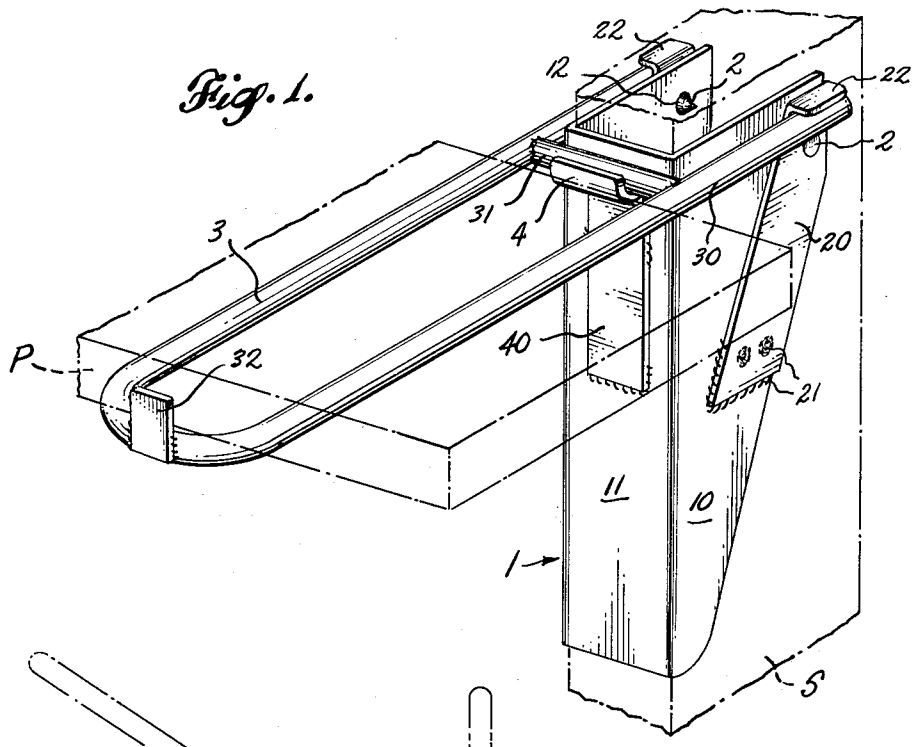
Nov. 24, 1964 W. J. RUTTER 3,158,348

MOUNTING BRACKET

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Fig. 1.



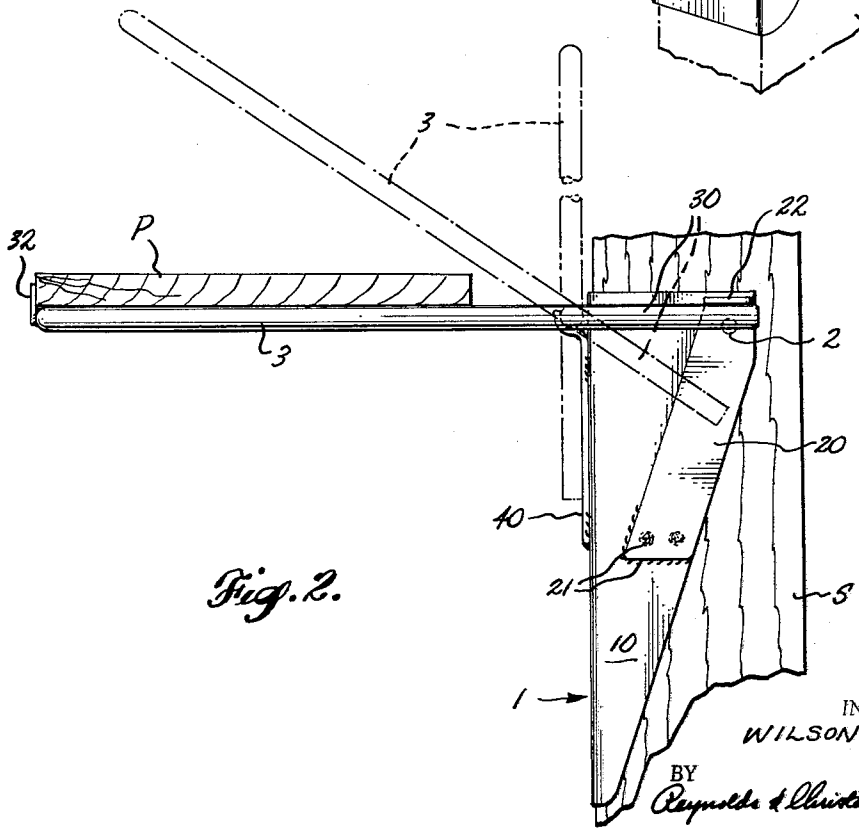


Fig. 2.

