June 18, 1963 J. SCHMIER 3,094,367

DUPLEX RECEPTACLE AND METHOD OF MANUFACTURING

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FIG. 1

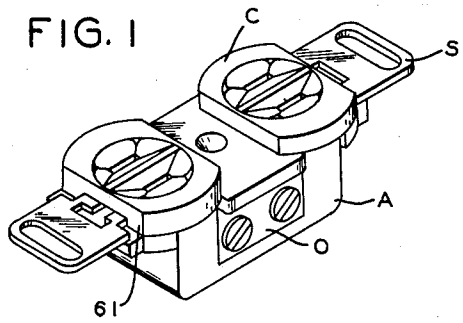


FIG. 3

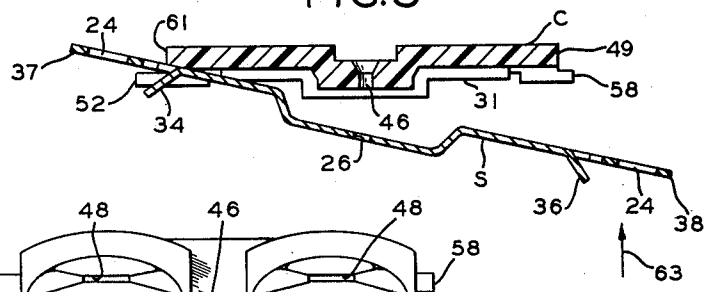
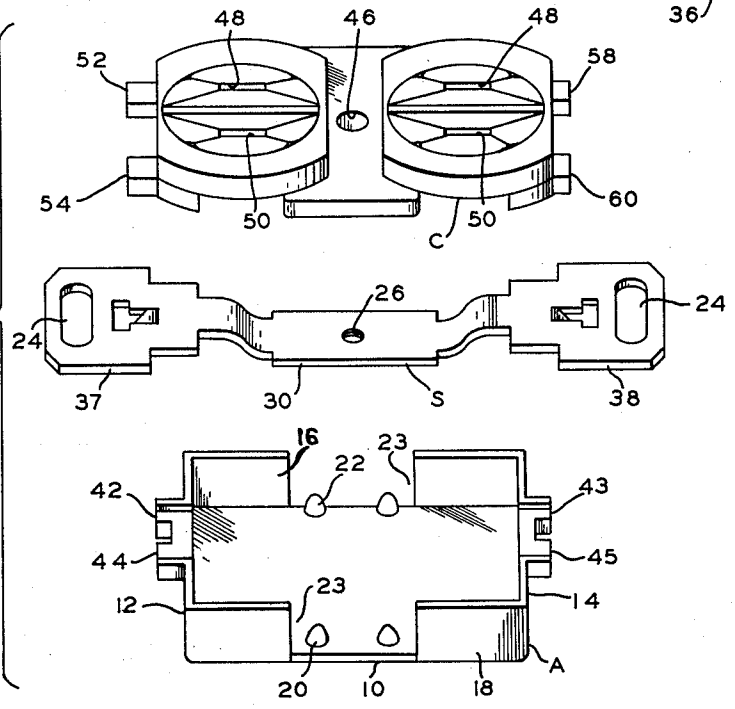


