May 8, 1956 W. E. MURPHY 2,744,437

PENETRATING AND EXPANDING FASTENER

Filed Nov. 2, 1951

FIG. 1.

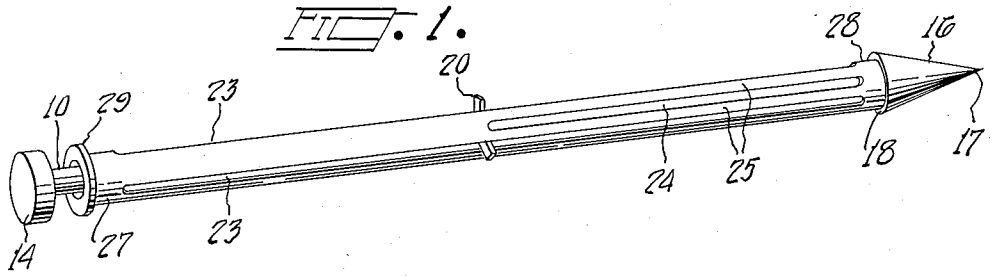


FIG. 2.

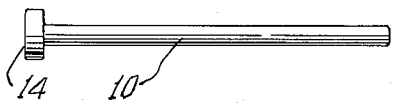


FIG. 3.

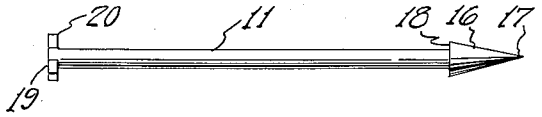


FIG. 4.

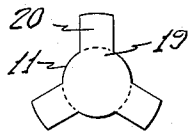


FIG. 5.

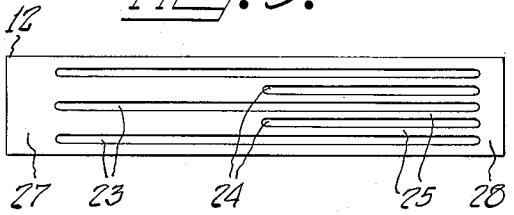


FIG. 6.

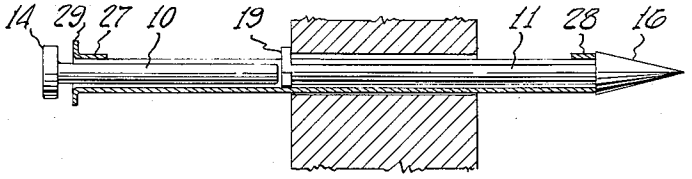
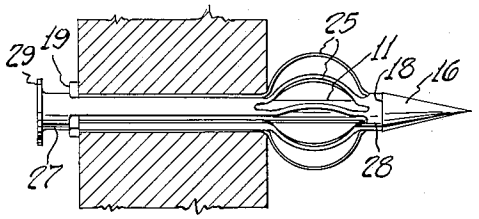


FIG. 7.



INVENTOR
WAYNE E. MURPHY

BY
Cook and Schermerhorn
ATTORNEYS

United States Patent Office 2,744,437 Patented May 8, 1956

2,744,437

PENETRATING AND EXPANDING FASTENER

Wayne E. Murphy, Salem, Oreg.

Application November 2, 1951, Serial No. 254,583

5 Claims. (Cl. 85—40)

This invention relates to improvements in hanger fixtures and the like for suspending or attaching articles on a wall structure.

The principal object of the present invention is to provide a hanger fixture that has unique piercing and locking means to attach the fixture to a wall.

Another object is to provide a hanger fixture that cuts its own aperture in the wall when it is installed, as in driving a nail.

A further object is to provide a hanger fixture that has locking means for embracing a relatively large area of support behind a wall.

Further objects are to provide a wall anchor type of fixture that is simple in construction, easy to install, and makes a solid connection with a wall that would not hold ordinary nails or screws securely.

