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R. W. ROSS  
ENCLOSURE FORMED BY EXTRUDED SIDE  
WALLS HAVING AN INTEGRAL FLANGE

2,644,602

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2 Sheets-Sheet 1

Fig. 1-B.

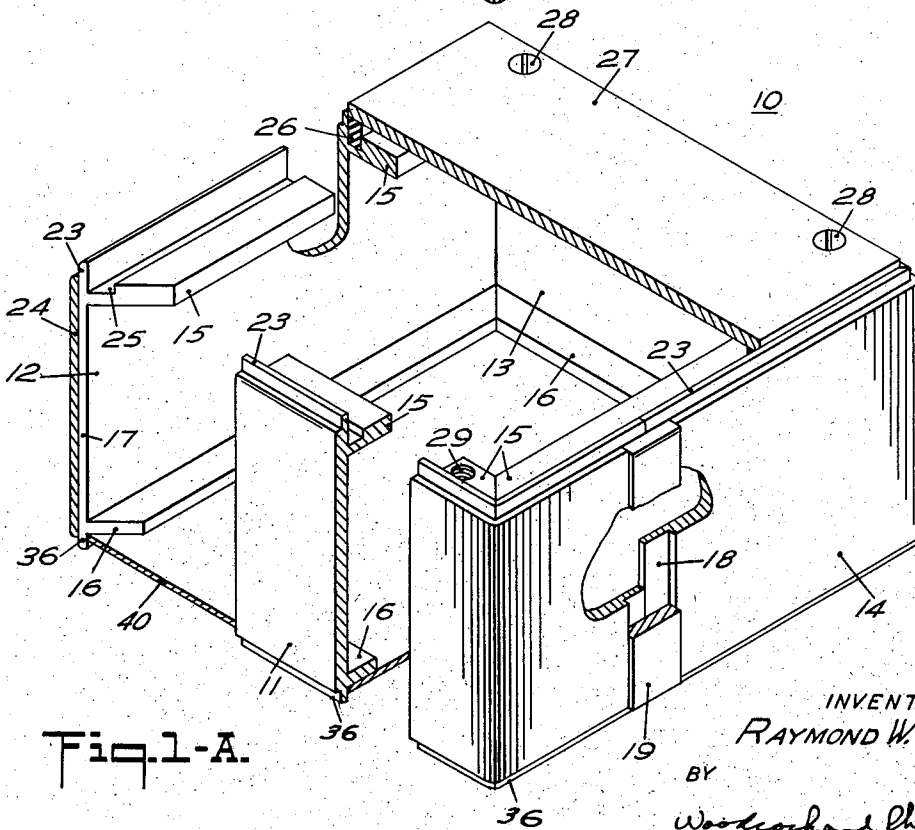
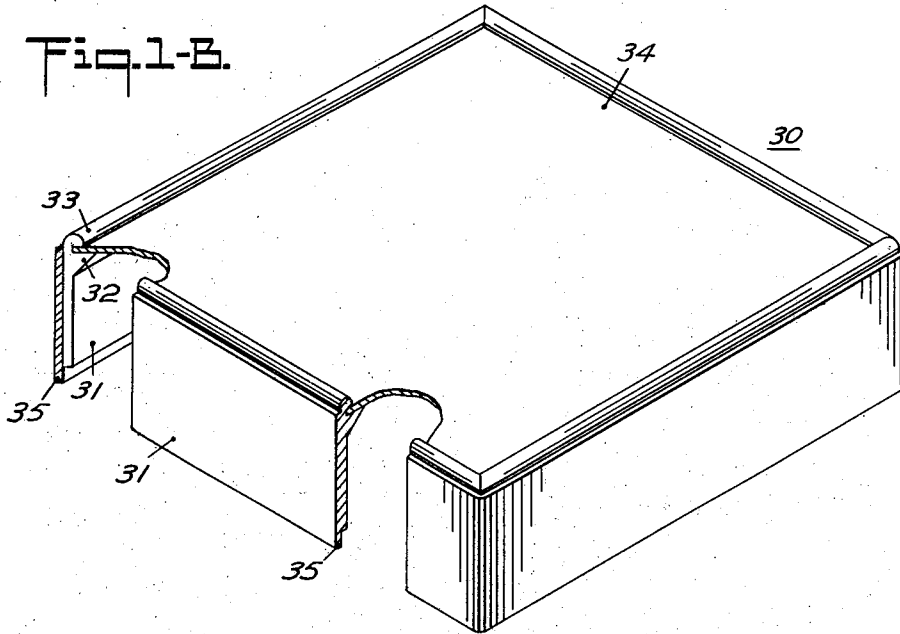


Fig. 1-A.

