Aug. 5, 1930. O. C. HOFFMAN 1,772,313

OUTLET OR JUNCTION BOX

Filed Nov. 13, 1924 2 Sheets-Sheet 1

Fig. 1.

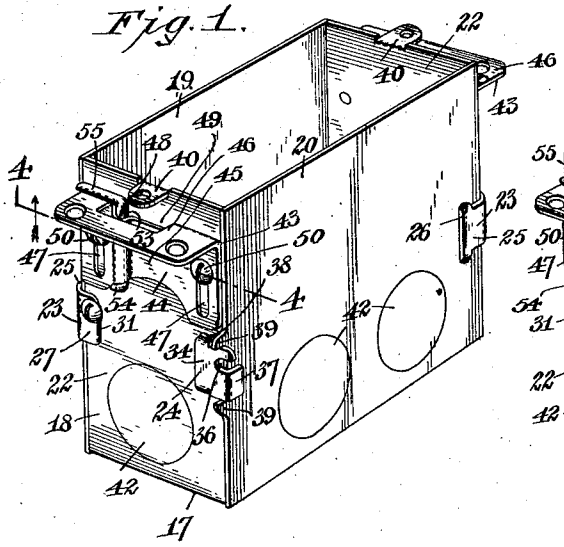


Fig. 2.

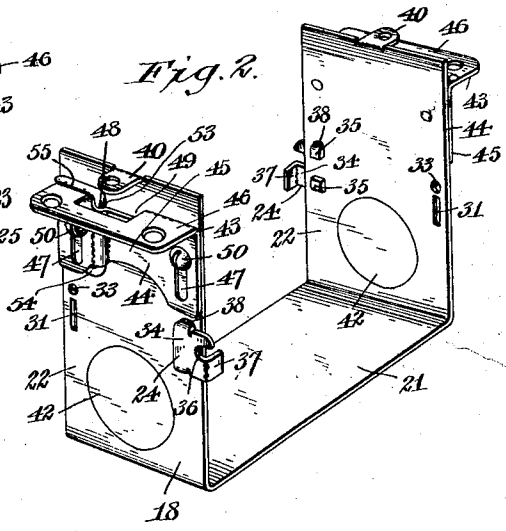


Fig. 3.

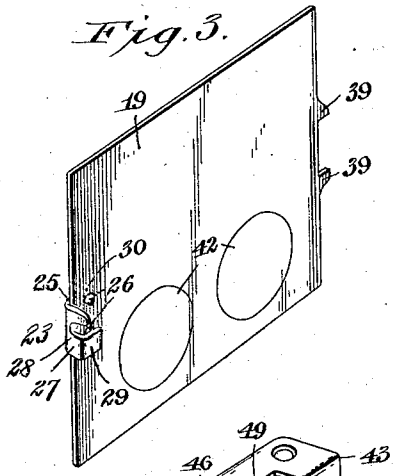
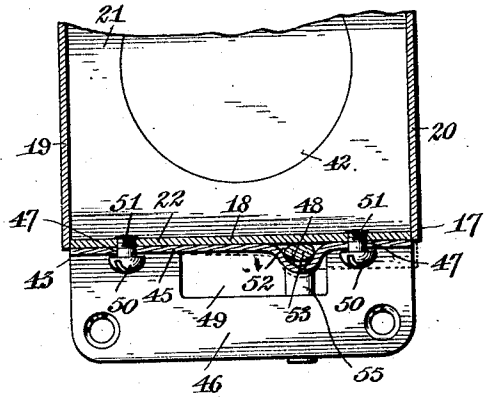


Fig. 4.



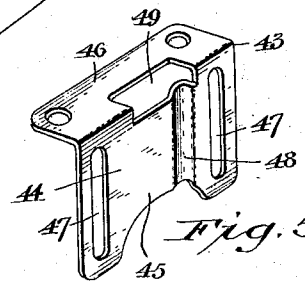


Fig. 5.

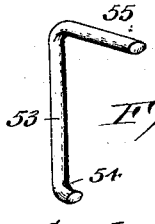


Fig. 6.

