Dec. 9, 1941. C. E. PIKE 2,265,926

SWITCH AND OUTLET BOX

Filed Jan. 24, 1938

Fig. 2

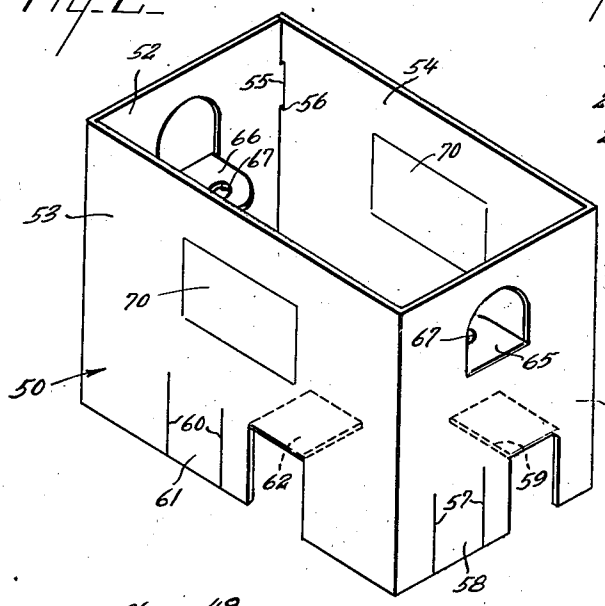
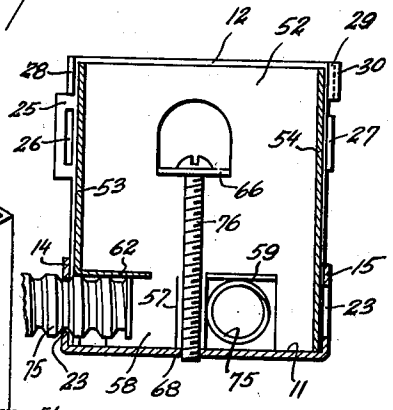


Fig. 3



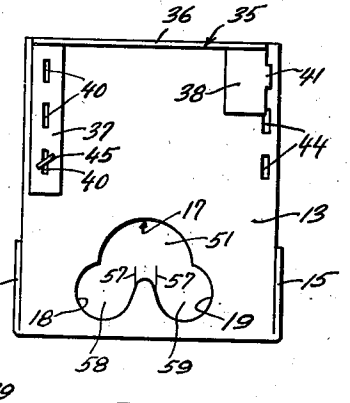


Fig. 4

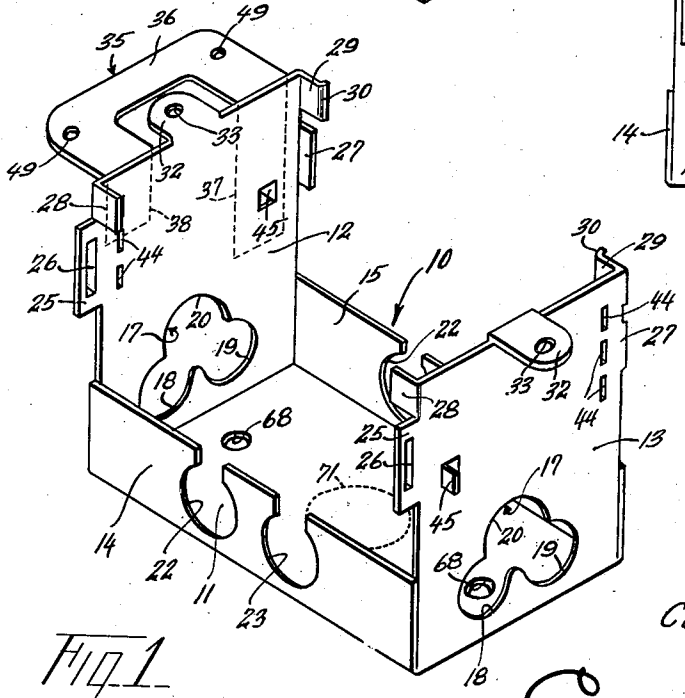


Fig. 1

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SWITCH AND OUTLET BOX

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1 Claim. (Cl. 220—3.94)

This invention relates to electrical receptacles.

The primary object of the invention is to provide a switch and outlet box so formed as to comprise an outer box-element and an inner box-element, both box-elements coacting to clamp and retain armored cables inserted therein without the use of special connectors.

Another object of the invention relates to the construction of the outer box-element whereby a plurality of such outlet boxes as contemplated by the invention may be assembled in gangs without the use of screws or separate fittings and special tools.

