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CABINETS

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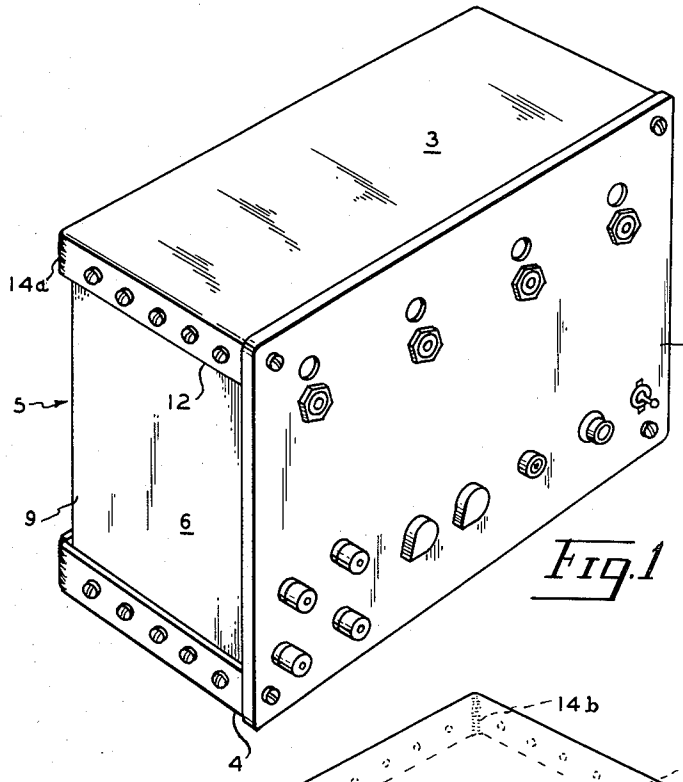


FIG. 1

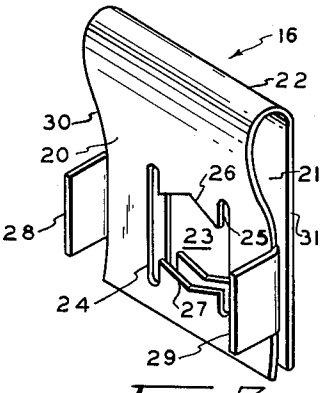


FIG. 3

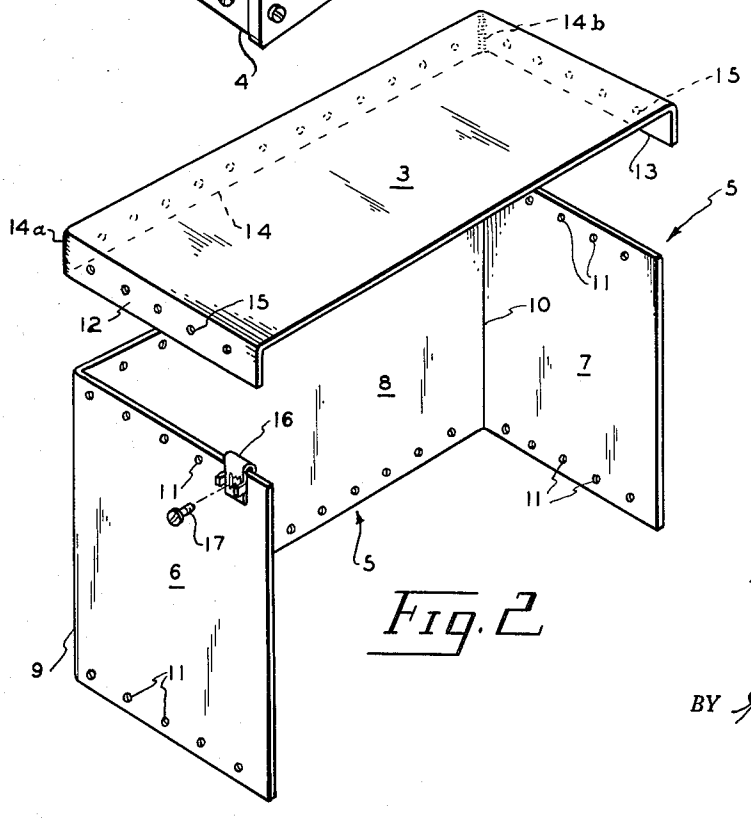


FIG. 2

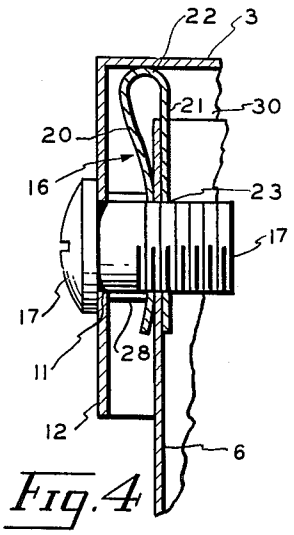


FIG. 4

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CABINETS

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8 Claims. (Cl. 312—213)

The present invention relates generally to metallic cabinets, and more particularly to ventilated metallic cabinets capable of rapid assembly from a minimum of readily fabricated component elements.

