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[11] **3,871,731**

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[54] **CAGE FOR REMOVABLY ENCLOSING COUPLED ELECTRICAL PLUGS**

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[52] **U.S. Cl.** ..... **339/75 P**

[51] **Int. Cl.** **H01r 13/54**

[58] **Field of Search** ..... 339/59 L, 75–85, 339/93

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[57] **ABSTRACT**

A hinged cage which is positionable over coupled electrical plugs. The opposed ends of the cage, when closed, provide restricted openings precluding a withdrawal of the plugs. A variation includes one plug exposing end having a slotted ear thereon selectively lockable to a wall receptacle.

7 Claims, 5 Drawing Figures

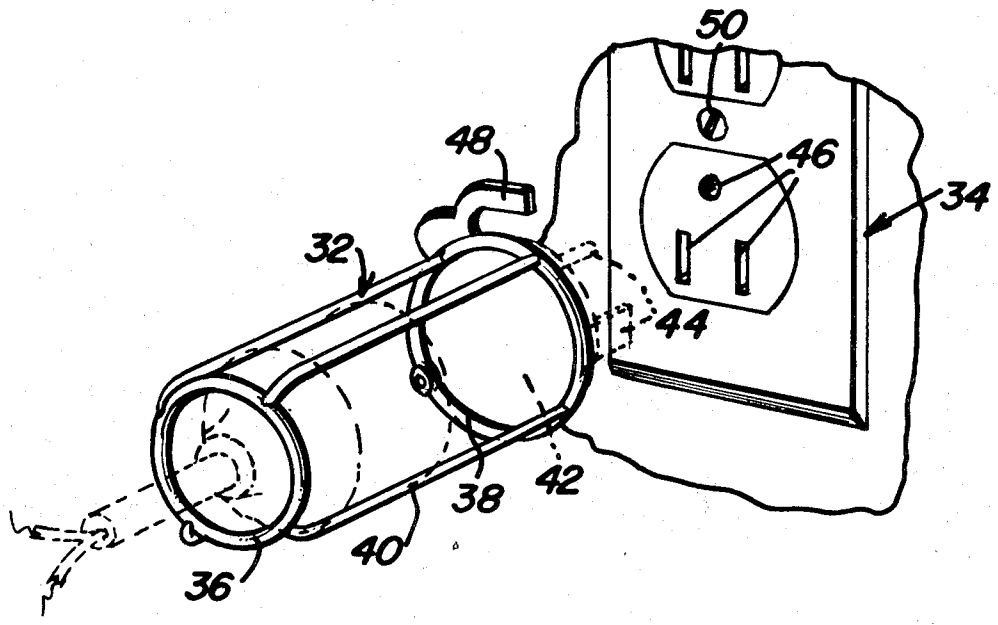


FIG. 1

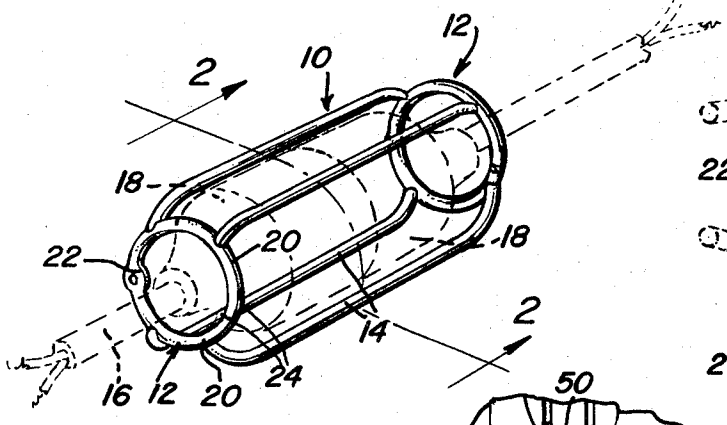


FIG. 2

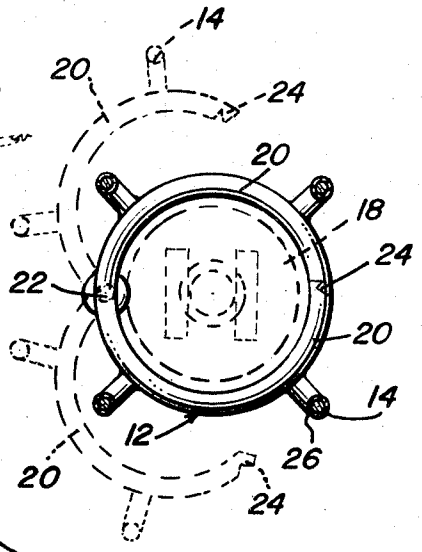


FIG. 5

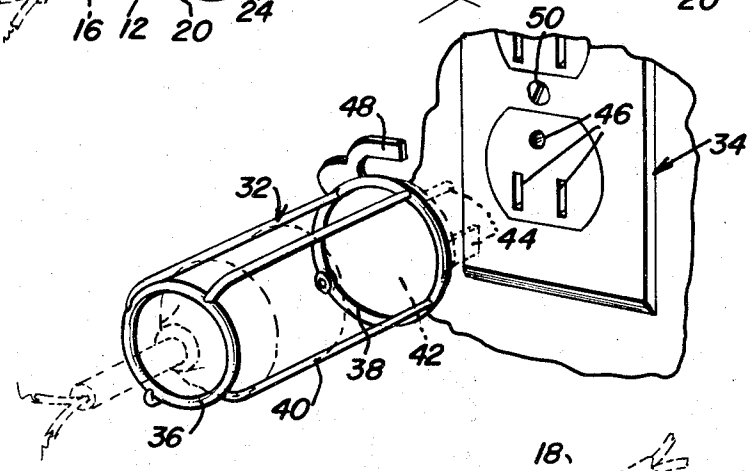


FIG. 4

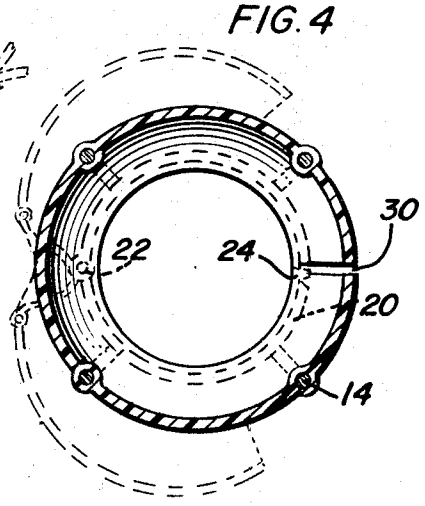
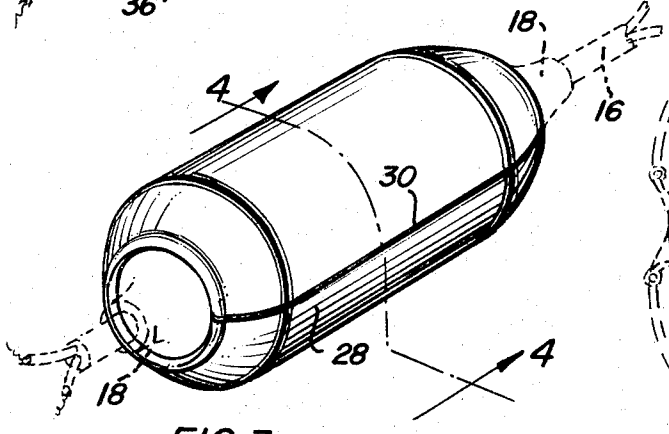


FIG. 3



CAGE FOR REMOVABLY ENCLOSING COUPLED ELECTRICAL PLUGS

The present invention generally relates to electrical apparatus, and is more particularly concerned with means for retaining electric plugs either coupled to each other or to wall receptacles.

It is one of the objects of the invention to provide a unique cage structure for enclosing coupled electric plugs in a manner whereby accidental disengagement of the plugs is impossible.

