

March 21, 1967

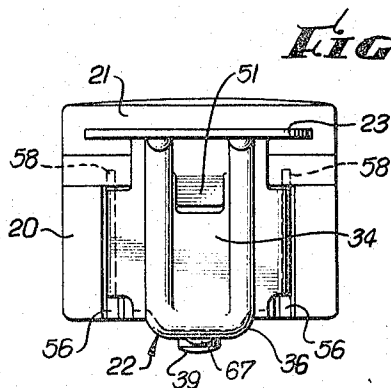
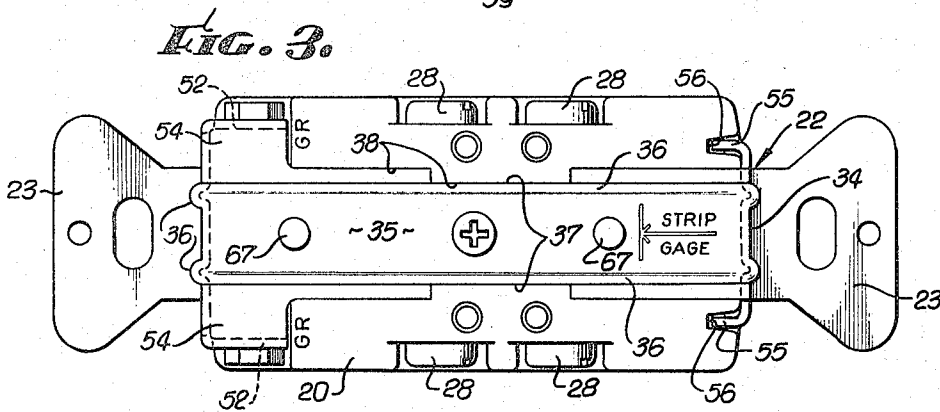
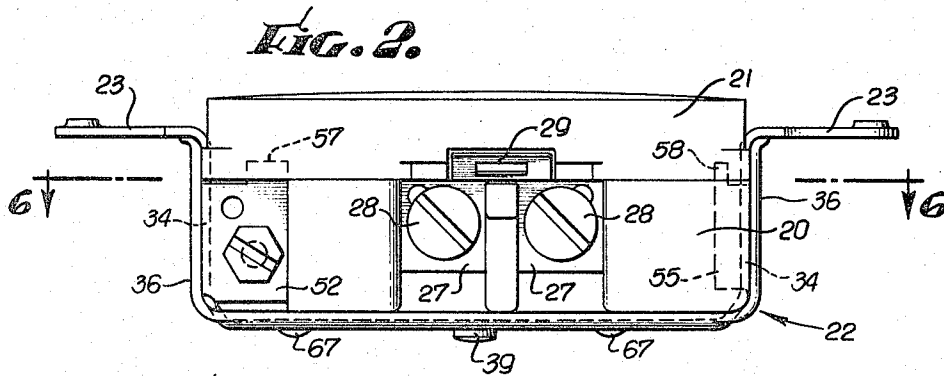
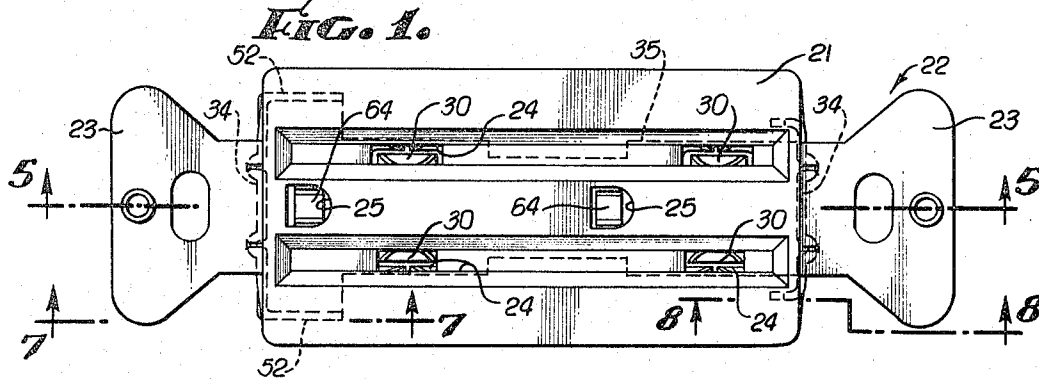
R. E. V. RAMSING