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MOUNTING BRACKET

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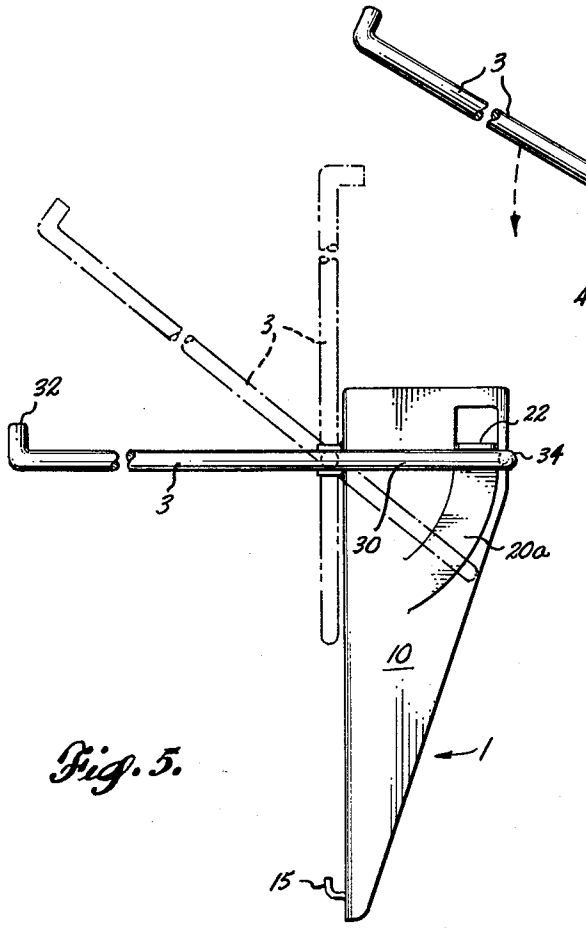


Fig. 5.

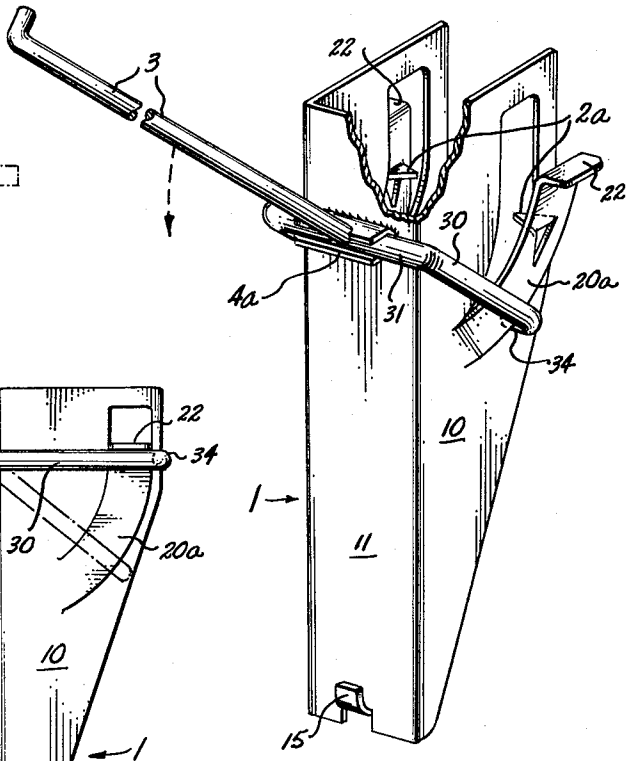


Fig. 4.

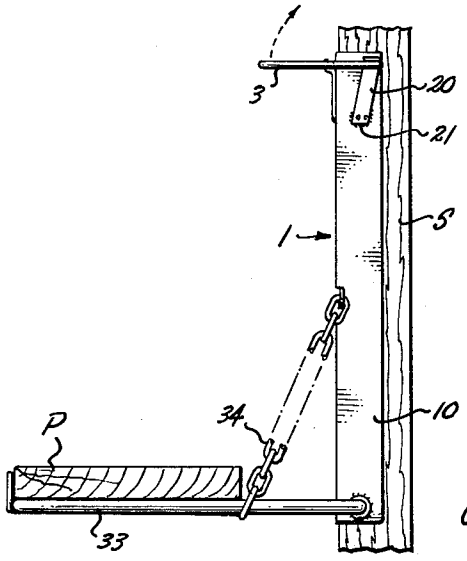


Fig. 3.

