

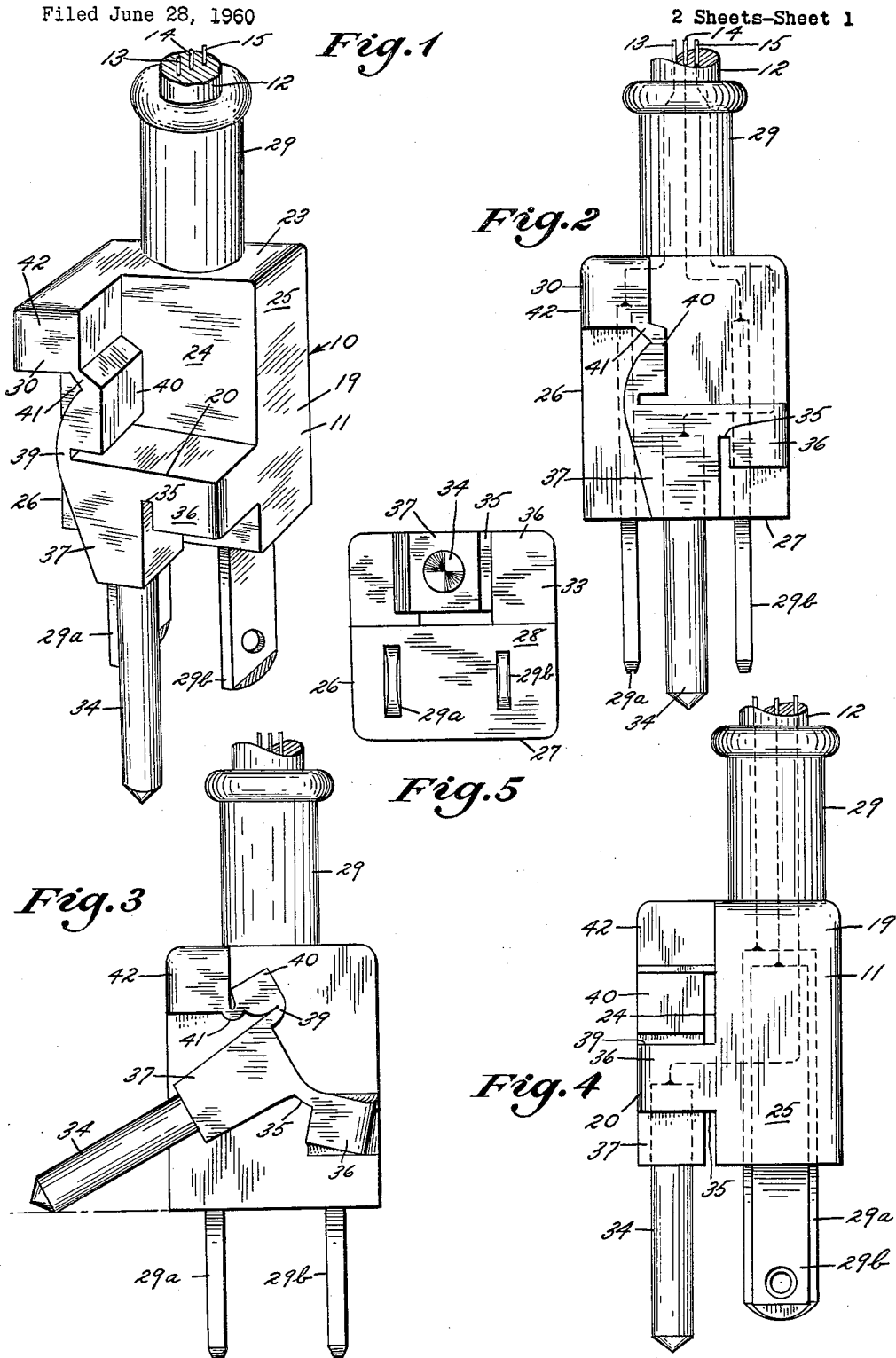
Oct. 30, 1962

M. MORSE

3,061,809

MULTIPOSITION MOLDED GROUNDING ELECTRICAL PLUG

Filed June 28, 1960



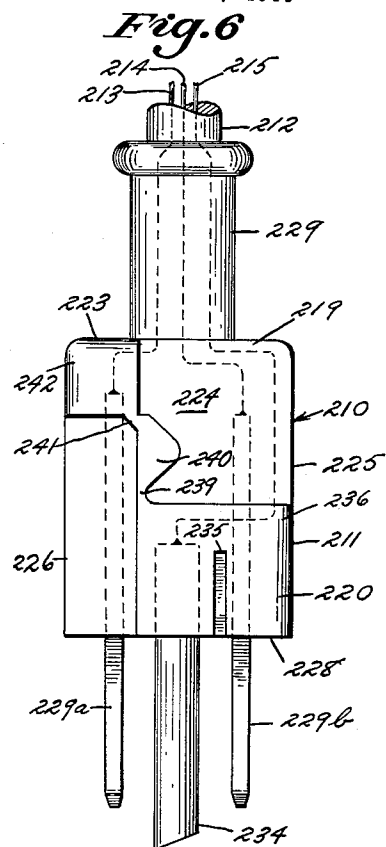