FIG. 2



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FIG. 4

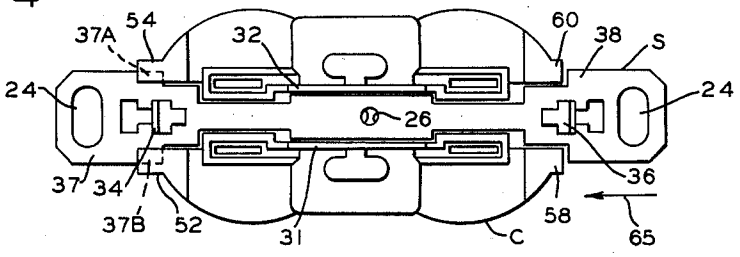


FIG. 6

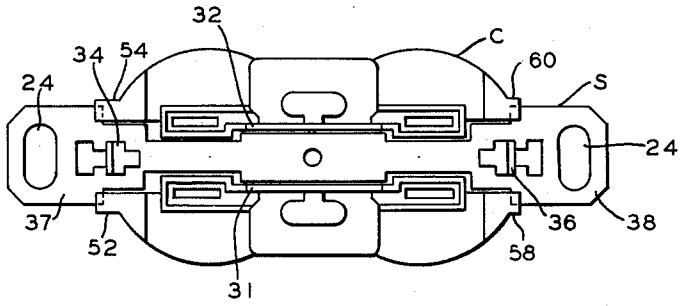


FIG. 8

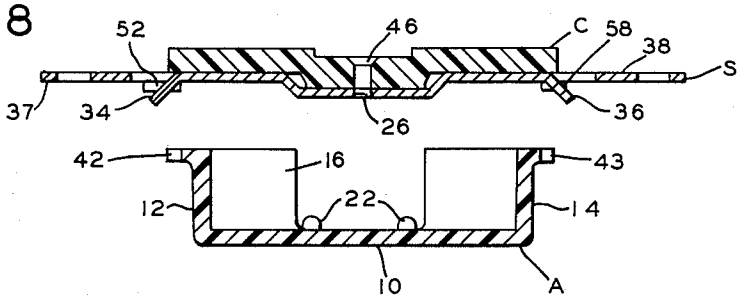
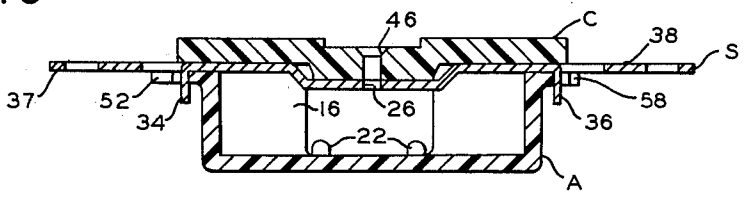


FIG. 9



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FIG. 5

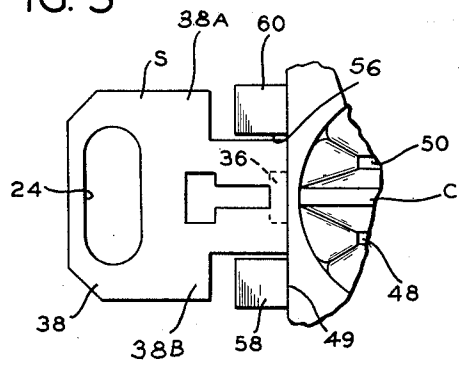


FIG. 7

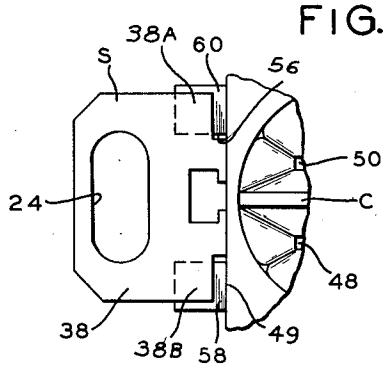


FIG. 10

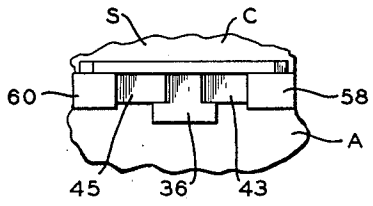
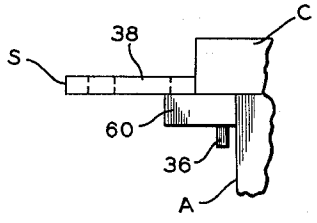


FIG. 11



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DUPLEX RECEPTACLE AND METHOD OF MANUFACTURING

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9 Claims. (Cl. 339—122)

My invention relates to a duplex receptacle and relates particularly to the construction of the interfitting parts thereof.

Duplex receptacles of the general type shown herein have been in common use in the electrical industry for use in residential, or industrial applications, wherein it is desirable to have a means of connecting or disconnecting appliances or other electrical devices by means of a pronged plug, so designed as to interfit with the contact members of said receptacle.