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MOUNTING BRACKET

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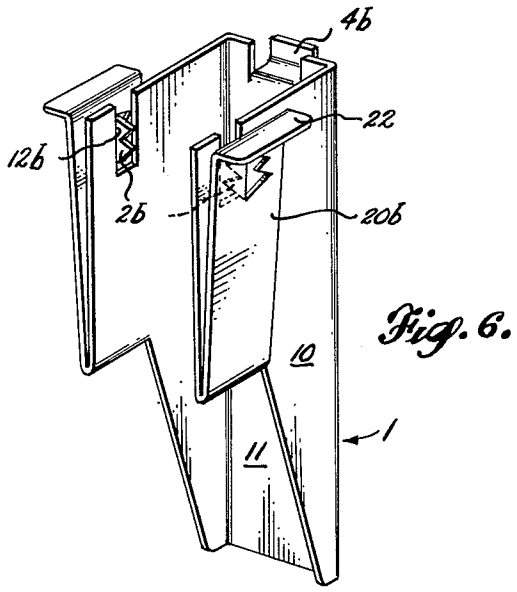


Fig. 6.

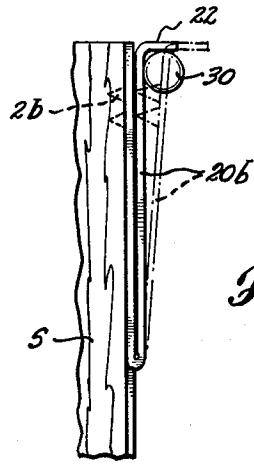


Fig. 7.

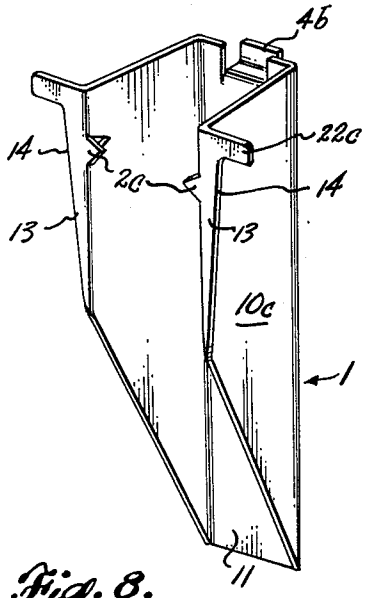


Fig. 8.

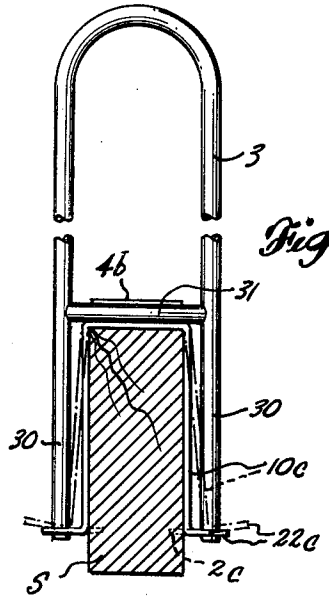


Fig. 9.

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3,158,348

MOUNTING BRACKET

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Filed July 1, 1963, Ser. No. 291,775
17 Claims. (Cl. 248—240.4)

The device of this invention is intended as a bracket whereby various articles may be mounted, temporarily or permanently, upon a support such as a wall stud. The device should be made of a size to fit a specific size of support, but could be made to fit a 2 x 4 wall stud, a 4 x 12 floor joist or roof joist, or any other similar support, verticaly or horizontally disposed. The support should be of wood or like material, for a dog or bit, or a pair thereof, is or are designed to pierce the side or sides of the support to insure against the bracket being pulled off.

