Sept. 26, 1944. R. I. SCHONITZER ET AL 2,359,054

CONNECTION BOX FOR ELECTRICAL TERMINALS

Filed Feb. 23, 1942

FIG. 1

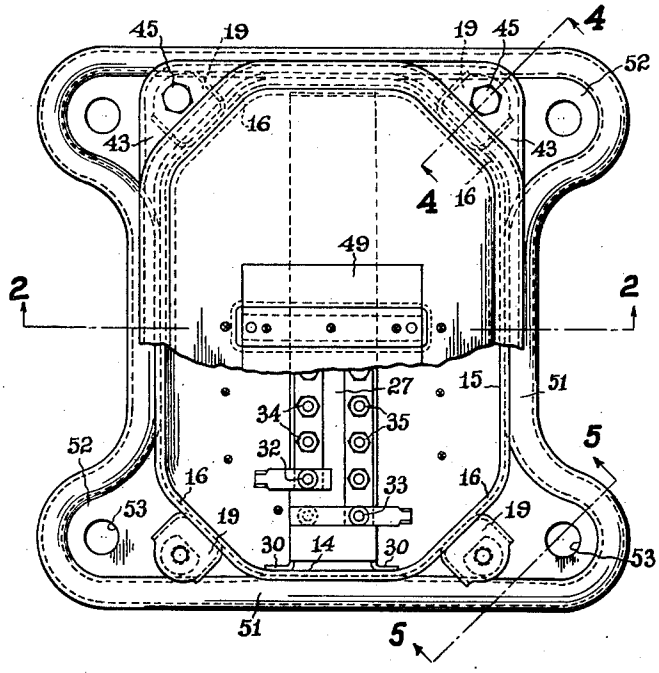


FIG. 3

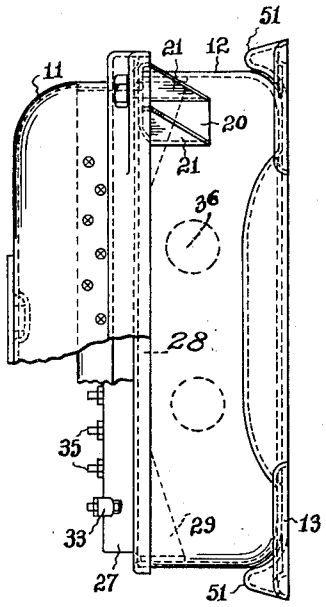


FIG. 2

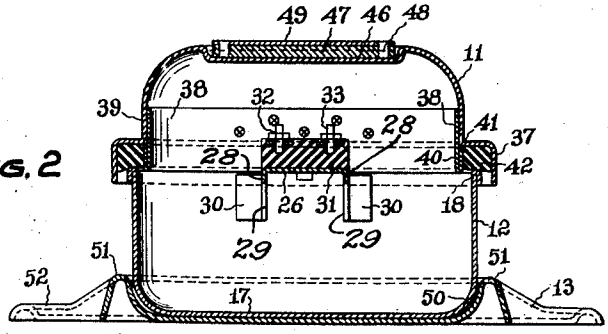


FIG. 4

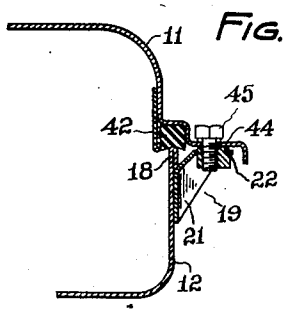
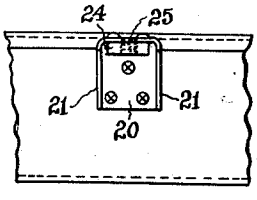


FIG. 5



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CONNECTION BOX FOR ELECTRICAL TERMINALS

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Application February 23, 1942, Serial No. 432,007

2 Claims. (Cl. 220—3.8)

The invention relates generally to a novel and improved connection box assembly for use in electric power distribution. It particularly relates to an assembly of this nature for housing terminals whereby a plurality of subordinate power circuits are tapped off from a main circuit.

The object of the invention is to provide an outlet or connection box assembly which is moisture-tight and weatherproof, but which can be constructed more rapidly and cheaply, and from lighter weight material, than outlet boxes now available.

Another object of the invention is to provide a box assembly of the nature indicated which is characterized by improved mechanical properties as a result of the structural features to be described hereinbelow.

