Dec. 22, 1959 E. B. ATKINSON 2,917,917

DEVICE FOR HOLDING SWITCH BOXES AND OUTLET BOXES TO WALL SURFACES

Filed Feb. 1, 1956

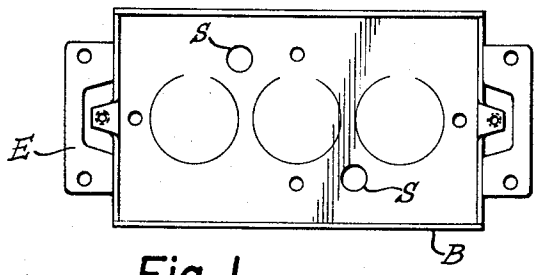

Fig. 1

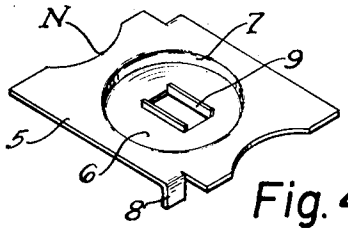

Fig. 4

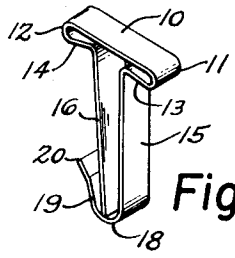

Fig. 3

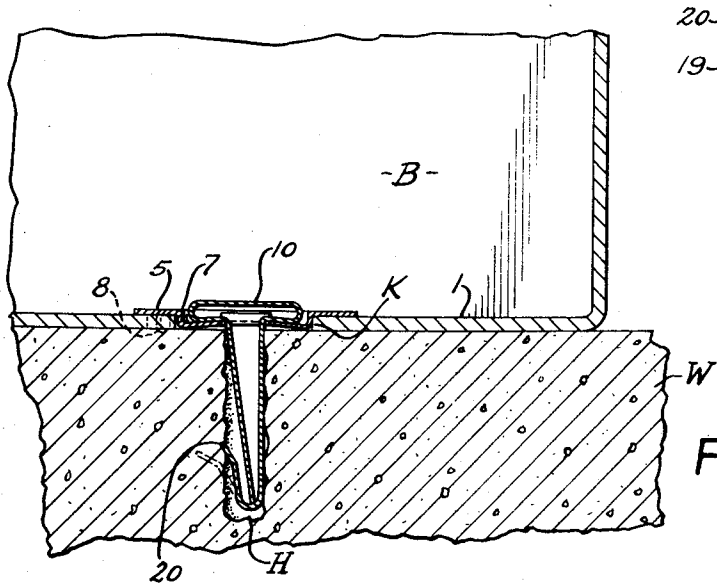

Fig. 2

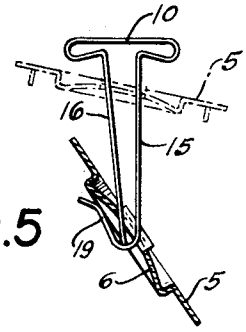

Fig. 5

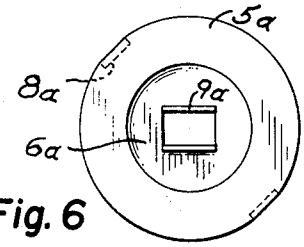

Fig. 6

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United States Patent Office 2,917,917
Patented Dec. 22, 1959

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DEVICE FOR HOLDING SWITCH BOXES AND OUTLET BOXES TO WALL SURFACES

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Application February 1, 1956, Serial No. 562,698

2 Claims. (Cl. 72—105)

This invention relates to anchoring and fastening devices for holding articles on wall surfaces, and which devices are adapted to be quickly and conveniently inserted into and anchored in openings or bored holes formed in masonry or other solid walls.

An object of the invention is to provide such a holding device which may be extremely simple and convenient to use and which is effective in its holding and anchoring functions, whether the opening which is engaged by the anchoring portion is made in brick, concrete, other composition, or wood.

A specific object is to so design such a device that it may be cheaply manufactured.

In the form herein disclosed, the invention is particularly adapted for securing switch boxes, outlet boxes, and the like, against the surfaces of such walls, and it comprises a single anchoring device in the form of a spring clip adapted to be firmly engaged in an opening in the wall and arranged to coact with a novel clamping member which may be fitted into one of the standard knockout openings in the bottom of the box to be held.