Witness:
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Filed Nov. 13, 1924 2 Sheets-Sheet 2

Fig. 7.

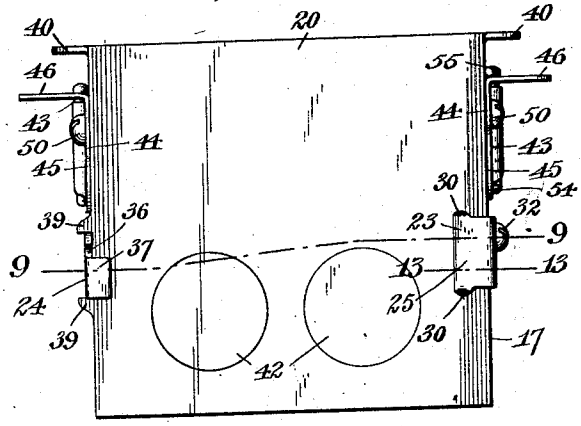


Fig. 8.

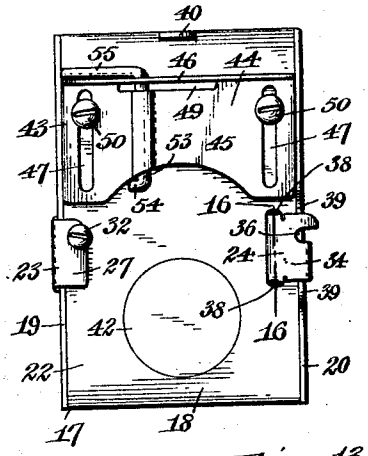


Fig. 9.

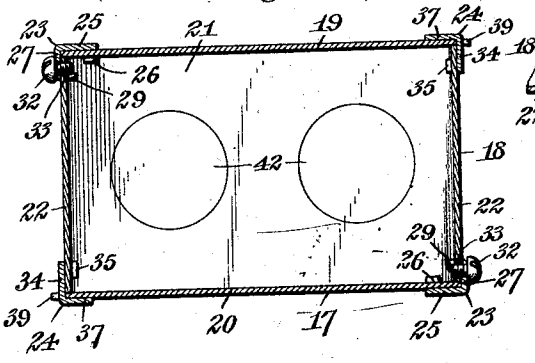


Fig. 12.

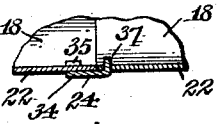


Fig. 13.

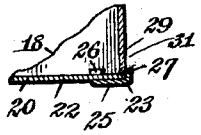


Fig. 14.

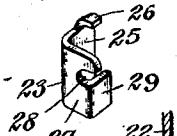


Fig. 15.

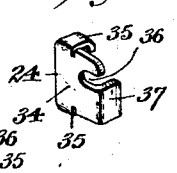


Fig. 16.

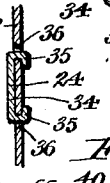


Fig. 10.

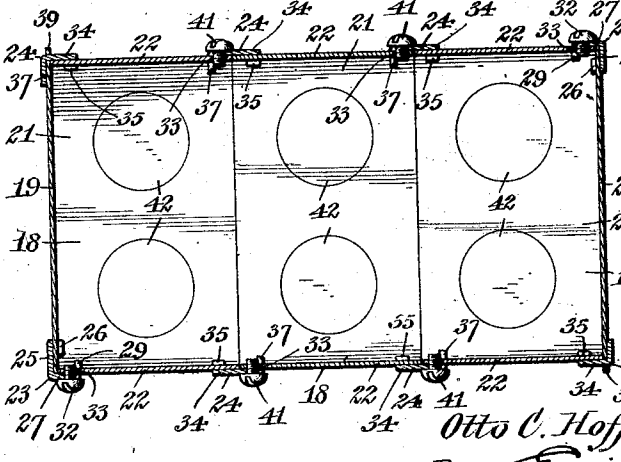
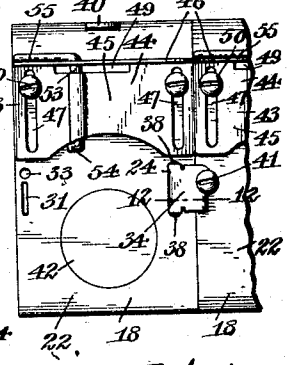


Fig. 11.



