Feb. 4, 1936. J. N. VICTOR 2,029,453

DEVICE FOR SECURING ARTICLES OF HARDWARE TO WOODEN MEMBERS

Filed Dec. 15, 1933

FIG. 1.

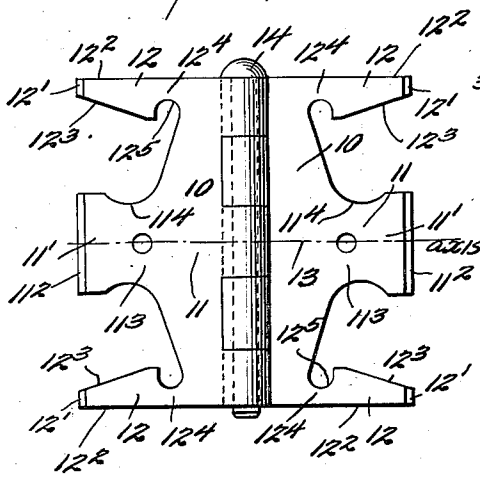
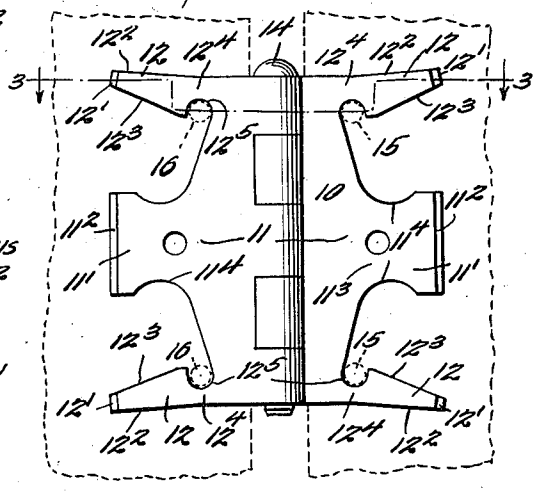


FIG. 2.



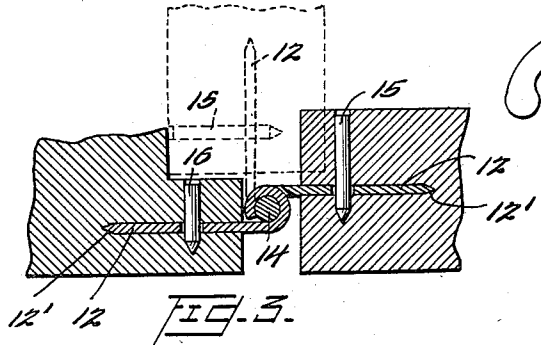


FIG. 3.

FIG. 5.

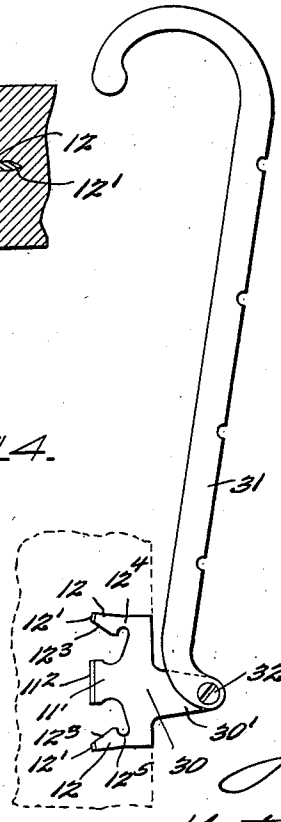
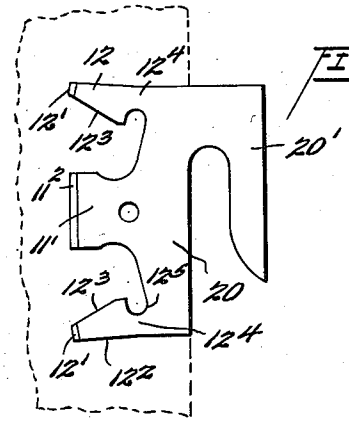


FIG. 4.



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DEVICE FOR SECURING ARTICLES OF HARDWARE TO WOODEN MEMBERS

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2 Claims. (Cl. 16—1)

In the fabrication of structures built up of wooden members, such, for instance, as doors, windows, and the like, it is frequently necessary to provide means for the attachment of various articles of hardware, such as hinges, latches, operating levers, hooks, and the like. Most commonly such articles are attached by means of screws or nails, but while such means of attachment are well-understood and in many instances quite sufficient for the purposes, it is frequently desired to attach articles of the class indicated above in a more secure and more inconspicuous manner.

The present invention provides a novel and improved means for attaching articles to wooden members, which contemplates the insertion of an anchoring plate directly into the interior of the member itself instead of being secured upon the surface, it being possible by the use of the invention to not only more conveniently locate hinges and attach hooks, catches, levers, etc., but also to more securely fasten these various devices in place. Thus, when the anchoring plate is embedded in the wood and firmly secured in position, it cannot be dislodged without great difficulty, and shock and vibration have no tendency to loosen the same. The invention not only provides a means which enables a fabricator of wooden structures to affix various articles of hardware thereto in a more secure manner, and facilitates the emplacement of such devices, but it likewise effects a considerable saving in cost inasmuch as the usual securing screws or bolts are dispensed with and the cost of applying these securing devices saved.

The invention has further important advantages, as will be apparent to one skilled in the art, and it will likewise be clear that it may be considerably varied in design in adapting the same for use in connection with the fabrication of building structures of various kinds.

In the drawing one embodiment of the attaching means, which has proven to be eminently satisfactory in practice, will be illustrated by way of example.