Still another object of the invention relates to the provision of attaching brackets to the outer box-element, both the brackets and outer box-element being so formed as to permit a rigid attachment of the brackets on said outer box-element in a plurality of adjusted positions without the use of screws, separate fittings and special tools.

Numerous other objects and advantages will be apparent throughout the progress of the following specification.

The accompanying drawing illustrates a selected embodiment of the invention and the views therein are as follows:

Figure 1 is a perspective view of the outer box-element of the switch and outlet box.

Figure 2 is a perspective view of the inner box-element of the switch and outlet box.

Figure 3 is a transverse sectional view through the switch and outlet box showing the inner and outer box-elements with inserted armor cables, all in assembled relation.

Figure 4 is an end elevational view of the switch and outlet box showing the manner of securing one of the attachment brackets thereto.

Referring to Figure 1, 10 denotes the outer box-element of the outlet box, and is formed of a single sheet metal stamping comprising a base 11, front and rear walls 12 and 13, and side walls 14 and 15. The front and rear walls are bent up from the base 11 into vertical parallel relation, and the side walls 14 and 15, which are considerably shorter than the height of the front and rear walls are likewise bent up from the base 11 into abutting engagement with the side edges of said front and rear walls as clearly shown in Figure 1, to form said box-like element.

Each of the front and rear walls 12 and 13 are provided with a cut-out portion 17, defined by three partly circular recesses, arranged in triangular relation, the two lower recesses 18 and 19 being of equal size while the upper recess 20 is of a considerably greater diameter. The combined part circular recesses form said cut-out portion 17 which is symmetrical with reference to the longitudinal vertical center plane normal to said walls, said cut-out portion 17 being arranged adjacent the base of said walls and are thus in exact opposed relation. The dimensions of the part circular recesses are such that one end of a standard and well known form of armored electric cable may be inserted readily into the upper recess 20 to be moved downwardly into one or the other of the lower recesses 18 or 19 to be snugly received therein, the edges of said lower recesses fitting between the convolutions of said armored cable to thus hold said cable against being pulled outwardly of said box-element, as will be described in greater detail hereinafter.

The side walls 14 and 15 are each provided with a pair of spaced cut-out portions 22 and 23, re-entrant from the upper edges of said side walls. The major part of each of said cut-out portion 22, 23 is part circular as shown and are of the same dimensions as the part circular recesses 18, 19 of the cut-out portions 17, to receive in interlocking relation an end of an armored cable, in the manner as above indicated.

At the same side edge of the front walls 12 and 13 there is provided an integral lateral extension 25 flush with the plane of said walls and so arranged adjacent the upper end portion thereof as to be in act opposed relation to each other. Each extension 25 is provided with a vertical central slot 26 which is substantially in line with the adjacent side edge of its respective wall, the dimensions of said extensions and slots being equal. At the other side edge of the front walls 12 and 13 there is provided an integral flat lug 27 bent normal to its respective wall so that said lugs on said walls will extend toward each other in opposed relation. The width of the lugs 27 is substantially equal to the length of the slots 26 in the lateral extensions 25, said lugs and slots being at the same distance above the base 11 of said box element 10, for a purpose to be hereinafter described.

Also formed integral with the front and rear walls 12 and 13 at the upper end portions of the side edges thereof are positioning lugs 28 and 29, said positioning lugs being inwardly bent normal to the plane of said walls, so that the positioning lugs on one wall will extend towards the positioning lugs on the other wall in opposed relation, and lying in the same plane. The positioning lugs 29 at the same opposed side edges

of said front and rear walls are each formed at their outermost vertical edge with an outwardly curved lip 30.

Formed integral with each of the front and rear walls 12 and 13 at their upper transverse edge is a horizontal bent over outwardly extending ear 32, each provided with a central small threaded opening 33, said ears being arranged in the vertical central longitudinal plane of the box-element 10. The ears 32 function as supporting and holding means for an electric switch, cover plate, etc., to be placed within an outlet box in the manner well known in the art. It is to be understood that the ears 32, the threaded openings 33 therein and the distance between the same are in accordance with the standard dimensions as utilized in the art whereby to coact with any standard type of electric switch, cover plate, etc.

Adjustably carried by the front and rear walls 12 and 13 are separable attaching brackets 35. The brackets 35 are identical and interchangeable and are made of a sheet metal stamping, U-shape in form and bent at its legs to provide a horizontal U-shaped attaching portion 36 and depending legs 37 and 38, the leg 37 being of a greater length than the leg 38. At each end of the bight portion 36 there is provided a screw or nail receiving opening 49, the space defined between the legs of the horizontal portion being sufficient to accommodate the ear 32, when the brackets 35 are placed in position. Formed in the long leg 37 of the bracket 35 are three vertical slots 40, equally spaced and each of the same size. The short leg 38 is provided along its outside edge adjacent its upper end with an integral guide lug 41, bent outwardly in a direction opposite to the horizontal portion 36.

