Dec. 19, 1950 E. G. JOHANSSON 2,534,449

REVERSIBLE JAW FOR METER BOXES AND THE LIKE

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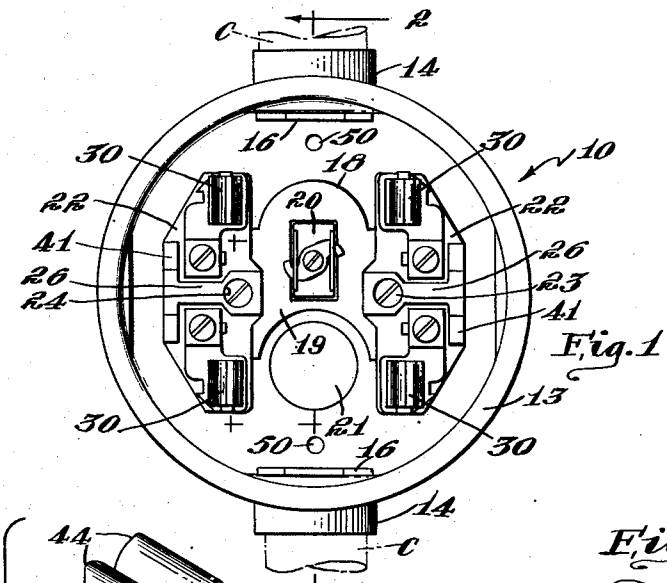


Fig. 1

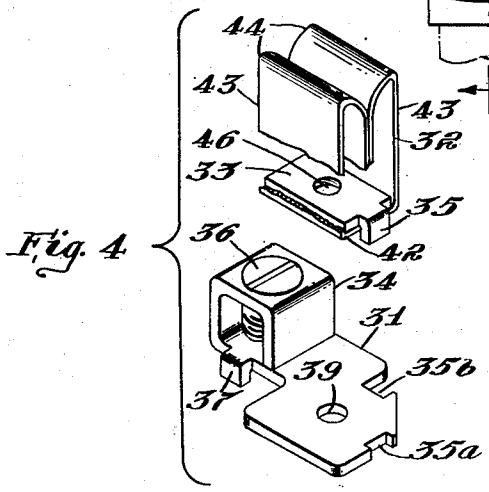


Fig. 4

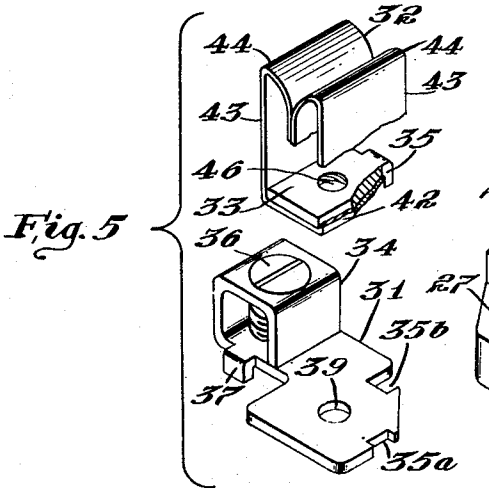


Fig. 5

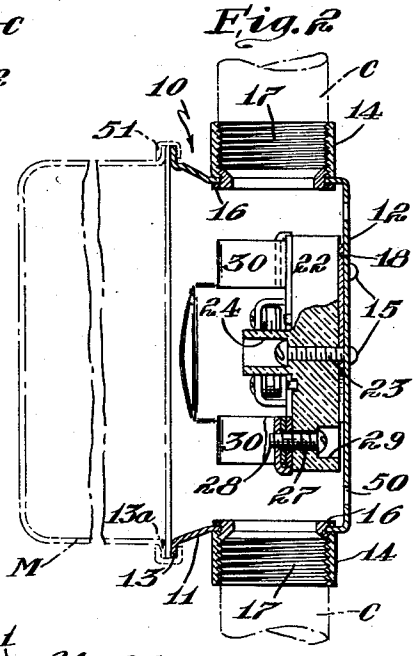


Fig. 2

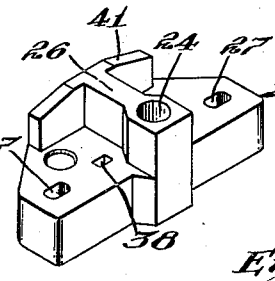


Fig. 3

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REVERSIBLE JAW FOR METER BOXES AND THE LIKE

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8 Claims. (Cl. 175—220)

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This invention relates to electrical connection boxes and more particularly to boxes of the type having jaws adapted to connect with the correlated blades of an electric meter.

