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M. MARKS

2,588,860

SCREW-HOLE LINER

Filed Feb. 12, 1948

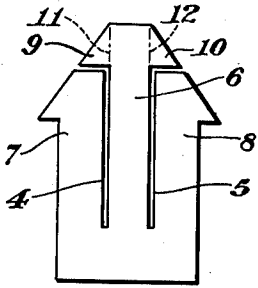


Fig. 1.

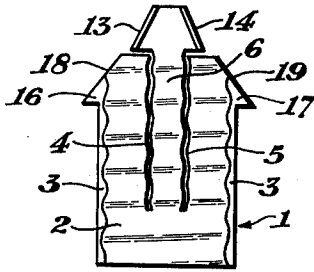


Fig. 2.

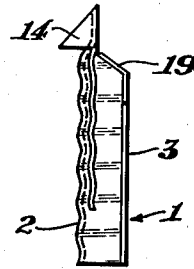


Fig. 3.

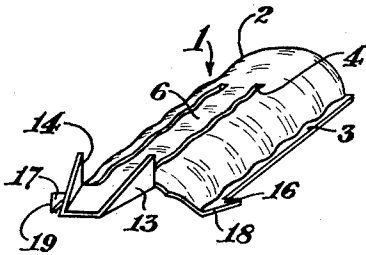


Fig. 4.

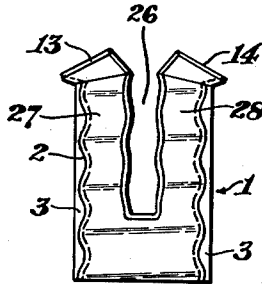


Fig. 5.

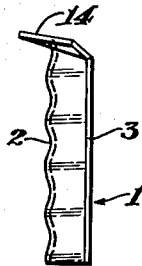


Fig. 6.

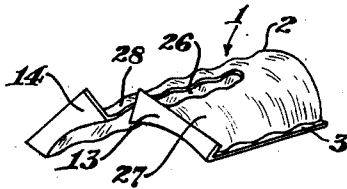


Fig. 7.

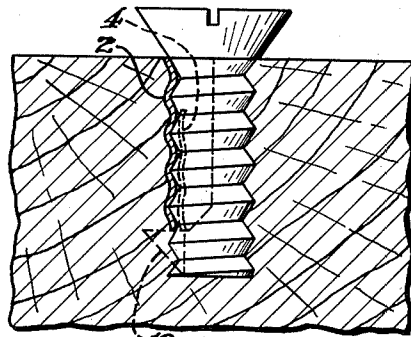


Fig. 8.

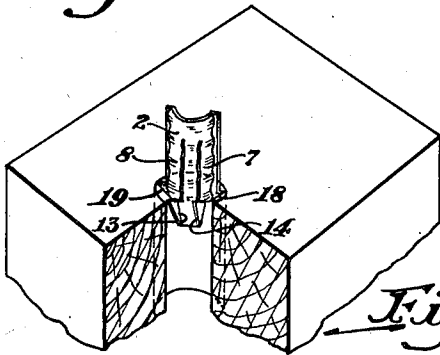


Fig. 9.

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UNITED STATES PATENT OFFICE

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SCREW-HOLE LINER

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1 Claim. (Cl. 151-14)

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This invention relates to screw-holders and, more in particular, to metallic screw-hole liners for anchoring screws in their holes.

It is known that when screws have been embedded in wood, in order to secure in position some element such as a drawer-knob or the like, they tend to work loose or can be torn loose because their metal threads can rip through the wood fibers. To avoid this, metal screw-hole liners have been inserted in pre-formed screw-holes prior to the threading-in of the screws, the theory being that the engagement of the screw threads with the metal of the liner will prevent the screw from being torn loose. However, these liners, or screw-holders are subject to a number of objections, one such being that they are expensive to manufacture and therefore not commercially practicable. Also, they are difficult to fit into the screw-holes and a different sized liner must be provided for holes of slightly varying diameter. Further, the liners themselves do not become firmly embedded in the hole-walls and, consequently, can be pulled out along with the screws, one reason for this being that, as the screw is being threaded into the hole, the liner rotates with it.

It is therefore among the objects of this invention to provide a screw-holder which is unusually simple and inexpensive to manufacture, which is easily insertable in a screw-hole and can be used for holes of varying diameters, and which will securely anchor a screw in place.

The holder provided according to this invention is fabricated from thin-walled, easily workable sheet metal which readily yields to quick and inexpensive manufacturing operations. The major portion of the holder is arcuately curved so as to conform to the curvature of a screw and has outwardly pressed threads formed on it. Preferably, the side edges of this portion are straight edges and the threads are formed between them, while at the front end of the holder, there is formed an outwardly projecting barb or prong. The holder is manually placed in the screw-hole and the screw then inserted. If the hole is found to be smaller than the holder, the holder can compress to fit it. This is possible since the holder is slit longitudinally from its front end throughout a major portion of its length, the slit forming a space for compressing the side arms. Also, at the front end of the side arms are formed laterally projecting, rearwardly-tapering pointed wings which, as the holder enters its screw-hole, bear against the sides of the hole and cause the side arms to compress. In

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effect, the wings provide a cam surface for the compression.

