Nov. 25, 1930. F. DOHNAL 1,782,565

SCREW HOLDER

Filed July 25, 1928

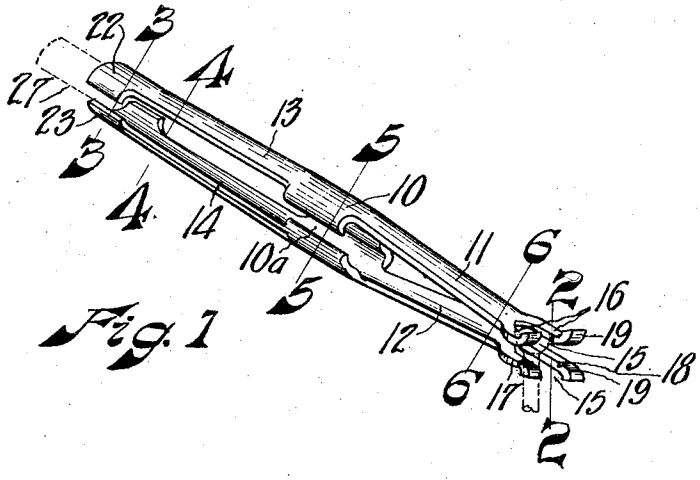


Fig. 1

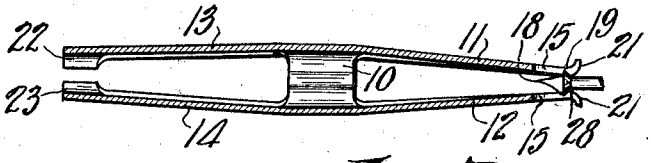


Fig. 2



Fig. 3

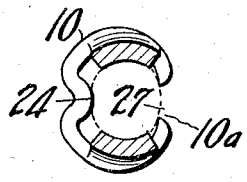


Fig. 4

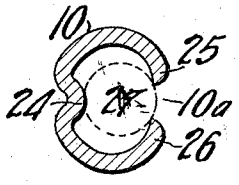


Fig. 5

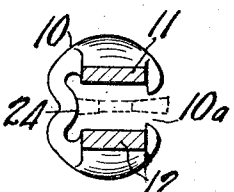


Fig. 6

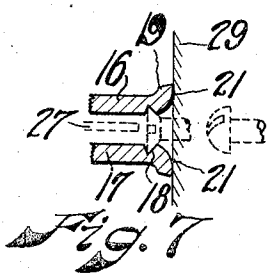


Fig. 7

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Patented Nov. 25, 1930 1,782,565

UNITED STATES PATENT OFFICE

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SCREW HOLDER

Application filed July 25, 1928. Serial No. 295,135.

My invention relates to means attachable to screw driver means and adapted to temporarily hold a screw preparatory to rotation thereof.

Objects of my invention are a simple, inexpensive, easily operable and efficient screw holder having means for engaging and automatically releasing variously sized screws preparatory to rotation thereof and for attaching the holder to variously sized screw driving means and automatically engaging the same. Other objects will appear or become apparent, or will suggest themselves upon an inspection of the accompanying drawing and the description following herein.

I am aware that my invention is applicable in various manners. For the purpose of illustration, but not for limitation, I have shown one device in the accompanying drawing, embodying my invention and describe the same herein to explain my invention.

In the accompanying drawing:—

Fig. 1 is a general perspective view of one type of screw holder embodying my invention with a portion of a screw driving means ready for operating position therein and a screw shown in dotted lines ready for screw holding operation in the jaws thereof.

Fig. 2 is a longitudinal section taken in a plane indicated by the line 2—2 in Fig. 1 and shows the relations of parts more clearly and the screw aligned with the device.

Fig. 3 is a transverse section taken in a plane indicated by the line 3—3 in Fig. 1 and shows the screw driver engaging means more clearly.

Fig. 4 is a transverse section taken in a plane indicated by the line 4—4 in Fig. 1 and shows the relations between the prongs and the screw driver and the screw driver engaging means more clearly.

Fig. 5 is a transverse section taken in a plane indicated by the line 5—5 in Fig. 1 and shows the second screw driver engaging means more clearly.

Fig. 6 is a transverse section taken in a plane indicated by the line 6—6 in Fig. 1 and shows the flat portion of the jaw prongs merging into the arcuate form thereof toward the band portion.