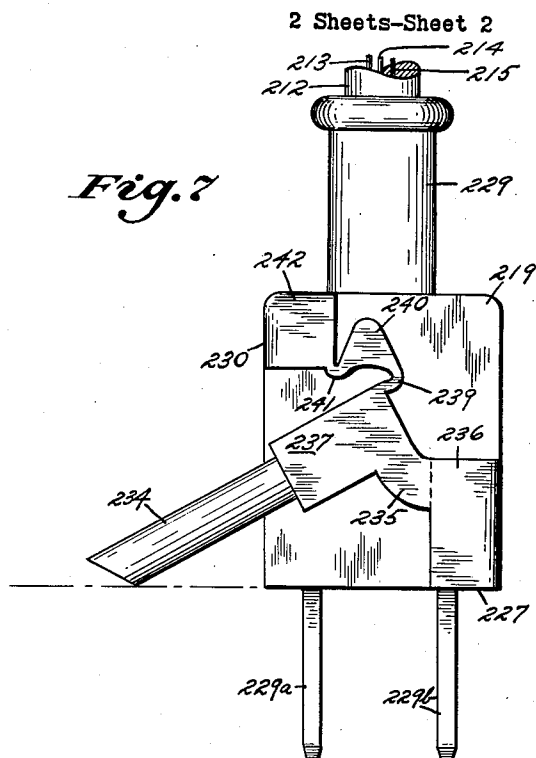
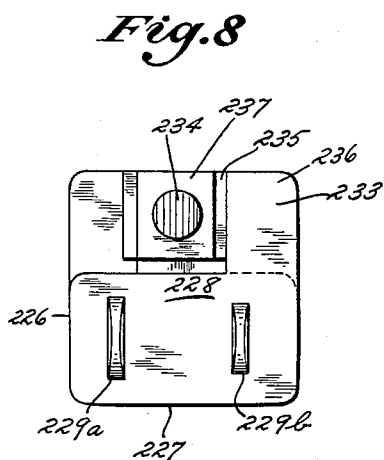
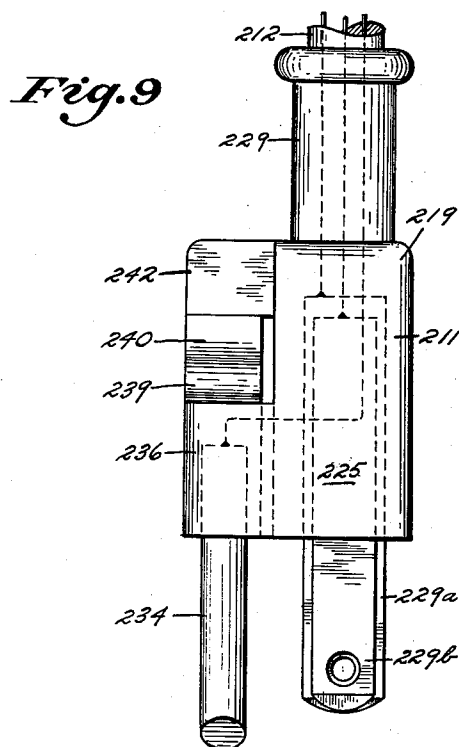
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MULTIPOSITION MOLDED GROUNDING ELECTRICAL PLUG