Objects of this invention are to provide an electrical connection box which provides mechanical support for an electric meter, which conjointly connects the meter to its associated electric circuits, which accommodates the meter when mounted in either a vertical or horizontal position, which maintains the connecting jaws in proper spaced relationship to mate with the correlated meter blades, which incorporates jaw spacing means of such configuration as to be readily manufactured from weather resistant insulating materials including ceramic, which is rugged and weather resistant, which is simple to install, and which advances the art generally.

In a broad aspect the invention contemplates a connection box for an electric meter of the type having one or more contact blades for completing the circuit thereto comprising a casing to which is secured an insulating block. A conducting strap having an aperture therein and a plurality of recesses equally distanced from the axis of the aperture is mounted upon the block. A jaw assembly adapted to receive the blade includes a jaw member having a bottom portion abutting the strap with an aperture aligned with the strap aperture through which apertures projects the body of a bolt. The projecting end of the bolt engages a threaded aperture of a nut with a tab for selectively engaging one of the recesses whereby the jaw can be positioned with respect to the strap to accommodate the blade of the meter.

In another aspect the invention contemplates a connection box for an electric meter comprising a casing having a closed end with an insulating block secured thereto. An aperture in each end of the block is aligned with an aperture in a respective conducting strap, which also has two recesses equally distanced from the axis of its aperture angularly spaced 90 degrees from each other. Fastened to each strap is a respective jaw assembly which is adapted to receive a correlated meter blade. Each jaw assembly includes a jaw member having a bottom portion abutting the correlated strap with aperture aligned with the strap aperture through which aperture projects the body of a bolt. The end of the bolt projecting beyond the jaw bottom portion engages a threaded aperture of a nut with a tab for selectively engaging one or the other of the recesses whereby each jaw can be positioned to

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accommodate the meter with the casing mounted in either a vertical or horizontal position.

In a further aspect of the invention the connection box comprises a casing to which is secured an insulating block having two centrically located recesses therein. Two conducting straps are mounted on the respective ends of the block. Each of the straps includes a finger at one end thereof for engaging a correlated block recess, an aperture through the other end thereof, and a plurality of recesses equally distanced from the axis of said aperture. A jaw assembly adapted to receive a correlated blade is mounted on each of the respective straps. Each jaw assembly includes a jaw having a bottom portion abutting the correlated strap with an aperture aligned with the strap aperture through which apertures projects the body of a bolt. The end of the bolt projecting beyond the jaw bottom portion engages a threaded aperture of a nut with a tab for selectively engaging one or the other of the strap recesses whereby the jaw can be positioned with respect to the strap to accommodate the correlated blade of the meter.

In a specific aspect the connection box comprises a casing having a closed end with an insulating block secured thereto. The block has two centrically located recesses therein and an aperture through each end thereof. Two conducting straps are mounted on the respective ends of the block. Each of the straps has a finger at one end thereof for engaging a correlated recess in the block and an aperture through the other end thereof aligned with the correlated block aperture. The apertured end of each strap has two recesses equally distanced from the axis of said aperture angularly spaced 90 degrees from each other. A jaw assembly adapted to receive a correlated blade is mounted on each of the respective straps. Each jaw assembly includes a jaw member having a bottom portion abutting the correlated strap with an aperture aligned with the strap aperture through which apertures projects the body of a bolt. The end of the bolt projecting beyond the jaw bottom portion engages a threaded aperture of a nut with a tab for selectively engaging one or the other of the strap recesses whereby the jaw can be positioned with respect to the strap to accommodate the correlated blade of the meter.