Provided on each of the walls 12 and 13 adjacent one side edge thereof is a vertical row of slots 44 equally spaced and of equal size, the length of said slots being of such size as to receive therein the guide lug 41 on the bracket leg 38. Transversely spaced from the lowermost slot 44 and adjacent the other side edge of the walls 12 and 13 is a struck out fastening lug 45, of such a size as to fit into any one of the slots 40 in the bracket leg 37. Manifestly, in view of the fact that the brackets 35 are identical and thus interchangeable it is necessary that the slots 44 and fastening lug 45 on one wall have a reverse relationship to the same on the other wall. In other words the slots 44 are in direct opposed relation to the fastening lugs 45, see Figure 1.

With the parts so formed the bracket 35 is assembled one with each of the walls 12 and 13, in the following manner: In the position of the bracket 35 shown in Figures 1 and 4 the horizontal portion 36 thereof is flush with the top edge of its associated wall and in this position the guide lug 41 on the bracket leg 38 is inserted in the uppermost slot 44 in said wall, while on the other hand the fastening lug 45 is inserted within the lowermost slot 40 of the bracket leg 37. To securely lock the bracket 35 in its adjusted position the fastening lug 45 is given a slight twist (see Fig. 4), whereby separation of the bracket 35 from its associated wall is positively prevented. It is obvious from the construction shown that three positions of adjustment for the brackets 35 are provided, the position thereof shown and described being the uppermost position possible. Thus in the lowermost position of the bracket 35, the guide lug 41 will fit within the lowermost slot 44, while the fastening lug 45 will fit within the uppermost slot 40. From this construction it will be appreciated that an exceedingly simple and efficient construction has been provided for securing the brackets 35 in any one of three adjusted positions on the front and rear walls 12, 13 of the outer box-element 10. To remove the bracket 35 and to readjust the same, all that is necessary is to straighten out the fastening lug 45 (by means of a plier) remove the bracket, reinsert in desired position and again twist the fastening lug 45.

Cooperating with the outer box-element 10 in securing the armored cables placed therein is an inner open ended box-element 50, shown in Figure 2. This inner box-element is restangular in form, and is formed from a single sheet metal stamping bent to provide end walls 51 and 52, and side walls 53 and 54. The opposite transverse edges of the stamping are formed with slots and lugs 55 and 56, arranged to interlock with each other in the manner wall known for rigidly connecting the end wall 52 with the side wall 54 to provide a rigid structure as well as preventing separation of said last mentioned walls. The dimensions of the inner box-element 50 are such that the same may be readily inserted into the outer box-element 10, with the walls of the former in close proximity to the walls of the latter, and with the top edge of the former lying substantially in the same plane with or slightly below the top edges of the latter, as shown in Figure 3.

The end walls 51 and 52 at their lower portions are provided with two pairs of spaced vertical slits 57 extending upwardly from the bottom edge of said walls to define two flaps 58 and 59, which are so positioned as to be, in the inserted position of said inner box-element 50, in opposed relation to the part circular recesses 18 and 19 formed in the walls 12 and 13 of the outer box-element. These flaps 58, 59 serve both as a closure for said recesses and also by being bent inwardly to engage an end of the armored cable for holding the same in place, in the manner as will be hereinafter described.

In a like manner and for a like purpose, the side walls 53 and 54 of the inner box-element 50 are formed with similar slits 60 to provide a pair of flaps 61 and 62 on each side wall.

Struck out from each of the end walls 51, 52 and bent horizontally inwardly with reference to the inner box-element 50 are opposed attaching lugs 65 and 66, arranged in the central longitudinal plane of said box-element and in the same horizontal plane. Each of said attaching lugs is provided with a threaded bolt receiving opening 67. Similar threaded openings 68 are provided in the base 11 of the outer box-element 10 adapted to be in axial registry with the attaching lug openings 67 when the box-elements 10 and 50 are in nested relation.

The side walls 53 and 54 of the inner box-element 50 are provided with weakened portions 70 which may be knocked out, in the manner well known to provide additional entry means into the outlet box, for conductors, cables, etc. In a like manner similar knock-out portions 71 may be provided in the base 11 of the outer box-element 10. It is to be understood that any desired number, shape and position of such knock-out portions may be utilized as found desirable and expedient.

