July 7, 1931. D. T. WADSWORTH 1,813,331

WIRING CHANNEL STRUCTURE

Filed Sept. 14, 1926 2 Sheets-Sheet 1

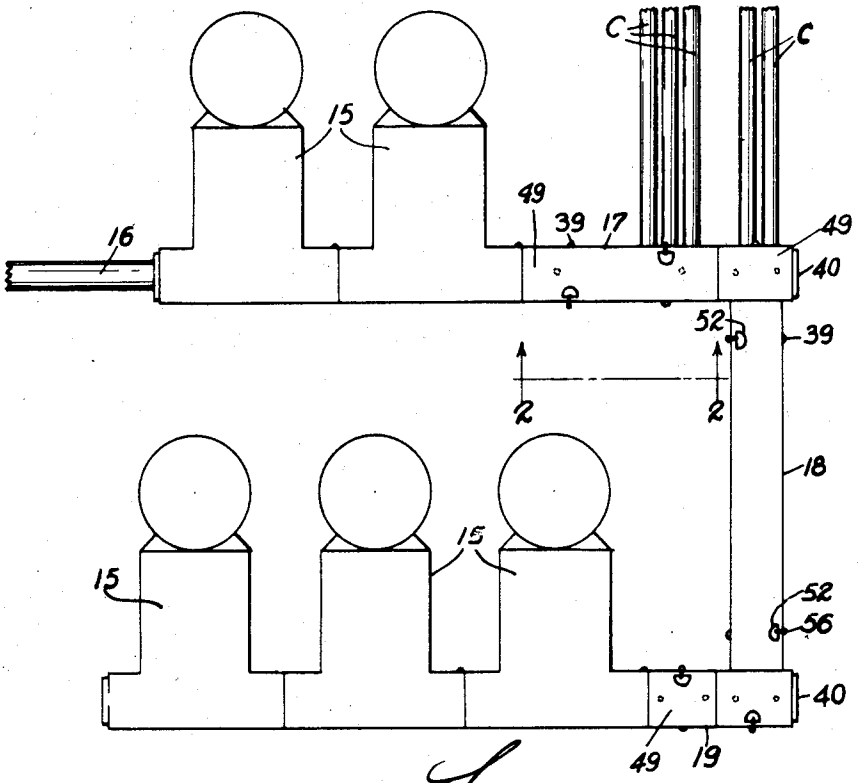


Fig. 1.

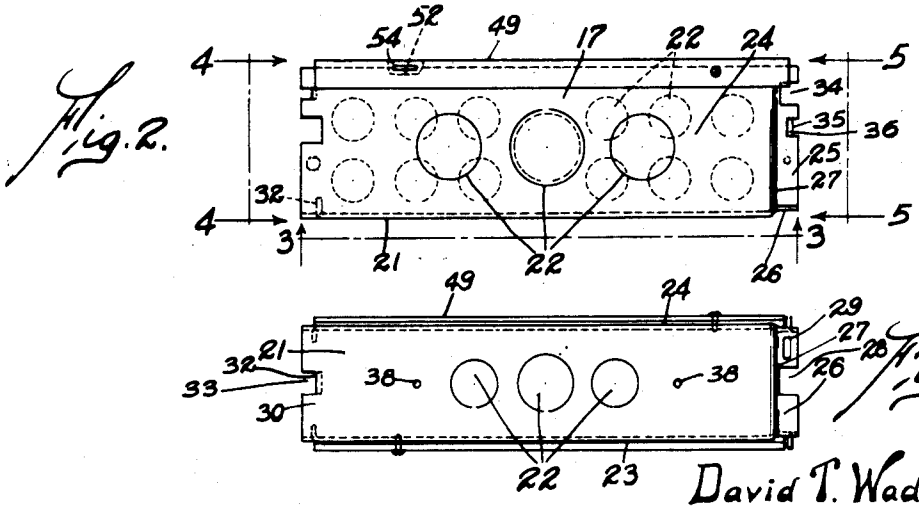


Fig. 2.

Fig. 3.

Inventor

David T. Wadsworth

By Murray & Ziegler

Attorneys

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WIRING CHANNEL STRUCTURE

Filed Sept. 14, 1926 2 Sheets-Sheet 2

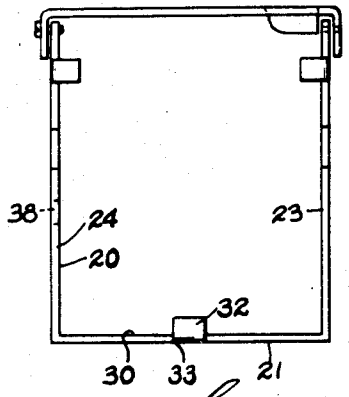


Fig. 4.