Fig. 7 is a typical section of the jaws showing the screw engaging notches and the jaw spreading means more clearly.

Similar reference characters refer to similar parts throughout the views.

Referring now particularly to the device shown in the accompanying drawing:—

For the purpose of simplicity and economy of manufacture, a feature of my invention, the device here shown is made of one piece of sheet material suitably cut out to provide the members or elements described below and bent to properly relate the same to each other as shown in the accompanying drawing and described below.

For the purpose of automatically gripping and aligning screws in the holder and automatically releasing screws from the holder and automatically engaging the holder on screw drivers and automatically releasing the same from screw drivers, one feature of my invention, is to make the device of resilient material.

The band portion 10 is bent circularly as shown with the opening 10^a between the edges thereof. The prongs 11 and 12 extend from one end of the band portion and are arcuate cross-sectionally at the band portion and gradually form into cross-sectionally flat ends so that the same retain their original shape and taper longitudinally so that the free ends thereof are normally closer together than the remainder thereof.

The prongs 13 and 14 extend from the other end of the band portion and are arcuate cross-sectionally so that the same retain their original form and taper longitudinally so that the free ends thereof are normally closer together than the remainder thereof.

Another feature of my invention is that either the width or the length, or the curvature, or the taper of the prongs, any or all of these features can be varied to suit various screw engaging, or screw releasing, or screw driver engaging, or screw driver releasing requirements.

As shown, the prongs 11 and 12 each have the slot 15 in the outer end thereof to permit of angular insertion of a screw as indicated in dotted lines in Fig. 1 and to provide the

pairs of jaws 16 and 17 each of which has the notch 18 with inclined sides in the present instance near the free end thereof and the outflaring member 19 on the extreme outer end thereof.

More than two jaws are thus formed on the prongs 11 and 12, four in the present instance, and the notches 18 are all in the same transverse plane in the present instance.

This transverse alignment of the notches and the even number of jaws will hold screws of variously shaped heads in alignment with the holder. If an uneven number of jaws, three for instance, were used and the notches therein in transverse alignment, the usual flat head screws will be held in alignment with the holder since the outer edge of the head engages the bottom of the notches but other forms of screw heads, round heads for instance, would not be held in such alignment since the round parts of the head contacts the upper wall of the notches and the edge of the head does not contact the bottom of the notches; in such cases, the contact points on the head are not diametrically opposite and therefore tend to disalign the screw in the holder and if the notches are suitably arranged to align one kind of head, they would not be suitable to align other kinds of heads. Whereas an even number of jaws, with the notches in alignment is suitable to hold screws with variously shaped heads in alignment with the holder since the contact points of the jaws on the screw are diametrically opposite.

The extreme outer end of each of the jaws 16 and 17 is formed with the outflaring member 19, each having an inclinedly curved face 21 directed in line with the movement of the prongs in the present instance.

The prongs 13 and 14 are formed with the sidewise enlarged clip members 22 and 23 on the outer end thereof, arcuate in the present instance and thereby form two opposite screw driver engaging means at the end of the holder.

The band portion 10 is formed with the inwardly extending lump 24 and the inwardly extending ears or clip members 25 and 26 each engageable on the screw driver and thereby form three screw driver engaging means at the band portion of the holder.

The clip members on one end of the holder and the lump and the ears on the band form, as one feature of my invention, a screw driver engaging means whereby the holder is effectively held and aligned on the screw driver.

As to operation of the device just described:—

A screw driver 27 can be inserted longitudinally into the holder through the resilient clip members 22 and 23 which then engage the screw driver automatically and locate and hold the holder thereon.

As one feature of my invention, the holder is open on one side as well as on both ends so that a screw driver can be inserted into the holder either endwise or sidewise.

The head 28 of a screw can be inserted in between the jaws at an angle to the longitudinal axis of the holder as shown in Fig. 1; the body of the screw being then located in one of the slots 15 the bottom of which forms an abutment or locating means for the screw; the screw is then used as a lever in jack knife fashion to force the jaws apart until the screw is in alignment with the holder whereupon the edge of the head 28 is forced into the notches 18, and the screw is firmly held in alignment with the holder and with the screw driver by the jaws which prevents disalignment of the screw. The screw driver can then be brought into operative connenction with the screw and rotated to rotate the screw.

Due to the inclinedly curved faces 21, screws, particularly those with round or pointed or conical heads, can easily be inserted endwise of the holder as indicated in dotted lines in Fig. 7.

