Nov. 25, 1941. H. G. KNUTH 2,264,243

FASTENING DEVICE

Filed June 22, 1940

Fig. 1.

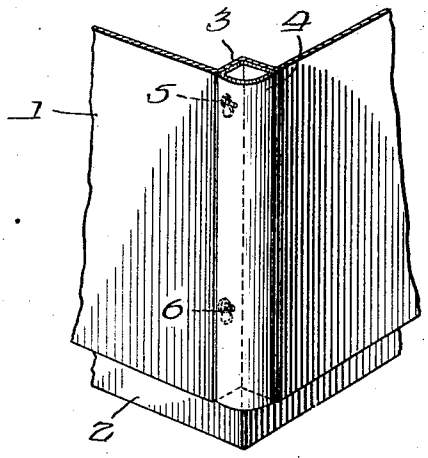


Fig. 2.

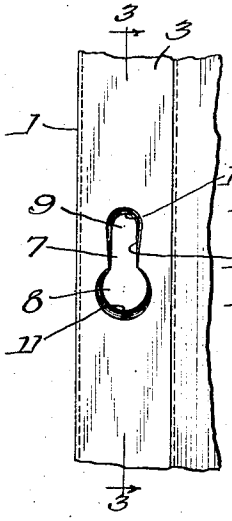


Fig. 3.

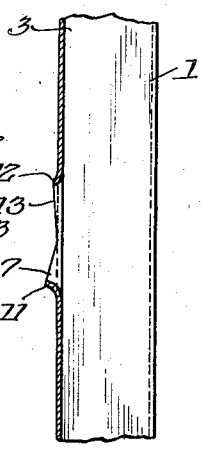


Fig. 4.

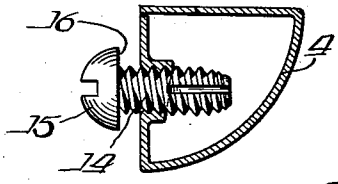


Fig. 5.

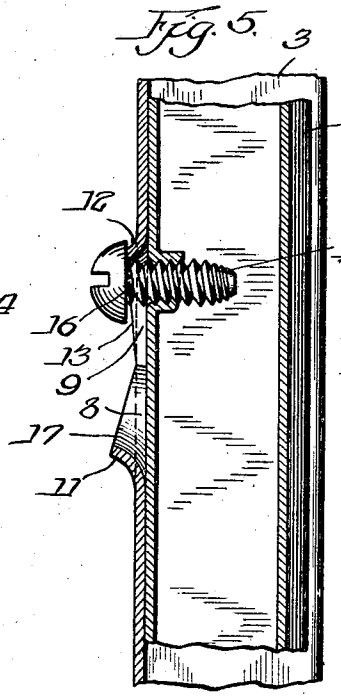
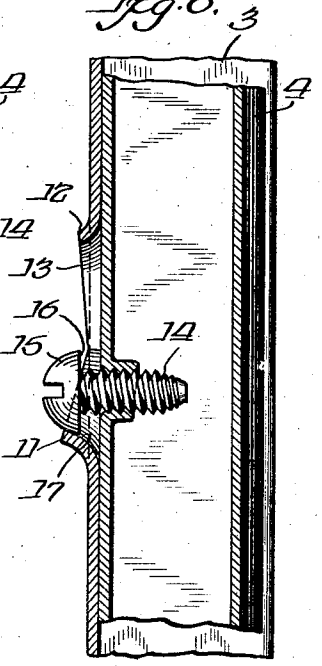


Fig. 6.



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UNITED STATES PATENT OFFICE

2,264,243

FASTENING DEVICE

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Application June 22, 1940, Serial No. 341,887

4 Claims. (Cl. 189—36)

My invention relates to a fastening device and more particularly it pertains to a keyhole type of fastening device such as may be utilized in removably securing a removable rounded sheet metal corner member to a recessed corner of a sheet metal cabinet. In the manufacture of sheet metal cabinets, such as, for example, kitchen sink cabinets and the like, it is desirable and advantageous to provide each cabinet with front corner means for attaching thereto another cabinet whereby a contiguous set of cabinets may be formed. A convenient way of doing this is to provide recessed front corners on the individual cabinets to which filler members may be removably secured for joining the adjacent cabinets. In the event that a cabinet is to be used either singly or forms an end section in a set of cabinets, the recessed front corner is preferably filled with a rounded member and the attachment thereto of the rounded corner member is illustrative of my present invention. However, it is to be clearly understood, of course, that my invention is capable of numerous installations other than the preferred application disclosed herein.