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Patented Aug. 5, 1930 1,772,313

UNITED STATES PATENT OFFICE

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OUTLET OR JUNCTION BOX

Application filed November 13, 1924. Serial No. 749,685.

My invention relates to improvements in outlet or junction boxes, and more particularly to that type of sectional box capable of being enlarged or reduced in size.

It has for one of its objects the provision of an outlet or junction box of the sectional type wherein provision is made for quickly and conveniently connecting the sections of a box together.

Another object of my invention is the provision of adjustable means for attaching an outlet or junction box to a wall, the attaching means being so constructed that it can be secured with equal facility to a plastered wall or to a wall constructed of beaver board, plaster board, or like material.

A further object of my invention is to provide an outlet or junction box with adjustable securing brackets maintained in any adjusted position without the manipulation of screws, this being highly desirable due to the fact that when using screws to tighten the brackets in adjusted position, considerable time is required, which results in increased cost of installation; and, moreover, as generally employed, the use of screws for tightening the brackets necessitate the adjusting of the brackets before placing the outlet or junction box in the opening in a wall provided therefor.

A further object of my invention is the provision of means for adjusting the securing brackets after positioning the outlet or junction box into the wall so that the brackets may be arranged flush with the face of the wall or be set into the wall to any desired degree.

A still further object of my invention is to provide improved and quick acting means for locking the securing brackets in position after adjusting the same.

A still further object of my invention is the provision of improved means for connecting the sections of an outlet or junction box together.

With the above and other objects in view, my invention consists in the novel features of construction and in the arrangement and combination of parts to be hereinafter described and more particularly set forth in the appended claims.

In the drawings:—

Fig. 1 is a perspective view of an outlet box constructed of a single section having opposite removable walls.

Fig. 2 is a perspective view of one of the sections having the removable walls removed therefrom.

Fig. 3 is a perspective view of one of the removable walls.

Fig. 4 is an enlarged fragmentary horizontal section taken on line 4—4, Fig. 1, looking up.

Fig. 5 is a detached perspective view of one of the securing brackets.

Fig. 6 is a detached perspective view of one of the locking devices co-operating with the securing brackets and with the walls of the box against which the brackets are retained.

Fig. 7 is an end view of the device.

Fig. 8 is a side view of the device.

Fig. 9 is a horizontal section taken on line 9—9, Fig. 7.

Fig. 10 is a horizontal section of an enlarged outlet or junction box formed of three sections, the sections being taken on the same plane as Fig. 9.

Fig. 11 is a fragmentary side view of the outlet or junction box shown in Fig. 10; one of the corner connectors being removed.

Fig. 12 is a horizontal section taken on line 12—12, Fig. 11.

Fig. 13 is a horizontal section taken on line 13—13, Fig. 7.

Fig. 14 is one of the corner connectors for attaching the removable walls to the body portion of the box.

Fig. 15 is a detached perspective view of one of the other corner connectors, which, however, is also used for connecting one section of a box to another.

Fig. 16 is a vertical section taken on line 16—16, Fig. 8.

In Figs. 1, 4, 7, 8 and 9 I have shown an outlet or junction box formed of a single section, while in Figs. 10 and 11 an outlet or junction box formed of a plurality of sections is shown.

Having reference to an outlet or junction box formed of a single section, the reference numeral 17 designates the complete box

formed of three main parts 18, 19 and 20. The part 18 is what I term the body portion or a section formed of a sheet of metal bent into substantially U-formation to provide a bottom 21 and side walls 22 rising from opposite ends of said bottom. The ends of said body portion or section are therefore open and they are adapted to be closed by the parts 19, 20, which I term removable plates or end walls, and which have their marginal portions lying against the edges of said bottom and side walls, forming a substantially box-like structure open at its upper end. The plates or end walls 19, 20 are held in place by connectors 23, 24, the connectors 23 being at diagonally opposite corners and being fastened to the end plates or walls 19, 20, respectively, while the connectors 24 are also at diagonally opposite corners of the box and connected to the side walls 22 thereof.

