig. 1.

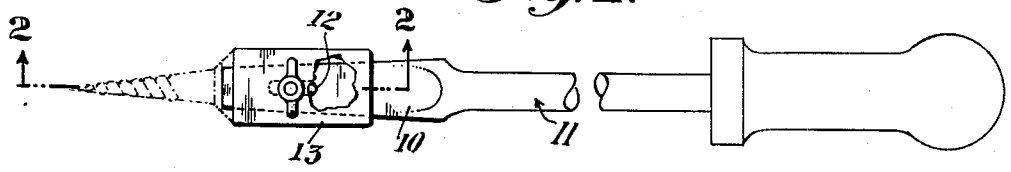


Fig. 2.

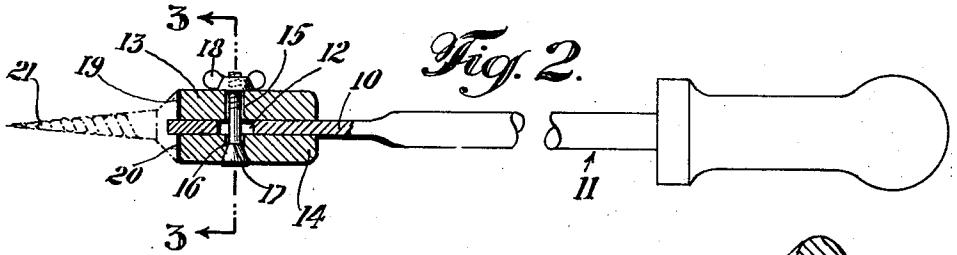


Fig. 3.

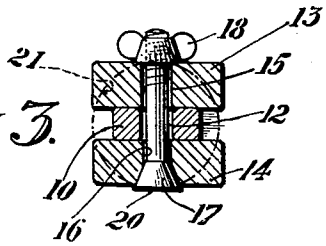
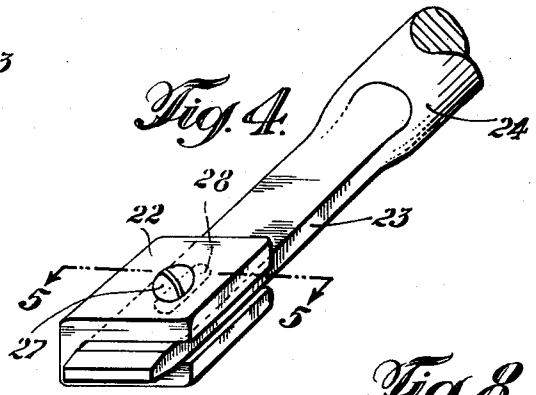


Fig. 4.



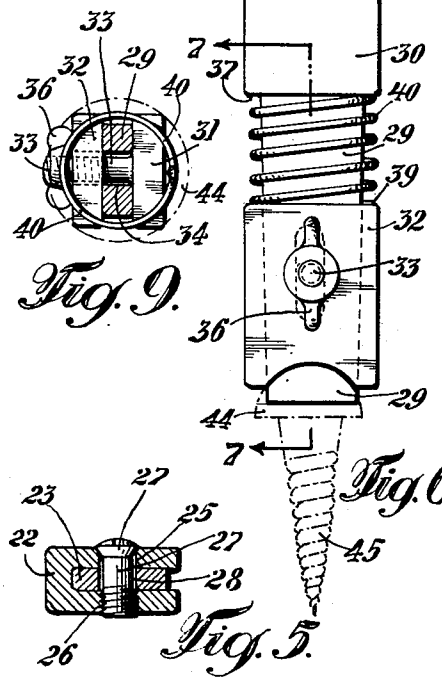


Fig. 9.

Fig. 6.

Fig. 5.

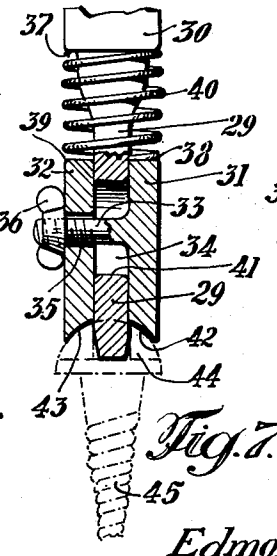
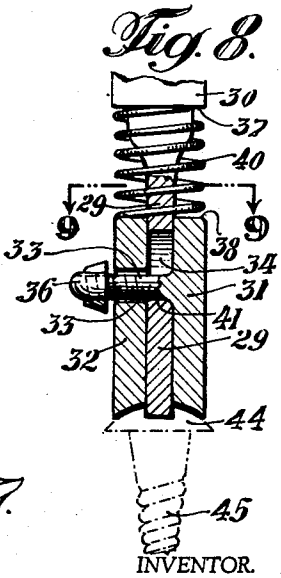


Fig. 7.