Another object of the invention is to provide a connection box assembly such that improved accessibility to the electric fittings is provided as compared with boxes of this general type previously available.

Further objects and advantages will be apparent from a description of one embodiment of the invention, illustrated in the accompanying drawing, in which

Fig. 1 is a top plan view, partially broken away, of a connection box assembly embodying the inventive features now to be described.

Fig. 2 is a transverse vertical section taken on the line 2—2 of Fig. 1.

Fig. 3 is a side elevational view, partially broken away as in Fig. 1, of said connection box assembly.

Fig. 4 is a section taken on the line 4—4 of Fig. 1, but with the base removed.

Fig. 5 is a section taken on the line 5—5 of Fig. 1, but with the cover member and base removed.

Before the present invention is described in detail it is to be understood that such invention is not limited to the details of construction and/or the specific arrangement of parts herein illustrated and/or described, as the invention obviously may take other forms. It also is to be understood that the phraseology or terminology herein employed is for the purpose of description and not of limitation.

The outlet or connection box assembly here illustrated and representing one embodiment of the present invention comprises three main components, identifiable as a cover 11, a box body 12, and a base 13. These members are preferably formed from a deep-drawing type of low carbon, low manganese sheet steel by a pressing or stamping operation but obviously any type of sheet metal of adequate physical properties may be used provided it is ductile enough to withstand the amount of deformation required by the structural design.

As seen in Fig. 1, the box body 12, as here illustrated, has an octagonal contour in horizontal section, being bounded by two end walls 14, two side walls 15, four flattened corner walls 16 and a bottom 17. The upper rim is outturned and crimped downwardly to form a top peripheral bead 18.

Each corner wall 16 carries, adjacent its upper edge, a bracket 19 having a web 20 which is welded or otherwise attached to such wall 16, two triangular wings 21, and a top horizontal flange 22, which flange is substantially coplanar with the top edge of the box body. Flange 22 supports a clinch nut 24 having a threaded bore 25 for a purpose which will hereinafter appear.

Extending longitudinally on the interior of box body 12 is a bridge member 26 which is conveniently formed from a metal stamping having at its midsection a slightly channeled contour comprising an upper planar portion 27 and downturned, lateral flanges 28. Near their ends these flanges 28 are enlarged to form angular supporting wings 29 which, at their terminal extremities are bent outwardly to form ears 30 which may be conveniently welded or otherwise attached to end walls 14.

A strip or plate of electrically nonconducting material 31 is attached to the upper planar portion of bridge 26, and carries, near one end thereof, two connections 32 and 33 to which supply line terminals may be attached. In parallel therewith is a double row of subordinate taps 34 and 35, connected respectively to terminals 32 and 33, and adapted to be used as leads for an appropriate number of subordinate circuits. Both the supply line inlets, and the distribution outlets are effected by the insertion of suitable conduits (not shown) through suitable apertures 36 in one or more of the box walls, the number and location of such apertures (two of which are indicated in dotted lines, Fig. 3) being determined by convenience or necessity. As a precaution against moisture, a conventional packing gland is inserted in each wall aperture around the conduit or conduits extending therethrough.

The cover 11 will now be described. It is a dished metal stamping complementary to, and corresponding in contour with, the box body 12 already described. Along its lower peripheral edge it has a step portion 37, extending outwardly and downwardly to generally encompass the upper peripheral edge of the box body 12 when the cover is in closed position. A stamped metal band 38 is inserted within, and in circumferential contact with the depending wall portion 39 of cover 11 (Fig. 2), being attached to the cover by welding or otherwise. The lower edge 40 of said band 38 extends below the plane of the horizontal component of step 37 and, as

shown in Fig. 2, this lower edge may be crimped over to form a portion of double thickness and provide a sealing shoulder 41 for positioning the band 38. The peripheral channel formed by cooperation of step 37 and the lower edge 40 of band 38 retains therein a resilient packing member or gasket 42 which engages the upper edge 18 of the box body 12 when the cover 11 is applied to the box body.

The cover 11 is provided along its lower peripheral edge with four generally triangular extensions 43 formed by modifying the step portion 37 at these locations. As seen in Fig. 1, these extensions 43 are located above the corner walls 16 of the box body, and consequently above the brackets 19 when the cover is applied to the box. Extensions 43, which in reality constitute connector tabs, are provided with apertures 44 (Fig. 4) which are in registry with the threaded bores 25 in the clinch nuts 24 carried by brackets 19. Suitable threaded studs 45 may be inserted downwardly through apertures 44 into bores 25 whereby the cover 11 may be drawn into secured relationship with the box body 12, the fitted relationship between the parts being such that the peripheral edge 18 of the box body engages the gasket 42 in air tight contact when the studs are drawn down.