In use, first one end of an armored cable 75,

see Fig. 3, is placed in position in one of the part circular recesses, of the outer box-element 10, there being shown in Figure 3, two such cable ends one inserted in the recess 23 of the side wall 14 and the other inserted in the recess 19 of the wall 12. The inner box-element 50 is then inserted within the outer box-element 10, with the appropriate flaps 62 and 59 bent up to accommodate said armored cable ends, in the manner clearly shown in Figure 3. Bolts 76 are then inserted through the openings 67 in the attaching lugs 65 and 66 and through the threaded openings 68 in the base 11 of the outer box-element, which act to tightly draw the inner box-element 50 into seating engagement with the outer box-element 10, at the same time the flaps 62 and 59 will press against the inwardly projecting ends of the armored cables to tightly clamp the same in place, as clearly shown in Figure 3. It will be apparent that this construction acts to securely lock the armored cables to the outlet box, requires no special and separate cable fasteners as commonly used, as well as no special tools in assembling the parts. It is also apparent that the outlet box construction as shown and described provides in a single outlet box unit a single means, namely, the flaps on the inner box-element for clamping as many armored cables in place as the outlet box unit may accommodate, in this case eight, thus rendering said outlet box unit extremely flexible in use with a considerable saving in time, cost and material. An additional cable of a larger size may be connected to the base 11 by means of connectors, by knocking out the knockout 71.

While only one outlet box unit has been shown, the construction thereof is such that the same may be assembled and interlocked in "gangs" of any desired number. Thus should it be desired to use two such outlet box units together, they may be arranged in attached side by side relation by placing the lugs 27 on the front and rear walls of one outer box-element into the slots 26 provided in the lateral extensions 25 of the front and rear walls of the other and adjacent outer box-element. To permit the insertion of the lugs 27 within the slots 26, the lateral extensions are sprung backwards by virtue of the inherent resiliency in the steel and will then spring back to its normal position in the manner readily apparent. As soon as lug 27 is forced into slot 26 as far as it will go the lip or bent portion 30 of lug 29 snaps over the end of lug 28 of its own accord due to the natural spring in the steel. The positioning lugs 28 on the first mentioned outer box-element will engage the positioning lugs 29 on said other adjacent outer box-element. The lugs 28 and 29 are tightly pressed together so that the lip 30 on each lug 29 will extend across the vertical outer edge of the lug 28 associated therewith, thus acting to hold the outer box-elements rigidly in alignment. In this manner any desired number of such outer box-elements may be assembled to provide a gang of outlet boxes.

When installing the switch or outlet boxes in a finished building using armored cable for wiring, the invention has the following advantages.

The various lines of cable can be pulled into partitions ready for the outlet boxes.

The outlet box because of its novel construction can be placed in the wall before the cable is placed in the box. This will permit placing in the box as many as the capacity of the box will permit.

There are no parts to take off or loosen when "ganging" two or more boxes.

The outer box-element can be placed in wall before cables are inserted into box.

The construction permits access to the electric cable in the wall and makes it possible to place cable in the cable cutouts. After the cables are in place the inner box-element is inserted and the screws taken up.

No undue limitation should be understood from the foregoing detailed description, for the present embodiment is susceptible of various modifications without departing from the spirit of the invention.

Having thus described my invention I claim as new, and desire to secure by Letters Patent:

An electric receptacle comprising an outer box-element formed of a single sheet metal stamping comprising a base, upwardly bent end walls, and upwardly bent side walls of considerable less height than said end walls and abutting the lower side edge portions of said end walls, a cut-out portion formed in each end wall in opposed relation to each other, longitudinally spaced re-entrant cut-out portions formed in said side walls and in opposed relation to each other, said cut-out portions being each shaped to receive an end of an armored cable, a removable inner box-element adapted to telescope within the outer box-element, said inner box-element formed of a single sheet metal stamping and comprising an open ended box having end walls and side walls of such dimensions as to closely fit within said outer box-element, clamping means on the lower portions of said inner box-element walls formed to provide individual upwardly bendable flaps arranged thereon as to be in opposed relation to the cut-out portions of said outer box-element in the assembled relation of said inner and outer box-elements and screw threaded means carried by said inner box-element and engaging said outer box-element for rigidly securing said box-elements together, whereby upon the insertion of an end portion of an armored cable within at least one of said cut-out portions in a wall of said outer box-element, the bendable flap on the inner box-element in opposed relation to said cut-out portion is bent upwardly into a horizontal position to clampingly engage substantially the full length of said armored cable end portion when said box-elements are rigidly secured together by said screw means.

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