Milton Morse, Englewood, N.J.

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1 Claim. (Cl. 339-14)

This invention relates generally to electrical connecting plugs, and more particularly to those adapted to conduct a plurality of conductors to corresponding elements of a receptacle while simultaneously effecting a grounding connection.

The desirability of automatically making a grounding connection simultaneously with a power source connection is well recognized. Usually, an additional opening is provided in the receptacle adapted to receive a correspondingly shaped and sized prong on the plug body. This presents a disadvantage in that the receptacle and the plug must be matched. Most often this is not the fact, and the user attempts to solve the problem by cutting or breaking off the grounding prong. This loses the entire grounding effect so that should the user be grounded (as in working while standing on a damp floor) and the appliance which he may be holding should develop a ground (a short of a live wire to the casing of the appliance) he may receive a severe shock.

In my prior U.S. Patent No. 2,879,469, granted July 28, 1959, there is disclosed a molded plug construction in which the grounding prong is mounted on an integrally molded flexible support in such manner that the grounding prong will normally be aligned parallel to the power prongs, and in alignment with an opening in a receptacle adapted to receive the same. Where no such opening is present, the grounding prong support is deflected in such manner that the grounding prong may effect a ground with the wall plates surrounding the receptacle.

It has been found that where plugs of this type are inserted into a non-grounding receptacle, the grounding prong support member, with passage of time, tends to lose its resiliency and maintains the grounding prong in unstressed condition such that the grounding prong is no longer parallel to the power prongs. If the plug is subsequently used with a grounding type receptacle, it is necessary to realign and hold the grounding prong support so that proper interconnection is made.

It is therefore among the principal objects of the present invention to provide an improved construction of the class described in which the above-mentioned disadvantage has been substantially eliminated.

Another object herein lies in the provision of an electrical connection plug which may be used with special grounding receptacles, without affecting the automatic grounding result.

A further object of the invention lies in the provision of a dead center snap action means incorporated into the grounding prong support which will positively align the grounding prong for insertion into a grounding type receptacle, irrespective of the amount of time the plug has been employed in conjunction with non-grounding type receptacle.

Still another object of the invention lies in the provision of a self-grounding plug which may be easily substituted for older plugs lacking its operational features, and by unskilled persons using only simple tools.

A further object of the invention lies in the provision of devices of the class described in which the cost of fabrication may be of a reasonably low order, with consequent wide sale, distribution and use.

A further object of the invention lies in the provision of an electrical plug of the class described in which the

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power prong portions thereof may be of unequal width to assure correct positioning of the plug within a wall receptacle in the event that the grounding prong is deflected upon improperly positioning the plug with respect to a grounded receptacle.

A feature of the invention lies in the provision of structure which will obtain a positive ground against any metallic receptacle box having a conventional metallic cover.

These objects and features, as well as other incidental ends and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claims.

In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIGURE 1 is a view in perspective of a first embodiment of the invention.

FIGURE 2 is a side elevational view of the first embodiment.

FIGURE 3 is a similar side elevational view, showing the grounding prong in deflected orientation.

FIGURE 4 is an end elevational view as seen from the right-hand portion of FIGURE 2.

FIGURE 5 is a bottom plan view, as seen from the lower portion of FIGURE 2.

FIGURE 6 is a side elevational view corresponding to that seen in FIGURE 2, but showing a second embodiment of the invention.

FIGURE 7 is an elevational view corresponding to FIGURE 3, but showing the second embodiment.