Fig. 8.



INVENTOR.

BY Edmond Ojalvo

E. R. Posnack ATT'Y

Patented Oct. 27, 1942

2,300,308

UNITED STATES PATENT OFFICE

2,300,308

SCREW DRIVER

Edmond Ojalvo, New York, N. Y.

Application January 13, 1941, Serial No. 374,199

1 Claim. (Cl. 145—50)

This invention relates to magnetic screwdrivers, and particularly although not exclusively to tools of this category employing permanent magnets.

Cognizance is taken of certain electromagnetic screwdrivers adapted to magnetically retain a screw against the blade of the tool,—such devices, however, being generally intricate in structure and too costly for practical purposes. There are also other types of screwdrivers containing mechanical gripping means for holding the screw head in place against the blade, these being also generally relatively expensive and at times difficult to operate. It is primarily within the contemplation of my invention to provide a screwdriver with magnetic means of such a nature as to not only enable the screw to be properly retained in place against the blade, but also maintained in such position during the driving operation.

It is a common occurrence in the operation of a screwdriver that if the axis of the tool and that of the screw are not perfectly aligned, the blade will either slip off, or the screw driven in at an undesired angle. It is another object of this invention to provide means associated with a screwdriver for at all times maintaining the screw in proper relation with respect to the blade during the operative use of the tool.

It is another object of this invention to enable a device of the above category to be adjustably adapted for use with screws of different slot depths, whereby the instrument can be most effectively employed for its intended purpose.

Another object of this invention is to provide a screwdriver with a driving surface of extended area to constitute a saddle or abutment member, whereby it will engage substantially the entire head of the screw, or a goodly portion thereof. In this manner my invention enables a greater effective driving force to be applied against the screw while being operatively driven.

It is another object of my invention to provide interchangeable saddles for screws with different sized and shaped heads, whereby both the blade and the saddle will engage a substantial portion of the screw head during the driving operation.

Other objects, features and advantages will appear from the drawing and description hereinafter given.

Referring to the drawing,

Figure 1 is a fragmentary elevation of a screwdriver showing one form of my invention,—illustrated in operative relation to a screw sho.n by dot-dash lines.

Figure 2 is a fragmentary section of Figure 1 taken along line 2—2.

Figure 3 is a transverse section of Figure 2 taken along line 3—3.

Figure 4 is a fragmentary perspective of a screwdriver constituting a modified form of my invention.

Figure 5 is a transverse section of Figure 4 taken substantially along line 5—5.

Figure 6 is a fragmentary elevation of a screwdriver illustrating another modified form of my invention showing its operative relation to a screw shown by dot-dash lines.

Figure 7 is a section of Figure 6 taken substantially along line 7—7.

Figure 8 is a fragmentary section similar to that of Figure 7, showing another position of the saddle as adapted for a smaller screw, and

Figure 9 is a sectional plan of Figure 8 taken along line 9—9.

In the drawing, the blade 10 of the screwdriver 11 contains, preferably although not necessarily along the medial portion thereof, an aperture 12. Positioned against the opposite flat sides of the blade are the two magnetic members 13 and 14, said members being preferably permanent magnets that may be magnetically attached to the blade. The said members contain two apertured portions 15 and 16 in substantial registry with the apertured portion 12 of the blade; and extending through apertures 12 and 15 of the blade and member 13, respectively, is the shank of the bolt 17, the head thereof being disposed within aperture 16. In threaded engagement with the outwardly protruding end of bolt 17 is the wing nut 18. The arrangement is such that the said magnetic members 13 and 14 can be adjustably moved longitudinally of the blade within the limits of the aperture 15, and fixedly secured in place.

In the operation of the tool disclosed in Figures 1 to 3, the members 13 and 14 are adjustably positioned in the manner aforesaid so that the blade will protrude forwardly from the front edges 19 and 20 of the members a distance corresponding to the depth of the slot of a screw 21 to be driven thereby. It will be observed that the end surfaces 19 and 20, in this form of my invention, are shown to be flat, so that they will be adapted for abutting engagement with the flat head of the screw 21.