A further object is to so design such an anchoring clip that it may be conveniently and effectively driven into position by two or three light blows of a hammer, and, without further operation or adjustment, remain permanently fixed, securely holding the box in place.

In the form of the invention hereinafter illustratively disclosed, an important characteristic is that when in anchoring position, a constant spring pressure action is exerted, pulling outwardly on the anchoring portion and drawing the box or other article being secured inwardly toward the wall.

Particular advantages and other characteristics will become apparent in the following description relating to the drawings, in which:

Fig. 1 is a plan view of a switch box showing a knockout opening and some of the usual associated smaller holes such as are formed in standard switch boxes;

Fig. 2 is an enlarged sectional view showing the anchoring device fitted into the opening in the wall, coacting with the clamping member, and, in turn, fitted into the switch box opening;

Fig. 3 is a perspective view of my special form of anchoring element;

Fig. 4 is a perspective view of a clamping member adapted to fit into the knockout openings, and having projections engaging the associated smaller openings;

Fig. 5 is a side elevation of the anchoring element showing the manner of assembling the holding clamp member thereon; and

Fig. 6 shows a modification of the clamping member.

In the drawings, the plan view of Fig. 1 illustrates a switch box B, the bottom portion of which has a central knockout opening K, and associated openings S adapted for screws or other uses when needed. Ears, indicated at E, are standard equipment on such boxes, but for the purposes of the present invention, are not here involved.

In many uses, such as factories, garages, and the like, switch and terminal boxes are secured to the face of a wall, as distinguished from setting them into the walls of finished rooms. The wall structures in such cases may be brick, tile, concrete blocks, or other compositions.

By my invention, I am enabled to utilize a single hole drilled into the wall, such as at H, Fig. 2, and by the anchoring device driven therein, may firmly secure the switch box to the wall with sufficient continued applied pressure as to prevent its becoming loose or displaced.

Assuming that the material of the knockout opening K is removed in a customary manner, as the name implies, by merely knocking out the partially cut circle from the bottom 1 of the box, a clamping member may be fitted into said opening, which member is provided in turn with an opening for receiving the anchoring device.

Such a clamping member preferably comprises a flat strip or plate of somewhat resilient metal, having a plane portion 5, an inset or cup portion 6 providing a flange 7, the outer portion of which may snugly fit the opening K. The depth of the flange 7 is preferably such as to clear the surface against which the wall portion may rest while the plate portion 5 tightly fits the top or inner surface of the bottom 1. Projections such as 8 formed of corner portions, turned down as shown in Fig. 4, may closely fit two of the openings S. These projections serve to prevent the cupped plate clamp member from turning with relation to the box.

When this clamping member is placed in position in the box, the projections 8 formed at the corners may be bent over and tightened firmly in position on the bottom surface, thus securely holding the clamping plate to the bottom wall.

The sides or ends of the plane portion 5 may have arcuate notches, such as indicated at N, which will clear the round slugs cut to form adjacent knockout openings, which in some boxes are formed at either side of the central knockout opening K.

In the middle of the bottom of the cupped portion I form a rectangular opening the sides of which are turned upwardly to form flanges 9, and which are adapted to closely embrace the sides of the legs of the anchoring member when in position, as will presently appear.

The bottom portion of the cup member 6 is preferably dished or bowed upwardly slightly, as appears particularly in Figs. 2 and 5.

My novel form of anchoring member, adapted to fit the opening H and fit between the flanges 9 of the rectangular opening of the clamping member, preferably comprises a single, flat strip of spring metal, such as steel, bent intermediately of its ends to form a flat portion 10, and then inwardly forming loops 11 and 12.

The inner reaches of the loop are preferably sloped somewhat toward the flat portion 10, as at 13 and 14, and then extend away from the head, as at 15 and 16, in straight leg portions. The leg 15 is formed somewhat longer than the leg 16 and is bent to form a hook portion having a U-shaped bottom 18 and an outwardly turned lip or edge 20. The return portion carrying the edge or lip 20 is shown as extending somewhat less than one-half of the length of the legs 15 and 16. However, this length may be varied, as desired. The return portion 19 normally stands away from the leg 16 and must be pressed toward it as it is driven into the hole H; whereupon spring action of the U portion forces the edge 20 to engage the wall material at the side of the hole.

The leg 16 is shown as extending downwardly substantially into contact with the U loop 18. This feature assures that the driving action applied to the head 10 will be transmitted evenly from both sides of the head

portion, effectively bringing the U to the maximum depth in the opening.