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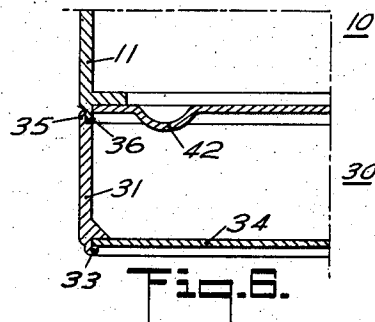
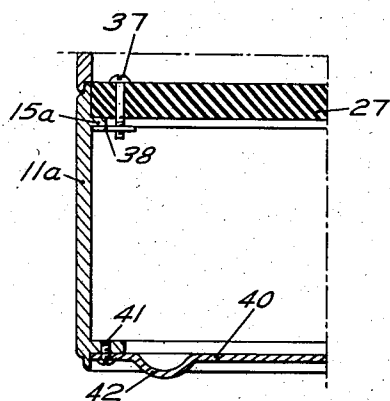
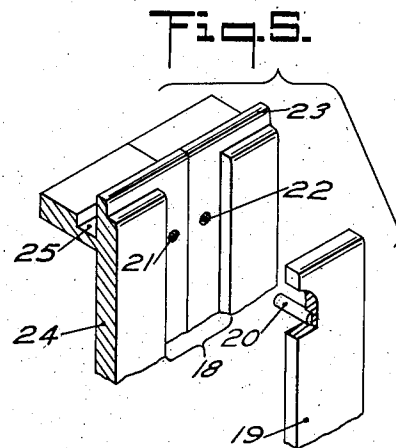
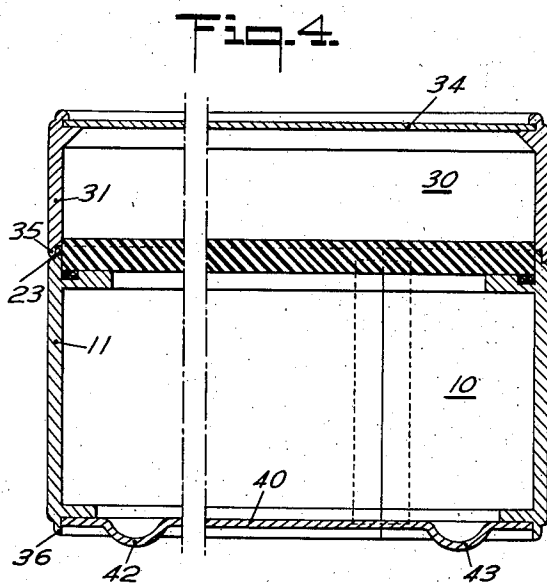
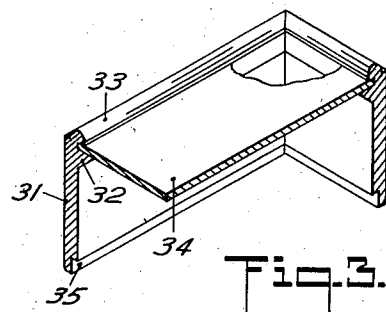
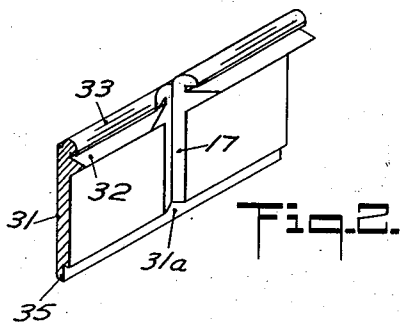
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## ENCLOSURE FORMED BY EXTRUDED SIDE WALLS HAVING AN INTEGRAL FLANGE

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2 Claims. (Cl. 220-4)

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This invention relates to enclosures or housings and has for an object the provision of wall structure formed from a common sheet or strip, including an integral flange, the strip and flange as a whole being of extruded metal. By forming a continuous strip or sheet from extruded metal with an integral flange or flanges, it becomes possible to notch the metal to define the angular junctures of the side walls at any selected distance apart and thus readily fabricate an enclosure of any desired length and width, and which when formed has a flange located in the exact position required to form a desired support for a top or bottom closure member.