3,310,770

ELECTRICAL RECEPTACLE WITH STRAP INTERLOCK

Filed Oct. 5, 1964

3 Sheets-Sheet 1



INVENTOR.
ROBERT E. V. RAMSING
 BY *White & Haefliger*
 ATTORNEYS.

March 21, 1967

R. E. V. RAMSING

3,310,770

ELECTRICAL RECEPTACLE WITH STRAP INTERLOCK

Filed Oct. 5, 1964

3 Sheets-Sheet 2

Fig. 5.

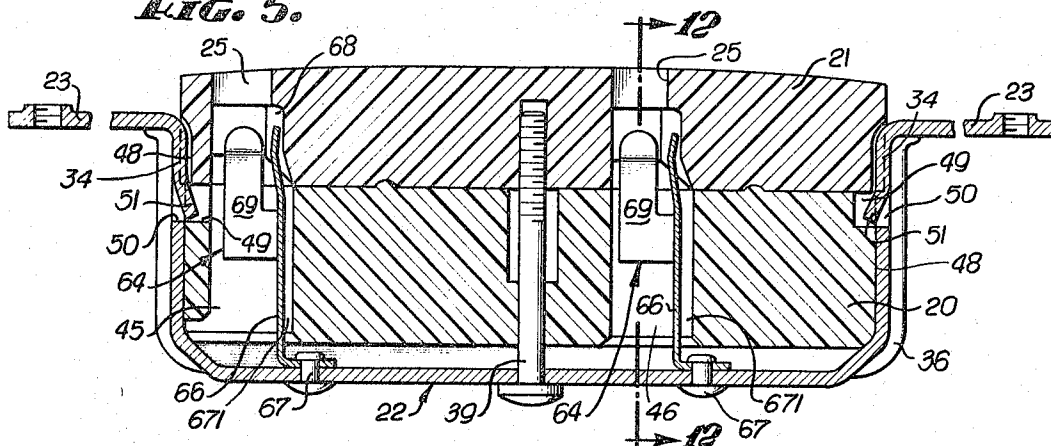


FIG. 6.

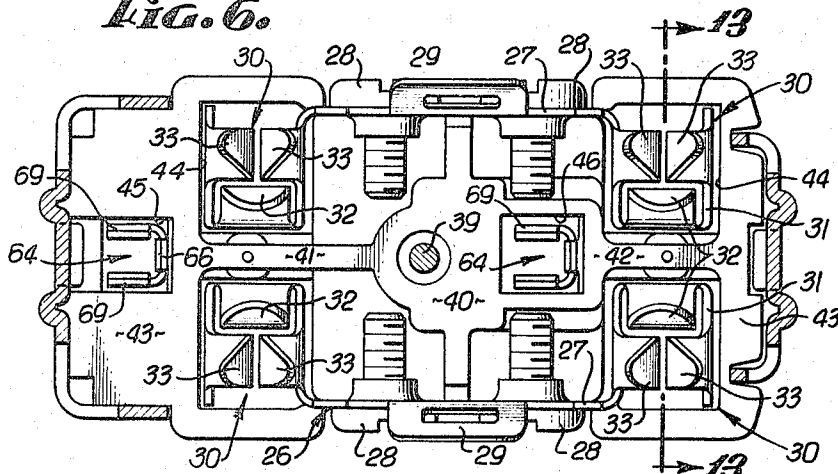


Fig. 7.