The top of cover 11 is provided with a depression 46, here shown as being of elongated, rectangular contour, thereby providing a seat for a metal tapping strip 47 which may be conveniently welded in said depression. Said strip 47 is provided with a plurality of threaded bores 48. A name plate or escutcheon 49 may be attached to the cover by studs which pass through the name plate and seat in said threaded bores. By this means perforation of the cover itself is avoided.

The base member 13, likewise formed from sheet metal has a centrally disposed concavity 50 which conforms in contour to the bottom of the box body which is seated therein, and which is formed by stamping, in the base member 13, ridge 51 of which portions abut the side walls 15 and end walls 14 of the box body. Opposite the corners 16 of the box the ridge 51 trends downwardly in height, and the base member swerves outwardly to provide corner projections or ears 52 which are perforated, as at 53, to receive attaching studs (not shown) whereby the base member may be attached to bulkheads, walls, ceilings, or the like. In preferred form the base member concavity 50 fits the bottom portion of box body 12 and the box body may be retained in the seat thus provided, by spot welding or otherwise securing the complementary parts in fixed relationship.

The assembly, constructed as described, may be fabricated and assembled both rapidly and economically, using only a minimum amount of metal. A number of factors contribute to supply adequate structural properties, including the reinforced edge 18, the beaded insert band or collar 38, the bridge 26, the stepped edge 37 of the cover, and the ridge construction 51 on the base member, all of which features cooperate to afford a strength and rigidity which is more than adequate. The enclosure is sufficiently weathertight to protect the various electrical terminals and taps against corrosion, and is therefore particularly suitable where corrosive atmospheres may be encountered, for instance on ships, in installations near the ocean, or under familiar industrial conditions.

What we claim is:

1. A box assembly of the character described, comprising a sheet metal box structure having a bottom wall and a peripherally continuous upstanding wall, a plurality of bracket members secured to said upstanding wall and spaced about the periphery thereof adjacent its upper edge, each of said bracket members having a web portion secured to said wall, an out-turned apertured top portion, and re-enforcing out-turned side wing portions, a sheet metal cover member for said box structure having a peripherally continuous depending wall provided at its lower edge with a peripherally continuous flange, said flange having an inner out-turned portion and an outer depending portion, said depending flange portion being provided with peripherally spaced out-turned apertured extensions which overlie said bracket members, the apertures of said extensions and the apertures of the top portions of said bracket members being in registry, gasket means of endless form in contact with said inner out-turned flange portion for sealing engagement with the upper edge of said upstanding wall, and means extending through the registering apertures of the out-turned extensions of said cover member and the top portions of the bracket members of said box structure for the rigid connection of the cover member to the box structure, with the gasket means of said cover member in sealing engagement with the upper edge of the upstanding wall of the box structure.

2. A box assembly of the character described, comprising a sheet metal box structure having a bottom wall and a peripherally continuous upstanding wall, a plurality of attaching members secured to said upstanding wall and spaced about the periphery thereof adjacent its upper edge, a sheet metal cover member for said box structure having a peripherally continuous depending wall provided at its lower edge with a peripherally continuous flange, said flange having an inner out-turned portion and an outer depending portion, said depending flange portion being provided with peripherally spaced out-turned extensions which overlie said attaching members, a sheet metal band of endless form secured to the depending wall of said cover member and projecting below the level of said inner out-turned flange portion, said band being provided intermediate its upper and lower edges with a continuous shoulder engaging said inner out-turned flange portion, gasket means of endless form in contact with said inner out-turned flange portion for sealing engagement with the upper edge of said upstanding wall, said gasket means being confined between said depending flange portion and the downwardly projecting portion of said band, and means for rigidly securing the out-turned extensions of said cover member to the attaching members of said box structure, with the gasket means of said cover member in sealing engagement with the upper edge of the upstanding wall of the box structure, the top surface of the cover portion being imperforate, but being provided with a recessed portion, said recessed portion carrying in fixed relationship thereto means for receiving further attachments, whereby the necessity of perforating the top of the cover portion is avoided.

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