It is apparent that the structure hereinabove referred to is conveniently adapted for operative use with screws of various sizes, and in a manner not possible with the conventional type of

screwdriver. Not only does the magnetic construction serve to hold the screw in place, but the surfaces or ends 19 and 20 of these members, being in abutment with the screw, serve to cooperate with the blade in effectuating the driving operation, as distinguished from the common type of screwdriver wherein only the blade is in driving engagement with the screw. Furthermore, the members 13 and 14 actually act as saddles for supporting the head of the screw 21, and preventing it from accidentally tilting out of alignment with the blade, or from being driven at an undesired angle into the work.

The combination of the magnetic members 13 and 14 and the blade 10 in the manner disclosed constitutes a means of holding the head of any one of a number of differently sized screws firmly and properly in position for the driving operation.

Figures 4 and 5 show a modified form of my invention wherein instead of employing two separate magnetic elements 13 and 14, a single U-shaped magnetic member 22 is placed over the blade 23 of the screwdriver 24, the opposite legs of the magnet flanking the blade as shown. In the particular embodiment disclosed in these figures, the magnet contains two axially aligned holes 25 and 26, the latter being threaded. A screw 27 extends through the two said holes 25 and 26 as well as the aperture 28 in the blade, the lower portion of the screw being in threaded engagement with hole 26, the arrangement is somewhat simpler and more streamlined than that of the first-mentioned form of my invention, in that a single magnet is employed, and no wing nut is used, but in place thereof a screw member having a head only slightly protruding above the magnet and adapted for operatively receiving either a screwdriver or a thin coin to manipulate the screw and adjustably position member 22 along blade 23.

Figures 6, 7, 8 and 9 show still another modification of my invention in which the blade 29 of the screwdriver 30 is flanked by two magnetic members 31 and 32, the former containing a threaded stud 33 extending through apertured portion 34 of the blade and the hole 35 in the magnetic member 32. A nut 36 is in threaded engagement with the protruding portion of the stud 33, whereby the assembly of the magnetic members 31 and 32 may be adjustably moved along blade 29 within the limits of apertured portion 34. The screwdriver 30 contains a shoulder 37, and disposed between said shoulder and the rear ends 38 and 39 of the magnetic members 31 and 32 is a preferably helical spring 40 mounted over the blade.

Normally said spring urges the magnetic members forwardly to the position shown in Figure 8 where the foremost wall 41 of the aperture 34 is in abutment with stud 33. Thus, when the nut 36 is in its loose or inoperative position on the stud, the said spring 40 will be freely urging the magnetic members forwardly so that the forward walls 42 and 43 thereof are in yieldable abutment with the head 44 of a screw 45 being driven by the tool. It is of course obvious that this condition will only prevail if the tip of the blade 29 projects forwardly a distance preferably slightly less than the depth of the slot in the screw head 44. The screwdriver can hence be conveniently manipulated with the said screw 36 loosely mounted as indicated, the walls 42 and 43 cooperating with the blade to effect a firm and effective driving action.

Should it, however, be desired to adjustably fix the magnetic members 31 and 32 at a predetermined position on the blade, that can be readily done by moving said members against the action of spring 40, and then tightening said nut 36. In this manner the screwdriver will be set for operative use with screws of predetermined dimensions.

It will be further observed that the shape of the walls 42 and 43 constituting abutments or saddles for the screw are, in the form illustrated, concave, so as to be adapted for operative use with the round headed screw 44. It is of course obvious that the magnetic members 31 and 32 can be readily removed and replaced with other similar members having differently proportioned and shaped forward walls adapted to serve as saddles for various sizes and types of screws.

It is understood that the various embodiments above described and shown in the drawing are illustrative of my invention and not employed by way of limitation, inasmuch as numerous changes and modifications may be made within the scope of the appended claim without departing from the spirit of this invention.

What I claim is:

In a screwdriver, a blade member, an abutment member mounted upon the forward portion of the blade member and normally freely movable longitudinally with respect thereto, a longitudinally disposed aperture in said blade member, an outwardly directed shoulder in the rear portion of the blade member, a spring surrounding said blade member and located in abutment with said shoulder and the rear portion of said abutment member for urging said abutment member forwardly, screw means for securing said abutment member to the blade member at a predetermined point therealong, said screw means containing a shank portion engaging said abutment member and extending transversely through said aperture, the sliding movement of said abutment member and said screw means being limited by the front and rear walls of said aperture, the front portion of said abutment member being disposed rearwardly from the forward end of the blade and being shaped for abuting engagement with the head of a coacting screw.

EDMOND OJALVO.