For the purpose of illustration, a typical embodiment of the invention is shown in the accompanying drawing in which

Fig. 1 is a front elevation view of the connection box;

Fig. 2 is a cross sectional view on line 2—2 of Fig. 1;

Fig. 3 is an isometric view of the insulating block;

Fig. 4 is an exploded isometric view of the jaw assembly arranged to accommodate a meter blade when the casing is mounted vertically; and

Fig. 5 is an exploded isometric view of the jaw assembly arranged to accommodate a meter blade when the casing is mounted horizontally.

In the particular embodiment of the invention chosen for the purpose of illustration the connection box comprises a casing 10 (Fig. 1) having a substantially cylindrical shell or wall 11 with a closed rear end 12. The front end of the casing 10 is open and is provided with an outwardly extending flange 13 which is adapted to connect with a similar flange of a meter M as will be described in detail hereinafter. Two diametrically opposed apertures are provided in the wall 11 to accommodate the end of the respective bushings 14 which are secured to the casing by swaging as at 16. Each of the bushings 14 has an internal thread 17 (Fig. 2) for engaging the external threads on the end of a conduit C whereby the electrical conductors (not shown) connecting with the meter M are carried to the connection box.

Permanently riveted to the end 12 as at 15 is a plate 18 having an offset central portion 19 (Fig. 1) for avoiding a knockout 21 in the casing end 12 which may be removed to provide an aperture for a bushing similar to 14 whenever it is desirable to introduce the connecting conductors through the end rather than through the wall of the casing 10. Fastened to the end 12 and projecting through an aperture in the offset portion 19 of the plate 18 is a terminal 20 for connecting a grounding conductor (not shown) for the casing 10.

At the ends of the plate 18 are secured the respective insulating blocks 22. Each block 22 is secured by a screw 23 which projects through an aperture 24 (Fig. 3) in a central barrier 26 to engage an aperture tapped in the correlated end of the plate 18. As is shown in Fig. 3, a slotted aperture 27 is provided in each end of the block 22 for a screw 28 of a jaw assembly 30, the aperture being enlarged as at 29 (Fig. 2) to accommodate the screw head.

The details of the jaw assembly 30 are more clearly illustrated in the enlarged isometric views in Figs. 4 and 5. Each jaw assembly 30 includes a conducting strap 31, a jaw member 32 and a rectangular nut 33 having a tab 35 projecting from one of the shorter sides thereof selectively to engage either slot 35a or 35b in the end of the strap 31 as will be described in detail hereinafter.

One end of the strap 31 is formed into a connecting terminal or lug 34 which is substantially cubical in shape, two opposing sides thereof being eliminated so that a conductor (not shown) can be inserted therein. The conductor is secured by a set screw 36 which threadingly engages an aperture in the top of the lug 34. The bottom portion of the lug 34 is provided with a finger 37 which projects downwardly into a recess 38 in the block 22. The opposite end of the strap 31 is provided with an aperture 39 for engaging the body of the screw 28 whereby the strap rests upon the top of the block 22 with its lug 34 adjacent the central insulating barrier 26. A similar barrier 41 (Fig. 1) extends normally from the outer end of the barrier 26 so that it is adjacent the open end of the lugs 34 thereby to prevent the inserted conductors from accidentally contacting the casing 10.

The jaw member 32 comprises two spring portions 43 which are connected at their lower ends by a bottom portion 42. The upper ends of the spring portions 43 are bent back upon themselves as at 44 to provide yieldable contacts for the respective blades of the meter M. The bottom portion 42 has a centrically located aperture through which projects the screw 28 so that said bottom portion abuts the top surface of the strap 31.

The rectangular nut 33 is provided with a threaded aperture 46 for engaging the end of the screw 28 and is proportioned to fit snugly between the spring portions 43 of the jaw member 32 so that there is substantially no relative rotary movement therebetween. The tab 35 projects downwardly over the edge of the bottom 42 of the jaw member 32 to engage selectively either the recess 35a or 35b. When the jaw member 32 and the strap 31 are assembled as in Fig. 4, the tab 35 engages the recess 35a so that the jaw assembly 30 is positioned to accommodate the correlated meter blade when the casing 10 is connected to the vertically disposed conduits C as is shown in Fig. 1. The recess 35b is angularly spaced at 90 degrees from the recess 35a and the respective bottoms thereof are equally distanced from the axis of the aperture 39. When the casing 10 is connected to horizontally disposed conduits C, the jaw assembly 30 is arranged with the tab 35 engaging the recess 35b as is shown in Fig. 5 so that the meter blades are accommodated thereby. With the above arrangement of the jaw assembly 30, it is possible quickly and easily to change the orientation thereof so that the connection box will accommodate the blades of a meter M with the box disposed in either a vertical or horizontal position.