The connectors 23 are formed of small pieces of sheet metal, preferably of the same stock from which the box is constructed, and each is of angular formation having one member 25 thereof provided with inturned clench ears 26 at its upper and lower edges, and the other or angular member 27 thereof provided with a screw hole 28 formed therein, said member 27 being also provided at its outer end with an inwardly-directed retainer lip 29. Each of the end plates 19, 20 is provided with two spaced openings 30 and the member 25 of each connector 23 lies in contact with the outer surface of an end plate and has the clench ears 26 of said member passed through said openings 30, said clench ears being headed, or bent at an angle, at the inner side of the plate so that the connectors are permanently attached to said plates.

The other member 27 of each connector 23 lies against one of the side walls 22 of the section or body portion 18, and the inwardly-directed retainer-lip 29 thereof is passed through a slot 31 formed in each of said side walls. Securing screws 32 are passed through the screw holes 28 of the connector 23 and are threaded into tapped screw holes 33 in the side walls 22.

Each of the connectors 24 is formed of a small piece of sheet metal, preferably of the same gage as that used for the connectors 23, and it has a flat or straight body portion 34 provided with clench ears 35 at its upper and lower edges. Said flat body portion has a screw hole 36 formed therein, and at one end thereof, which may be termed its outer end, it is provided with a retainer lip 37 arranged at a right-angle to said body portion.

The screw holes 36 of the connectors 24 are not adapted for use at the corners of a box, but they are adapted to have screws passed therethrough when using said connectors to connect two or more sections together, as will be described hereinafter.

The body portion 34 of each connector 24 lies against the outer surface of one of the side walls, and the clench ears 35 thereof are passed through spaced openings 38 formed in the side walls 22 of the section or body portion 18 of the box, the ends of said clench ears being bent against the inner surface of said side walls so as to securely fasten said connectors to said section or body portion.

From the foregoing it will be clear that the connectors 23 are permanently secured to the plates or end walls 19, 20, while the connectors 24 are permanently secured to the side walls 22 and have their retainer lips 37 directed at a right angle to said side walls so as to lie against the outer sides of said plates or end walls. Each plate or end wall has a pair of spaced ears 39 extending from one vertical edge thereof, and in positioning these plates against the body portion of the box, each plate is placed against the body portion and directed behind the retainer lip 37 of one of the connectors 24, the ears 39 straddling the body portion of said connector so that the upper ear of the pair bears against the upper edge of said body portion while the lower ear bears against the lower edge thereof. In this manner the plate is held against vertical movement and also against outward movement due to the fact that it is retained by the lip 37 of said connector.

When positioning the plates or end walls behind the retainer lips 37 of the connectors 24 with the spaced ears 39 thereof straddling said connectors, the connectors 23 permanently attached to said plates or end walls will have their angular members 27 brought into contact with the side walls of said body portion and the retainer lips 29 of said angular members passed through the slots 31 in said side walls. The retainer lips 29 serve to prevent movement of said plates or end walls vertically.

By passing the screws 32 through the screw holes 28 in the angular members 27 of the connectors 23, the plates or end walls 19, 20 are securely fastened to the body portion of the device.

Viewing either of the plates 19, 20 from the outside, the connector 23 is permanently attached to the right hand marginal portion thereof, and the spaced ears 39 extend from the left hand edge of the plate, and since the connectors 24 are at diagonally opposite corners of the body portion, the plates will be exact counterparts and either may be secured to one or the other end of the body portion.

Extending outwardly from the upper edge of the side walls 22 of said body portion, are perforated lugs 40 designed to provide means for attaching a cover to the box, or a face plate, depending on the use to which the box is to be put.

In Figs. 10 and 11, the box is shown as con-

structed of a plurality of sections so as to increase the size of the box, the sections being exact counterparts. In these figures I have shown three sections, but it will be apparent that two or more than three sections may be used to form the completed box. The end plates or walls 19, 20 are the same as those employed in the single section structure, illustrated in Figs. 1, 7, 8 and 9, and the manner of connecting said end plates or walls to the adjoining sections need not be explained, as the connectors employed for this purpose are the same connectors described with reference to the single section box.