FIGURE 8 is a bottom plan view corresponding to that seen in FIGURE 5, but showing the second embodiment.

FIGURE 9 is an end elevational view corresponding to that seen in FIGURE 4, but showing the second embodiment.

In accordance with the invention, the device, generally indicated by reference character 10, includes a conduit 12 having first, second and grounding conductors 13, 14 and 15, respectively. The plug body 11 includes a main body element 19 and a grounding element 20.

The main body element 19 is of generally rectangular configuration, being bounded by an outer surface 23, side surfaces 24, 25, 26 and 27, and an inner surface 28. A conduit engaging extension 29 is preferably formed integrally with the main body element 19, and at the inner surface 28, a pair of conventional mutually parallel power transmitting prongs 29a and 29b, respectively, anchored in any suitable manner well known in the art. As best seen in FIGURES 4 and 5, prong 29a is slightly wider than 29b to prevent reversed insertion into a wall outlet (not shown).

The grounding element 20 includes a mounting member 33 and a grounding prong 34 of standardized configuration. The prong 34 is anchored within a prong supporting portion 37, flexibly connected to a mounting portion 36 through a resilient bend portion 35.

The grounding element 20 also includes a movable linking means 30, including a first flexible portion 39 secured to a part of the prong-supporting portion 37. Connected to the first flexible portion 39 is a relatively rigid torque-transmitting link portion 40, in turn connected through a second flexible portion 41 to a mounting portion 42 fixedly interconnected to the main body element.

As best seen from a comparison of FIGURES 2 and 3, the linking means 30 has two relatively stable positions. In the first position shown in FIGURE 2, the link portion 40 is in substantially parallel alignment with respect to the axis of the grounding prong 34, and where the device 10 is inserted into a grounding type receptacle

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(not shown) proper alignment will be maintained to assure a simple insertion. Where a non-grounding type receptacle, contact of the grounding prong 34 with the receptacle will deflect the prong to the position shown in FIGURE 3 in the drawing. This deflection is accompanied by a "snap action" during which time the linking means is deflected so that it exerts a line of force which will partially cancel the stress placed upon the bend portion 35 by the deflection of the grounding prong 34. In this position, the stress exerted upon the bend portion is partially relieved, so that upon removal of the plug from contact with the non-grounding receptacle, the grounding prong will snap back to its initial position parallel with the power prongs of the device. Where the device is maintained in the condition shown in FIGURE 3 for an extended period of time, the presence of the linking means prevents fatigue upon the bend portion 35, thereby maintaining its resilient properties.

Turning now to the second embodiment of the invention, parts corresponding to the first embodiment have been designated by similar reference characters with the additional prefix "2."

The second embodiment differs from the first embodiment principally in the relocation of the line of force transmitted between the flexible portions 239 and 241. Whereas in the first embodiment, in the normal or unstressed condition shown in FIGURE 2, the line of action is directed leftwardly with relation to the principal axis of the grounding prong, in the second embodiment in a comparable position, the line of action is directed parallel to the principal axis of the grounding prong.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown

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and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

I claim:

- 5 In a self-grounding electrical plug, including a plug body, and at least one power prong within said body, and a flexibly mounted grounding prong, the improvement comprising: a grounding prong support flexibly interconnecting said grounding prong with said plug body,
- 10 and in normally unstressed condition supporting said grounding prong in a position parallel to said power prong, and movable linking means interconnecting said grounding prong support and said plug body, said linking means including a first portion fixedly mounted with respect to said plug body, and a second portion interconnected between said grounding prong support and said
- 15 first portion, said movable linking means having first and second positions, in one of said positions said grounding prong being resiliently urged to a position substantially parallel to said power prong, and in another position
- 20 said grounding prong being in a position substantially angularly disposed with respect to the axis of said power prong, said linking means serving to reduce the effective force of said grounding prong support tending to move
- 25 said grounding prong to said first-mentioned position.

References Cited in the file of this patent

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