In conjunction with the above object, it is also a significant feature of the invention that the plug enclosing cage be easily mounted and removed as desired.

Basically, the cage includes a pair of longitudinally spaced end rings, each formed of two sections hinged together at one end and mounting cooperating latch portions at the second end. The rings are in turn rigidly interconnected by elongated outwardly bowed bars connected with respective sections for movement therewith. The configuration of the bars is such so as to snugly receive the plugs while the rings are of a reduced diameter confining the plugs and precluding a longitudinal withdrawal of the plugs from the cage. The rings and bars are coated with an appropriate non-conductive rubber or plastic and in fact can be embedded within a completely enclosing flexible housing which, upon a mounting and closing of the cage, completely conceals the plugs. In a contemplated variation, one ring can be enlarged so as to expose a male plug therethrough for engagement within a wall receptacle, the enlarged ring having a slotted ear rigid therewith which can be locked to the screw for the receptacle cover plate. This in turn locks the cage to the receptacle whereby a withdrawal of the plug is precluded.

Construction of the cage in the manner proposed provides a highly rigid durable unit capable of economical manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout.

FIG. 1 is a perspective view of the cage in closed operative position about a coupled pair of electrical plugs;

FIG. 2 is an enlarged cross-sectional view taken substantially on a plane passing along line 2—2 in FIG. 1 and illustrating the cage in both its open and closed position;

FIG. 3 is a perspective view of the housing enclosed cage;

FIG. 4 is a cross-sectional detail taken substantially on a plane passing along line 4—4 in FIG. 3 and illustrating the housed cage in both open and closed position; and

FIG. 5 illustrates a variation of the cage adapted for locking to a wall receptacle.

Referring now more specifically to the drawings, reference numeral **10** is used to generally designate a plug encasing cage constructed in accordance with the present invention. This cage **10** includes a pair of longitudinally spaced rings **12** interconnected by a plurality of elongated bars **14.**

The rings **12** are of a size so as to allow passage of the electric cord **16** therethrough while precluding passage of the associated plug **18** with the spacing between the two rings **12** being just sufficient so as to accommodate a pair of coupled plugs **18** whereby a disengagement of the plugs is prevented.

In construction, each of the rings **12** includes a pair of semi-circular sections **20** hingedly joined at one end as at **22** and mounting cooperating snaplatch portions **24** at the other end thereof. The longitudinal bars **14** extend between corresponding ring sections on each of the two rings **12,** preferably two bars **14** being associated with each ring section **20.**

In order to accommodate the relatively larger plugs **18** between the rings **12,** it will be noted that the major central portion of each bar **14** is outwardly set relative to the end rings **12** with the end portions of the bars **14** curving inwardly to engage and be rigidly affixed to the corresponding bar sections.

With particular reference to FIG. **2,** the manner in which the cage opens and closes will be more readily appreciated. With regard to the latch ends **24,** such include cooperating cam faces so as to allow for a quick snap closing thereof with a subsequent disengagement of the latch portions requiring a slight flexing of the rings in an obvious manner.

The cage **10** is finished by providing a non-conductive rubber or plastic coating **26** on the rings **12** and bars **14,** this coating being sufficiently flexibly resilient so as to enable the necessary hinging action to open and close the cage.

With reference to FIGS. **3** and **4,** the invention also contemplates the provision of a complete housing **28** about the cage. This housing, formed of appropriate non-conductive rubber or plastic, completely embeds the various rings and bars as will be readily appreciated from FIG. **4** with the opening and closing of the cage being accommodated by a longitudinal slit **30** provided through the housing in alignment with the longitudinally aligned ring latches **24.** Utilizing such a complete housing **28,** it will be appreciated that the plugs **18** will be for the most part concealed presenting a more pleasing appearance should the coupled plugs be in an exposed area.

