Feb. 18, 1936. G. B. BENANDER 2,031,453

CONVENIENCE OUTLET

Filed June 29, 1931

Fig. 1.

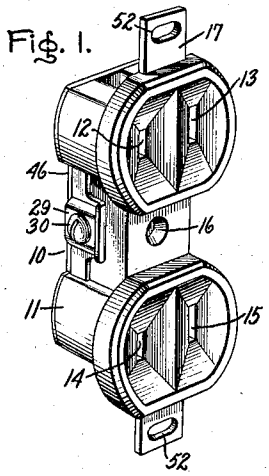


Fig. 2.

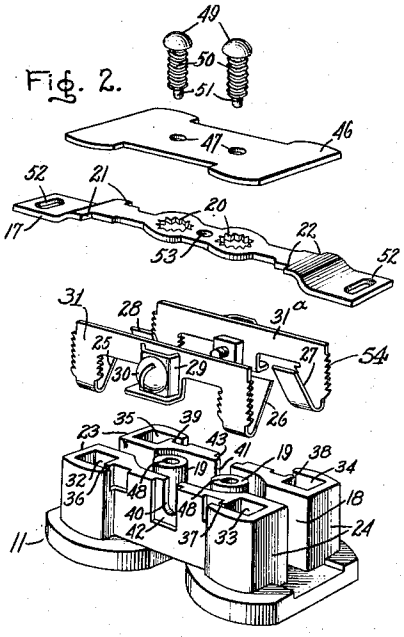
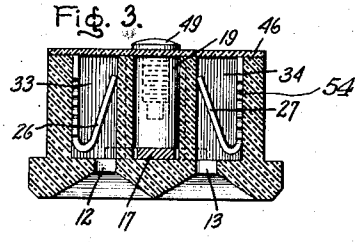


Fig. 3.



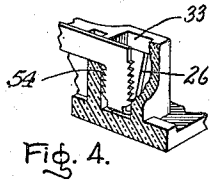


Fig. 4.

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CONVENIENCE OUTLET

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Application June 29, 1931, Serial No. 547,557

6 Claims. (Cl. 173—330)

My invention relates to convenience outlets and more particularly to convenience outlets adapted to be mounted in an outlet box flush with the opening in a wall, floor or the like and providing means for connecting an electrical appliance to the electrical wiring circuit of a building.

An object of my invention is to reduce the cost of manufacturing and assembling of convenience outlets.

My invention will be better understood with reference to the detailed description in connection with the accompanying drawing and the scope of the invention will be pointed out in the appended claims.

In the accompanying drawing Fig. 1 is a perspective view of a convenience outlet completely assembled; Fig. 2 is an exploded view of a convenience outlet in perspective looking toward the rear of the outlet; Fig. 3 is a cross-sectional view of the end of the convenience outlet; and Fig. 4 is a detailed view partly in section of a recess in the body member with a contact clip in position.

10 indicates a double convenience outlet with a body member 11 formed of molded insulating material in which the metal parts are secured by force fits in recesses provided in the body member. The insulating material used in forming the body member may be a phenolic condensation product or other tough non-frangible material. To provide for the connection of two attachment caps to the convenience outlet 10, parallel slots 12, 13, and 14, 15 are provided in body member 11. In order to adapt the convenience outlet for the reception of polarized attachment caps slots 13 and 15 are made longer than the corresponding slots 12 and 14. Thus an attachment cap having one blade wider than the other blade can only be connected to the convenience outlet 10 so that the grounded side of the attachment cap will be connected to the grounded side of the convenience outlet. A non-polarized attachment cap may also be connected to the convenience outlet as the slots 12 and 14 are the standard size to receive the blades of such attachment caps. To provide for the connection of a face plate or cover plate an opening 16 is provided in the center of body member 11 registering with a threaded aperture in the supporting strap.

To support the convenience outlet in an outlet box, a strap 17 is provided and adapted to seat in a channel 18 in body member 11. To anchor strap 17 in the body member 11, columns 19 are provided integral with the body member and located in the channel 18. To cooperate with the anchoring columns 19 apertures 20 with serrated edges are provided in the strap 17. When the strap 17 is forced into position in the channel 18 the serrated edges of the apertures 20 bite into the sides of columns 19. To insure a firm fit of the strap 17 in position in the body member 11, shoulders 21 and 22 are provided at either end of the strap to engage the end faces 23 and 24 respectively of the extension of body member 11. The distance between shoulders 21 and 22 is made slightly less than the distance between the end faces 23 and 24 so that the shoulders bite into the insulating material as the strap 17 is forced into position. To secure the convenience outlet 10 in an outlet box by means of a strap 17, oblong openings 52 are provided at either end of strap 17 and permit the insertion of screws to engage threaded apertures provided in the outlet box. The openings 52 are made oblong to give some leeway in the positioning of the convenience outlet in the outlet box. To provide for the securing of a face plate or cover plate to the convenience outlet after it has been located in an outlet box a threaded aperture 53 is provided in strap 17 and located to register with the opening 16 in the body when the strap 17 is in position in the body member.