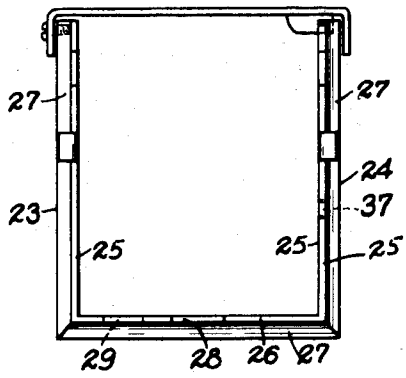


Fig. 5.

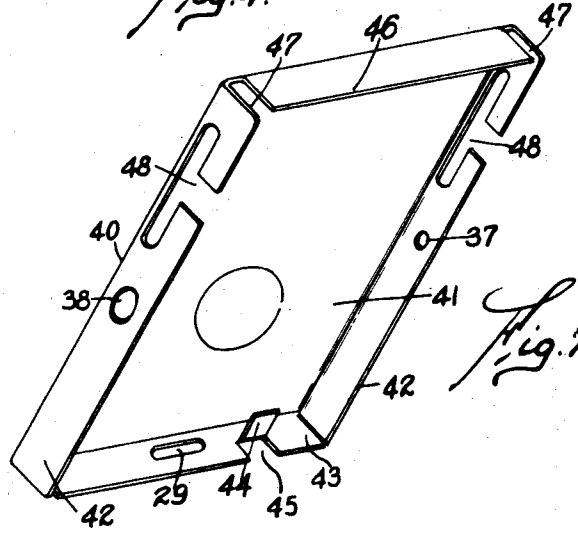


Fig. 7.

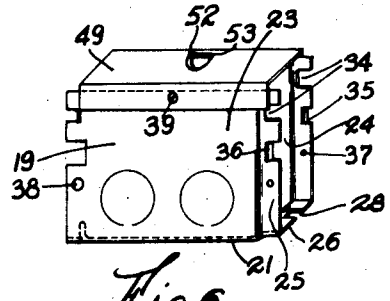


Fig. 6.

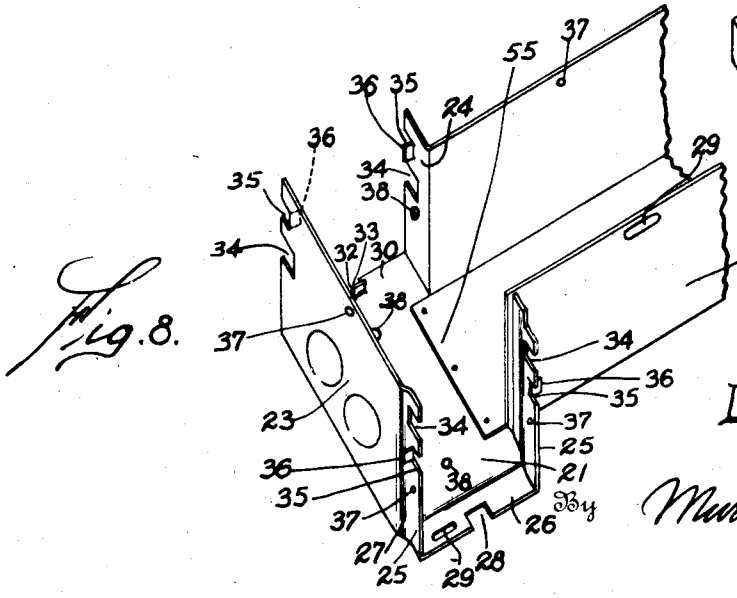


Fig. 8.

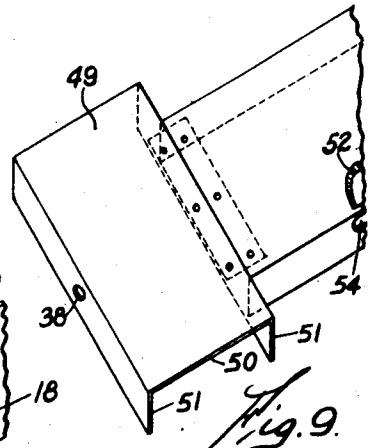


Fig. 9.

Inventor

David T. Wadsworth,

By Murray and Zugelter

Attorneys

Patented July 7, 1931 1,813,331

UNITED STATES PATENT OFFICE

DAVID T. WADSWORTH, OF COLD SPRINGS, KENTUCKY, ASSIGNOR TO THE WADSWORTH ELECTRIC MANUFACTURING COMPANY, OF COVINGTON, KENTUCKY, A CORPORATION OF KENTUCKY

WIRING CHANNEL STRUCTURE

Application filed September 14, 1926. Serial No. 135,457.