FIG. **5** illustrates a form of cage **32** particularly adapted for use at a wall receptacle **34.** The basic construction of the cage **32** is similar to that of the cage **10** in that spaced hinged and selectively latchable rings **36** and **38,** interconnected by longitudinally extending bars **40,** are provided. The cage **32** differs in that the inner ring **38** is of a size so as to expose a male plug **42** sufficiently so as to enable a firm seating of the prongs **44** thereof into the appropriate female receptacle openings **46** in the wall receptacle **34.** In addition, the cage **32** includes a rigid slotted ear **48** fixed to the inner ring **38** and so located as to align with the cover plate mounting screw **50** which is loosened so as to allow for an introduction of the slotted ear **48** therebeneath. The screw **50** is then retightened or locked which in turn fixes the cage **32** to the wall receptacle **34** and locks the plug or plugs therein to the receptacle. In this form of the invention, it will be appreciated that the length of the cage **32** will depend on whether the cage is to retain a combined plug and adapter as suggested in FIG. **5,** or a relatively shorter single male plug. In either case, the outer ring **36** will be of a smaller size than the inner ring **38** so as to, while allowing passage of the plug cord therethrough, preclude longitudinal withdrawal of the outermost plug. This will of course require a slight in-

turning of the outer ends of the side bars **40** prior to fixed attachment to the ring **36.**

From the foregoing, it will be appreciated that a highly unique retaining device for coupled electrical plugs has been defined. This device, while of a basically simple and economical construction, is highly effective in positively retaining coupled plugs against accidental disengagement.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A retaining cage for coupled electrical plugs comprising a pair of longitudinally spaced rings, elongated bars extending between and rigidly fixed to said rings, and means providing for a lateral introduction of said cage over coupled electrical plugs with the plug engaged current conductors projecting outward of the cage through said rings, one of said rings being of a lesser diameter than the internal diameter of the cage defined by the cage bars to preclude movement of a cage received plug therethrough, said bars, at the end corresponding to the one ring of lesser diameter, turning inward to engage this ring, the second ring also being of a lesser diameter than the internal diameter of the bar defined cage.

2. The cage of claim **1** wherein the means providing for a lateral introduction of the cage over the plugs includes formation of each ring in a pair of sections hingedly connected at one end and incorporating releasable latch means at the second ends, said bars being engaged between corresponding sections on the two rings for movement therewith.

3. The cage of claim **1** wherein said rings and bars are provided with a non-conductive coating.

4. The cage of claim **3** wherein said cage is completely enclosed by a non-conductive housing, the ring and bar coating constituting a portion of said housing.

5. A. retaining cage for coupled electrical plugs comprising a pair of longitudinally spaced rings, elongated bars extending between and rigidly fixed to said rings, means providing for a lateral introduction of said cage over coupled electrical plugs with the plug engaged current conductors projecting outward of the cage through said rings, one of said rings being of a lesser diameter than the internal diameter of the cage defined by the cage bars to preclude movement of a cage received plug therethrough, said bars, at the end corresponding to the one ring of lesser diameter, turning inward to engage this ring, the second ring being of substantially the same diameter as the internal diameter of the cage, and a rigid slotted ear fixed to the second ring and projecting outwardly therefrom for engagement over the cover plate mounting screw of a wall receptacle for a fixing of the cage thereto.

6. A retaining cage for coupled electrical plugs comprising a pair of longitudinally spaced rings, elongated bars extending between and rigidly fixed to said rings, each of said rings comprising a pair of sections hingedly connected at one end and incorporating releasable latch means at the second ends, said bars engaging between corresponding sections on the two rings for movement therewith about the hinged section ends whereby an outward swinging of the sections relative to each other so as to allow for a lateral positioning of the cage over coupled plugs can be effected, at least one ring being of a lesser diameter than the internal diameter of the cage defined by the cage bars to preclude movement of a cage received plug therethrough, said bars, at the end corresponding to the one ring of lesser diameter, turning inward to engage this ring, and a non-conductive flexible housing enclosing the rings and bars.

7. The cage of claim **6** wherein the second ring is also of a lesser diameter than the internal diameter of the cage defined by the cage bars.

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