More particularly, and by way of example of one typical use of the invention, its application will be explained in connection with electrical measuring instruments, preferably mounted within housings or enclosures. Ordinarily the enclosure may be of a standard size but frequently, due to the addition of components, an enclosure of greater width or breadth is needed. In the past, it has been necessary either to stock housings of a wide variety of sizes or to have them made to order to meet the needs of a particular device.

In accordance with the present invention, a box of any selected length or width may be readily fabricated from a strip or sheet of extruded metal and in which there has been included in the extruding process the supporting and strengthening flange or flanges. A suitable length of such a sheet is selected and the flange or flanges marked to define the angular junctures of the sides. In the region of each angle or juncture the flange or flanges are milled out to form V-notches. The milling is preferably carried slightly into the body of the sheet material, in effect to form scoring lines and to localize and fix the bending of the material. The extruded sheet material may also include tongues which may mate with corresponding tongues extending from the cover members and the flanges may include grooves for sealing material. If a plurality of shelves are desired, the requisite number of flanges may be included during the extruding operation.

For a more detailed disclosure of the invention and for further objects and advantages thereof, reference is to be had to the following description taken in conjunction with the accompanying drawings, in which:

Fig. 1-A is an isometric view, with parts cut away, of an enclosure embodying the invention;

Fig. 1-B is a cover designed for use with the enclosure of Fig. 1-A;

Fig. 2 is an isometric view of sheet material of the type utilized for the cover of Fig. 1-B and shows the corner notch milled therein;

Fig. 3 is an isometric view of Fig. 2 after bending and after insertion of a closure member;

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Fig. 4 is a sectional elevation of the assembled box of Figs. 1-A and 1-B, and shows a sealing means disposed in a groove of one of the flanges;

Fig. 5 is an exploded isometric view illustrating the manner in which the meeting ends of the strip of material forming the side walls of Fig. 1-A may be mechanically connected;

Fig. 6 illustrates the cover of Fig. 1-B disposed beneath and supporting the enclosure of Fig. 1-A; and

Fig. 7 shows a modification of the upper flange of Fig. 1-A.

Referring to the drawings, there is shown in Fig. 1-A an enclosure 10 comprising angularly disposed side walls 11, 12, 13 and 14 formed by a single extruded strip of material and including integral reinforcing flanges 15 and 16. The strip is formed of a material which may be extruded, such for example, as aluminum or one of its alloys. In the extrusion of the strip or sheet of material, the flanges 15 and 16 extend lengthwise of the entire strip for a distance adequate to form one or more enclosures of the desired length and width. Of course, if enclosures of smaller dimensions are to be made the length of the strip is cut or selected in accordance with the desired perimeter of the enclosure. To form the angular junctures or corners of the enclosure, V-notches are milled from the flanges 15 and 16, the milling preferably being carried partly into the strip or sheet itself as indicated at 17 in Figs. 1-A and 2. Thus, there is provided a bending or scoring line for the sheet of material between the flanges 15 and 16, Fig. 1-A, while the sides of the V-notches or their angles are selected so that when the aforesaid sides, such as 12 and 13, extend at the desired angle with respect to each other, shown as right angles, the sides of the V-notch in the wall-juncture are substantially in abutting engagement.

The ends of the strip are mechanically interlocked with each other by any suitable means. Preferably they are reduced in section as by milling so that when they meet they define a groove or recess 18, Figs. 1-A and 5, which extends across their abutting ends to provide for nesting therein of a structural or reinforcing member 19. The member 19 may be secured therein in any suitable manner and it may also include studs 20, Fig. 5, arranged to nest within openings 21 and 22 in the respective ends of the strip. Though only one stud 20 has been shown in Fig. 5, it is to be understood there will be a plurality of studs and corresponding openings, at least four, two near the top and two near the bottom of the box, so that the ends will be mechanically joined together at a plurality of spaced points.

In the extrusion of the strip or sheet it will be observed that tongues 23, Figs. 1-A, 4 and 5

extend upwardly and in spaced relation with the body portion 24 of the strip. A channel or recess 25 may also be formed in the flange 15 during the extruding process, the recess being for the reception of a sealing and/or spacing means 26. A closure member 27 may rest upon the sealing and/or spacing means 26 and it may be held in position as by screws 28 threadedly engaging suitable openings in the flanges, one of which, the opening 29, is shown in Fig. 1-A. By utilizing spacers and/or sealing means 26 of different height, the closure member 27 may be spaced at any selected distance above the flange 15. Instead of using a rubber spacer 26, it may be of rigid material with or without soft sealing faces. Preferably the closure member 27 is located so that its upper surface is at least as high as the upper surface of the tongue 23.