For making electrical connection with the blades of an attachment cap contact clips 25, 26, 27 and 28 are provided. To complete the electrical connection between the contact clips 25 and 26 and an electrical conductor a contact strip 31 is provided consisting of a flat strip with a centrally depending section having an ear extending at right angles which cooperates with a shoe 29 and a binding screw 30 to hold a conductor in position in electrical contact with the contact strip 31. Similarly, contact clips 27 and 28 are connected by means of a contact strip 31_a. The contact clips are adapted to be seated in the body member 11 in recesses 32, 33, 34, and 35 formed by extensions of the body member. To permit the mounting of the contact clips in position in the recesses with the top of the connectors 31 and 31_a flush with the end of the extensions of body member 11 slots 36, 37, 38, and 39 are provided at the inner end of the extensions communicating with the recesses 32, 33, 34, and 35 respectively. Slots 40 and 41 are provided for the insertion of the binding screws connected to the contact strips 31 and 31_a and rectangular recesses 42 and 43 are provided for the location of nuts on the end of the binding screws. The contact clips 25, 26 and 27, 28 are formed integral with the contact strips 31 and 31_a respectively by turning up a portion of the depending ends of the contact strip. To secure the contact clips 25, 26, 27, and 28 in position in the recesses 32, 33, 34, and 35, respectively, serrations 54 are provided on both edges of the flat portion of the contact clips connected to the contact strips. The part which is serrated is that which is situated between the connector 31 and the yielding or contact-making clip. The yielding or contact

making clip is less in width than the part which is serrated so that it may move easily within the recess in which the contact clip is secured. These serrated edges bite into the walls of the recesses as the contact clips and contact strips are forced into position. The serrations are made like the teeth of a saw with the angular edge of the tooth presented to the insulating material as the clips are forced into position. Due to the thin gauge of metal used in the clips the teeth are bent up slightly as the clips are forced down. When an attempt is made to pull the clips out the teeth tend to straighten out and dig into the insulating material thus preventing their removal.

To cover the rear of the convenience outlet 10 after the contact clips and strap have been secured in the body member 11, a plate of insulating material 46 is provided conforming with the general configuration of the rearward extensions of body member 11. Apertures 47 are provided in insulating plate 46 to communicate with openings 48 in the columns 19. To secure the plate 46 in position pins 49 are provided having serrated shanks 50 and reduced extensions 51. Pins 49 secure the plate 46 in position when forced into position in openings 48 of columns 19.

As better indicated in Fig. 3, when a plug with projecting blades is connected to the convenience outlet, the blades extend into the recesses 33, 34, contacting with the contact clips 26, 27 and forcing the turned up ends of the contact clips away from the central walls of the recesses. Forcing the resilient contacts away from the central walls creates a contact pressure between the resilient contacts and the blade projections of the plug making a good electrical connection between the blades and contacts. The position of the contact clip 26 in the recess 33 with its serrated edges engaging the walls of the recesses is well indicated in Fig. 4.

When the convenience outlet is manufactured, the insulating body member 11 is molded and the contact clips, strap and insulating plate are separately formed. To assemble the parts the contact clips 25, 26, 27, and 28 are located in position above the openings of recesses 32, 33, 34, and 35 respectively and the strap 17 is located in position over channel 18 with the openings 20 registering with the columns 19. The contact clips and strap are then forced into position, their serrated edges biting into the insulating material. The contact clips and strap may be forced into position in any convenient manner. It may be desirable when such devices are manufactured in large quantities to utilize a press to force them into position. Insulating plate 46 is then located in position over the rear of body member 11 with its apertures 47 registering with the openings 48 in columns 19. Pins 49 are placed in position over the openings 48 with their reduced extensions 51 extending into the openings to hold them in position. Pins 49 are then forced home, their serrated shanks biting into the insulating material of channels 19. The assembly of the convenience outlet is thus completed and it is ready for installation in position.

In accordance with my invention, a convenience outlet is provided consisting of few parts with the metal parts held rigidly in position in the molded body member by force fits. The design of the parts of the convenience outlet makes it possible to assemble them in two major operations, that is, by the forcing of the contact clips and strap in position and the securing of the plate to the rear of the convenience outlet. For purposes of illustration a double convenience outlet is shown in the drawing but it is quite obvious that the same construction and method of assembly may be utilized in the manufacture of a single convenience outlet.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. A convenience outlet comprising a body member of insulating material having rearward extensions forming spaced recesses and anchoring columns, contact clips seated in said recesses and having serrated edges engaging the side walls of said recesses and holding the contact clips in position, a supporting strap having apertures with serrated edges engaging the anchoring columns of said body member, an insulating plate covering the rear of said body member, and pins with serrated shanks engaging openings in the body member and holding the insulating plate in position.

2. A convenience outlet comprising a body member of insulating material having a central channel with hollow cylindrical columns and spaced recesses, contact clips having serrated edges engaging the walls of the recesses, a supporting strap with openings with serrated edges engaging the cylindrical columns and seating in the base of the central channel of said body member, a plate of insulating material for covering the rear of said body member and serrated pins engaging the openings in the columns to secure the insulating plate to the rear of said body member.

3. A convenience outlet comprising a body member of insulating material having rearward extensions forming spaced recesses, flat contact strips with depending ends bent up to form contact clips, serrated edges adjacent the bent up ends of said contact strips embedded in the insulating material for securing the contact clips in said recesses, and a supporting strap secured to said body member.

4. A double convenience outlet comprising a body member of insulating material having rearward extensions forming spaced recesses, flat contact strips with depending ends bent-up to form contact clips, serrated edges on a portion of the contact clips adjacent to and wider than the bent up ends embedded in the insulating material for securing the contact clips in said recesses, and a supporting strap secured to said body member.

5. A double convenience outlet comprising a body member of insulating material having rearward extensions forming spaced recesses, flat contact strips, contact clips integral with and depending from the ends of said contact strips, a portion of said contact clips having serrated edges for securing said contact clips in said recesses by force fits, a portion of said contact clips of less width and extending at an angle to the remainder of the contact clips, and a supporting strap secured to said body member.

6. A double convenience outlet comprising a body member of insulating material having rearward extensions forming spaced recesses, flat contact strips, contact clips integral with said contact strips and having a portion wider than the remainder of the contact clips with serrated edges for securing the contact clips in said recesses by force fits, and a supporting strap secured to said body member.

GEORGE B. BENANDER.