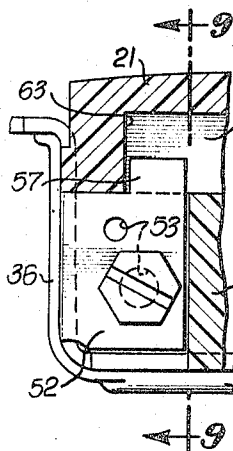


FIG. 8.

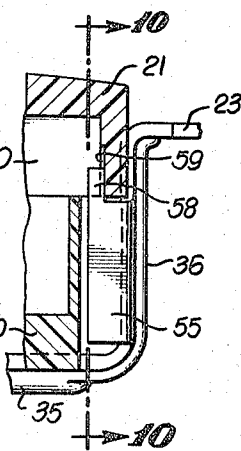
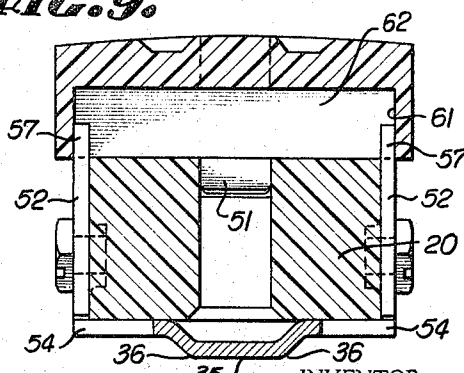


Fig. 9.



INVENTOR.
ROBERT E. V. RAMSING
BY *White & Hoefliger*
ATTORNEYS

March 21, 1967

R. E. V. RAMSING

3,310,770

ELECTRICAL RECEPTACLE WITH STRAP INTERLOCK

Filed Oct. 5, 1964

3 Sheets-Sheet 3

FIG. 14.

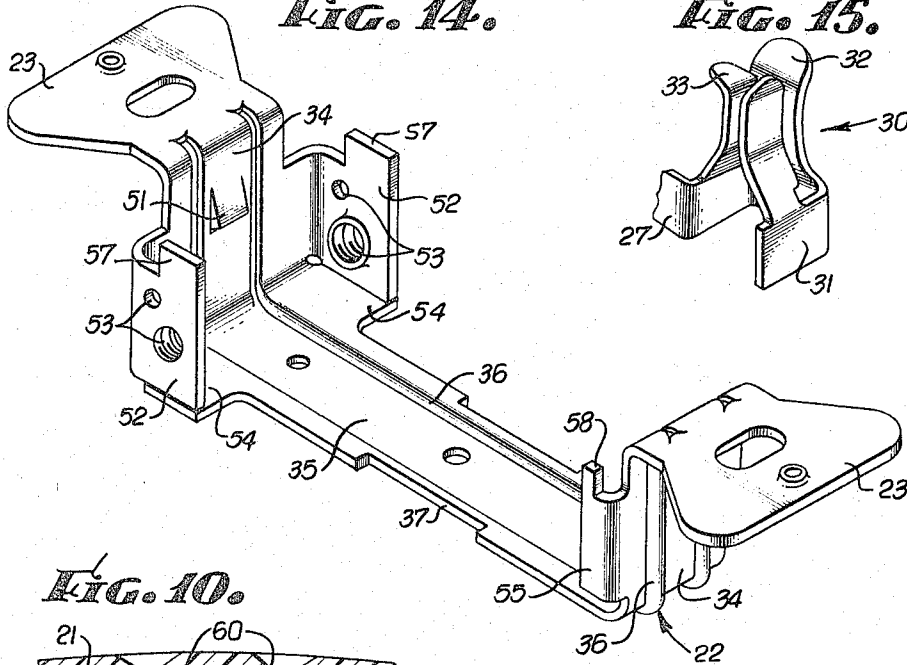


FIG. 15.

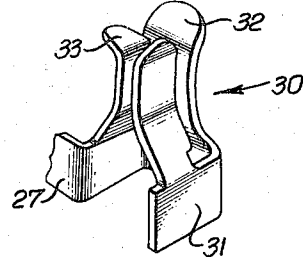


FIG. 10.

