ABSTRACT: An antitheft alarm for appliances is provided consisting of a hold-in circuit which is completed through a special appliance cord and plug arrangement whereby a disconnection at either end causes a closed relay to drop out and sound an alarm.

ANTITHEFT ALARM FOR APPLIANCES
10 Claims, 3 Drawing Figs.

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UNITED STATES PATENTS

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ANTITHEFT ALARM FOR APPLIANCES

This invention relates generally to alarms, and more particularly to an antitheft alarm for appliances having a hold-in circuit means which is completed through a special appliance cord and plug arrangement, such that a disconnection at either end causes a delayed relay to drop out and sound an alarm.

Larceny of portable appliances, such as radio and television sets from motels, and electric calculating machines and typewriters from offices has become a serious problem. Closed electric circuits have long been used on windows and doors to monitor the condition of same and sound an alarm in case of unauthorized entry, but application to portable equipment was not considered feasible.

It is an object of this invention to provide a closed circuit arrangement through the medium of a novel appliance cord and plug arrangement for the appliance, whereby the circuit breaks on disconnection and sounds an alarm.

Another object of the invention is to provide a connection cord which may be used for other equipment, such as telephone handsets, public speaking, animated advertising displays, and the like, to give warning of a disconnection of the cutting or breaking of the cord.

Other objects and attendant advantages of the invention will become more readily apparent and understood from the detailed specification and accompanying single sheet of drawings in which:

FIG. 1 is an electrical circuit diagram showing the special appliance cord and plug in longitudinal section which incorporates features of the antitheft alarm system of this invention;

FIG. 2 is an enlarged sectional view showing the details of the circuit-breaking tip and sleeve type of socket and prong for the invention; and

FIG. 3 is a schematic diagram of a second embodiment of the alarm circuitry of this invention.

Referring now to the details of the invention as shown in FIG. 1, reference numeral 10 indicates generally a special appliance cord for interconnection of an appliance 12 such as a television set to a wall box 14, such as for a power outlet. A special receptacle 16 is used on this box 14 having a simple jack 18 and a tip and sleeve connection jack 20. The remote end of the cord 10 has a female connector 22 provided with similar jacks 18 and 20.

The proximate end of the cord 10 is equipped with a male connector 24 having a simple prong 26 and a tip and sleeve plug 28. The latter is depicted on the right-hand side of FIG. 2, and shows the insulation 30 separating the tip, male, Tm, and sleeve, male, Sm, electrodes.

The view on the left of FIG. 2 depicts the jack 20 with insulation 32 separating the tip, female, Tf, and sleeve, female, Sf.

Electric power for the appliance and alarm is provided at connections 34 and 36 in FIG. 1. The common wire 34 is attached to one terminal of a buzzer 38, one coil terminal of a relay 40 and to the simple jack 18 of the receptacle 16. The other supply wire 36 connects to a back contact 42 of the relay 40 and to the tip connection Tf of jack 20. The sleeve connection Sf is wired to the other coil terminal of relay 40. A connection on arm 44 of relay 40 leads to the remaining terminal of buzzer 38.

The cord 10 has three leads 46, 48, and 50 extending between connectors 22 and 24. Lead 46 ties together jack 18 and plug 26. Lead 48 ties together sleeves Sf and Sm of jack 20 and plug 28, respectively, leaving remaining lead 50 to tie together the tips Tf and Tm.

With the cord 10 connected to the wall box 14 and to the appliance 12, leads 46 and 50 provide power from supply connections 34 and 36 to the connector pins 26 and 52 of the appliance 12. The third lead 48 of the cord completes a loop circuit which is closed by the bridging of tip and sleeve Tf and Sf in connector 22 by the connector pin 52 of the appliance.

This circuit holds relay 40 energized and contacts 42 and 44 open. A break in the loop by withdrawal of the cord 10 at either end or the severance of same will drop out relay 40, close contacts 42 and 44 to sound the buzzer 38.

