I. B. MALABY.

WALL ANCHOR.

APPLICATION FILED APR. 27, 1912.

1,084,458. Patented Jan. 13, 1914.

Fig. 1.

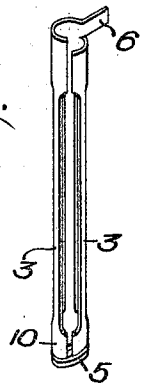


Fig. 2.

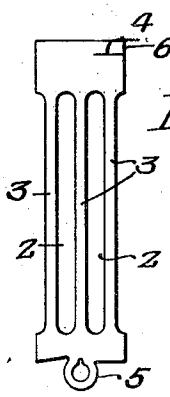


Fig. 8.

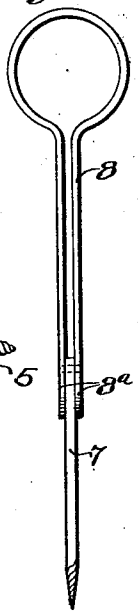


Fig. 3.

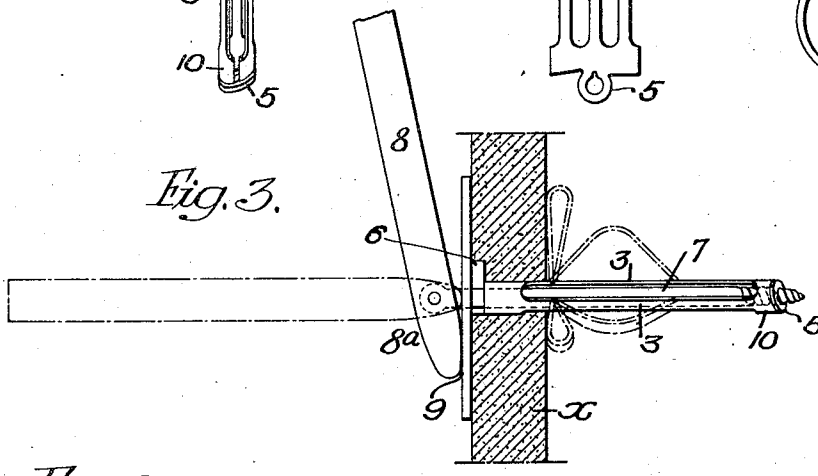


Fig. 4.

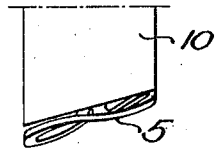


Fig. 5.

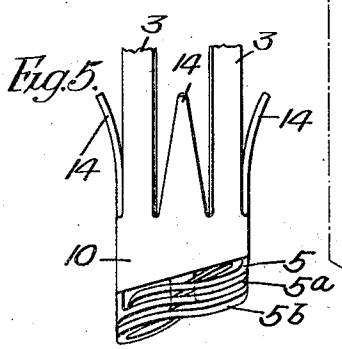


Fig. 7.

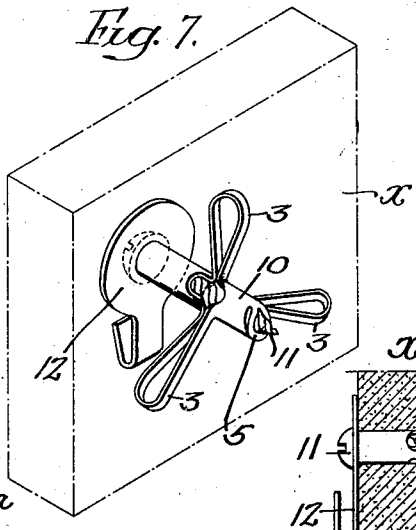
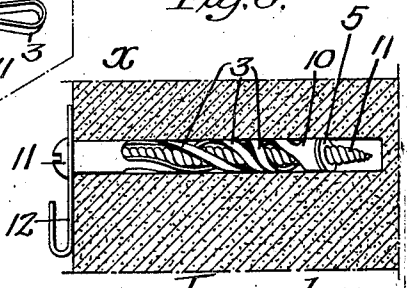


Fig. 6.



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UNITED STATES PATENT OFFICE.

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WALL-ANCHOR.

1,084,458. Specification of Letters Patent. Patented Jan. 13, 1914.

Application filed April 27, 1912. Serial No. 693,546.

To all whom it may concern:

Be it known that I, IRA B. MALABY, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Wall-Anchors, of which the following is a specification.

One object of my invention is to provide a novel form of holding device particularly adapted for use in hollow or plaster walls as well as in solid brick or stone walls, which shall be convenient to apply and inexpensive to manufacture.