In general, the present invention comprises a fixture of the type that is used to attach articles or hang pictures on a wall between studs or frame members that support the wall. The device is especially adaptable to walls constructed of plaster or plasterboard and may also be conveniently used on fiberboard walls or other relatively thin structures where ordinary nails and screws cannot be used effectively. The device has three parts which comprise a driving member or punch, a nail or piercing member, and a tubular member of stamped metal such as tin which is substantially longer than the nail. The tubular member is formed around the nail from a sheet and has elongated slots to fit over segments of the flange forming the nail head. The sheet which forms the tube has additional slots cut in the end which passes through the wall to weaken said end. After the nail and tube are driven through the wall by the use of a punch and a hammer, the tube can be driven farther to expand the weakened end thereof and form a flared portion embracing the rear surface of the wall.

The invention will be better understood and additional objects and advantages will become apparent from the following description taken in connection with the accompanying drawings illustrating a preferred embodiment of the invention. It is to be understood, however, that the invention may take other forms, and all such modifications as will be obvious to persons skilled in the art are included in the invention.

In the drawings:

Figure 1 is a perspective view showing the parts of the device of the invention assembled in readiness to be driven into a wall structure;

Figure 2 is an elevation view of the driving member or punch;

Figure 3 is an elevation view of the nail member;

Figure 4 is an end view of the nail member showing the shape of the head;

Figure 5 is a plan view of the sheet of stamped metal which is used to form the tubular member of the device, showing the arrangement of slots cut therein;

Figure 6 is a sectional view of the assembled device showing a first step of driving the device into a wall

wherein the nail member has pierced through the wall; and

Figure 7 is a sectional view showing the device in fully anchored position, the device itself being shown in elevation.

It is within the contemplation of the present invention to provide a fixture of the type described which will make a solid anchor in a wall structure when driven therein. The device is principally designed, however, to provide a hanger for articles to be hung on a wall, such as pictures, and may be used for any purpose wherein an anchor is desired in a relatively thin structure. The device is easily assembled and forms its own aperture in the wall, obviating the use of any tools except a hammer.

Figure 1 shows the fixture in assembled relation, and Figures 2, 3 and 5 show the parts thereof which comprise a driving member or punch **10**, Figure 2, a nail or piercing member **11**, Figure 3, and a sheet of stamped metal **12**, Figure 5. The punch **10** has a driving head **14** on one end for driving by a hammer. The nail portion **11** has a sharpened point **17** and a rearwardly facing shoulder forming a stop **18**. The nail has a head **19** made in the form of a segmented flange **20**, there being three such segments shown in Figure 4 for illustration.

The sheet **12** is made from a suitable metal such as tin which is easily stamped and made into blanks. As seen in Figure 5, the sheet **12** has three slots **23** extending substantially the full length thereof, terminating a short distance from each end. Cut between the elongated slots **23** is a pair of slots **24** which extend from adjacent one end to approximately half the length of the sheet. The slots cut in the sheet **12** thus form a number of narrow strips **25** on the one end and it is seen that the structure of this end of the sheet is considerably weakened by said slots. As hereinbefore stated, the slots **23** and **24** do not extend to the ends of the sheet, but terminate a short distance therefrom, thus providing unslotted end portions **27** and **28**. End **27** is rolled or folded outwardly to form a reinforcing bead **29** around that end.

To assemble the device, it is necessary only to wrap the metal sheet **12** into a tube around the nail member **11**, the tube having a diameter slightly less than the diameter of the point **17** to cause the end portion **28** of the tube to abut against the shoulder **18**. The radially extending segments **20** of the nail head extend through the elongated slots **23** when the sheet is wrapped around the nail, as seen in Figure 1, and it is to be understood that the sheet **12** may have any number of slots to provide a plurality of bands **25**, it being necessary that the sheet be provided with elongated slots **23** so positioned as to receive the segments **20** of the nail head **19** when the device is assembled.