Briefly described, cabinets in accordance with the present invention are capable of assembly, from three economically fabricated component elements, primarily by means of speed nuts, and when assembled constitute ventilated rigid five walled cabinets, suitable for housing electronic equipment, or the like. The elements of the cabinet are (1) a bent U-shaped member, which constitutes the back and two side walls of the receptacle; (2) two duplicate metallic panels, forming one the top wall and the other the bottom wall of the cabinet. Each of the panels is provided with three overturned skirts, which overlie the back and side walls, externally thereof.

A row of apertures is provided along the entire top edge of the U-shaped member, and a similar row of apertures along the entire bottom edge thereof. U type speed nuts are slipped over the edges, the thread engaging apertures of the speed nuts being located in alignment with the apertures. A row of apertures is provided in each skirt of the top and bottom panels in mating relation to the apertures at the top and bottom edges of the U-shaped member.

The bolts employed in conjunction with the speed nuts pass from exteriorly of the case, through the apertures in the skirts, and in threaded relation to the speed nuts, and via the apertures provided in the U-shaped member. The speed nuts are provided with spacer lips, which protrude from the nuts in a direction parallel with the bolts and outwardly of the U-shaped member. The spacer lips serve to maintain a predetermined spacing between the skirts of the panels and the side and rear walls of the receptacle. The vertical locations of the apertures in the U-shaped member are such that a portion of each speed nut protrudes vertically beyond the edge of the U-shaped member. The speed nuts thus form vertical spacers, which support the U-shaped member in vertically spaced relation to the bottom panel, and the top panel in vertically spaced relation to the U-shaped member. Further, the spacer lips maintain a predetermined lateral spacing between the skirts of the top and bottom panels and the U-shaped member. At the same time the speed nuts serve to interlock the walls and panels of the cabinet in rigid relation to one another. The spacing between components, provided by the speed nuts, serves to provide ventilating slots for the cabinet, thus eliminating any necessity for the provision of louvres, or the like.

The operations required in the fabrication of a cabinet in accordance with the present invention, involve the cutting of blanks for the top and bottom panels, and the U-shaped member, the bending of the U-shaped member to shape, which requires only two bends, and the bending of the skirts of the top and bottom walls, which requires three bending operations for each. In addition the necessary holes must be punched and the corners of the top and bottom panels welded. The construction is such,

however, that considerable dimensional tolerance is allowable, in respect to hole alignment, and length dimensions. Accurate inter-fitting of parts is dispensed with, and no difficulty is experienced in assembly of the cabinet, with a screw driver as the sole required tool.

It is, accordingly, a broad object of the present invention to provide a novel metal cabinet.

It is a more specific object of the invention to provide a novel ventilated metal cabinet.

It is another object of the invention to provide a metal cabinet having integral rear and side walls, secured in spaced relation to top and bottom panels by means of speed nuts which act as both spacer elements and fasteners.

It is still another object of the invention to provide a novel metal cabinet in which space is provided intermediate the edges of vertical walls and horizontal panels, to provide ventilating apertures.

A further object of the invention resides in the provision of a readily assembled cabinet, consisting of a small number of economically fabricatable elements, which may be readily assembled after being punched and bent to relatively loose dimensional tolerances.

It is another object of the invention to provide a cabinet structure in which speed nuts are simultaneously employed to provide desired vertical and lateral separations between walls of the cabinet, and to secure the walls rigidly together.

The above and still further features, objects and advantages of the invention will become apparent upon consideration of the following detailed description of a specific embodiment thereof, especially when taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a view in perspective of a cabinet constructed in accordance with the invention;

Fig. 2 is a view in perspective of side and rear walls of the cabinet of Fig. 1, together with a top panel, in separated relation, and indicating the manner of assembly;

Fig. 3 is a view in perspective of a speed nut of the type employed in assembling the cabinet of Fig. 1; and

Fig. 4 is a view in section, on the line 4—4 of Fig. 1, and indicating the assembled relation of a side wall and top panel, of the cabinet of Fig. 1, as maintained in rigid separated relation by a speed nut.