It has been found that duplex receptacles now in common use are so constructed as to require the use of screws or bolts, passing through the case and cover thereof, to hold the various parts together.

It is an object of my invention to provide means by which the mechanical closure of the case, cover, and electrical contacts may be secured by means of the mounting strap, which is so constructed as to slide into locking position, securely locking the various parts together without the use of screws or bolts.

Another object of my invention is to provide a metal strap for a duplex receptacle whereby said receptacle is mounted in a standard metal wall box, said metal strap to also serve as the means for holding the various parts of the receptacle together.

Still another object of my invention is to provide an electrical receptacle which includes a metal strap which holds the various parts of the receptacle together at two spaced points whereby the force of insertion of a male plug into the receptacle is not concentrated at the center of the strap and thus avoids bending of the same.

Yet another object of my invention is to provide a metal strap for a duplex receptacle whereby the strap includes means for positively holding the various parts of the receptacle together which resists both upward and downward separation forces.

Other objects of my invention are to provide an improved device of the character described, that is economically produced, easily assembled, and which is sturdy in construction.

With the above and related objects in view, my invention resides in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawings, in which

FIG. 1 is a perspective view of a duplex receptacle embodying my invention;

FIG. 2 is an exploded perspective view of the device of FIG. 1 with the electrical contacts omitted;

FIG. 3 is a sectional view of the cover and strap of the device of FIG. 1 in a first stage of assembly.

FIG. 4 is a bottom plan view of the cover and strap of the device of FIG. 1 in a second stage of assembly;

FIG. 5 is an enlarged fragmentary top plan view of the right hand portion of FIG. 4;

FIG. 6 is a view similar to FIG. 4 but with the strap seated by moving it to a position to the left of the position of FIG. 4;

FIG. 7 is an enlarged fragmentary top plan view of the right hand portion of FIG. 6;

FIG. 8 is a sectional view of the device of FIG. 1 showing the cover and strap combination of FIG. 6 in a

position to be united to the casing with the electrical contacts removed from the casing;

FIG. 9 is a view similar to FIG. 8 but showing the cover strap and casing in the fully assembled position;

FIG. 10 is a fragmentary, side elevational view of the device of FIG. 1 showing the cover, strap and casing in the fully assembled position; and

FIG. 11 is a fragmentary, front elevational view similar to FIG. 10.

Referring now in greater detail to the drawings, I show in FIG. 1 a duplex convenience flush receptacle for use in the home or shop wherein electrical circuits may be tapped from the receptacle. The receptacle comprises a hollow casing or shell of thermosetting molding compound, generally designated as A. A metal strap, generally designated as S, provides means for fastening the receptacle to a metal box (not shown) and it also provides means for locking a cover, generally designated as C, to the casing A. A pair of electrical contacts, each of which is generally designated as O, are located within the casing.

The insulation casing A (FIG. 8) is hollow and it comprises a bottom **10**, end walls **12**, **14** and side wall portions **16**, **18**. The upper portion of the shell A is open and within the shell are provisions for holding the two electrical contacts O, O. The cover of the duplex receptacle is constructed to receive one or more electrical plugs (not shown) which supply electrical power to other electrical devices (not shown), such as electrical lamps, clocks, radios, television sets, and so forth.

The casing as shown in FIG. 2 has within its chamber a plurality of elongated ridges **20** and **22** on the bottom **10** thereof to provide means for locating the electrical contacts O adjacent the side walls **16** and **18**. The side walls possess cut away portions **23** which enable bare electrical wires of the electrical circuit to be directly connected to the duplex receptacle contacts O, O from an external circuit.

The metal holding strap S as shown in FIG. 2 is a metal stamping of metal wherein at each end there is an opening **24** for enabling a wall box holding screw to pass therethrough. The center portion **30** of the strap S has a threaded bore **26** therein for receiving a wall plate holding screw. The center portion **30** of the strap S as shown in FIGS. 2 and 3 is depressed and is adapted to fit within the area between guides **31**, **32** (see FIG. 4), projecting downwardly from the inside portion of the cover C.

