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H. R. HINES
MAGNETIC SCREW DRIVER
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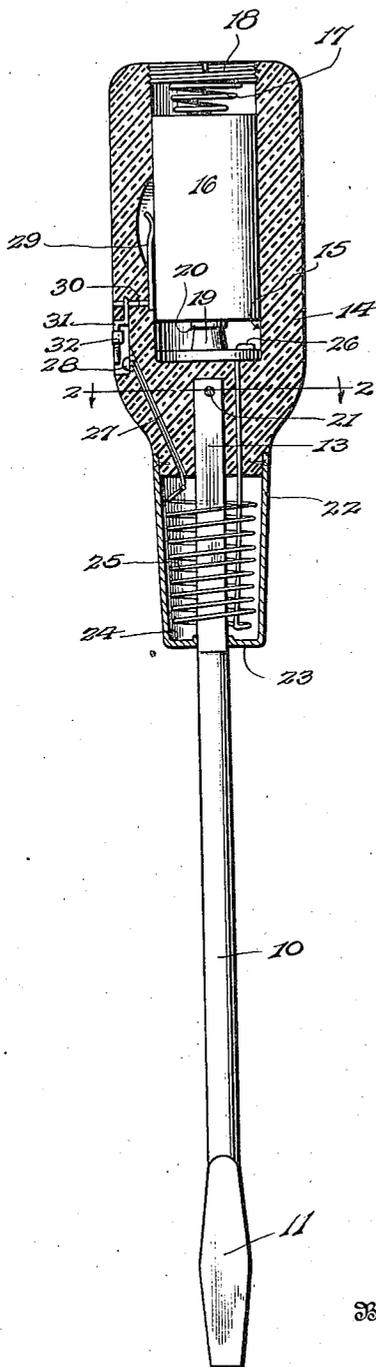


Fig. 1.

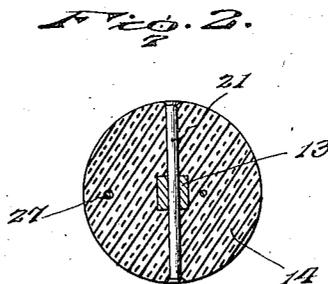


Fig. 2.

Inventor

H. R. HINES.

By

Lucy Macy, Attorneys

UNITED STATES PATENT OFFICE.

HOWARD ROSS HINES, OF WARSAW, INDIANA.

MAGNETIC SCREW DRIVER.

Application filed May 17, 1923. Serial No. 639,568.

To all whom it may concern:

Be it known that I, HOWARD R. HINES, a citizen of the United States, residing at Warsaw, in the county of Kosciusko and State of Indiana, have invented certain new and useful Improvements in Magnetic Screw Drivers, of which the following is a specification.

My invention relates to a screw driver, the blade of which may be magnetized when in use to pick up and hold iron and steel screws when placing them in position for tightening.

It is very difficult to place screws in position for tightening in deep recesses or narrow passages, particularly in sundry places on automobiles. With the screw driver forming the subject matter of the present invention, such difficulties are overcome, as by simply operating a switch on the handle of the screw driver, the point of the blade becomes magnetic and will hold the screw until positioned in the aperture provided for the same.

It is also found very difficult to remove the screws from deep recesses or narrow passages after they have been unscrewed from their seats, and also in this case, the magnetic screw driver will be very useful to remove the loose screws or bolts or even washers and nuts from such places on automobiles or other machinery, or any other similar steel and iron parts fallen into the pan or crank case of an automobile.

Another advantage of having a screw driver, the blade of which can be magnetized when needed, resides in the fact that it is only a few moments that the blade need to be in condition to hold a screw thereon, and that at other times it is more advantageous to have a screw driver that is not magnetized. Directly the screw has been inserted and started in the aperture made for the same, the switch is made to break the current thereby demagnetizing the blade.

In the accompanying drawing, one embodiment of the invention is illustrated; and—

Figure 1 shows a longitudinal section of the screw driver forming the subject matter of the present invention; and

Figure 2 is a transverse section along line 2-2 of Figure 1.

In the drawing, reference numeral 10

represents the blade preferably made of soft iron with the exception of the working end 11, which may be made of tough steel so as to take hardening. The upper end of the blade has preferably a square sectioned shank 13 which is inserted in the wooden handle 14. The handle is bored at its upper end to provide a chamber 15 for a dry cell 16. This cell is an ordinary one and one-half volt flash light cell having a cylindrical metallic casing, and the chamber 15 is large enough to permit a close fit for the cell therein. The cell is held in position by means of a coil spring 17 which is inserted between the upper end of the cell and the cap 18 which is threaded in the open end of the chamber 15 in the handle.

The square shank 13 does not reach into the lower part of the chamber, but is secured in the handle 14 by means of a pin 21 running through the handle and the square shank 13 of the blade, as best seen in Figure 2. A brass button 19 deposited in the bottom of the chamber 15 is adapted to contact with the positive pole 20 of the cell.

At the lower end of the handle 14 is secured, by means of screws or the like, a ferrule 22 preferably of brass, extending downwardly along the shank of the blade 10 and engaging firmly therewith with its closed bottom portion 23.

Within the ferrule, which forms a roomy compartment 24 around the blade 10, is housed a coil wire 25. This wire is preferably made of copper or some similar material forming a good conductor and covered with a double layer of cotton or silk providing insulation between the coils. One end of this coiled wire runs along the shank of the blade and is secured as at 26 to the brass button 19, while the other end thereof is led by a suitable passage 27 to a metallic stud 28 secured in the handle. A contact spring 29 presses against the metallic side of the cell 16 and is held firmly in the handle 14 by means of a securing pin 30 which is associated with a finger 31, upon which the switch button 32 is adapted to slide. As seen in Figure 1, this switch button is in open position, and in order to close the circuit, the button has to be pushed downwardly until it contacts with the stud 28, thereby closing the gap and permitting the current to run through the coiled wire 25,

thus magnetizing the core formed by the shank of the blade 10, through induction.

The switch button 32 is in a convenient position to be shifted by the thumb or finger of the operator whenever he needs to pick up a screw or other iron or steel part, after which it may be immediately released by throwing back the switch button 32 into open position.

The ferrule 22 does not only form a guide for the screw driver blade 10 by providing an extension to the handle 14, but also furnishes a shield or guard for the magnet coil 25, thus protecting it from damage.

Instead of providing a separate spring 29 for making the contact with the negative pole of the cell, the spring 17 might also perform this duty if properly connected with the switch finger 31.

When the blade is magnetized to pick up an ordinary slotted wood screw or stove bolt, there are three magnetized points; namely two sides and the bottom of the screw slot, thus holding the screw securely until started in the opening provided therefor, whereupon the switch button is retracted to break the current and demagnetize the blade.

Having thus described the invention, what is claimed as new is:

A screwdriver comprising a handle having one solid end, having a chamber in its opposite end and having a recess in its side, a blade secured in and projecting from the solid end of the handle, a contact button on the wall of the chamber in the handle, a fixed contact element housed in the recess in the side of the handle, a coil around the blade having its ends passing through the solid end of the handle out of contact with and insulated from the blade and connected to said button and said contact element respectively, a battery cell in the chamber of the handle having one terminal in contact with said button, a conductor housed in the handle and having one end in contact with the other terminal of the battery cell, a finger forming a continuation of the opposite end of said conductor and extending longitudinally of and housed within the recess in the side of the handle, and a switch member slidably mounted on said finger to engage the contact element in said recess.

In testimony whereof I affix my signature.
HOWARD ROSS HINES. [L. s.]