As the screw is being worked in, the barb of the holder, the pointed wings, and the straight side edges of the rear portion dig into the wall of the screw-hole and prevent rotation of the holder with the screw. In manufacture, the holders are made from a strip of metal which is advanced through a series of stations that successively slit, shape, bend and finally slice the finished holder from the strip. By this manufacturing process the holders can be rapidly produced at very small cost.

The invention is illustrated in the accompanying drawings in which Fig. 1 is a plan view of a blank for forming one form of the holder; Figs. 2, 3 and 4 are, respectively, plan, side and perspective views of the same holder after bending; Figs. 5, 6 and 7 are, respectively, side, plan and perspective views of another form of the invention; Fig. 8 is a sectional view showing a screw and holder positioned in a screw-hole; and Fig. 9 shows a holder entering a screw-hole.

Referring to Figs. 2 to 4, the holder there illustrated is arcuately curved into a segment of a cylinder, and, along its rear portion 1, are formed outwardly pressed transverse threads 2 which, however, do not extend the full width so that the side edges of this portion are straight instead of being threaded. Further, it is preferable, to bend each side edge into a laterally extending flange 3 (Fig. 4).

As shown in Fig. 1, prior to any bending, the holder is generally arrow-shaped and is divided by slits 4 and 5 into a central tongue member 6 and side members 7 and 8. As seen, the slits run first inwardly at the front end of the holder and then rearwardly, thereby forming, on the central tongue member, projecting flanges 9 and 10. In a subsequent operation, these flanges are bent outwardly along lines 11 and 12 to form a pair of pointed barbs 13 and 14 (Figs. 3 and 4), the purpose of which will be explained later. Side members 7 and 8 also are specially shaped to provide wings 16 and 17 which project laterally beyond the width of the rear portion of the holder. The sides of these wings taper outwardly from the front of the side members to form what may be called cam surfaces 18 and 19. As shown in Fig. 4, these wings are not bent arcuately with the rest of the holder so that, in the finished holder, they still project in a lateral direction.

In use, the holder first is inserted manually in a screw-hole and then the screw worked in. As illustrated in Fig. 9, it often will be found that

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the screw-hole is smaller than the holder. In such a case, as the holder enters the hole, the cam surfaces 13 and 19 of the holder's wings strike the edge of the hole and, as the holder is pressed downwardly, side members 7 and 8 are pressed toward each other and the holder compressed into a size which will fit into the hole. Also, barbs 13 and 14 strike the hole's edge and aid in compressing the holder to proper size. When the threading in of the screw is begun, barbs 13 and 14 will be pressed into the wall of the hole and will resist any tendency of the holder to rotate with the screw. Also, pointed wings 16 and 17 and flanges 3 at the holder's rear portion will dig into the wall of the hole and further resist the tendency to rotate.

After the screw has been worked in the full distance, it is firmly anchored due to the fact that the threads of the screw have forced the metal threads of the holder into the hole wall to securely embed them therein, and the threads of the screw are engaged by the metal of the holder. Any force tending to rip the screw from its hole is resisted by this engagement and also by the fact that barbs 13 and 14 are embedded in the wall of the hole.

Another form of the invention is illustrated in Figs. 5, 6 and 7. The principal difference in this form is that, in place of being slit to permit compression, it is provided with a rearwardly extending notched or cut-away portion 26 which divides the holder into side arms 27 and 28. Also barbs 13 and 14 are formed by bending the tips of the side arms downwardly. Aside from that, this holder is the same as that previously described, it having a threaded rear portion on which are formed straight edged flanges 3 and, also, wings 16 and 17, which have tapering cam edges 13 and 19 for compressing the holder into a suitable size for a hole. Further, it will be understood that this form functions in the same manner as that previously described. The many advantages of holders of this type should be readily apparent. They are easily insertable in holes of different diameters, unusually efficient in anchoring a screw in place and can be manufactured very simply and inexpensively so that they are a practical commercial item. They are particularly economic in maintenance and repair work in that they permit the old screws and screw-holes to be used any number of times.

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According to the provisions of the patent statutes, I have explained the principle, construction and mode of operation of the invention and have illustrated and described what now is considered to be the best embodiment of the invention. However it is understood that, within the scope of the appended claims, the invention may be practiced by other forms than those specifically illustrated and described.

I claim:

A screw-holder for anchoring a screw in a screw-hole, said holder having an elongated substantially semi-cylindrical metal body provided with opposite side edges and front and rear ends, said body having sections of outwardly pressed screw-receiving threads extending across it, the central portion of said body being provided with a pair of laterally spaced slits extending from its front end rearwardly throughout a major portion of its length to form a central flexible tongue between a pair of flexible side arms, the tongue projecting ahead of the side arms and having the opposite edges of its projecting portion provided with integral barbs projecting away from the convex side of the body for engagement with the wall of a screw-hole to prevent rotation of the holder therein, and the front edges of the side arms being inclined rearwardly from the tongue to the side edges of said body to form cam surfaces for pressing the arms toward each other when the holder is driven into an undersize screw-hole.

MILTON MARKS.

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