Oct. 17, 1950 H. ERICKSON 2,526,211

SCREW-HOLDING SCREW DRIVER

Filed Feb. 17, 1945

FIG. 1

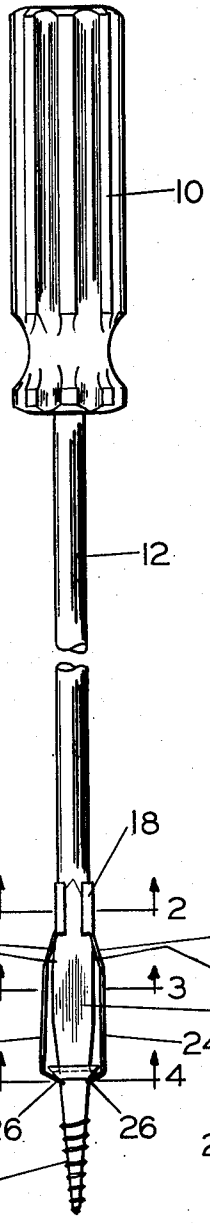


FIG. 6

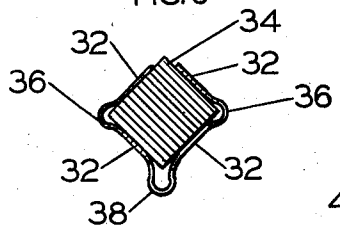


FIG. 7

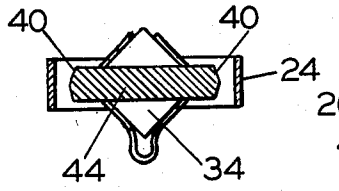


FIG. 5

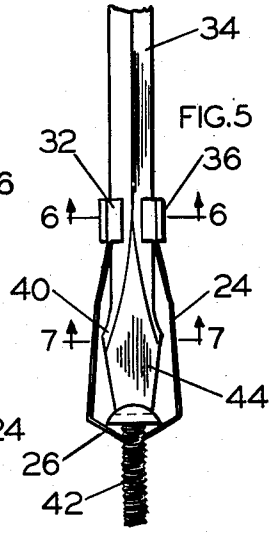


FIG. 2

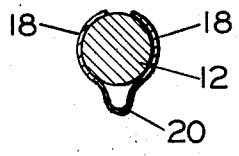


FIG. 3

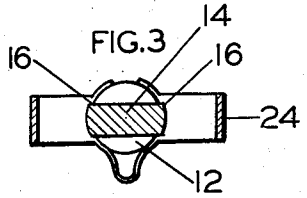


FIG. 4

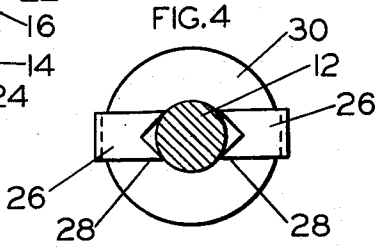
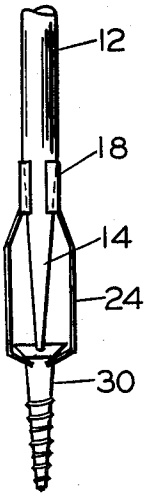


FIG. 8



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SCREW-HOLDING SCREW DRIVER

Hugo Erickson, Chicago, Ill.

Application February 17, 1945, Serial No. 578,383

2 Claims. (Cl. 145—52)

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My invention relates to hand tools and includes among its objects and advantages an increase in the facility with which a mechanic can complete assemblies where wood-screws, machine-screws, nuts or other threaded fastening instrumentalities need to be quickly put in place in places difficult of access.