Figure 1 illustrates in plan one type of hinge to which the invention has been applied;

Figure 2 shows the same hinge after its application to two wooden members, the wooden members being indicated in dotted lines;

Figures 3 is a section on line 3—3 of Figure 2 showing the members to which the hinge is connected in two different positions;

Figure 4 illustrates in plan the improved attaching means applied to a wooden member and constituting a base for a projecting latch, the wooden members being also indicated in dotted lines; and

Figure 5 shows the novel attaching means as utilized in attaching a lever, such as a window operating lever, to a wooden member, such, for instance, as the bottom rail of the sash of a casement window.

It will be observed, upon inspection of the several figures of the drawing, that the means for actually attaching the various articles of hardware to the wooden members are identical, each such means comprising essentially a flat, relatively thin, metallic base 10 having formed integral therewith three anchoring elements, a central or intermediate element 11 and outer elements 12, these elements extending in substantial parallelism and being formed integral with the base 10. The entire anchoring means, including the base and anchoring elements, is preferably formed of one piece of relatively ductile metal, such, for instance, as brass.

The central anchoring element 11 may be said to have a head portion $11'$ provided with a tapered or sharpened outer edge 11^2 and a stem 11^3 by which it is connected to the base 10. This stem is undercut on both sides, as indicated at 11^4, so that the width of the stem between the undercut portions is less than that of the head. The two outer anchoring elements 12 are identical in configuration, each having a tapered or sharpened edge 12', an outer edge surface 12^2 which is parallel to the central axis 13 of the member, an inner edge surface 12^3 which is forwardly and outwardly inclined with respect to the edge 12^2, and a weakened stem portion 12^4, the width of which is reduced by reason of an inwardly opening semi-cylindrical undercut 12^5.

Where the invention is utilized in connection with a hinge as shown in Figures 1, 2, and 3, the base 10 is provided with cylindrically curved flanges extending therefrom in the direction opposite to the direction in which the anchoring elements extend, each base member having a plurality of these spaced integral cylindrical extensions, which extensions alternate, as shown in Figure 1, in order that a single elongated hinge pin 14 may be passed therethrough to secure the two members together.

In applying one of the members to a wooden element, it is first preferred that a shallow slot be formed in such member, into which the outer ends of the anchoring elements are inserted. The depth of this slot may vary as desired, the slot being made deeper where it is anticipated that

there is some danger of splitting of the wood due to forcing of the anchoring plate into the same, and shallower where no splitting is likely to occur. In certain instances it may be deemed unnecessary to form any such slot as a preliminary operation.

Following the insertion of the member into the shallow slot, pressure is applied thereto in the general direction of the axis 13 to force the cutting edges of the anchoring elements 13 through the fiber of the wood, this pressure being continued until the entire member has been forced into the wood the desired distance. During this penetration the bendable outer anchoring elements 12 will be deflected outwardly from the positions in which they are shown in Figure 1 to the positions in which they are shown in Figure 2, the inclined edge surfaces 12^3 of these members acting as camming surfaces or wedging surfaces, the wood fibers coming in contact with these surfaces exerting such pressure thereagainst as to bodily deflect the anchoring elements outwardly, it being possible for these elements to deflect in the stated manner by reason of the fact that the stems 12^4 of these members have been previously weakened and further by reason of the fact that the metal of which the entire article is constructed has sufficient ductility to permit this deflection without breakage. During this forcing operation, the head 11' of the central anchoring element 11 follows a rectilinear path in penetrating the wood fiber, but in most woods, particularly soft woods, it is found that expansion of the wood fiber takes place subsequent to the passage of the head 11' so that, by reason of such expansion, the undercuts 11^4 eventually are wholly or partially filled with the fiber of the wood. The device thus inserted into the wooden member is very strongly held by the fibers thereof, and it is very difficult indeed to withdraw it, by reason of the outward deflection of the elements 12 and the natural clamping action of the wood fiber.

As an additional precaution against loosening of the plate in the wooden member, however, especially where the device is used in connection with a hinge or in any other case where shock, vibration, or pull may tend to dislodge it, locking pins may be driven laterally through such wooden member and through the semi-circular undercuts 12^5. In Figure 3 of the drawing, two of these pins, indicated at 15 and 16, are illustrated. As the recesses 12^5 are hidden from view after the insertion of the member into the wood, it is generally desirable to employ gauges or templates for properly positioning the pins. The pins thus inserted will have the effect of further spreading the end anchoring elements should any substantial pulling force be subsequently exerted upon the plate.

In Figure 4 of the drawing, the base 20 is shown as having an extension 20' in the form of a hook or catch member, and in Figure 5 the base 30 is shown to have an extension 30' to which one end of an operating lever 31 may be pivotally connected as at 32. As will be obvious, the invention is useful not only in the application to wooden members of the several articles of hardware illustrated and described but is useful in many other instances where it is desired to avoid the use of the customary surface attaching means or to apply hooks, hinges, etc., in a normal, convenient, and economical manner.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A device of the class described comprising a flat relatively thin base portion to which an article of hardware may be secured, and three anchoring elements integral with said base and disposed in the plane thereof, said elements being substantially parallel and the two outer elements being spaced from the intermediate element to provide two wood receiving spaces, the intermediate element having its stem portion laterally undercut to provide recesses for swelling wood fiber and the two outer elements being bendable in the plane of the device by wood pressure as the device is forcibly inserted.

2. A device of the class described comprising a flat relatively thin base portion to which an article of hardware may be secured, and three anchoring elements integral with said base and disposed in the plane thereof, said elements being substantially parallel and the two outer elements being spaced from the intermediate element to provide two wood receiving spaces, the intermediate element being relatively wide and rigid, having an elongated cutting edge remote from the body and its stem laterally undercut, the two outer elements being relatively narrow and being bendable in the plane of the device.

JOSEPH N. VICTOR.