After the sheet **12** is rolled around the nail, the punch **10** is inserted in the rear end of the tube thus formed to abut against the nail head **19**. Striking the punch **10** drives the nail through the wall **30** to the position shown in Figure 6, the point **17** of the nail making an aperture sufficiently large to allow the tube easily to follow the point of the nail through the wall. If the wall structure is fiberboard and the fibers tend somewhat to close the aperture and engage the tube after the point of the nail has passed through the wall, the tube would be driven by the head **14** of the punch **10** as the punch drives the nail member through the wall. When the nail head **19** abuts against the wall, the punch is removed, and the beaded end **29** of the tube is struck with a hammer. The forward end of the tube engages the shoulder **18** of the nail and, as the nail can travel no farther, the bands **25** of the tube expand or bow out to the position shown, locking the device to the wall. At the completion of travel of the tube, the unslotted end portion **27** engages the nail head **19** and protrudes sufficiently from the wall

to support a wire and the like suspended therefrom. The expanded portion of the tube embraces a relatively large area behind the wall to prevent damage to the wall and to provide a solid anchor for articles suspended from the protruding end 27 of the tube 12. Bead 29 forms a head on the tube end 27 to be struck with a hammer and also provides a hook for picture wire when a picture is to be suspended from the projecting end of the tube.

It is obvious that the fixture can be applied to walls of varying thicknesses. When applied to a relatively thin wall, the radial expansion of the strips 25 will be greater, forming a wide area of support behind the wall. On thicker walls, the area of the rear surface of the wall covered by the strips will be less, but in this instance a large clamping area is not necessary.

Having now described my invention and in what manner the same may be used, what I claim as new and desire to protect by Letters Patent is:

1. A wall fixture comprising a wall piercing member having a sharpened point and a rearwardly facing shoulder forming a stop adjacent said point, said piercing member also having a shank and a driving head in the form of a segmented flange, a longitudinally slotted tube engaging around said shank, the slots in said tube terminating adjacent the ends of the tube to provide a tube having unslotted end portions, an unslotted end portion of said tube abutting said shoulder, the radially extending segments of said driving head extending through said slots whereby said driving head may be caused to engage the surface of the wall, the walls of said tube being comprised of a plurality of deformable strips of greater length that said shank separated by said slots and extending longitudinally of the tube between said unslotted end portions, said strips being adapted to bow radially outward behind said wall when said tube is driven against said shoulder.

2. A wall fixture as defined in claim 1 in which the other unslotted end portion of said tube forms a driving head on said tube for driving said tube against said shoulder, said last driving head projecting from the wall when the fixture is mounted in the wall and having a flange spaced from the wall to form a hook on the wall.

3. A wall fixture as defined in claim 1 in which said tube has additional longitudinal slots between said first mentioned slots extending from a point adjacent the shoulder abutting end of said tube to approximately the mid length of the tube.

4. An anchor fixture comprising a piercing member having a sharpened point, a rearwardly facing shoulder forming a stop adjacent said point, a head on the other end of said piercing member comprising a radially extending segmented flange, a longitudinally slotted tube engaging around said piercing member, the slots in said tube terminating adjacent the ends of the tube to provide a tube having unslotted end portions, an unslotted end of said tube abutting said stop, the segments of said flange on said piercing member extending through said slots to limit the penetration of said piercing member in an anchoring medium, said slots defining a plurality of strips of greater length than the distance between said shoulder and head of said piercing member forming the walls of said tube, said strips being deformable radially of said tube when said tube is driven against said stop.

5. A wall fixture comprising a wall piercing member having a sharpened point and a rearwardly facing shoulder forming a stop adjacent said point, said piercing member also having a shank and a driving head in the form of a segmented flange, a longitudinally slotted tube engaging around said shank, the slots in said tube terminating adjacent the ends of the tube to provide a tube having unslotted end portions, one of said unslotted end portions abutting said shoulder and the other forming a driving head on said tube, the segments of said first driving head projecting radially through said tube slots and adapted to engage a wall surface, the walls of said tube comprising a plurality of deformable longitudinal strips of greater length than said shank separated by said slots and adapted to bow radially outwardly behind the wall when the tube is driven against said shoulder .

References Cited in the file of this patent

UNITED STATES PATENTS

1,165,778	Howard	Dec. 28, 1915
1,214,679	Hindmarsh	Feb. 6, 1917
2,098,556	Tamada	Nov. 6, 1937
2,148,977	Buck	Feb. 28, 1939
2,313,616	Bowersox	Mar. 9, 1943