In essence the mounting bracket comprises a channel-shaped body of a size to straddle the support and to lie close to its opposite sides. A dog or bit at one side, or two bits at the opposite sides, is or are directed inwardly towards the side surface or surfaces of the support. While one such bit might suffice, two are shown and preferred, and two will be referred to hereinafter, it being understood that the use of one only is not outside the scope of the invention. These bits are held outwardly from the surfaces towards which they are directed by their immediate support, and since it will usually be desirable for purposes of initial installation and later withdrawal of the bracket from its support, the immediate support for the bits preferably takes the form of resilient elements upon which the bits are secured or formed. Movement of the bits towards and into the wood of the support, in opposition to the resilience of the resilient elements, is accomplished by cam means including an operating lever pivotally mounted upon the channel-shaped body and cooperable with camming surfaces operatively associated with the resilient elements to urge them inwardly, or by reverse movement permitting (or in certain possible embodiments, causing positively) the resilient elements to withdraw the bits. As stated, the cam means referred to includes a level pivotally mounted upon the channel-shaped body, and when parts are in position with the bits piercing the support, this lever is in position to support a plank as a scaffold or shelf panel, or to perform any desired supporting function. Stop means on the channel-shaped body or on the resilient elements, when engaged by the lever, prevents further swinging of the lever, and strongly supports the same. The pivotal support for the lever may be of a type permitting its disengagement from the body, for ease and compactness of packaging and storage, yet such that accidental disengagement is unlikely. In preferred forms the bits are projected into the wooden support through apertures in the channel-shaped body, whereby these bits are strongly reinforced to resist any tendency for them to bend or break loose. The bits may take various forms, as also can the resilient members.

The general object of this invention is to provide a mounting bracket having the general form and capability indicated, which can be made easily and inexpensively, and which will be simple yet rugged in construction, and which can be applied, and if need be removed, in a simple and expeditious manner, and which when applied will hold tenaciously to its support until released.

It is also an object to provide such a mounting bracket capable of application not only to upright wall studs but to horizontal or inclined supports such as floor or ceiling joists or the like.

Also it is an object to provide such a device wherein the bracket may mount or support various types, shapes,

or sizes of supported articles, when designed for the support of any particular article, or may support two or more different articles.

Further objects and advantages will appear as this specification proceeds.

In the accompanying drawings, the invention is shown as embodied in several variant forms. The drawings also illustrate the mounting bracket as supported from a wall stud, and it will be obvious how it could be modified or used for support from a different member.

FIGURE 1 is an isometric view of a form which is presently preferred by me, in the position of use, and FIGURE 2 is a side elevational view of the same, illustrating other positions in dot-dash lines.

FIGURE 3 is a view similar to FIGURE 2, showing the device in an elongated form.

FIGURE 4 is a view similar to FIGURE 1, but showing a modified form in position for application to or removal from a stud, and FIGURE 5 is a view of the modified form, corresponding to FIGURE 2.

FIGURE 6 is an isometric view of the channel-shaped body, in another modified form, and FIGURE 7 is an edge view of one side of this form, in position of use.

FIGURE 8 is an isometric view of a still further form of the channel-shaped body, and FIGURE 9 is a plan view of the same form, in position of use.

To illustrate the invention it is shown as designed for application to an upright wall stud S, of 2 x 4 size, for the purpose of supporting a plank P to form a scaffold. However even in this design it may be readily and usefully mounted upon a rafter, beam or other member regardless of orientation and for a wide variety of uses. It comprises a channel-shaped body 1 of a size and shape to straddle one edge of the stud, with its side plates 10 closely embracing the opposite side surfaces of the stud. Its base portion 11 rests against one edge of the stud. It may be of any suitable length; in all figures except FIGURE 3 it is short, but in FIGURE 3 is of rather appreciable length.

Projecting inwardly from one or from both of the side plates or flanges 10 are dogs or bits 2. Two opposite bits are shown in each form. They are movable inwardly and outwardly with respect to the side plates 10, and can be supported from the latter by means such as resilient fingers 20 (FIGURES 1, 2, and 3) which are secured by their lower ends, at 21, to the side plates 10, and extend thence upwardly and outwardly when unstressed, to the end that the bits 2 are normally withdrawn from the stud S. The side plates 10 are desirably apertured so that the bits may pass through freely, a hole 12 being shown for the purpose, but each such aperture closely embraces the bit when the latter has pierced the stud, and thereby strongly reinforces the bit and it may also be designed to have the effect of presenting a bearing surface to the wood immediately surrounding the bit in order to resist outward deflection of wood fibers attending tearing of the bit across the grain when under load. To this extent the wood also is reinforced in order to withstand greater loads.

In order to move the bits 2 inwardly, to pierce the stud, a camming action occurs between the upwardly and outwardly inclined resilient fingers 20 and arms which lie at one side of the transverse pivot pin 31 of a lever 3, the larger and supporting portion whereof extends oppositely from the arms 30. These arms 30 lie outside the fingers 20, and rather close to the exterior surface of the side plates 10, so that when the lever and its arms 30 swing from the dot-dash line position of use, the arms 30 will crowd the fingers 20 and their bits 2 inwardly, to pierce the wooden stud which the channel-shaped body 1 straddles.