For convenience in forming the clip, it may be desirable to have the length of the leg **16** stop short of the return portion **19**. In either event, however, the leg **16** fits against the side of the hole into which the anchor clip is to be driven and prevents such movement of the clip in the hole as would permit looseness or displacement therein. However, it is preferred to have the leg extend to the bottom of the hook or loop portion for effectively driving the clip to its full depth.

To assemble the anchor member and clamping member, the opening **9** is first threaded over the spring arm portion **19**, as indicated in solid lines in Fig. 5, and is then moved upwardly, as indicated in broken lines in the same figure, sliding it along the leg portions **15** and **16**.

In this assembled position, the two members are placed in position with the cup portion fitted into the opening K, and with the projections **8**, in turn, fitted into the associated openings S. The hole H having been bored into the wall of masonry or other material, the box is now placed against the wall and the anchor member is started into it; whereupon, the hooked end of the anchor may be driven downwardly into the wall until the portions **13** and **14** of the head have somewhat flattened the arched bottom **6** of the cup portion of the clamping member.

It will be seen that if the side walls of the box B interfere with directly striking the head portion **10** of the anchoring member, a suitable tool, such as a screw driver, may be placed against the middle of the reach or flat portion **10** for applying even pressure of hammer blows while driving the anchoring member into the tight holding position described.

The holding effects of the loops **11** and **13**, and **12** and **14**, and of the curvature of the bottom **6** of the cup, tend to draw outwardly on the anchoring member, firmly engaging the biting edge or lip **20** into the material of the side of the opening. In this position, a constant inward tension is effected on the anchor, the clamping member, and against the bottom wall **1** of the box being thus held firmly pressed to the wall surface.

A modified and somewhat more simple form of clamping member is illustrated in Fig. 6, the flat portion *5a* of which may be round, with outwardly extending projections *8a* corresponding to the projections **8** of the form shown in Fig. 4. These members *8a* are positioned to engage the openings S and prevent relative turning of the clamping member and box, as previously described. The depressed portion *6a* corresponds to the depression **6**, formed to engage the knockout opening, while the rectangular opening and the upturned flanges are indicated at *9a*. The diameter of the flat portion *5a* is such as to clear the adjacent knockout openings in the box, as were the notches N of the form shown in Fig. 4.

The clinched-over ends of the projections **8** or *8a* may be caused to indent or bite somewhat into the surface of the well material, further assuring the holding of the box in fixed position by tending to prevent any turning of the box being so held.

From the foregoing description, it will be seen that the objects set forth have been attained by the unique,

novel and practical construction of simple elements which may be manufactured by well-known stamping and forming methods, and further, it should be apparent that it is extremely simple to install as an anchoring device. Experience has demonstrated that the assemble is very effective and durable in use.

Having thus described my invention, what I claim is:

1. An anchoring device for holding articles against the surfaces of walls of the character described, in which wall is formed a bore for receiving the anchoring device, the anchoring device comprising a single spring strip shaped to form a T-shaped head portion having a substantially flat top and continued in return bends toward the middle of the head portion thereof and then turned away in substantially straight portions extending from the head and forming a pair of legs adapted to extend into the opening, one leg being turned backwardly toward the head for a distance greater than the diameter of the bore to form a spring hook the outer end of which forms a bore engaging and anchoring lip, the T-shaped portion being adapted to engage and hold a member against the wall surface.

2. A switch box holding means for anchoring a switch box to the face of a thick wall having a hole bored therein, comprising in combination a flat plate portion of the switch box having a knockout opening therein and smaller openings adjacent thereto, a clamping member having a flat portion and an offset portion fitted within said knockout opening and having projections engaging the adjacent smaller openings, said clamping member also having a rectangular opening at its middle portion, and a spring clip anchoring device formed of a single strip of metal and comprising a transverse head intermediate of the ends of the strip and with its end portions again turned to form two legs extending away from the head, one of the legs being turned back upon itself for a distance greater than the diameter of the bore in the wall forming a hook with its free end turned outwardly to form a wall engaging lip, the other leg extending from the head and fitted into the turn of the hook of the first leg, said legs extending through and non-rotatably engaging the rectangular opening in the clamping member, the head portion contacting the clamping member and acting to draw the plate portion of the switch box against the face of the wall and preventing turning of the clamping member and the switch box.

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