This invention relates to wiring channel elements and has for an object the provision of means whereby a so-called bank of switches or rows of housings containing meter terminal blocks and switches may be conveniently and rapidly wired and subsequently enclosed.

Another object is to provide means for the purpose stated which are adapted to interlock upon one another to provide wiring channels suited to any required element.

Another object is to provide means whereby wiring may be installed without necessitating the tedious operation of pulling wires through conduits.

These and other objects are attained by the means described herein and disclosed in the accompanying drawings, in which:

Fig. 1 is a diagrammatic view showing in elevation a typical arrangement of bank switches having associated therewith channel elements of my invention.

Fig. 2 is a view on line 2—2 of Fig. 1, showing one side of one of the elements forming a part of my invention.

Fig. 3 is a view on line 3—3 of Fig. 2.

Fig. 4 is an enlarged view on line 4—4 of Fig. 2.

Fig. 5 is a similar view taken on line 5—5 of Fig. 2.

Fig. 6 is a perspective view of another embodiment of the element forming a part of my invention and having the lid member mounted thereon.

Fig. 7 is an enlarged perspective view of an end cap which may be used with any of the elements of the invention.

Fig. 8 is a fragmental perspective view of a channel riser element forming a part of the invention.

Fig. 9 is a fragmental perspective view of a corresponding lid portion for the element shown on Fig. 8.

In such buildings as require a plurality of separate switches and meters which are fed from a single set of service lines, much difficulty is experienced when the wires leading to and from each meter and switch are pulled through the conduits connecting the switch boxes or cabinets and leading away the load wires for the building.

The wiring channel elements of my invention are provided in several lengths, each of which may be conveniently connected with any other element so that a bank of switch cabinets may be arranged in an orderly and systematic manner and the open channel elements connected thereto whereupon the wires are laid in the channels which are then closed with lids.

As shown in Fig. 1, for example, five banking switch cabinets 15, which may be of the type disclosed in U. S. Letters Patent No. 1,522,926, issued January 13th, 1925, are arranged in two rows and have connected thereto wiring channel elements of my invention. Service lines are entered into the system through a conduit 16 to the several cabinets or boxes 15 in one row and these wires as well as the load lines may be led up or down through the channels which comprise any desired combination of channel elements 17, 18 and 19. Each of these elements is so constructed as to provide an efficient and uniform interlocking of elements for attaining a continuous communicating open conduit which is adapted to receive closing members or lids and also end caps where required.

The elements 17 and 19 are similar except as to length and the number of knock-outs provided, wherefore a description of one will serve for both. The element 18 comprises two of the elements 19 spaced by and communicating through a solid riser channel, wherefore its essential characteristics of structure are also disclosed by the description of the element 17.

The channel element of my invention comprises a U-shaped or channel shaped metallic box 20 open at the top and ends and provided with inter-locking fastening means at the ends. As shown herein the box comprises a base 21 provided with knock-outs 22 and side walls 23 and 24 which also have a plurality of suitably arranged knock-outs 22. The side walls are preferably but not necessarily arranged at right angles to the base 21. At a selected end, for example, the right hand end of the channel members (see Figs. 2, 3, 5, 6 and 7) the walls and base are provided with integral flanges 25 and 26 re-