In the accompanying drawing:

Figure 1 is a side elevation of a screw-driver equipped with an attachment according to the invention;

Figure 2 is a section on line 2—2 of Figure 1;

Figure 3 is a section on line 3—3 of Figure 1;

Figure 4 is a section on line 4—4 of Figure 1;

Figure 5 is a side elevation similar to Figure 1 of a screw-driver with a square reach;

Figure 6 is a section on line 6—6 of Figure 5;

Figure 7 is a section on line 7—7 of Figure 5; and

Figure 8 is a view similar to Figure 1 with the parts in a different position.

In the embodiment of the invention selected for illustration in Figure 1, the screw-driver includes the conventional handle 10, reach 12, and blade 14. In the process of manufacture the deformation of the metal to form blade 14 causes a slight lateral bulge or swelling of the reach where it joins the blade as indicated at 16 in Figures 1 and 3.

The clip comprises C-shaped jaws 18, the inner faces of which have the same curvature as the outer surface of the reach 12. The jaws are connected by a bight 20 and the entire clip is of resilient tempered spring steel so that when properly adjusted the jaws 18 press against the reach 12 to secure a firm frictional grip. From the jaws 18 the supporting arms for the screw extend first outwardly and downwardly as at 22 and then downwardly as at 24 and finally downwardly and inwardly as at 26 to terminate in notched ends 28 adapted to embrace the screw 30.

It will be apparent that with the parts in assembled condition as in Figures 1, 5 or 8, the mechanic need only have access to the handle 10 with his hands and can insert the reach 12 and the clip and screw carried thereby into places that are inaccessible or too small to admit the hand of a workman. In this way he can put the screw 30 in the desired position and screw it in quickly, and a simple pull will thereafter be adequate to disengage the screw-driver and clip.

Clips of this general type have been proposed in the past. To the best of my knowledge and belief, there has been some sporadic commercial

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success in their use, but so far as I am aware, there has been material dissatisfaction with such previous devices because they get bent or slightly distorted from their original shape and thereafter become useless, because it is impossible for the user to get them back into workable condition. More specifically, if the jaws 18 get a little too loose, the clips of the prior art could not be reconditioned except at the factory.

According to the invention, I make the thickness of the metal and the size of the bight 20 such that the distortion of that part of the clip incident to pushing it past the bulges 16 is exactly the right amount to permit the resilience of the bight 20 to bring the jaws 18 back to a proper grip on the reach. Thus, when the jaws 18 get too loose, the workman can pull the clip off and with a hammer or a pair of pliers squeeze the jaws 18 until they are closer together than in Figure 2. Then he pulls the clip back over the bulges 16 into the position of Figure 1 and the bight 20 is again stretched a little beyond its elastic limit and has just the right amount of recovery to give the right frictional grip on the reach 12.

Specifically, these parts have substantially the proportions of Figure 2 when the reach is $\frac{3}{16}$'' in diameter, and a good standard grade of spring steel having a thickness of 0.015'' when properly tempered, will give the desired result. It will be obvious that the ratio between diameter and blade thickness for other sizes may readily be worked out by simple tests. And, it is not necessary to employ any particular grade or quality of spring steel because Young's modulus is practically the same for all such steels. It is only necessary to get the size of the bight 20 so proportioned with respect to the size of the buges 16 that when the jaws are expanded to put them over the bulges, the movement of the jaws back to the position of Figure 2 will leave the right amount of stress at the bight 20.

In Figures 5, 6 and 7 I have indicated the application of the same principles to a tool with a square reach. The supporting arms may be identical with Figure 1 but the jaws 32 are each in two portions lying at right angles to get a bearing against one of the faces of the reach 34. To make sure that the bearing is on the face and not at one of the corners each jaw is bowed out as at 36 adjacent the corner it straddles. The bight 38 is merely a bowed out portion similar to the bulges 36 but of much greater extent. As a rule, in forming such a tool with a square reach, the bulges 40 will extend a trifle

further than the bulges **16**, but all that is necessary to allow for that difference, is to make the bight **38** correspondingly deeper. In Figure 1 the wood-screw **30** has a tapered portion having approximately the same inclination as the arm portions **26**, but this is not essential to effective operation. Thus, in Figure 5 I have illustrated a machine-screw **42**, and it will be noted that the portions **26** of the supporting arms bear against the edges of the head while their inner ends reach in to engage the threaded shank of the screw.