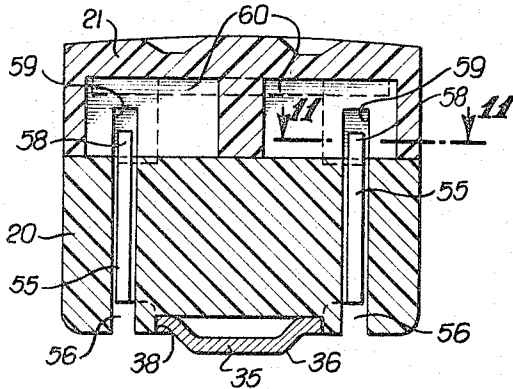


FIG. 12.

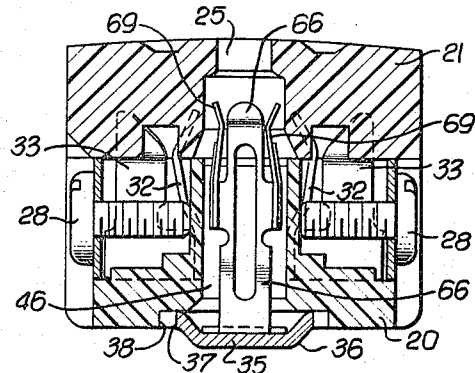


FIG. 13.

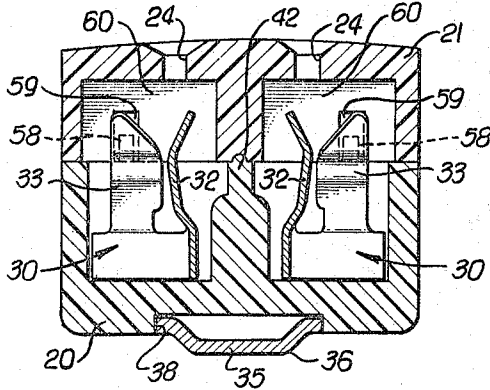
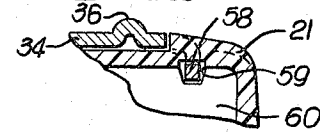


FIG. 11.



INVENTOR.
ROBERT E. V. RAMSING
BY *White & Haeffliger*
ATTORNEYS.

1

3,310,770

**ELECTRICAL RECEPTACLE WITH STRAP
INTERLOCK**

Robert E. V. Ramsing, Whittier, Calif., assignor to Sierra
Electric Corporation, Gardena, Calif., a corporation
of California

Filed Oct. 5, 1964, Ser. No. 401,419

9 Claims. (Cl. 339-14)

This invention relates generally to improvements in electrical receptacles of the type comprising an insulative body having a removable cover, and an associated mounting strap secured to the face of the body opposite the cover and having end extents in overlapping relation with opposite ends of the body.

More particularly, the invention relates to receptacles of the grounded type containing contacts adapted to electrically connect with a pair of current carrying blades and the grounding pin of a conventional two pole grounding type plug-in cap.

Principally contemplated by the invention are improvements associated with the mounting strap and its utilization both for end retention of the body and for positively preventing shifting of the cover relative to the body and strap.

In furtherance of this general objective, the invention provides for formation of the strap with inwardly directed projections engageable with surfaces at the ends of the body to block retraction of the body out of the strap unless the latter is intentionally sprung to release the body, and other projections extending from the body over lapping end extents of the strap into the cover to block shifting of the cover both longitudinally and transversely of the body.

Accomplishment of these functions is rendered particularly effective by a novel form of mounting strap wherein its end extents are formed with opposed integral wings disposed at the sides of the body, and with the cover stabilizing projections extending from and integrally with the wings, into recesses within the cover.

Also contemplated in association with the strap is an improved form of grounding terminal projecting into the body and composed of a flexible conductor carrying a pair of wings spaced in alignment with the grounding pin opening in the cover.