In the preferred form of the invention the closure member 27 forms a supporting panel for measuring apparatus disposed thereon and for circuit components such as meters, switches, and the like. For such an application an additional enclosure or cover 30, Figs. 1-B, 2 and 3, may be provided. It too is preferably constructed from a single extruded strip 31, having a flange 32 and an upper bead 33 integrally formed therewith. V-notches are provided at the junctures of the side walls, one of these, the notch 31a, being shown in Fig. 2, and in the assembly an upper closure 34 is disposed in the notch provided between the bead 33 and the flange 32. The strip 31, Fig. 2, is shown in the assembled position in Fig. 3 with the closure member 34 disposed in said notch or recess.

The strip 31 is provided with a downwardly extending tongue 35 forming an extension of the outer surface of the strip 31. The tongue 35 of the cover 30 is disposed to nest over the tongue 23 of the enclosure 10 in the manner illustrated in Fig. 4. The cover or enclosure 30 may be held in place by conventional latches. Separable hinges may be provided so that when the cover 30 is swung to open position it may be bodily removed from the position shown in Fig. 4. As a matter of convenience and in order thereafter to keep the cover 30 with its associated box or enclosure, the strip of Fig. 1-A may be provided with tongues 36 extending outwardly from the inner surface to receive in overlapping relation the tongues 35, as shown in Fig. 6. In this manner, the cover 30 forms an elevated support for the enclosure 10.

In lieu of the fastening screws 28 of Fig. 1-A which engage threaded openings in the flange 15, fastening screws 37, Fig. 7, may extend through the closure 27 with eccentric nuts 38 thereon. Each eccentric nut is provided with an eccentrically located hole so that the extending portion thereof may engage the side wall 11a of the enclosure to prevent the turning thereof during the tightening of the screw 37. When the screw is loosened, the eccentric nut 38 will eventually turn with it and out of engagement with a ledge 15a. It will be observed the ledge 15a differs in cross section from the ledge 15 of Fig. 1-B, the variation being shown as indicative of the fact that the ledge or flange may be of any desired shape which may be readily extruded along with the body portion of the strip.

A bottom closure member 40 may be secured to the ledge 16 in any suitable manner, such as by spot welding or by screws, one such screw, the screw 41, being shown in Fig. 7. It will be seen that the bottom closure may be provided with a

plurality of hemispherical extensions, generally four, and two of which, the extensions 42 and 43, are shown in Fig. 4. These hemispherical extensions serve to provide smooth supports for the instrument with the cover 30 in the position shown in Fig. 4.

While preferred modifications of the invention have been shown, it is to be understood modifications may be made within the scope of the appended claims.

What is claimed is:

1. Box structure including side wall structure comprising an extruded strip having a continuous unbroken outer surface and an inner surface including as an extruded element thereof solid projecting longitudinal flange structure spaced from the edges of said extruded strip, a groove formed in a surface of said flange structure adjacent an edge of said extruded strip, said extruded strip being bent at spaced notched locations to form corners of said box structure, means for securing together the ends of said extruded strip, a member mounted in said groove, and a closure member secured to said flange structure for retaining said first-named member in said groove.

2. An enclosure comprising angularly disposed side walls all formed from a common extruded planar strip member folded along a plurality of spaced transverse lines to form a plurality of corners with the free ends of said strip meeting in abutting relation intermediate two of said corners, said member having a solid flange integral therewith, said flange protruding as flange sections from the body portions of the side walls, said member also having a peripheral tongue at one edge thereof, said flange sections abutting at the junctures of said angularly disposed side walls to form a substantially continuous flange, the abutting ends of said extruded member having a shape defining a recess extending across their abutting ends and including a plurality of openings, a structural member having a corresponding plurality of projections cooperating with said plurality of openings in said ends positioned in said recess for filling said recess and for mechanically holding said ends together, a closure member, said flange forming a stop for said closure member, and a cover having a peripheral tongue disposed for overlapping engagement with said peripheral tongue of said extruded member.

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