Referring now more particularly to the accompanying drawings, the reference numeral 1 indicates generally a cabinet, constructed in accordance with the present invention, for housing an equipment secured to a front panel 2, and comprising a top panel 3, a duplicate bottom panel 4, and a unitary U-shaped member 5, which provides side walls 6 and 7, and a rear wall 8, for the cabinet 1.

The front panel 2 is shown as including certain electrical connectors, switch actuators, and the like. The general arrangement of the front panel, per se, is not, however, of importance to the present invention, and front panels of various characters and constructions, may be employed, secured to the remainder of the cabinet, by various devices, known per se. In general, in applying the cabinet of the invention as a housing for electronic equipments, the circuits, tubes etc., will be secured to a chassis (not shown), to which may be secured the front panel 2, and the assemblage of front panel 2, and the chassis, inserted into the body of the cabinet as a unit.

The U-shaped member 5, which comprises the side and rear walls of the cabinet, is cut from a single sheet of material, in the form of a rectangle, and the side panels 6, 7 bent at right angles to the rear panel 8, at lines 9, 10. Either prior to, or after the bending operation, as may be convenient, a series of equally spaced apertures 11 may be punched adjacent the upper and lower edges of the U-shaped member 5.

The top and bottom panels of the cabinet, 3 and 4, may be identical. Describing the top panel 3, as exemplary, it may be formed from a single blank of appropriate shape and formed to have bent side skirts 12, 13, and a bent rearward skirt 14, extending at right angles to the main body of the panel. The heights of the skirts 12, 13, 14, are uniform about the panel, and within the skirts 12, 13, 14, about centrally of the heights thereof, is provided a plurality of apertures 15, which mate with the apertures 11, one for one. The side skirts 12, 13, may be rigidly joined to the rear skirt 14, at the corners 14*a*, 14*b*, as by welding.

The vertical distance from the edges of the side and rear walls 6, 7, 8, at which are located the aperture 11, the heights of the skirts 12, 13, 14, and the vertical locations of the apertures 15, therein, are so selected that when the several apertures are in vertical alignment, the upper and lower edges of the side and rear walls 6, 7, 8 will be substantially separated vertically from the panels 3, 4. At the same time the dimensions of the top and bottom panels 3, 4 are substantially greater than those of the side and rear walls 6, 7, 8 so that the skirts 12, 13, 14 may be laterally spaced therefrom.

The top and bottom panels 3, 4 are secured to the U-shaped member 5 by means of speed nuts, 16, and cooperating bolts 17. Speed nuts of various sizes, shapes and conformations are known, and the practice of the present invention is not limited to any specific form of speed nut. A suitable and preferred form of speed nut is, however, illustrated in perspective in Figure 3 of the accompanying drawings.

The speed nut, 16, comprises a U-shaped metallic element having parallel plane legs 20, 21, of considerable width and height in relation to the lateral separation of the legs 20, 21. Preferably, this separation is of the same order of magnitude as the thickness of the walls 6, 7, 8 of the cabinet 1 and if desired may be arranged for slide fit thereover. The legs 20, 21 are formed of one thin strip of relatively resilient metal, for example, steel, and are joined by a rounded bend 22. Punched through the legs 20, 21, in mating relation, are generally H-shaped apertures 23, having two relatively narrow elongated elements 24, 25, which extend parallel with the side edges of legs 20, 21, and which are joined by a transversely extending aperture, formed and bounded by two opposed V-shaped lips, 26, 27. The latter provide thread engaging elements of the speed nuts 16, for threadedly engaging bolts 17. The leg 20, but not the leg 21, is supplied with two ears 28, 29, which extend substantially perpendicularly from the side parallel edges 30, 31 of the leg 20.

In assembling the top panel 3 and the bottom panel 4 to the side and rear walls 6, 7, 8, a speed nut 16 is slipped over each one of apertures 11, the wall 21 of the speed nut falling internally of the U-shaped member 5 and the ears 28, 29 in all cases falling externally of the U-shaped member 5. The vertical heights of the speed nuts 16 are such that when the apertures 23, in the speed nuts 16, are aligned with the apertures 11 adjacent the edges of the U-shaped member 5, the bends 22 of the speed nuts 16 fall substantially beyond the edges of the U-shaped member, 5.