To provide adequate contact between the meter blades and the correlative jaw assemblies 30, the spacing between such assemblies must be closely maintained. With the box positioned as in Fig. 1, the horizontal spacing introduces no particular problem as it is determined largely by the distance between the tapped holes in the plate 19 for the screws 23, a dimension which was readily maintained within close limits when the plate is stamped.

The vertical spacing between the jaw assemblies 30 is determined principally by the manufacturing tolerances of the respective insulating blocks 22. As these blocks 22 are, for insulating properties, dielectric and mechanical strength and weather resistance, preferably of a ceramic material, the problem of maintaining the dimensions between the screw holes 27 during firing is a serious one. The relative positions of the jaw assemblies 30 is therefore maintained by the fingers 37 which project into the recesses 38 centrically positioned with respect to the block 22, the apertures 27 being slotted so as not to interfere with the spacing function of the recesses 38. As the dimension between the recesses 38 is small such dimension is more readily maintained within allowable limits during manufacture than the much greater dimension between the slotted apertures 27.

The box is installed vertically or horizontally depending upon the conduit configuration, by fastening it to a panel (not shown) by means of screws which project through the small apertures 50 in the rear end 12. In either case the conduits C are coupled to the box by means of

the bushings 14 and the electrical conductors drawn therethrough. The jaw assemblies 30 are oriented to accommodate the meter blades by removing the insulating blocks 20 from the box by disengaging the screws 23 from the plate 18. The screws 28 are loosened and the tab 35 inserted in the recess 35a or 35b as required. The screws 28 are then tightened and the insulating blocks 22 reinstalled in the box. The meter M is connected by inserting the blades in the correlated jaw assemblies 30 until its flange 13a abuts the mating flange 13, the flanges being maintained in this position by the clamp band 51.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. A connection box for an electric meter of the type having a blade for completing the circuit thereto comprising a casing, an insulating block secured to said casing, a conducting strap mounted on said block having an aperture therein and a plurality of recesses equally distanced from the axis of said aperture, and a jaw assembly adapted to receive said blade including a jaw member having a bottom portion abutting the strap with an aperture aligned with said strap aperture, a bolt having a body projecting through said aligned apertures, and a nut having a threaded aperture for engaging the end of the bolt projecting through the aperture in said jaw bottom portion and a tab for selectively engaging one of said recesses whereby the jaw can be positioned with respect to the strap to accommodate the blade of the meter.

2. A connection box for an electric meter of the type having a blade for completing the circuit thereto comprising a casing having a closed end, an insulating block secured to said end and having an aperture therethrough, a conducting strap having an aperture aligned with said block aperture and a plurality of recesses equally distanced from the axis of said apertures, and a jaw assembly adapted to receive said blade including a jaw member having a bottom portion abutting the strap with an aperture aligned with said strap aperture, a bolt having a body projecting through said aligned apertures, and a nut having a threaded aperture for engaging the end of the bolt projecting through the aperture in said jaw bottom portion and a tab for selectively engaging one of said recesses whereby the jaw can be positioned with respect to the strap to accommodate the blade of the meter.

3. A connection box for an electric meter of the type having a blade for completing the circuit thereto comprising a casing, an insulating block secured to said casing, a conducting strap mounted on said block having an aperture therein and two recesses equally distanced from the axis of said apertures angularly spaced 90 degrees from each other, and a jaw assembly adapted to receive said blade including a jaw member having a bottom portion abutting the strap with an aperture aligned with said strap aperture, a bolt having a body projecting through said aligned apertures, and a nut having a threaded aperture for engaging the end of the bolt projecting through the aperture in said jaw bottom portion and a tab for selectively engaging one or the other of said recesses whereby the jaw can be positioned to accommodate the meter with the casing mounted in either a vertical or horizontal position.

