Oct. 8, 1946. W. HOLMAN ET AL 2,408,852

FRAME CORNER STRUCTURE

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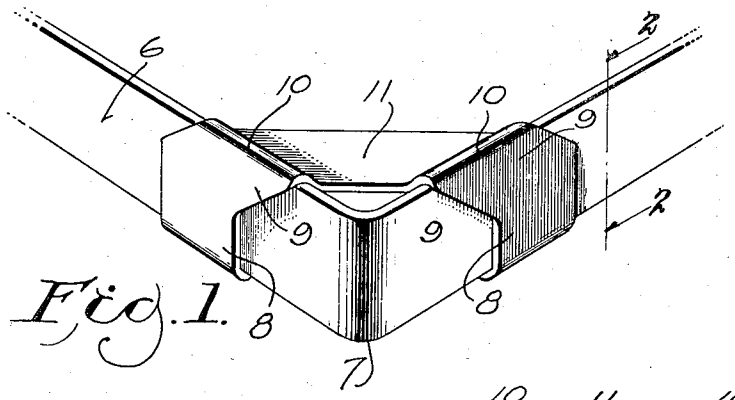


Fig. 1.

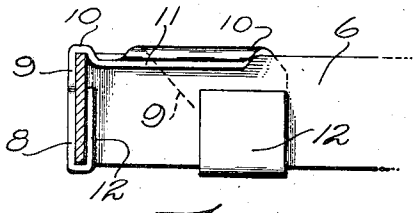


Fig. 2.

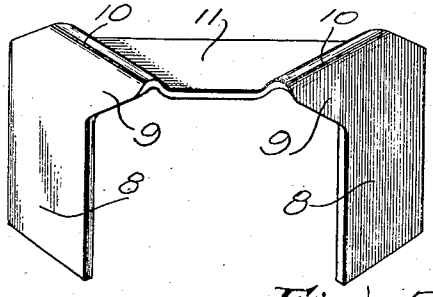


Fig. 3.

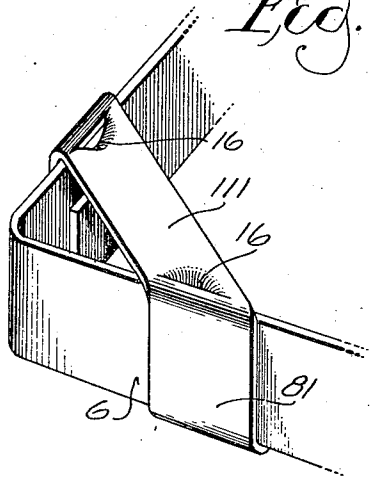


Fig. 5

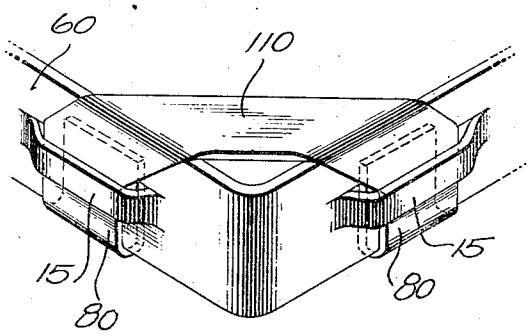


Fig. 4.

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FRAME CORNER STRUCTURE

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5 Claims. (Cl. 189—34)

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This invention relates to improvements in a frame corner structure. The invention may be utilized in the manufacture of trunk or stove racks, battery hold-down frames, metal cases and elsewhere.

In devices of this general type, it has been common practice to reenforce the corner of a frame by means of a diagonal bracket riveted, bolted or welded across the corner of the frame. It is the object of the present invention to simplify and reduce the cost of such a construction by providing means whereby the corner bracket may be applied to the frame by deforming portions of the metal in such a way as to preclude movement of the bracket in any direction with respect to the frame, whereby an entirely rigid corner structure results. In this connection, it should be noted that it is not sufficient merely to bend portions of the bracket about portions of the frame since the bracket might still move toward the corner, thereby relieving the corner of stress and leaving it non-rigid. In accordance with the present invention, the corner reenforcing bracket is in pressure engagement with the frame both internally and externally at several points at each side of the corner and to achieve this structure economically is another object of the invention.

In the drawing:

Figure 1 is a view in perspective of a preferred embodiment of the invention.

Figure 2 is a detailed view taken on line 2—2 of Figure 1 showing the frame in section and the corner bracket in side elevation.

Figure 3 is an enlarged detail view in perspective of the corner bracket as formed prior to its application to the frame.

