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E. A. DODELIN

2,276,470

SELF-HOLDING SCREW DRIVER

Filed June 30, 1939

Fig. 1.

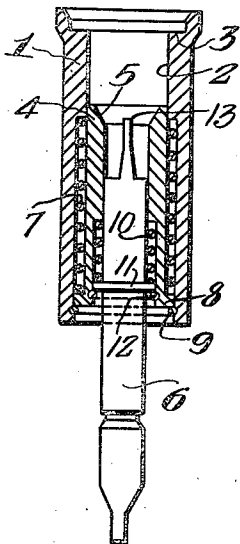


Fig. 2.

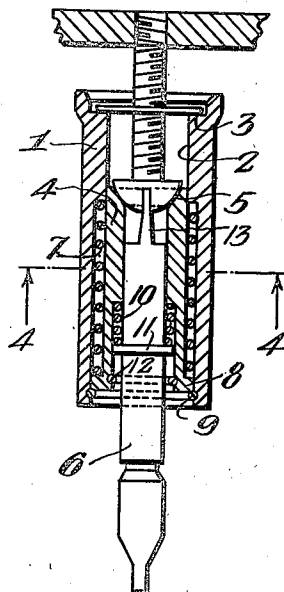


Fig. 3.

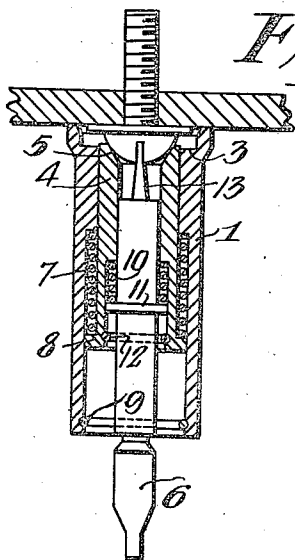
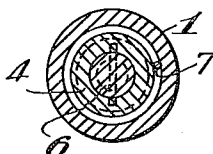


Fig. 4.



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SELF-HOLDING SCREW DRIVER

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2 Claims. (Cl. 145—51)

This invention relates to self-holding screw and bolt drivers.

The usual procedure in the uniting of parts of wood or of metal by means of screws or bolts dictates the use of a washer to form a seat for the head or nut of the screw or bolt. The utility of the usual self-holding screw driver in jobs requiring the use of washers is of questionable value since in practice the operator will usually hold the washer while the driving force is applied to the screw, thereby exposing his fingers to the very hazards which such devices are supposed to obviate.

Accordingly, an object of the present invention is to provide an improved self-holding screw driver which is adapted to receive not only a screw or a bolt but also an accompanying washer.

Another and important object of the invention is to provide a simple, inexpensive and trouble free combined screw and washer holder and one which in use simplifies and renders less hazardous the uniting of parts of wood or metal.

Other objects and advantages together with certain details of construction will be apparent and the invention itself will be best understood by reference to the following specification and to the accompanying drawing, wherein:

Figure 1 is a longitudinal sectional view of a tool constructed in accordance with the principle of the invention;

Figure 2 is a view similar to Fig. 1 but showing a screw and washer seated within the tool;

Figure 3 is also a longitudinal sectional view but showing the tool at the moment the screw has been driven and just prior to the completion of the cycle of operation of the tool; and

Figure 4 is a sectional plan view taken on the line 4—4 of Fig. 2.

In the drawing, wherein like reference characters designate the same or corresponding parts in all figures, 1 designates an outer casing or barrel having an axial opening 2 which extends therethrough. The inner wall of this barrel is provided with a shoulder 3 which is preferably disposed at or adjacent its leading end and upon which a washer W for a screw S (Figs. 2 and 3) may be removably seated. Supported for axial movement within the barrel 1 is a hollow cylinder 4 which has its leading end shaped to provide a shouldered recess 5 of a contour adapted to receive the head of the screw S (Figs. 2 and 3) or the nut (not shown) of a bolt. A screw driver 6 is mounted to permit of both rotatable and axial movement within the cylinder 4.