4. A connection box for an electric meter of the type having a plurality of blades for completing the circuit thereto comprising a casing, an insulating block secured to said casing, a conducting strap mounted on each of the respective ends of said block having an aperture therein and a plurality of recesses equally distanced from the axis of said aperture, and a jaw assembly adapted to receive a correlated blade mounted on each of said respective straps, each jaw assembly including a jaw member having a bottom portion abutting the correlated strap with an aperture aligned with said strap aperture, a bolt having a body projecting through said aligned apertures, and a nut having a threaded aperture for engaging the end of the bolt projecting through the aperture in said jaw bottom portion and a tab for selectively engaging one of said recesses whereby the jaw can be positioned with respect to the strap to accommodate the correlated blade of the meter.

5. A connection box for an electric meter of the type having a plurality of blades for completing the circuit thereto comprising a casing having a closed end, an insulating block secured to said end and having an aperture in each end thereof, two conducting straps each having an aperture aligned with one of said block respective apertures and a plurality of recesses equally distanced from the axis of its aperture, and a jaw assembly adapted to receive a correlated blade mounted on each of said respective straps, each jaw assembly including a jaw member having a bottom portion abutting the correlated strap with an aperture aligned with said strap aperture, a bolt having a body projecting through said aligned apertures, and a nut having a threaded aperture for engaging the end of the bolt projecting through the aperture in said jaw bottom portion, and a tab for selectively engaging one of said recesses whereby each jaw can be positioned with respect to the strap to accommodate the correlated blade of the meter.

6. A connection box for an electric meter of the type having a plurality of blades for completing the circuit thereto comprising a casing having a closed end, an insulating block secured to said end and having an aperture in each end thereof, two conducting straps each having an aperture aligned with one of said respective block apertures and two recesses equally distanced from the axis of its respective aperture angularly spaced 90 degrees from each other, and a jaw assembly adapted to receive a correlated blade mounted on each of said respective straps, each jaw assembly including a jaw member having a bottom portion abutting the correlated strap with aperture aligned with said strap aperture, a bolt having a body projecting through said aligned apertures, and a nut having a threaded aperture for engaging the end of the bolt projecting through the aperture in said jaw bottom portion and a tab for selectively engaging one or the other of said recesses whereby each jaw can be positioned to accommodate the meter with the casing mounted in either a vertical or horizontal position.

7. A connection box for an electric meter of the type having a plurality of blades for completing the circuit thereto comprising a casing, an insulating block secured to said casing having two centrically located recesses therein, two conducting straps mounted on the respective ends

of said block each having a finger at one end thereof engaging a correlated recess, an aperture through the other end thereof, and a plurality of recesses equally distanced from the axis of said aperture, and a jaw assembly adapted to receive a correlated blade mounted on each of said respective straps, each jaw assembly including a jaw having a bottom portion abutting the correlated strap with an aperture aligned with said strap aperture, a bolt having a body projecting through said aligned apertures, and a nut having a threaded aperture for engaging the end of the bolt projecting through the aperture in said jaw bottom portion and a tab for selectively engaging one or the other of said strap recesses whereby the jaw can be positioned with respect to the strap to accommodate the correlated blade of the meter.

8. A connection box for an electric meter of the type having a plurality of blades for completing the circuit thereto comprising a casing having a closed end, an insulating block secured to said end having two centrically located recesses therein and having an aperture through each end thereof, two conducting straps each having a finger at one end thereof engaging a correlated recess and an aperture through the other end thereof aligned with the correlated block aperture, the apertured end of each strap having two

recesses equally distanced from the axis of said aperture angularly spaced 90 degrees from each other, and a jaw assembly adapted to receive a correlated blade mounted on each of said respective straps, each jaw assembly including a jaw member having a bottom portion abutting the correlated strap with an aperture aligned with said strap aperture, a bolt having a body projecting through said aligned aperture, and a nut having a threaded aperture for engaging the end of the bolt projecting through the aperture in said jaw bottom portion and a tab for selectively engaging one or the other of said recesses whereby each jaw can be positioned to accommodate the meter with the casing mounted in either vertical or horizontal position.

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