It will be understood that the invention is applicable to grounded receptacles having a single assembly of a pair of blade-receiving contacts and a grounding contact, or to receptacles embodying a series of such assemblages. As illustrative, the invention will be described typically with reference to a receptacle with duplex or dual contact assemblies wherein initially integrated blade receiving contacts are rupturable between the assemblies.

The various features and objects of the invention will be understood more fully from the following detailed description of the illustrative embodiment shown by the accompanying drawing, in which:

FIG. 1 is a cover face plan view of the receptacle;

FIG. 2 is a side elevation of FIG. 1;

FIG. 3 is a bottom plan view of the receptacle;

FIG. 4 is an end elevation of FIG. 2;

FIG. 5 is a cross section taken on line 5-5 of FIG. 1;

FIG. 6 is a plan view on line 6-6 of FIG. 2 showing the interior of the body with the cover removed;

FIGS. 7 and 8 are fragmentary sections taken respectively on lines 7-7 and 8-8 of FIG. 1;

FIGS. 9 and 10 are sections taken respectively on lines 9-9 and 10-10 in FIGS. 7 and 8;

FIG. 11 is a fragmentary section taken through the cover on line 11-11 of FIG. 10;

FIG. 12 is a cross section on line 12-12 of FIG. 5;

2

FIG. 13 is a cross section on line 13-13 of FIG. 6; FIG. 14 is a view showing the strap in perspective; and FIG. 15 is a fragmentary showing in perspective of one of the blade contact terminals.

The receptacle is shown generally to comprise an elongated body 20 and a cover 21, both being formed of electrically insulative material and being mountable and interconnected in the manner later explained, by a strap generally indicated at 22 having apertured mounting terminals 23. As previously observed, the invention is applicable to grounded type receptacles in which the cover is apertured at 24 and at 25 to pass respectively the current carrying blades and grounding pin of a conventional two pole grounding plug-in cap, not shown. The receptacle may embody only one, or any number in series, of such aperture arrangements and corresponding body-containing contacts, the typical form shown being a duplex or two-series type.

At this point it may be observed that the body 20 may contain contacts of any suitable design for reception of the plug blades inserted through the cover apertures 24. Merely as illustrative in FIG. 6, such contacts generally indicated at 26 and located at and within opposite sides of the body, are shown to have intermediate extents 27 carrying binding screws 28, with exposed removable sections 29 which may be broken out to electrically isolate terminals generally indicated at 30. Referring to FIG. 15, each terminal 30 comprises a U-shaped bend 31 of the conductor 27 carrying flexible blades 32 and 33 the spacing between which is aligned with the cover slots 24 so that upon insertion therethrough, the plug-in conductor will enter between and be retained by the blade arrangement of the terminal.

Now in particular reference to FIG. 14, the strap 22 is shown as a metallic piece die-formed to present the mounting terminals 23 bent outwardly from the resiliently spreadable ends 34 which in turn are bent from and in right angular relation to the long or intermediate extent 35 of the strap. The latter may be rigidized by die-formed ribs 36 running longitudinally, and the side edges of the extent 35 are notched at 37 for keyed conformance with recess 38 in the bottom of the body, as best viewed in FIG. 3. The strap is retained in the recess and interconnected through the body with the cover 21 by screw 39, appearing in FIG. 5.

In reference to FIG. 6, the screw passes through a central portion 40 of the body, the surface of which is coplanar with ribs 41, 42 and end surfaces 43, within which are recesses 44 for accommodation of the terminals 30. Recesses 45 and 46 with their offsets 68 and 671 serve as body openings to contain the later described grounding contacts. As shown in FIG. 5, the end portion 34 of the strap is received within recess 48 in the ends of the body and cover. Unintentional release of the body from out of the strap is prevented by the engageability of the body shoulders 49 of recess 50, with tongues 51 struck inwardly and out of the strap metal.