FIG. 3 differs from the circuit of FIG. 1 in including in the cord loop previously mentioned, an added set of contacts 54 and 56 which open when the relay 40 releases.

Under these circumstances, the buzzer 38 continues to sound even though the cord 10 is replaced. A circuit bypassing key switch 58 of movable type is provided so that authorized personnel may reset or "arm" the system by energizing the relay 48 which then "holds" through the restored loop.

In the circumstances of frequent power failures where the hold relay drops out and then sounds a false alarm on restoration of power, the invention may incorporate a self-restart circuit. The terminals of the alarm buzzer 38 are connected to the heating elements, terminals 4 and 5 of a time delay relay 60. After a short time contacts 1 and 2 thereof close and apply power from supply terminals 34 and 36 through the back or alarm contacts 42 and 44 of the relay 40. This closes it and turns off the buzzer 38. The relay stays closed in the "armed" position unless the cord 10 is disconnected. Then the action is regenerative and the antitheft alarm becomes a continuous series of short warning signals.

Obviously many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. An alarm system for indicating disconnection of an appliance from a power source, comprising: a receptacle having contacts connected with the power source and a further contact spaced from one of said power source connected contacts; a cord having power contacts and circuit means for connecting a said appliance with the receptacle contacts, including a spaced contact on one end of the cord for connection with said spaced contact of the receptacle; a spaced contact on the other end of the cord for shorting to an adjacent power contact of the cord by a portion of a said appliance on connection of a said appliance to the cord; and a disconnect alarm circuit including a power switch circuit for responsive connection through all said spaced contacts whereby after a said appliance is connected to the power source through the cord, the alarm circuit is activated on disconnection of either end of the cord.

2. An alarm system as recited in claim 1, wherein said receptacle contacts comprise respectively a simple jack contact and tip-and-sleeve jack contacts, wherein said cord contacts for connection with the receptacle contacts comprise respectively a simple prong contact and tip-and-sleeve plug contacts, and wherein said cord contacts for connection with a said appliance comprise respectively a simple jack contact and tip-and-sleeve jack contacts.

3. An alarm system as recited in claim 2 wherein, with the receptacle and cord connected to a said appliance, said alarm circuit includes connection of a terminal of the power switch to one part of the power source, and connection of another terminal of the power switch through said receptacle jack sleeve-contact, through said cord plug sleeve-contact, through circuit means to said cord jack sleeve-contact, through a said shorting portion of said appliance to said cord jack tip-contact, and through circuit means to said cord plug tip-contact, and through said receptacle jack tip-contact, to another part of the power source.

4. An alarm system as recited in claim 3 wherein, with the receptacle and cord connected to a said appliance, said appliance power connection includes connection from one portion of said power source through the receptacle jack tip-contact, through the cord plug tip-contact, through circuit means to the cord jack tip-contact, through said appliance, and return through all said simple contacts and circuit means connected therebetween to another portion of said power source.

5. An alarm system as recited in claim 3, including normally open self-holding contact means serially connected in said power switch response circuit, and normally closed disconnect.
alarm actuating contacts held open by said power switch, whereby when the disconnect alarm is actuated on cord disconnection, said disconnect alarm circuit remains actuated regardless of subsequent cord reconnection.

6. An alarm system as recited in claim 5, and key switch means for bypassing said disconnect alarm circuit.

7. An alarm system as recited in claim 2, wherein said receptacle tip-and-sleeve jack contacts comprise longitudinally spaced externally threaded sleeves connected by an internally threaded insulator.

8. An alarm system as recited in claim 2, wherein said cord tip-and-sleeve plug contacts comprise longitudinally spaced, internally threaded sleeves connected by an insulator having external threads thereon and having an axial opening for passage of a conductor therethrough.

9. An alarm system as recited in claim 1, wherein said disconnect alarm switch circuit includes a relay means and audible alarm means operatively connected through the relay means.

10. An alarm system as recited in claim 1, and additionally self-restore circuit means for said alarm system.

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