One of the more important objects of my invention is to provide a keyhole fastening means wherein the keyhole is formed in such a manner that upon inserting the attached member a wedging action occurs to hold the member securely in place.

Another object lies in the provision of a guide formed preferably integrally with the keyhole to assist both in the attaching and detaching of the attached member.

These and other objects and advantages will appear throughout the specification and claims which are to be read in connection with the accompanying drawing wherein:

Fig. 1 is a perspective view of a cabinet corner showing a rounded corner member attached thereto.

Fig. 2 is a magnified fragmentary front view of the cabinet corner showing the detailed form of my improved keyhole aperture.

Fig. 3 is a view taken on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view of the rounded corner member showing the manner in which the screw is attached thereto.

Fig. 5 is a vertical sectional view of the cabinet corner showing the rounded member attached thereto.

Fig. 6 is a view similar to Fig. 5 but showing the rounded member in a partially detached position.

Like reference numerals refer to like parts throughout the various views of the drawing.

In Fig. 1 I have shown a portion of a sheet metal cabinet, generally designated 1, having the base 2 thereof set back from the planes of the sides to provide toe room for a person standing at the cabinet or sink. The corner of the cabinet is recessed, as at 3, for purposes hereinabove described, and in order to provide a rounded corner on the cabinet the member 4 is detachably secured thereto by the keyhole attachments shown at 5 and 6. In a cabinet of the usual height to be placed under or adjacent a kitchen sink it is ordinarily desirable to provide three or four keyhole attachments in substantially vertical alignment to properly hold the rounded corner member 4 in place.

To my knowledge keyhole apertures heretofore provided were merely plain cut-out apertures having the enlarged circular, or head receiving portion at the uppermost end thereof and the elongated or narrow portion of the keyhole extending downwardly therefrom. My invention contemplates an improved keyhole which will provide a secure grip on the head of the projecting screw or other headed member extending through the keyhole regardless of the way in which it is positioned. Further, in previous keyholes when it was desired to remove the attached piece by sliding the screw head to the enlarged circular portion of the keyhole there was the objectionable tendency for the under side of the head to slide beyond and catch on the peripheral metal of the keyhole and thus seriously interfere with the easy removal of the attached piece. In constructions like the example chosen for illustration herein where a plurality of keyhole attachments are usually provided, it can easily be seen that the latter tendency of the end peripheral portions of previous keyholes to catch would make the matter of removal relatively difficult, especially because each of the independent keyholes would necessarily have to be disengaged simultaneously. In contradistinction, in my invention the headed member which extends through the keyhole cannot catch on the periphery of the circular portion of the keyhole and therefore, regardless of the number of keyholes employed for effecting the attachment, the corner member is easily removable.

As more clearly shown in Figs. 2 and 3, the keyhole 7 comprises the enlarged circular portion 8 and the usual elongated portion 9. The circular portion 8 however is provided with the guide lip 11 preferably formed by bending outwardly

the sheet metal surrounding the said circular portion. The elongated portion 9 is also provided with a wedging lip 12 having the angularly disposed wedging edge 13 which is designed to bear frictionally against the under side of the head of the projecting member or screw.

Fig. 4 shows in cross-section the manner in which the rounded corner member 4 is provided with the usual suitably positioned self-tapping screw 14, the head 15 thereof being slightly spaced apart from the wall to which the screw is attached so that it will extend through the keyhole opening. If desired, other headed means may of course be employed to extend through the keyhole, for example, a rivet, a welded extension or an integral suitably headed projection may be provided without affecting the application of my invention.

Attention is now directed to the assembly view of Fig. 5 wherein the rounded member 4 is shown attached to the recessed corner portion 3 of the cabinet. It will be noted that the under surface 16 of the screw head 15 bears tightly and resiliently against the lip 12 and wedging edge 13 whereby even though the keyhole is in a relatively inverted position the removable member 4 will not have a tendency to become disengaged from the cabinet. The advantage gained by this construction will be evident in the example of a cabinet which is to be placed beneath a sink or else have some other relatively rigid cover or top placed thereon which cannot readily be lifted or removed when it is desired to attach or to detach the corner member 4. My invention permits the member 4 to be removed merely by sliding it downwardly so that the edge 13 is frictionally engaged by the undersurface 16 of the screw head 15. Thus conversely when in the attached position due to the said frictional engagement of the inclined edge 13 with the surface 16 the member 4 is held securely in the desired position.