The metal holding strap has two T-shaped ears **34**, **36** (see FIG. 10) stamped from the bracket. Both ears are pressed to extend at an angle of 45° to the end portions **38** of strap S.

The inverted T-shaped ears **34**, **36** are pressed from the strap S but are not severed therefrom. The inverted T-shaped ear **34** is adapted to fit between a pair of spaced projections **42**, **44** (FIG. 2) on the wall **12** of the casing A. The second inverted T-shaped ear **36** on the strap S, is adapted to be pressed between a pair of spaced projections **43**, **45** on the wall **14** at the other end of the casing A.

Each of the T-shaped ears **34**, **36** and the complementary projections **42**, **44** and **43**, **45** combine with fingers **52**, **54** and **58**, **60** of cover C to hold the casing and the contacts O therein, the strap S, and the cover C together.

The cover C (FIG. 4), made of thermosetting insulation material, has extending through its center a central opening **46** through which a wall plate mounting screw (not shown) may pass. There are two pairs of complementary rectangular openings **48**, **50** in the cover C through which the prongs of two male plugs (not shown) may pass.

Upon the inside surface of the cover C as shown in FIG. 4 are guide surfaces **31**, **32** which permit the strap

S to slide in proper alignment to the predetermined position for a purpose which will become apparent as the description develops.

However, an essential part of the invention is shown at each end of the cover C (FIG. 2) in the pairs of integrally molded relatively long fingers **52, 54** and relatively short fingers **58, 60.**

The duplex receptacle of the present invention is adapted to be assembled in the following manner: Electrical contacts O, O are positioned within the casing A and are interposed between projections **20** and **22** of casing A and an adjoining side wall **16** or **18** thereof. One end **37** of strap S is positioned upon relatively long fingers **52, 54** as shown in FIGS. 3 and 4 in such a manner that corners **37A** and **37B** of strap S rest respectively on the fingers **52, 54** (FIG. 4) and abut against a short side wall **61** of cover C (FIG. 1) adjacent the male plug entry area **48, 50.**

Because fingers **58, 60** are shorter than the fingers **52, 54** (approximately one-half in length) end portion **38** of strap S may be moved in the direction of arrow **63** of FIG. 3 so that corners **38A** and **38B** may clear the relatively short fingers **58, 60** (FIGS. 3 and 4) and the entire strap S may lie flush against the undersurface of cover C.

The strap S is now moved in a left hand direction (in the direction of arrow **65**) as viewed in FIG. 4 to seat end portion **38** thereof upon relatively short fingers **58, 60** (FIG. 7) while the other end portion **37** thereof remains seated upon the relatively long fingers **52, 54.**

It should be now noted that cover C and strap S are firmly secured together and can be separated only by sliding end portion **38** of strap S to clear relatively short fingers **58, 60** in a reversal of the previously discussed assembly process. Strap S cannot be separated from cover C at end portion **37** since this end portion cannot clear the relatively long fingers **52, 54** because corners **38A** and **38B** immediately abut against vertical edge **49** (FIGS. 3 and 7) of the cover C. Moreover strap S is restrained from upward or downward movement by cover C or the pairs of fingers **52, 54** and **58, 60** respectively.

The assembled cover C and strap S (FIG. 8) may now be positioned upon casing A which is so dimensioned that the pairs of projections **42, 44** and **43, 45** thereof will be interposed respectively between pairs of fingers **52, 54** and **58, 60.** The interposition of one pair of projections **42, 44** of casing A between fingers **52, 54** of cover C is shown in FIG. 10. **T**-shaped ears **34, 36** may now be bent to a position normal to the plane of strap S to rest respectively between pairs of projections **42, 44** and **43, 45** aind to abut thereagainst from below. See FIGS. 9 and 10.

It is thus seen that the actual time of assembly for the present receptacle is relatively short, and the contacts O, O are automatically aligned with the openings **48, 50** for the prongs of a male plug (not shown).