I further desire to provide an expansible holding device which may be applied to a hollow or plaster wall without requiring to be hammered in order that it may assume its holding form; the invention also contemplating such construction of the holding device as will permit of its being inserted in a previously made hole and thereafter expanded either by the rotation or by the pulling outward of a screw after this has been properly entered in the device.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings in which,

Figure 1 is a perspective view of an expansible holding device constructed according to my invention; Fig. 2 is a plan of the blank from which is made the device shown in Fig. 1; Fig. 3 is a side elevation, partly in section, illustrating the construction and use of the apparatus preferably employed for expanding the holding device shown in Fig. 1; Fig. 4 is an enlarged fragmentary side elevation illustrating the detail construction of one end of the device shown in Fig. 1; Fig. 5 is an enlarged fragmentary side elevation illustrating a slightly modified form of my invention; Fig. 6 is a vertical section showing the position assumed by my holding device when it is applied to a structure in which it is completely embedded, Fig. 7 is a perspective view showing the form assumed by the inner or rear end of my holding device, when it has been expanded into its holding position, and Fig. 8 is an elevation of the handle.

In constructing my improved device which may be referred to as a wall anchor, I form a blank of the construction shown in Fig. 2 by the use of suitable dies and the necessary associated machinery. This blank usually has the form of a flat elongated body of relatively thin sheet metal having a number of elongated, longitudinally extending openings or recesses 2, between which are narrow lengths of metal 3. A cut 4 extending from one edge of the blank is formed adjacent one end thereof and at the opposite end there is a perforated substantially circular projection 5. By means of suitable machinery forming no part of the present invention, this blank is rolled or bent into the shape of an elongated tube and the lug or projection 5 is given the form of a portion of a helical surface so as to form a nut, being bent to lie across one end of the cylindrical body portion. The tongue 6 formed by the cut 4 is made to project laterally from the end opposite that having the nut 5 and when so formed the device is ready for use, although in some cases I may provide it with barbs 14 projecting beyond its cylindrical surface as shown in Fig. 5 and formed integral with its body at that end thereof adjacent the nut 5. In applying it, for example to a hollow or other wall, such as indicated at X, in Figs. 3 and 7, the anchor is loosely placed in a previously formed hole so as to extend through said wall or other structure, and then has applied to it an elongated tool in the form of a rod or screw 7 threaded at one end. This screw is pivoted to a handle 8 some distance from the end thereof and in the case illustrated, the handle is made of a suitably formed length of stiff band or strip of metal having its extremities extended on opposite sides of the screw to form cams 8^a. A relatively large washer 9 is mounted on the screw 7 to provide a means for temporarily holding the outer end of the anchor in place, and the handle 8, which is turned on its pivot so as to be at right angles to the screw, is then rotated to cause said screw to engage and enter the nut 5. Thereafter said handle is forcibly turned on its pivot until it is substantially in the line of the screw and this action causes the cam portions 8^a to coact with the washer and end of the anchor to collapse the structurally weak side members 3 thereof, with the result that each of them is bent outwardly in more or less bowed form, for that portion of their length which projects beyond the inner surface of the wall. The straight pulling out of the handle thereafter completely collapses or expands these parts into the positions shown at 3^a in Figs. 3 and 6. Under these conditions the cylin-

drical end portion 10 of the anchor adjacent the helical nut 5 is drawn so as to be immediately adjacent the rear or inner surface of the wall, and thereafter the tool may be removed by rotating the handle 8 in the direction such as will free the threads of the rod 7 from the nut 5. If desired, a screw of suitable length may then be inserted into the anchor and so turned as to cause its threads to enter the nut 5, thereby causing the projecting tongue 6 to be embedded in the outer face of the wall so as to effectually prevent any rotation of the anchor and giving the whole device a finished appearance. It is of course obvious that if desired the screw 11 may be omitted and the head formed by the projecting tongue 6 relied on to hold a picture hook or other device 12 in place.

In some cases a screw of suitable length may be inserted in the anchor after this has been placed in the previously formed hole in the wall, and thereafter by turning said screw in the proper direction it may be caused to engage the helically formed nut 5. The continued turning of the screw will then forcibly draw the outer end of the anchor toward the rear or inner face of the wall, thereafter causing the laterally weak side members 3 to bow or bend as previously described, and embedding the tongue 6 in the outer face of the wall so as to prevent rotation of the head part of the anchor. The screw may thereafter be permitted to remain in place, it being understood that it may be permitted to project beyond the outer surface of the wall or may hold thereto a suitably formed hook or other device as desired.

Where anchors constructed according to my invention are used in more or less solid walls of brick or stone or in other structures of such thickness that such anchor cannot pass through the same, I drill or otherwise form a hole of suitable diameter to receive an anchor of the ordinary form shown in Fig. 3. As in the second case described, I introduce a screw into the anchor, and then turn it so as to cause its threads to engage the helically formed nut or tongue at the inner end of the anchor. As a result of the continued turning of the screw, said nut and with it the cylindrical end portion 10 of the anchor are drawn toward the head end thereof and although the side members 3 of the anchor bend outwardly for a distance sufficient to cause them to engage the walls of the hole, the form assumed by the anchor is radically different from that previously described, being usually as shown in Fig. 7. The said side members are twisted to a greater or less extent and are so distorted in form as to tightly and immovably grip the walls of the hole so that even though the screw may be removed by turning it in a direction the reverse of that previously noted, it is practically an impossibility to remove the anchor. This latter thus forms a socket whose nut 5 provides threads for a screw which may be used to attach or support any desired structure.