For connecting one section to another the connectors 24 are used, and the clench ears 35 extending from opposite edges of said connector are passed through the openings 38 in one of the side walls of each section. The clench ears 35, after being passed through said openings, are bent at an angle so as to lie against the inner surface of said side wall. These connectors are therefore permanently attached to one of the side walls of each section and when joining two or more sections together the retainer lips 37 of said connectors are passed through the slots 31 in the side walls of adjoining sections, thus preventing separation of the sections in a direction parallel with said side walls. It is to be noted that a connector, such as 24, is secured to one side wall only of each end section, while the intermediate section or sections, as the case may be, will have such connectors permanently secured to opposite side walls at diagonally opposite points.

The connectors 24 have their retainer lips 37 at the left at one side of the box, while those at the other side thereof have their retainer lips at the right, as clearly shown in Fig. 10.

In order to prevent relative movement of the sections in a direction parallel with the meeting edges thereof, screws 41 are passed through the screw holes 36 in said connectors, and threaded into the tapped screw holes 33 in said side walls. In this manner the sections of the box are rigidly connected together, and in effect the structure will be the same as though formed of a single piece of material. The end plates or walls 19, 20 and each of the side walls 22 and the bottom 21 of each section have knockouts 42 formed by stamping the material from which the box is constructed with a circular cut extending almost through the material; this being, however, common and well known in the art.

From the foregoing it will be clear that each section has a vertical slot 31 in each of its side walls and a tapped screw hole 33 directly above the same, these two being arranged at diagonally opposite points on the section, as clearly shown in Fig. 2. These slots and screw holes are formed through one of the vertical marginal portions of each side wall. At the opposite vertical marginal portion of each side wall, the spaced openings 38 are arranged in vertical alinement, and these vertically-alined openings are also disposed at diagonally opposite points.

It will therefore be plain that the spaced openings 38 of all sections are adapted to receive the clench ears 35 of the straight connectors 24. It will also be clear, upon examination of Figs. 1 and 10, that the slots 31 and screw holes 33 directly above said slots, angular connector 23 or the straight connector 24. The angular connector is at all times used at a corner of a box, whether constructed of a single section or a plurality of sections, while the straight connector is used at the corners of a single or a multiple-section box, and also for joining two or more sections of a multiple-section box.

The connectors 23, 24 are so formed that when applied to the corners of a structure for connecting the end plates or walls to the body portion thereof, said end plates are held against vertical movement and against transverse movement in one direction by one of said connectors, and against vertical movement and transverse movement in the other direction by the other connector, and the connectors employed for connecting the sections of an enlarged box together are so constructed that they prevent relative movement of said sections in any direction.

I have devised a quick-acting adjustable securing device for the box for attaching the same to a wall, the securing device permitting the box to be as readily secured to a beaver board, plaster board, or other like wall, as to a plastered wall having a wooden or other foundation.

For the purpose of placing the box into a wall, the wall is provided with an opening or depression, depending on the thickness of the same, and my securing devices, designated by the numeral 43, are applied to opposite sides of the box. Each securing device includes a bracket 44 formed of a piece of sheet metal bent into angular formation to form a body portion 45, and a securing flange 46 extending outwardly along the upper end of said body portion. The body portion near each vertical edge thereof is provided with a slot 47, and on the inner side in close proximity to one of said slots is a vertically-disposed groove 48. The metal forming each bracket has an opening 49 formed therein at the junction of the body portion with its flange, said opening extending into the body portion and partly into said flange so that said flange will not come in contact with the lug 40 extending outwardly from the upper end of the side wall 22 to which said bracket is secured. That portion of the opening 49 which extends into the body portion of the bracket furnishes the necessary clearance to enable the flange of the bracket to be moved to its outermost po-

sition. The groove 48 extends from the lower edge of the body portion of the bracket to said opening 49. The body portions of the brackets 44 are placed against the side walls of the box, and combined retainer and guide screws 50 are passed through the slots 47 thereof and threaded into said side walls, the heads of said screws being slightly spaced from or bearing loosely against the outer surface of said body portion.