Moreover, the present invention constitutes a distinct improvement both structurally and functionally over presently known devices. In the currently used devices the cover, strap and casing are generally held together by a single bolt positioned at the center of the device. Thus when a male plug is inserted in the prior art devices a torque is created about the centrally located bolt as a pivot point thereby tending to bend the strap and distort it. Such a torque is substantially eliminated in the present invention where securement via the spaced **T**-shaped ears **34, 36** is near the two ends of the device. It should also be noted that such securement is effected without the necessity of increasing the length of the present receptacle as would be the case if two bolts were to be positioned near the two ends of the device.

Moreover, the central part of the strap S has been widened to add strength to the unit and to eliminate another weakness in the straps found in the prior art.

Although the invention is being described for a duplex flush receptacle, it is equally applicable to any number of pairs of contacts, and it is not necessarily limited to a flush receptacle. A ground connection may be added.

It should also be noted that the three elements of the present invention may be assembled in a slightly modified manner than as shown in FIG. 3 to 9. In the modified mode of assembly the strap S may be secured to the cover C as shown in FIGS. 3 and 4. This combination of strap and cover may then be positioned upon casing A. Thereafter, the strap S is moved to the left as shown in FIG. 7 with the final step of bending ears **34, 36** into position as shown in FIG. 10.

Although my invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

What is claimed as the invention is:

1. An electrical receptacle comprising a cover, a casing, a holding strap to secure said cover to said casing and electrical contacts positioned within said casing, said cover having at each end thereof a pair of fingers, each pair of fingers defining a first slot therebetween, said casing having at each end thereof a pair of projections, each pair of projections defining a second slot therebetween, each of said second slots being complementary with one of said first slots to provide pairs of complementary slots, said holding strap comprising an elongated body portion having end portions, said body portion being positioned between said cover and said casing and said end portions being slidably positioned to rest upon said pairs of fingers, and ears, each having fastening means, extending from said holding strap, said ears each being positioned within one of said pairs of complementary first and second slots so that said fastening means cooperate with said pairs of projections to secure said casing to said cover, whereby said end portions of said strap bear against said fingers.

2. The electrical receptacle of claim 1 wherein said ears are of an inverted **T**-shape with the leg of each **T** positioned within one of said pairs of complementary first and second slots and the base of each **T** positioned beneath and bearing upwardly against one of said pairs of projections.

3. The invention of claim 1 including guide members under said cover to align said strap.

4. The invention of claim 1 wherein said holding strap is of metal.

5. The invention of claim 1 wherein one pair of said finger is shorter than the other pair of said fingers whereby one end portion of said strap may be positioned on said other pair of fingers and then slid so that the other end portion of said strap may be positioned on said shorter pair of fingers to provide a tight assembly.

6. A method of assembling an electrical receptacle including a cover, a casing, and a holding strap to secure said cover to said casing, said cover having at each end thereof a pair of fingers, each pair of fingers defining a first slot therebetween, said casing having at each end thereof a pair of projections, each pair of projections defining a second slot therebetween, said holding strap comprising an elongated body portion having end portions including ears, each having fastening means extending from said strap, the method of assembly comprising sliding said strap under said cover in such a manner that each of the end portions of said strap rest upon one of the pairs of fingers of said cover and so that each of said ears is positioned within one of said first slots between a pair of fingers of said cover and extends therefrom, positioning said casing with respect to said cover and strap so that each of said ears is also mounted within one of said second slots between a pair of projections of said casing and extends therefrom, and adjusting said

ears so that said fastening means cooperate with said pairs of projections to secure said casing to said cover.

7. The invention of claim 6 including guide members under said cover to align said strap.

8. The invention of claim 6 wherein one pair of said fingers is shorter than the other pair of said fingers to facilitate the sliding of said strap in order to provide a tight assembly.

9. The invention of claim 5 wherein said strap is positioned under said cover in such a manner that one end portion of said strap rests upon said other pair of said fingers and the other end portion of said strap is positioned immediately adjacent to said shorter pair of fingers and wherein said strap is slid in a direction toward said one pair of fingers whereby each of said end portions of said strap respectively rest upon a pair of said fingers.

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