Fig. 6 shows the member 4 in a partly detached position with the outer rounded surface portion of the screw head 15 contacting the inner or guiding surface 17 of the lip 11. From this view it is readily apparent that when the member 4 is in the process of being detached the screw head 15 is suitably guided so that it cannot slide beyond and catch on the peripheral edge of the circular portion 8 of the keyhole. Further, it will be evident that during assembly and when the head portion 15 is being inserted into the keyhole the guiding surface 17 also functions to urge the screw head toward the elongated open portion 9 of the keyhole.

My invention is not of course limited to the embodiment herein disclosed, namely, a sheet metal kitchen sink cabinet, but may be utilized in a great many instances wherein it is desirable to attach members together by means of a keyhole fastening device. The spirit and scope of the invention is more generally defined in the claims appended hereto.

I claim:

1. In a removable corner assembly of the character described, comprising a hollow corner member to be secured to a corner recessed supporting structure and having a seating surface for contact therewith, means carried by said corner member for engagement with said supporting structure, the said latter means including threaded holding means, the said corner member during course of assembly with the said supporting structure being movable axially relative to said supporting structure, said means of engagement upon said supporting structure including an aperture of substantially keyhole form, the enlarged substantially circular end limit of which is provided with an inwardly inclined guide lip enclosing a substantial perimetral portion of an enlarged end of the aperture, the elongated portion of the keyhole aperture being defined by a perimetral continuously inclined lip, the greatest height of said inclined lip being substantially at the end limit of the elongated portion of the aperture.

2. In a removable corner assembly of the character described, comprising a hollow corner member to be secured to a supporting structure having a recessed corner portion, means carried by said corner member for engagement with said supporting structure, the said latter means including a holding means with a projecting head portion, the said corner member during course of assembly with the said supporting structure being movable axially relative to said supporting structure, said means of engagement upon said supporting structure including an aperture having connected end slots, the larger end limit of one slot being provided with an inwardly inclined guide lip enclosing a substantial perimetral portion of said larger end of the aperture, the other end slot portion being substantially bounded by a continuously inclined raised lip, the height of said inclined lip being greatest at the end of the latter mentioned slot.

3. A removable corner assembly comprising a corner member to be secured to a supporting structure having a recessed corner portion, means carried by said corner member for providing slidable engagement with said supporting structure during assembly therewith, the said engagement means including a headed member mounted upon said corner member and having a reduced neck portion for engagement of an aperture upon the said supporting structure, the aperture being of substantially keyhole form with an enlarged rounded end portion and an elongated portion, the said rounded portion having its limits defined by a perimetral wall having an upper inclined edge, the angle of inclination starting and continuing in a direction away from the juncture of the rounded end portion with the elongated portion of the aperture, the elongated portion of the aperture having an inclined lip around the perimetral portion thereof, the angle of inclination of said lip likewise starting and continuing in a direction away from the juncture of the rounded end portion with the elongated portion of the aperture, the said corner member being movable axially, the limit of such movement being defined by the respective wall and lip, whereby at the limit of said axial movement in one direction the said headed member contacts a portion of the inner surface of said perimetral wall thereby separating said corner member from said supporting structure, while at the other limit of said axial movement of said corner member in the opposite direction the headed member engages an upper surface of the inclined lip thereby drawing said corner member and said supporting structure together and frictionally maintaining these members in the latter position.

4. A removable corner assembly comprising a corner member to be secured to a supporting structure and having a seating surface for abutting contact therewith, means carried by said corner member for engagement with said supporting structure the said corner member during

course of assembly therewith being movable axially relative to said supporting structure, the said latter means comprising a substantially rounded projection upon said corner member and having a reduced portion engaging an aperture upon said supporting structure, the said aperture being of substantially keyhole form with an enlarged rounded end portion and an elongated portion, the said rounded portion having its limits defined by a perimetral wall having an upper inclined edge, the angle of inclination starting and continuing in a direction away from the juncture of the rounded end portion with the elongated portion of the aperture, the elongated portion of the aperture having an inclined lip around the perimetral portion thereof, the angle of inclination of said lip likewise starting and continuing in a direction away from the juncture of the rounded end portion with the elongated portion of the aperture, the said corner member being movable axially, the limit of such movement being defined by the respective wall and lip, whereby at the limit of said axial movement in one direction the said rounded projection contacts a portion of the inner surface of said perimetral wall thereby separating said corner member from said supporting structure, while at the other limit of said axial movement in the opposite direction the undersurface of the rounded projection engages the upper surface of the inclined lip thereby drawing said corner member and said supporting structure together and frictionally maintaining these members in the latter position.

HARVEY G. KNUTH.