spectively which are offset within the body lines of the box and extend parallel thereto. This structure provides an external shoulder 27 about three sides of one end of each element. The opposite end of the side walls and base are straight. From the foregoing it will be noted that the elements being of the same cross section may have the flanged end of one element telescopically received in the straight end of any other element with the shoulder 27 substantially abutting the edges of the straight end of an adjacent element. The base flange 26 has a central rectangular notch 28 therein and an elongated aperture 29 at one side of the notch 28. The opposite straight end 30 of the base 21 has a lug 32 struck from the body thereof in alignment with the notches 28 which also provides a notch 33. The flanges 25 are provided with aligned upper notches 34 beneath which are spaced a second pair of aligned notches 35 formed by striking integral lugs 36 from the body of said flanges. The opposite end of the side walls 23 and 24 are provided with similar notches and lugs in horizontal alignment with those on opposite flanged end, but in inverted order, namely notches 35 having inwardly struck lugs 36 are positioned above the notches 34. It should be noted that the lugs 36 on flanges 25 are outwardly struck, while those at the opposite end of the channel element are inwardly struck. By reason of the inwardly offset relation of the flanges 25 to the normal body of the element, the lugs 36 are all disposed substantially within the said normal body lines. From the foregoing it will be noted that when the flanges 25 and 26 of one element are telescoped into the straight end of another similar element, the lugs 36 on flanges 25 which are disposed in the lowermost position will enter the lower notches 34 in the straight end of the channel and serve to guide the members and to limit the telescoping movement thereof. At the same time it will be noted that the inwardly struck lugs 36 on the straight end of one element will enter the upper notches 34 on the flanges 25 and also serve to limit the telescoping of the members. The lug 32 in the base of one element enters the notch 28 in the flange 26 of the other for limiting the movement with the third side or base of the elements. One wall, for example 24, has a threaded perforation 37 in the flange 25 thereof while the opposite end of said wall has a somewhat enlarged perforation 38 therethrough in horizontal alignment with the threaded perforation 37 so that when the members are telescoped one upon another as just described, a screw inserted through perforation 38 and into perforation 37 will preclude longitudinal separation of the overlapping ends of the members. Perforations 38 are also provided in the base of each element so that they may be screwed or nailed to a wall structure. The threaded perforations 37, it will be noted, are provided at intervals adjacent certain free edges of the elements and the perforations 38 are also provided so that in the various interlocking positions of the elements, said perforations will register so that a short-headed screw 39 may bind the parts together. This scheme is used throughout the several elements so that the installation of the elements and the securing together thereof as well as the mounting of the lid members may be rapidly performed.

Referring now to Fig. 7 it will be noted that there has been provided an end cap which is of the universal application for closing either end of any of the channel elements. The end cap indicated generally as 40 comprises an end wall 41 having side flanges 42 which are spaced at a distance so that the inner faces thereof will receive the flanges 25 and 26 of an element between them and so that the outer faces thereof will seat between the straight opposite end portions of a channel element. The bottom flange 43 carries a lug 44 struck from the edge thereof and provides a notch 45. The top flange 46 is cut away at opposite ends between the side flanges 42 to provide openings 47 so that the topmost portions of flanges 25 may enter therein while the lug 44 enters the elongated aperture 29 in flange 26. The side flanges 42 have T-shaped slots 48 therein to permit entry of the lugs 36 on either end of any of the elements whereupon the end cap 40 may be moved upwardly or downwardly to permit lugs 36 to interlock in the upper or lower portion of the vertically disposed part of the T-shaped slot 48. This reciprocating movement also serves to seat lug 32 in the elongated aperture 29 in the bottom flange 43 or to permit the lug 44 to enter elongated aperture 29 in the flange 26. The perforations 37 and 38 are also provided in the side flanges 42 so that a screw 39 may retain the end cap in its interlocked position on either end of the channel elements. Lid members 49 (see Fig. 6) are provided in suitable lengths for each of the channel elements. The lid members 49 are U-shaped, and comprise a top 50 and side flanges 51 in which are disposed a suitable number of perforations 38 for receiving screws 39.

In order that the lids 49 may be secured against unauthorized removal, each lid is provided with one or more depressions 52 having a slot 53 disposed interiorly of the lid and registering with a slot 54 in the side flange 51 adjacent thereto. When the lid is seated upon a channel element, one of the perforations 38 will register with one of the threaded perforations 37 in the channel and the slots 53 and 54 in the lid will be disposed on opposite sides of and in registry with one of the slots 29 in adjacent the edge of the side

wall of the channel element (see Fig. 2). When the end of a wire or tape of a sealing member is passed into the depression 52 in the lid it will thread itself through slots 53, 29 and 54 so that the opposite ends of the wire or tape may be twisted and suitably sealed with a minimum of effort.

Referring to Figs. 1, 8 and 9, it will be noted that elements indicated generally as 18 and also the lid therefor is I-shaped in plan. Referring to Fig. 8, it will be noted that the element 18 is provided by cutting out one side wall of an element 19 (shown in Fig. 6) and connecting such elements in spaced communication by spot-welding or riveting thereto an overlapping tongue 55 on a length of U-shaped channel material. Referring to Fig. 9, it will be noted that the lid for element 18 is constructed in the same manner, namely by cutting out a portion of one flange of a lid member such as 49 and connecting a similar section of said material thereto at right angles by any suitable means such as spot-welding or riveting.