The inner wall of the barrel is cut away

through a portion of its length to accommodate a spring 7 which exerts its bias downwardly, as viewed in the drawing, against a circumferential rim or flange 8 which is preferably integral with the outer wall of the cylinder 4. A retaining ring 9 or the like serves to maintain the cylinder within the barrel. The inner wall of the cylinder 4 is likewise cut away to accommodate a spring 10 which exerts its bias against a circumferential rim 11 on the shaft of the screw driver 6. A retaining ring 12 which is seated in the base of the cylinder limits the outward movement of the screw driver.

The several parts of the device are preferably so designed that when the cylinder 4 and screw driver 6 are in their idle position, as shown in Fig. 1, the space above the cylinder and within the barrel is sufficient to accommodate half or more than half of the over-all length of the screw or bolt S. Thus, when the washer W is seated on the shoulder 3 of the barrel the washer will limit the angle through which the screw may be tilted and serve to maintain it in a position to be driven. The length of the screw driver as measured from its blade 13 to the rim 11 is preferably such that the blade will not interfere with proper seating of the screw head in the mouth of the cylinder 4.

When the screw S and its surrounding washer W are dropped into the barrel 1 the washer W is immediately seated on the shoulder 3 in a plane normal to the axis of the barrel, and the screw S assumes an upright position with its shank extending along said axis. When a rotating movement is imparted to the screw driver 6 as by a motor (not shown) the blade 13 will seek and enter the slot in the head of the screw, and move it slightly out of intimate contact with the shoulder 5 or other supporting means on the end of the cylinder 4, thereby relieving the friction therebetween. As the driving force is applied to the screw, the spring 10 surrounding the screw driver is compressed by the force applied thereto through the rim 11 and the cylinder 4 is moved in the direction of the washer W against the bias of the outer spring 7. This upward movement of the cylinder 4 follows very closely the movement of the screw so that if the screw should be retarded for any reason, the cylinder will be urged forward into contact with the screw head and add its force to that applied directly thereto through the blade 13 of the screw driver.

When the screw has reached the limit of its movement the driving force is withdrawn and the cylinder and screw driver returned to their idle

position by the biasing force of the springs 7 and 19, respectively.

The self-holding screw or bolt holder of the invention has found useful application in the assembly of electrical apparatus where it has been used, by way of example, in bolting radio sets to their cabinet shelves, from the underside of the shelves. The use of the device, however, is not limited to applications requiring an upward or vertical movement since, by forming the barrel of magnetic material, the washer may be held in a horizontal position, in which case the screw is prevented from excessive tilting by contact with the metal surrounding the orifice in the washer.

Other modifications of the invention will suggest themselves to those skilled in the art. It is to be understood, therefore, that the foregoing description of a preferred embodiment of the invention is to be interpreted as illustrative and not in a limiting sense except as required by the prior art and by the spirit of the appended claims.

I claim as my invention:

1. A tool of the character described comprising a barrel having an axial opening adapted to receive a screw and a washer for said screw, a shoulder in the inner wall of said barrel adjacent the open end thereof and upon which said washer may be seated, a hollow cylinder mounted for

axial movement within said barrel and having a recess within which said screw is received with its shank within the opening in said washer, a screw driver mounted for rotatable and axial movement within said cylinder, and means responsive to axial movement of said screw driver for moving said cylinder in the direction of said washer.

2. A screw and washer holder comprising a barrel provided with an inner shoulder adjacent one end thereof and upon which a washer is adapted to be removably seated, a hollow cylinder mounted for axial movement within said barrel, biasing means tending to maintain said cylinder in a position remote from the said end of said barrel, a shoulder on the inner surface of said cylinder adapted to receive the head of a screw when the shank thereof extends through and is centered by said washer, a screw driver mounted for rotatable and axial movement within said cylinder, biasing means tending to maintain said screw driver in an axial position which permits the seating of said screw head upon the shoulder of said cylinder, and means responsive to axial driving movement of said screw driver for moving said cylinder against the force of its bias in the direction of the end of said barrel adjacent which said washer is supported.

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