The pivotal mount of the lever 3 upon the body 1

may vary in form, and may be permanent or releasable. Preferably it is of the latter type. To this end a strap 40 is secured to the base 11 of the channel-shaped body, and its upper end is bent outwardly at 4, and upwardly, to form a groove to receive the pivot pin 31 when the latter is moved downwardly; see the double-dot-dash line in FIGURE 2. Obviously, the pivot grove may be otherwise formed, and different forms are shown in the other modifications illustrated.

Swinging movement of the lever should be stopped in a precise position, in order that the same may constitute a rigid support. Stop means may be mounted directly upon the body 1, or indirectly upon the fingers 20, as shown. The stops 22 are conveniently formed by flanging outwardly the upper ends of spring fingers 20, in such position relative to the pivot groove at 4 that upward swinging of the arms 30 is stopped when the lever 3 is horizontal, or in any other desired position. Thus, as in FIGURES 1 and 2, when horizontal the lever 3 will support a plank P or other such element. A retainer 32 engages the outer edge of the plank to prevent its sliding off. Note that any load upon the plank acts downwardly against the upwardly opening pivot groove 4 and upwardly against the downwardly facing stops 22. There is little likelihood that the lever can be accidentally dislodged. This arrangement facilitates shipment and storage of the body 1 and the lever 3 in separated condition, yet they are readily engaged.

In FIGURE 3 the body 1 has been shown greatly elongated, and instead of supporting the plank P upon the lever 3, a supplemental lever 33 is pivoted upon the body 1, and braced therefrom by the brace chain 34. The lever 3 may be used as a hanger for a bucket of paint, or other article, as an auxiliary support.

The form shown in FIGURES 4 and 5 is quite similar to that already described. Here the pivot groove *4a* opens laterally to receive the pivot pin 31, but the arms 30 are formed at their swinging ends with retainer fingers 34 which embrace the edge of arcuate spring fingers *20a*, formed concentrically of the pivot axis. This precludes accidental disengagement of the lever 3 from the body 1, until parts are in the two-dot-dash line position of FIGURE 5. In this form the bits *2a* are shown as tabs struck from the metal of the fingers *20a*, and the latter as struck from the metal of the side plates 10.

In the form of FIGURES 6 and 7 the spring fingers *20b* are struck from metal of the side plates 10, bent directly upwardly and inclined outwardly when relaxed. They are urged inwardly by the camming action of arms 30, as in FIGURE 7. This presses inwardly the bits *2b*, shown as struck from the metal of the fingers *20b*. In this form the bits *2b* are closely embraced by the edges of recess *12b* (FIGURE 6), of notch formation, and thereby the bits are strongly supported by the edge of this recess *12b* against the stress to which they are subjected in use. This form also shows a slight change in the pivot groove *4b*, which now is struck from the metal of the base portion 11 of the channel-shaped body 1.

In the form shown in FIGURES 8 and 9 no separate spring fingers are provided, but instead the side plates *10c* diverge slightly away from the base 11 of the body 1, and at their edges distant from that base are flanged laterally, at 13, and the edges 14 of such flanges are inclined upwardly and outwardly. The entire side plates, with these flanges, constitute resilient spring fingers or elements, and are urged inwardly by the camming action of upwardly swinging arms 30; compare the dot-dash line and full line showings of FIGURE 9. By striking bits *2c* from the metal of the side plates, so that they are directed inwardly when the flanges 13 are bent, they will bite into the stud S when the side plates are thus urged inwardly. The pivot groove *4b* is formed in the same manner as in FIGURES 6 and 7. Stops *22c* are also formed at the upper end of flanges 13, for engagement with arms 30.

In the form of FIGURES 4 and 5 a supplemental support such as the hook 15 is shown. This may afford a convenient support for a paint bucket. Such supplemental supports may be provided in other forms, and in various location.

I claim as my invention:

1. A mounting bracket comprising a channel-shaped body formed to straddle a wooden stud or the like, at least one bit supported at a side of the channel-shaped body, and directed inwardly towards the stud, a lever pivotally mounted upon said body, said lever including at least one arm moveable alongside a side of the body, and an article support extending from said arm beyond the body, when in position for use, and cam means operatively connected to said bit, and positioned for engagement by said arm as the lever swings during pivotal movement, and aranged to urge the bit inwardly into engagement with the stud as the article support moves towards its position for use.