I may in any or all of the cases described so form the blank that the finished anchor shall be provided with the integral barbs 14 projecting from the part 10 between the side members 3 with their points outside the cylindrical surface of the anchor body and directed toward the head thereof. These aid in retaining it in a hole in which it is inserted and when the side members 3 are collapsed, are forced into the walls of said hole so as to effectually assist in preventing the withdrawal of the anchor.

As shown in Fig. 5 a number of integral nuts may be provided as indicated at 5, 5^a and 5^b, by forming the blank with the desired number of perforated tongues at one end, and thereafter bending or forming said tongues so that they are substantially parallel to each other adjacent said end.

I claim:—

1. A wall anchor consisting of a single sheet metal piece in the form of a hollow elongated body having cylindrical end portions and more than two side portions connecting the same; with an integral nut extending over one of said end portions.

2. A wall anchor consisting of a single sheet metal piece rolled up to form a hollow elongated body having end portions and more than two laterally weak side portions; with an integral nut attached to one of the end portions adjacent one side thereof and bent over the same.

3. A wall anchor consisting of a single sheet metal piece in the form of a hollow body of elongated form having laterally weak side portions; with an integral nut consisting of a relatively thin helically formed piece adjacent one of its ends.

4. A wall anchor consisting of a single sheet metal piece rolled up to form a hollow elongated body slit from end to end; said body having longitudinally extending openings forming more than two laterally weak side members and being provided with an integral nut adjacent one of its ends.

5. A wall anchor consisting of a single sheet metal piece in the shape of a hollow laterally weak body of elongated form having at one end a relatively thin tongue extending substantially at right angles to constitute an integral head, and at its opposite end provided with an integral nut.

6. A wall anchor consisting of an elongated tubular body of sheet material having a helically bent perforated tongue extending adjacent one of its ends.

7. A wall anchor consisting of a tubular body of sheet material having a helically bent perforated tongue extending adjacent

one of its ends; said body having longitudinally extending openings in its sides forming laterally weak side members.

8. A wall anchor consisting of a body of sheet material in form of a longitudinally split elongated tube; there being openings in the sides of said tube forming two substantially cylindrical end portions connected by laterally weak side members; and an integral perforated tongue projecting across one of the ends of said body.

9. A wall anchor consisting of a body of sheet material in form of a longitudinally split elongated tube; there being openings in the sides of said tube forming two substantially cylindrical end portions connected by laterally weak members; and an integral perforated tongue projecting across one of the ends of said body; with an integral laterally extending projection forming a head at the other end of said body.

10. A wall anchor consisting of a single metallic piece in the shape of a tubular laterally weak body of elongated form having an integral lateral projection at one side of one end and at the other end provided with a nut.

11. A wall anchor consisting of a single metallic piece in the shape of a tubular laterally weak body of elongated form having at one end a relatively sharp edged integral lateral projection presenting its edge in a plane substantially parallel to the line of said body, and at the opposite end provided with an integral nut.

12. A wall anchor consisting of a hollow elongated body provided with longitudinally extending openings, a barb or barbs integral with the body and projecting from said openings beyond the sides of the body, and a nut adjacent one of the ends of the body.

13. A wall anchor consisting of a hollow elongated body provided with longitudinally extending openings; integral barbs projecting from said openings at one end of the body beyond the sides thereof; and an integral nut extending across said end of the body.

14. The combination with a wall anchor of means for expanding the same consisting of a threaded member for engaging the anchor, with a handle having a cam surface and pivotally connected to said member.

15. The combination with a wall anchor having laterally weak side portions, of means for initially collapsing said side portions, consisting of a threaded member, and a handle pivoted thereto having a cam portion extending beyond its pivot.

16. The combination with an expansible wall anchor having laterally weak side members; of means for collapsing said members consisting of a threaded rod and a handle having two side members respectively hinged to opposite sides of the rod and provided with cam portions extending beyond the hinge connecting it with said rod.

17. The combination of a wall anchor consisting of a laterally weak elongated tubular body having a relatively thin integral helically bent nut at one end; with a screw mounted in said body in engagement with the nut.

18. The combination with a wall structure having a cavity therein of an elongated tubular body mounted in said cavity and formed with laterally weak side portions; said body having at one end an integral nut, with a screw extending into the body and engaging the nut; the latter being of material whose thickness is less than the pitch of the threads of said screw.

19. The combination with a wall structure having a hole therein of a tubular elongated body having structurally weak side portions and an integral nut mounted in said hole; said side portions respectively extending in bowed form away from the line of said body; and a screw mounted in the body in engagement with the nut; with a laterally extending projection at one end of the body embedded in said wall structure so as to prevent rotation of said body.

20. The combination with a wall anchor of means for expanding the same consisting of a threaded member for engaging the anchor; a handle having a cam portion or portions and pivoted to said threaded member; and a washer mounted on the rod between the anchor and the handle.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

IRA B. MALABY.

Witnesses:
WILLIAM E. BRADLEY,
WM. A. BARR.