The inner ends of the screws 50 preferably terminate flush with the inner surfaces of the side walls, and are soldered so that they cannot be rotated, as clearly shown at 51 in Fig. 4. Rotation of the screws may, however, be prevented by any other means, or if desired, the screws may be threaded into the side walls without providing means to prevent rotation thereof. These screws, by reason of the fact that the heads thereof are not tightened against the brackets, serve as guides to permit the devices to be adjusted vertically on said side walls, and for this reason the screws and the slots in said brackets, through which the screws are passed, may be referred to as guiding means.

When the brackets 44 are applied to the side walls 22, the walls of the vertical grooves 48 on the inner sides of said brackets co-operate with a vertical portion of said side walls, forming vertical holes 52 of which said side walls form part.

Arranged in the groove 48 of each bracket 44, or more particularly in the hole 52, which said groove also forms part of, is a clamp element 53 formed of a piece of wire or rod of substantially oval formation in cross section, the lower end of the wire or rod extending down beneath the lower edge of the body portion of said bracket and being bent outwardly, as at 54, to form a retainer ear which prevents the wire or rod from being drawn upwardly through said hole. At its upper end said wire or rod is bent at a right angle, as at 55, to form a handle for turning the clamp element. When the handle 55 extends outwardly at a right angle to the face or side of the box, the wire or rod forming the clamp element is positioned loosely within the hole 52 and allows the bracket to be moved upwardly or downwardly on the box to any desired degree so that the flange of said bracket will be positioned in line with the upper edge of the side wall, or any desired distance from said upper edge.

By rotating the wire or rod within its hole 52, it will engage the wall of the groove 48 in the bracket and force the bracket outwardly away from the side wall of the box and in firm contact with the heads of the screws 50. The grooves in the brackets are so formed that they are of greater width than the oval or otherwise widened wire or rod positioned therein, but of less depth than the width of said rod so that when the wide portion of the rod is turned to assume a position at an angle to the side wall of the box, the wire or rod acts as a cam and forces the bracket outwardly. Attention is invited to the fact that the angular upper end or handle of the rod is positioned at a slight angle to a plane passing through the major axis of that portion of the wire or rod passed through the hole 52 formed between the bracket and the side wall so that when turning the angular upper end or handle parallel with the side wall, opposite edges of that portion of said wire or rod passing through said hole will be at a slight angle to a plane passing through the minor axis of said rod; or, in other words, that portion of the wire or rod extending through the hole 52 formed by the side wall and bracket will be rotated beyond the dead center when the angular or upper portion or handle is positioned parallel with said side wall so that accidental rotation of said clamp device will be prevented and assurance had under all conditions of use that the bracket will be maintained in any adjusted position.

The clamp element 53 may be said to be interposed between the bracket 44 and the side wall of the box, and under the principle involved, at least a portion thereof has a greater width in one direction than in another so that when positioned with its handle arranged in one direction, as shown in Fig. 4, the smaller width will be in the direction of a line extending at right angles to the face of the box, while when said handle is in another direction, the greatest width will be parallel with said line or at a slight angle thereto, preferably the latter, so as to force the bracket away from the side wall of the box and bring the same in firm contact with the heads of the screws passed through said bracket.

It is of course understood that the usual electrical devices are placed within the box and the proper knockouts removed from any wall or walls thereof for passing wire, or loom with the wires therein, through the openings formed by removing said knockouts, the wires being adapted for connection with the electrical apparatus within the box.

Having thus described my invention, what I claim is:—

1. The combination with an outlet box, of a bracket applied to the outer side of one of the walls of said box and having a pair of parallel slots therein, headed screws passed through said slots and threaded into the wall, and movable means interposed between said bracket and said wall adapted upon movement to a certain position to force said bracket against the heads of said screws and thereby clamp said bracket in any adjusted position.

2. The combination with an outlet box, of a bracket applied to the outer side of one of the walls of said box and having spaced parallel

slots, headed elements passed through said slots and fastened into said wall, and a rod interposed between said bracket and said wall and having greater cross-sectional dimension in one direction than the other, said rod when having its greatest cross-sectional dimension parallel with said bracket permitting free adjustment of said bracket and when having said greatest dimension at right angles to said bracket, or substantially so, serving to force said bracket outwardly against the heads of said headed elements.