It is not difficult to use the parts assembled as in Figure 1 and Figure 5. In fact, a few workmen prefer to hook the notch in the head of the screw over the end of the blade **14**, or **44**, and then swing the screw into axial alignment to snap the arms into gripping position. However, the majority of users prefer to have the blade at right angles to the position shown in Figure 1 and Figure 5, as indicated in Figure 8. To insert the screw in this position, one end of the slot is engaged with the corner of the blade and the slot guides the movement of the screw into assembled position.

The preferred technique is to screw the fastening element far enough in so that the part receiving it will hold it firmly in place. Then the screw-driver is withdrawn and the clip retracted so that the ends of the arms will not be caught under the head of the fastening member. Then the screw-driver is again engaged with the fastening member for final tightening. On this account it will be apparent that a grip so tight that it hurts the user's fingers to displace the clip will be unsatisfactory, and also unless the grip is tight enough to pull the clip off the fastening member, there will be trouble of a different sort. Furthermore, if a hurried or absent-minded worker tightens up on the fastening member with the clip jaws still in place, those jaws are going to be deformed more or less. On this account it is necessary to be able to slip the clip off and straighten up the jaws with a pair of pliers, and then get the clip back on again in good working condition. It will be apparent that the structure disclosed obviates the foregoing disadvantages.

Without further elaboration the foregoing will so fully explain my invention that others may readily adapt the same for use under various conditions of service.

I claim:

1. The combination with a conventional screw driver having a reach of circular cross section, a flattened blade, and a joining portion joining the reach and the blade, which joining portion has a cross-sectional contour projecting at spaced points beyond the contour of the cross section of said reach, of a holder comprising, in combination: a relatively short and relatively rigid sleeve-like body having opposed members shaped to fit frictionally against opposite sides of said reach; a connection between said members in the nature of an open U-shaped bight integral with said members and joining them at one side only; relatively resilient arms integral with said body and extending in one direction only from said body; each arm being substantially flat in cross section to secure flexibility greater than that of said members; said arms being axially longer than said body and long enough to extend beyond the end of said screw driver with said body still positioned on said reach; said arms having inwardly directed end portions shaped to grip and hold a screw in operative engagement with said screw driver; said members gripping said reach peripherally with a predetermined frictional force greater than that required to free said resilient arms but small enough to permit convenient axial adjustment by the fingers of the user; the elastic limit of said bight being such that deforming said sleeve means to an abnormally contracted condition and subsequently pushing it on longitudinally over said joining portion will let it spring back and grip said reach with said predetermined frictional force.

2. The combination with a conventional screw driver having a reach of uniform cross section, a flattened blade, and a joining portion joining the reach and the blade, which joining portion has a cross-sectional contour projecting at spaced points beyond the contour of the cross section of said reach, of a holder comprising, in combination: a relatively short and relatively rigid sleeve-like body having opposed members shaped to fit frictionally against opposite sides of said reach; a connection between said members in the nature of an open U-shaped bight integral with said members and joining them at one side only; relatively resilient arms extending in one direction only from said body; each arm being more flexible than said members; said arms being axially longer than said body and long enough to extend beyond the end of said screw driver with said body still positioned on said reach; said arms having inwardly directed end portions shaped to grip and hold a screw in operative engagement with said screw driver; said members gripping said reach peripherally with a predetermined frictional force greater than that required to free said resilient arms but small enough to permit convenient axial adjustment by the fingers of the user; the elastic limit of said bight being such that deforming said sleeve means to an abnormally contracted condition and subsequently pushing it on longitudinally over said joining portion will let it spring back and grip said reach with said predetermined frictional force.

HUGO ERICKSON.

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