The screw can also be inserted as aligned in the holder before the same is attached to the screw driver.

When the screw driver and the holder are attached to each other, the usual wide portion of the screw driver just back of the screw engaging end can project out through the spaces between the prongs as indicated in Fig. 6.

When the screw has been moved a certain distance as when it is nearly home, the faces 21 contact the part 29 into which the screw is inserted as indicated in Fig. 7. Further rotation of the screw driver, after the faces 21 are contacting the part 29, causes the edge of the screw head to move the jaws outwardly due to the inclined sides of the notches therein and thereby, eventually, as a feature of my invention, releases the screw automatically while the same is being rotated.

This outward moving of the jaws is facilitated by the faces 21 which are curved inclinedly as a feature of my invention, in that there is a good wedging action to move the jaws outward easily and so that there is no square shoulder or edge like member in contact with the part 29 to impede or prevent the easy outward movement of the jaws.

In the device shown and described there are more than two screw engaging jaws whereby a screw is automatically held effectively and in alignment with the holder and with the screw driver; the jaws automatically release the screw while the same is being rotated; the clip members automatically engage on and automatically disengage from the screw driver; the device is held in alignment on the screw driver by spaced clip means; and the holder can easily be attached to and removed from a screw driver or the screw driver inserted into and removed from

the holder without the use of tools and either endwise or sidewise.

I am aware that changes, can be made in the structure as well as in the arrangement of elements shown and described within the scope of the appended claims; therefore, without limiting myself to the precise structure and arrangement of elements as shown and described,

I claim:—

1. A screw holder including means adapted to automatically hold the holder onto a screw driver and two resilient prongs normally contracted at the outer end thereof, each of said prongs having a slot in the outer end thereof longitudinally of the prong for insertion of the head of a screw sidewise in between said prongs and longitudinally of the prongs and to form jaws on the ends of said prongs; each of said jaws having a notch therein to engage the head of the screw when the screw is swiveled from the sidewise inserted position thereof into an aligning position with the holder.

2. A screw holder including means for automatic aligning and holding the holder onto a screw driver, and two prongs one at least having a slot in the outer end thereof to receive the shank of a screw when the head portion thereof is inserted sidewise in between the prongs from the outer end and longitudinally thereof and to grip the head of the screw when the same is swiveled from its inserted angular position into aligning position with the holder; the outer end of each of said prongs being flared outwardly to open the prongs and release the head of the screw when the outer ends of the prongs contact the article into which a screw is driven and to facilitate longitudinal insertion of screws into the holder.

3. A screw holder including a band portion open at one side and having screw driver engaging means spaced circumferentially and out of diametrically opposite relation to align and to assist in the holding of the holder on a screw driver, clip means longitudinally of one end of said band portion to assist in the aligning and in the holding of the holder on the screw driver, and screw gripping means longitudinally of the other end of said band portion and adapted to grip the head of screws to hold the same in position previously to driving the same.

4. A screw holder including a resilient band portion open at one side and having screw driver engaging means spaced circumferentially and out of diametrically opposite relation to align and to assist in the holding of the holder on a screw driver, clip means longitudinally of one end of said band portion to assist in the aligning and in the holding of the holder on the screw driver, and two resilient prong portions each bifurcated on the outer end thereof to receive the head portion of a screw inserted sidewise in between the prongs from the outer longitudinal end thereof and having notches to grip the head of the screw and align the screw with the screw driver when the screw is swiveled from its inserted angular position into an aligning position.

5. A screw holder adapted to be attached to a screw driver and having resilient screw holding prongs normally contracted at the free end thereof; at least one free end having a slot to initially receive the head portion of a screw sidewise and both free ends having notches to grip the head when the screw is swiveled from its angular position into alignment with the holder.

6. A screw holder made of one piece of material and formed into a resilient band and resilient clip members for alignment on and engagement of a screw driver and further formed into resilient free end jaws comprising a slot therein for sidewise reception of a screw and screw head engaging notches interiorly thereof for alignment of the screw with the screw driver and final gripping of the screw upon movement of the screw from its initial angular position to an aligning position with the screw driver.

7. A screw holder attachable to a screw driver, made of one piece of material and formed into resilient screw gripping jaws and further formed into a resilient band comprising a certain number of screw driver engaging portions and resilient clips comprising a different number of screw driver engaging portions.

In testimony of the foregoing I affix my signature.

FRANK DOHNAL.