3. The combination with an outlet box, of a bracket applied to one of the walls of said box, said bracket having a body portion and an outstanding flange and the body portion having a pair of parallel slots, headed guide elements passed through said slots and secured in said wall, said bracket having also a groove on its inner side parallel with said slots, and a rod passed through said groove and having greater cross-sectional dimension in one direction than the other, said rod having its upper end bent at a right angle to permit of turning said rod within said groove for forcing the bracket outwardly and firmly against the heads of said headed elements.

4. The combination with an outlet box, of a bracket applied to the outer side of one of the walls of said box, said bracket being formed of sheet metal having also a body portion and an outstanding flange at the upper end of said body portion, said bracket having also an opening at the junction of said body portion and said flange extending partly into said body portion and partly into said flange, the body portion of said bracket having a vertical slot near each end thereof and a vertical groove on its inner side between said slots, screws passed through said slots and threaded into said wall, a rod disposed within said groove and having greater cross-sectional dimension in one direction than the other, said rod extending up through the opening formed at the junction of said body portion and flange and having its upper end bent at a right angle, said rod being adapted to be rotated within said groove so that in one position its greatest cross-sectional dimension is in the direction of the length of said bracket and in its other position at a slight angle to a plane at right angles thereto.

5. In an outlet box or the like, a securing bracket adjustable on one of the walls thereof and comprising a flat body portion and an outstanding flange at the upper end of said flat body portion, and means between said wall and body portion movable from one position to another and adapted to secure said bracket in any adjusted position when in one of said two positions.

6. In an outlet box or the like, a securing bracket adjustable on one of the walls thereof, means on said wall for limiting the outward movement of said bracket, and means interposed between said wall and said bracket for forcing said bracket against said limiting means.

7. In an outlet box or the like, a bracket adjustable on one of the walls thereof, means on said wall co-acting with said bracket to limit the outward movement thereof, and a cam device interposed between said wall and bracket adapted to loosen or tighten said bracket on said wall.

8. In an outlet box or the like, a bracket adjustable on one wall thereof, means on said wall limiting the outward movement of said bracket, a rod interposed between said wall and said bracket and having greater cross-sectional dimension in one direction than the other, said rod having its upper end bent at a right-angle to form a handle extending outwardly from said wall when the greatest cross-sectional dimension of said rod is parallel with said bracket, said handle being adapted to be swung into a position parallel with said wall to rotate said rod and position the same that its greatest cross-sectional dimension is at a slight angle beyond a plane at right angles to said wall.

9. In an outlet box or the like, a bracket applied to one of the walls thereof, means on said wall for limiting the outward movement of said bracket and a rotatable cam element interposed between said wall and bracket, said cam element when rotated in one direction serving to loosen said bracket and when rotated in the other direction assuming a position beyond the dead center and forcing said bracket outwardly against said limiting means.

10. The combination with an outlet box, of a bracket adjustable on one of the walls of said box, means permitting the adjustment of said bracket on said wall while retaining said bracket thereon, and clamping means interposed between the inner side of said bracket and the opposed surface of said wall to clamp said bracket in adjusted position.

11. The combination with an outlet box, of a bracket adjustable on one of the walls of said box, means for adjustably holding said bracket against said wall, and a cam device interposed between the inner surface of said bracket and the outer surface of said wall and movable to clamp said bracket in any adjustable position on said wall.

12. The combination with an outlet box, of a bracket adjustable on one of the walls of said box, means for adjustably holding said bracket on said wall, and a rod of substantially oval formation in cross section interposed between said bracket and said wall, said rod being adapted for rotation to clamp said bracket in any adjusted position.

13. The combination with an outlet box, of a bracket adjustable on one of the walls

of said box, means for rectilinearly guiding the bracket, and movable means interposed between said bracket and said wall adapted upon movement to a certain position to securely fasten the bracket in its rectilinearly guided position.

In testimony whereof I affix my signature.

OTTO C. HOFFMAN.