The cabinets 15 are adapted to be interlocked upon one another and to any of the channel elements. The operation and installation of the device is readily apparent. The channel elements 17, 18 and 19 are telescoped upon one another by inserting the flanges 25 and 26 at the end of one into the straight end of the next member with the lugs 36 seated in notches 34 as heretofore explained and by inserting screws 39 through registering perforations 38 and 37 in the respective members. The end caps 40 are positioned at any end termination of the channel elements and may be placed within or about such end termination as circumstances may require. The supply wires (not shown) are then connected to the several switches and meters in the cabinets 15 whereupon the load wires may be placed in the open channels by simply laying them therein. The several series of load wires carried through the channels may then be passed through suitably arranged holes which are provided by removing knock-outs 22 whereupon the several series of load wires may be passed into the wall wiring conduits C which extend through the building and which form no part of this invention. The lid sections 49 are then placed upon the channels and screws 39 inserted through registering perforations 38 and 37 for precluding separation thereof. After the wiring has been inspected, seals 56 are passed through the registering slots so that the channels are secured against unauthorized access. Cabinets 15 with exteriorly operable switch handles may be employed advantageously in such construction.

When comparing the time and effort and difficulty experienced in connecting a bank of switches by means of conduits with the herein disclosed system it will be readily apparent that there is effected a great saving of time and the disagreeable labor of pulling wires through conduits is entirely eliminated. It should be noted also that the channel elements provide ample space for both main service wires and load or branch circuits. It should be noted, however, that it is possible to use the channel elements and risers for carrying the service wires only and that the load wires may be led off separately from each cabinet, if desired.

Should trouble develop in the system, the cabinets and channel elements may be easily opened whereupon all of the wires are exposed for inspection and the trouble is very easily traced. This also is a marked advantage over a system wherein the wires have been pulled through conduits since in the last mentioned system it is impossible to simultaneously expose all the wires or any of the wires at a given point without removing them from the conduits.

What I claim is:

1. A sheet metal wiring channel element for wall mounting comprising a U-shaped member open at its top and ends, one of said ends having inwardly offset flanges provided with notches and having lugs extending therefrom at certain of said notches, the opposite end of said channel being provided with complementary notches and lugs whereby a plurality of said channel elements may be telescoped one upon the other at the ends thereof.

2. As a new article of manufacture the combination of a U-shaped channel section, an inwardly offset flange extending from one end of the channel member, the opposite sides of said flange being provided with a pair of aligned notches therein and a pair of outwardly struck aligned lugs struck from the body of said flange adjacent the notches, the opposite end of said channel having a pair of notches therein aligned with the lugs on the flange and a pair of inwardly struck lugs aligned with the notches in the flange, the flange having a threaded perforation therein and the opposite end of the channel wall having an aligned non-threaded perforation therein.

3. In a device of the class described the combination of a sheet metal U-shaped channel member for wall mounting comprising a base and side walls, inwardly offset flanges on the side walls of said member at one end thereof and inwardly offset flanges on the base of said member at the same end of the member, offset ends of the channel member being provided with complementary notches and lugs, said opposite ends also having aligned perforations therein for receiving screw fastening means.

4. In a device of the class described, the combination of a U-shaped channel member

comprising a base and opposed side walls, inwardly offset flanges at one end of the base and side walls, outwardly extending lugs on the flanges on the side walls inwardly extending lugs on the opposite end of the channel, and an end cap having T-shaped slots in the walls thereof for receiving the lugs upon the channel member, and adapted to be selectively mounted on opposed ends of the channel members.

5. In a device of the class described, the combination of a U-shaped channel member having its opposite ends disposed in offset parallelism one with the other, the opposed ends of said member being notched and having lugs extending therefrom in opposite directions at the notched portions, and a flanged end cap having opposed T-shaped slots in the flanges thereof, the end cap being adapted to be inserted between the base and side walls at one end of the channel member with the lugs on said end of the channel member seated within the upper portions of the T-shaped slots in the end cap, and to receive the opposite end of the channel member with the lugs on said end of the channel member disposed in the lower portions of the T-shaped slots.

6. In a wiring channel structure the combination of a pair of superposed switchbox cabinets having opposed openings therein, a series of channel members interlocking at their opposite ends with one another and with the switch boxes at the openings therein, riser channels disposed at angles to and connecting the channel members, lid members for the channels and risers and end caps for closing selected ends of the channels and risers.

7. In a bank switch structure the combination of superposed rows of switch boxes, channel members having their opposite ends arranged for connection with one another and with the switch boxes, riser members adapted to be interlocked at their opposite ends with the channels extending from said superposed rows of switch boxes, cover members for the channels and the risers and adapted to be sealed against unauthorized opening and end cap members adapted to selectively close the ends of the channels, risers and switch boxes.

In testimony whereof, I have hereunto subscribed my name this 1st day of September, 1926.

DAVID T. WADSWORTH.