2. A mounting bracket as in claim 1, including also stop means engageable by the lever when it reaches its position for use, to halt its swinging.

3. A mounting bracket as in claim 1, wherein the lever includes also a pivot pin perpendicular to said arm, and an open channel means supported by the base of the channel-shaped body, receiving said pivot pin, and constituting therewith the pivotal mount as the lever.

4. A mounting bracket as in claim 1, including a spring element carried by at least one side of the channel-shaped body and inclined upwardly and outwardly, the lever's arm engaging said inclined element to urge the same inwardly as the lever approaches its position of use, and so constituting the cam means, and the bits being carried by the upper end of said spring element, and moving inwardly to engage the stud by such movement of the lever.

5. A mounting bracket as in claim 4, including a stop at the upper end of the spring element, in position for engagement by the arm when the lever reaches its position of use.

6. A mounting bracket comprising a channel-shaped body formed to straddle a wooden stud or the like, a pair of bits supported at the opposite sides thereof, directed inwardly towards the stud, a lever pivotally mounted upon said body and including arms movable alongside the opposite sides of the channel-shaped body and an article support extending from said arms beyond the body, in their position of use, and cam means operatively connected to said bits, and positioned for engagement by said arms as they swing during pivotal movement of the lever, thereby to urge said bits inwardly into engagement with the stud as the lever moves into its supporting position.

7. A mounting bracket as in claim 6, including spring fingers supported by one end of each at the opposite sides of the channel-shaped body, the bits being carried at the opposite ends of said fingers, and said fingers being positioned for engagement by said arms of the lever, to be moved inwardly to engage the bits with the stud as the lever moves towards its position of use.

8. A mounting bracket as in claim 7, wherein the sides of the channel-shaped body are apertured for passage of the respective bits, closely adjacent the same.

9. A mounting bracket as in claim 6, including a spring finger supported by its lower end, beneath the bit, from each side of the channel-shaped body and inclined upwardly and outwardly therefrom, each bit being supported at the upper end of the corresponding spring finger, and the arms, as the lever swings towards its position of use, moving over the corresponding fingers to press them inwardly.

10. A mounting bracket as in claim 9, each spring finger having an outwardly flanged upper end positioned for engagement by the respective arms as the lever swings into its position of use.

11. A mounting bracket as in claim 6, including an

open channel means supported by the base of said channel-shaped body, and a pivot pin carried by the lever and removably received in said open channel, constituting the pivotal mount of the lever.

12. A mounting bracket as in claim 11, including a stop positioned to engage the arms as the lever swings, into its position of use, said stop facing oppositely to the open channel of the lever's pivotal mount.

13. A mounting bracket as in claim 6, including spring fingers inclined outwardly from and supported by the lower end of each from the opposite sides of the channel-shaped body, the bits being carried by the upper ends of said fingers, and the fingers being arcuately formed concentric with the pivot axis of the lever, said lever including inturned tips at the swinging end of its arms engaging the arcuate fingers, the arms as they swing upwardly urging the fingers and their bits inwardly towards the studs.

14. A mounting bracket as in claim 13, wherein the spring fingers are struck from the metal of the sides of the channel-shaped body.

15. A mounting bracket as in claim 6, including spring fingers integral with the opposite sides of the channel-shaped body and directed upwardly and inclined outwardly, exteriorly thereof, the bits carried by the upper ends of said fingers, directed inwardly therefrom, and the arms of the lever being mounted to swing upwardly over and to urge inwardly the spring fingers, as the lever moves towards its position of use.

16. A mounting bracket as in claim 6, wherein the edges of the sides of the channel-shaped body, remote from its base, are flanged outwardly and inclined upwardly, and said sides are flared outwardly away from its base, and the arms of the lever are mounted to swing upwardly over the inclined edges of said flanges, to urge the flared sides inwardly as the arms swing upwardly towards the lever's position of use.

17. A mounting bracket comprising a channel-shaped body formed to straddle a wooden stud or the like, a pair of bits supported at the opposite sides thereof, directed inwardly towards the stud, lever means pivotally mounted intermediate its ends upon said body and including arms movable alongside the opposite sides of the channel-shaped body, cam elements supporting said bits and wedgingly engageable by such movement of said arms progressively thereby to advance inwardly toward the stud and press said bits inwardly into the stud, and stop means engageable by said lever means to limit such movement thereof at a predetermined position with the bits pressed into the stud, said cam elements including means resiliently opposing such inward advance to maintain the bits normally retracted from the stud.

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