Figure 4 is a view similar to Figure 1 showing in perspective a modified embodiment of the invention.

Figure 5 is a view showing in perspective a different modified embodiment of the invention.

Like parts are identified by the same reference characters throughout the several views.

The frame requiring reenforcement is designated by reference character 6. It comprises a piece of strap metal having a slightly rounded right angled corner at 7.

The reenforcing bracket used in the preferred construction is separately illustrated in Figure 3. It is made from a single piece of metal formed to provide legs 8 which are in planes at right angles to each other from which, in the respective planes, the diagonally offset portions 9 extend upwardly and toward the frame corner. In positions to

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register with the top margins of the sides of the frame contiguous to corner 7, the bracket has folds 10 engageable with the top margins of the respective frame sides. From these folds, the metal extends downwardly within the frame to the diagonally extending connecting portion 11 which spans the corner of the frame at a level somewhat below the top margins thereof.

With the bracket applied to the frame as shown in Figure 1 and Figure 2, the lower extremities of the respective legs B are turned upwardly at 12 at the inside of the frame, thereby securely locating the folds 10 on the top margins of the frame. The upwardly turned lower margins 12, together with the portions of the folds 10 which engage within the top margin of the frame securely position the bracket against displacement on the frame in any direction. The application of the bracket to the frame corner is preferably made in a die and the resulting reenforced frame is exceptionally rigid.

The interlock of the bracket with the frame may also be accomplished by deforming portions of the frame instead of portions of the bracket, or both. In the Figure 4 construction, the frame sides are provided with offset strips 15 and the bracket comprises a strap having leg portions 80 which extend downwardly within the strips 15 and between such strips and the frame 60. The ends of the legs 80 are folded upwardly against the inner faces of the frame sides. The intervening portion 110 of the bracket strap spans the corner and, as in the construction previously described, the bracket is incapable of movement in any direction, the pressure of the deformed strips 15 of the frame holding the bracket securely in position.

In the construction shown in Figure 5, the bracket legs 81 pass downwardly on the outer faces of the frame sides and beneath the lower margins of the frame sides and upwardly upon their inner faces exactly as in the Figure 4 construction. As a means of preventing the bracket from sliding toward the frame corner, the diagonal web portion 111 of the bracket has integral portions 16 formed downwardly against the inner faces of the frame sides near their top margins, thus securely locking the brackets against movement. As in the constructions previously described, the bracket is preferably applied to the frame in a die and the resulting structure is extremely rigid.

The various constructions disclosed exemplify some of the various possibilities in the way of the pressure interlock of a bracket with a frame cor-

ner whereby integral portions of the bracket and frame are engaged to rigidify the frame without the use of any extraneous fastening such as welds, rivets, bolts and the like.

We claim:

1. In a frame corner structure, the combination with strap metal frame sides connected at right angles to comprise a corner and having external and internal faces and disposed so that their edge portions form top and bottom margins, of a metal strap bracket diagonally spanning the top margins of such sides across the angle therebetween and in spaced relation to the corner, the ends of said strap bracket extending downwardly in face contact with the external faces of the respective frame sides and thence beneath the lower margins thereof and upwardly in substantial face contact with the interior faces of the respective frame sides, said frame sides and strap bracket having integral portions mechanically interlocked against movement of said bracket toward the corner of the frame sides, whereby to secure the bracket independently of extraneous fastening means.

2. In a frame corner structure, the combination with strap metal frame sides connected at right angles to comprise a corner and having external and internal faces and disposed so that their edge portions form top and bottom margins, of a metal strap bracket diagonally spanning the top margins of such sides across the angle therebetween and in spaced relation to the corner, the ends of

said strap bracket extending downwardly in face contact with the external faces of the respective frame sides and thence beneath the lower margins thereof and upwardly in substantial face contact with the interior faces of the respective frame sides, integral portions of said strap bracket between said sides being downwardly deformed relative to the top margins of said sides into engagement with the inner faces of said sides to effect a mechanical interlock between said bracket and sides.

3. The device of claim 2, in which portions of the strap bracket immediately within the top margins of said frame sides extend downwardly in pressure engagement with the inner faces of such sides to comprise the portions mechanically interlocked with such sides.

4. The device of claim 2, in which all portions of the strap bracket between the top margins of the frame sides are offset downwardly in thrust engagement with the inner faces of such sides to comprise the portions interlocked with such sides.

5. The device of claim 2 in which the downwardly deformed integral portions of the strap bracket comprise tongues having free ends directed to internal faces of the frame sides engaged thereby, the remainder of the strap bracket between said sides extending substantially rectilinearly across the angle therebetween.

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