Referring again to FIG. 14, at one end the strap has the bent configuration illustrated to form opposed and corresponding wings 52 which may have threaded and unthreaded openings at 53 for the accommodation of grounding conductors, if needed. Intermediate portion 35 of the strap has extensions at 54 approaching or underlying the wings 52, which engage the underside of the body as illustrated in FIG. 3. At its opposite end, the strap has similar but smaller and more narrowly spaced wings 55 which are receivable within body recesses 56 as shown in FIGS. 3 and 4.

The wings 52 and 55 serve to position integrally formed projections 57 and 58 which extend into the cover 21 to positively prevent and block longitudinal or transverse

3

shifting of the cover relative to the body. As shown in FIGS. 8 and 10, projections 58 are received within recesses 59 in the end surface of one of the cover cavities 60, and projections 57 extended upwardly into and in engagement with the side surfaces 61 of the cover cavity 62 and in close proximity to the end surface 63, as illustrated in FIGS. 7 and 9. Thus the projections are positioned to hold the cover, as stated, against shifting transversely or longitudinally independently of the screw 39.

The invention is further characterized by its provision of a novel and effective form of grounding conductor generally indicated at 64, and its relation to the configuration of the body openings 45 and 46 and cover openings 25. Each contact comprises a relatively thin flexible conductor 66, see also FIG. 12, riveted at 67 to the strap 22 and having a free elongated extent accommodated within portion 671 of the body opening 45 and portion 68 of the cover opening 25, and offset from opening 25. Resiliently flexible blades 69 are formed integrally with and extend from an intermediate portion of the conductor 66, and project in spaced relation substantially aligned with the cover opening 25, so that the cap grounding pin inserted through the opening flex and become retained between the blades 69. Opening 25 may be oversized in relation to the grounding pin so that if the latter is inserted at an angle into recess 68, the pin becomes engageable with the upper somewhat angular terminal of the conductor 66 which then tends to align the pin toward the blades 69.

I claim:

1. An electrical receptacle comprising an insulative body and removable cover containing openings for passage into the body of a pair of plug-in prongs and a grounding pin, a resilient mounting strap secured to the face of the body opposite the cover and having end extents in overlapping relation with opposite ends of the body and cover, inward projections carried by the strap and so positioned opposite surfaces of the body as to block separation of the body from the strap by engagement with said surfaces, said end extents of the strap each having a pair of projections extending into the cover

4

and engageable therewith to block lateral shifting of the cover relative to the body.

2. A receptacle according to claim 1, in which said inward projections are tongues struck out of the strap and terminating within end recesses in the body.

3. A receptacle according to claim 1, in which said pairs of projections are engageable against inside cover surfaces to block cover movement both longitudinally and transversely of the body and strap.

4. A receptacle according to claim 1, in which said end extents of the strap have lateral wings overlapping the sides of the body and carrying said projections extending from the ends of the wings into the cover.

5. A receptacle according to claim 1, in which wings are formed as opposed correspondingly bent extensions of said end extents of the strap.

6. A receptacle according to claim 5, in which said strap wings are received within interior recesses in the body.

7. A receptacle according to claim 6, in which said inward projections are tongues struck out of the strap and terminating within end recesses in the body.

8. A receptacle according to claim 6, including also a fastener interconnecting the strap and cover centrally through the body.

9. A receptacle according to claim 1, in which said strap carries a grounding contact adapted to receive the grounding pin and projecting into the body, said contact comprising a flexible conductor carrying a pair of blades spaced apart in alignment with the grounding pin opening in the cover.

References Cited by the Examiner

UNITED STATES PATENTS

1,602,370	10/1926	Avery	339—33
1,631,507	6/1927	Slade	339—133 X
2,672,593	3/1954	Shenton	339—14
3,032,736	5/1962	Howells	339—14

EDWARD C. ALLEN, *Primary Examiner*.

PATRICK A. CLIFFORD, *Examiner*.