Reference is made more particularly to the top panel 3, bearing in mind however the fact that the construction of bottom panel 4 and its mode of assembly to side and rear walls 6, 7, 8 are identical with the construction and mode of assembly of top panel 3. The top panel 3 is placed over the upper edges of side and rear walls 6, 7, 8, its main wall resting on the bends 22 of the speed nuts 16, rather than on the edges themselves, and providing considerable vertical clearance from the edges, as is illustrated at 30, of Figure 4 of the drawings. The skirts 12, 13, 14 of the top panel 3 overlie the speed nuts 16, covering them from view. At the same time, the apertures 15, in the skirts 12, 13, 14 align with the apertures 23 in

the speed nuts 16, and both with the apertures 11 in the U-shaped member 5. The ears 28, 29 serve as lateral spacers, between the skirts 12, 13, 14 of the top panel 3, and the side walls 6, 7, 8.

Insertion of the bolts 17 into threaded engagement with speed nuts 16, via apertures 11, 15, serves rigidly to interlock the panel 3, the side walls 6, 7, 8 and the speed nuts 16, in the spatial relation recited in the previous paragraph. At the same time, the vertical and lateral spacings provided between main wall of the top panel 3, and the edges of the side walls 6, 7, 8, and between the skirts 12, 13, 14 and the side walls 6, 7, 8, serves to provide apertures for ventilation of the interior of the cabinet 1.

While I have described and illustrated one specific example of the invention, it will be clear that variations of detail may be resorted to without departing from the true spirit and scope of the invention as defined by the appended claims.

What I claim is:

1. A metallic cabinet comprising integral side and rear vertical walls, a top panel, a bottom panel, each of said panels comprising a main wall and two side skirts and one rear skirt, said side and rear walls having a plurality of apertures located adjacent the top and bottom edges thereof, said skirts having apertures mating with said first mentioned apertures, one for one, a U-shaped speed nut for each pair of mating apertures, each of said speed nuts including two legs straddling said walls and overlying the edges thereof, and having a bolt engaging element aligned with each pair of mating apertures, each of said speed nuts including means vertically spacing said main walls of said panels from said edges of said side and rear walls and said skirts from said rear and side walls.

2. A metallic cabinet comprising a three walled U-shaped member having only two right angle bends and providing side and rear vertical walls for said cabinet, a horizontal top panel for said cabinet, a horizontal bottom panel for said cabinet, said top and bottom panels each comprising a main wall and side and rear skirts bent at right angles to said main wall, the distance between the side skirts of each panel being substantially greater than the spacing between said side vertical walls, said side and rear walls having first apertures located adjacent the top and bottom edges thereof at a pre-determined spacing with respect to said edges, said skirts having further apertures mating with said first apertures, one for one, and spaced from the main walls of said panels by a spacing substantially greater than said predetermined spacing, a plurality of nuts, one for each pair of mating first and further apertures, said nuts each including a bolt engaging aperture in mating relation to a pair of mating first and further apertures, said nuts including means for spacing said skirts with respect to said side and rear walls, and said main walls with respect to said edges.

3. The combination in accordance with claim 2 wherein said nuts are speed nuts.

4. The combination in accordance with claim 2 wherein said nuts are two legged speed nuts, each leg having a thread engaging aperture, said legs straddling the edges of said side and rear walls.

5. A ventilated cabinet comprising a U-shaped bent metal sheet constituting side and rear walls, said sheet having two right angle bends only, a top panel for said cabinet, a bottom panel for said cabinet, said top and bottom panels having each a main wall and a rear skirt and two side skirts bent at right angles to said main wall and overlapping the upper and lower edges of said side and rear walls, and means for securing said skirts to said side and rear walls, said means for securing including a plurality of speed nuts, having bolt engaging apertures, said side and rear walls and said skirts having apertures mating with each other and with said bolt engaging apertures, said speed nuts including integral spacer ele-

ments spacing said skirts laterally of said side and rear walls and spacing said main walls with respect to said upper and lower edges.

6. The combination in accordance with claim 5 wherein said speed nuts each includes two legs straddling the edges of said side and rear walls, and a resilient element joining said two legs and spacing said main walls with respect to said upper and lower edges.

7. A ventilated cabinet comprising a body member having a plurality of walls, a closure member for said cabinet having a main panel and a plurality of skirts bent at right angles to said main panel and overlapping edges of said walls, and cooperating threaded members and speed nuts for securing said skirts to said walls, said speed nuts having means for spacing said skirts laterally of said walls and for spacing said main panel with respect to said edges of said walls.

8. The combination in accordance with claim 7, wherein said speed nuts each have two legs straddling said edges of said walls, a resilient element joining said two legs and interposed between said main panel and said one edge, and at least one projection extending from one of said legs for laterally spacing said walls and said skirts.

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