

H. G. DORSEY.
SAFETY DEVICE FOR ELECTRIC CIRCUITS.
APPLICATION FILED JAN. 28, 1916.

1,291,443.

Patented Jan. 14, 1919.

2 SHEETS—SHEET 1.

Fig. 2.

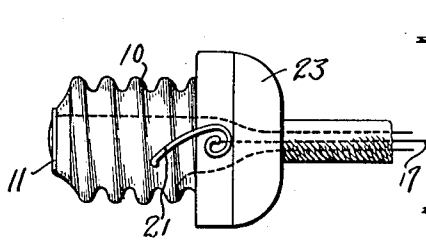


Fig. 1.

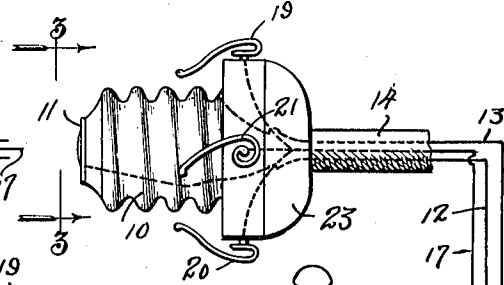


Fig. 3.

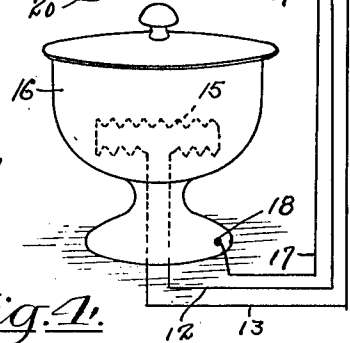
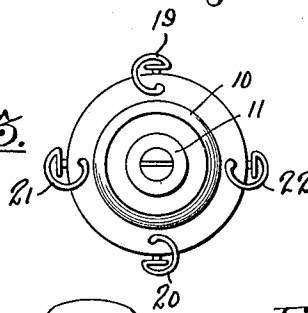


Fig. 4.

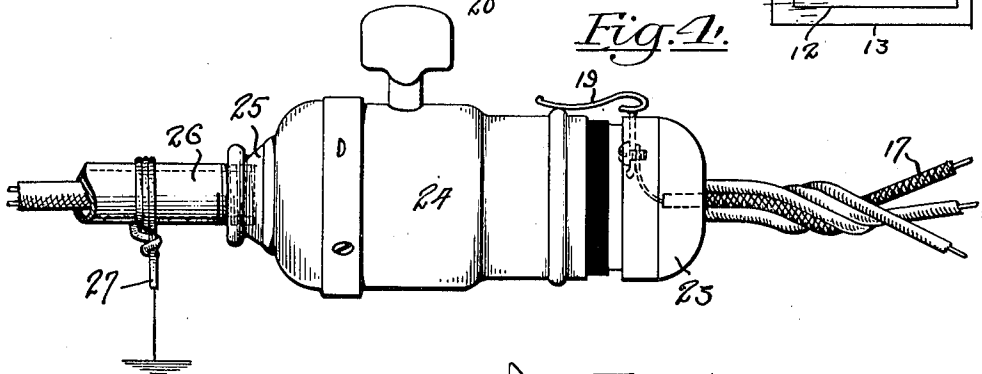
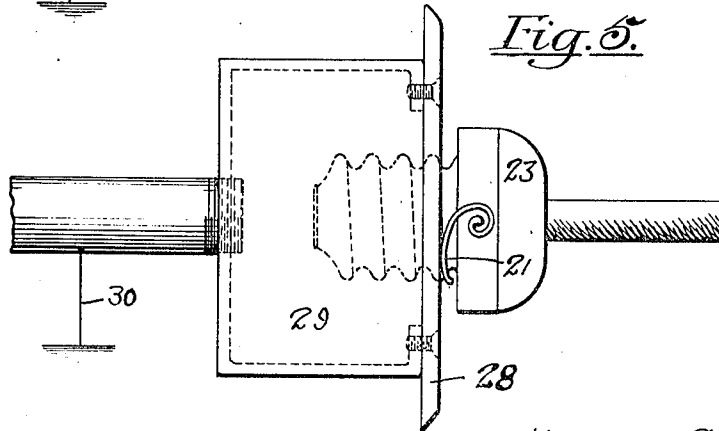


Fig. 5.



Witness:
John H. Jones

Inventor
HERBERT G. DORSEY
By his Attorney
Harmon and Anderson

H. G. DORSEY.
SAFETY DEVICE FOR ELECTRIC CIRCUITS.
APPLICATION FILED JAN. 28, 1916.

1,291,443.

Patented Jan. 14, 1919.

2 SHEETS—SHEET 2.

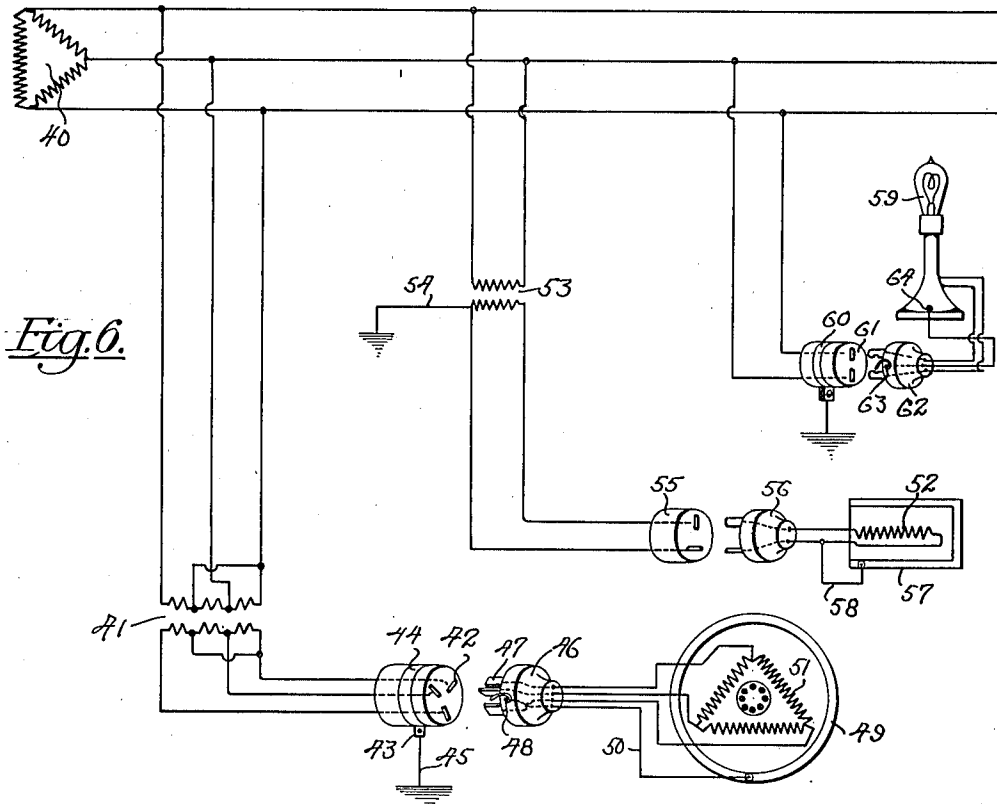


Fig. 6.

Fig. 7.

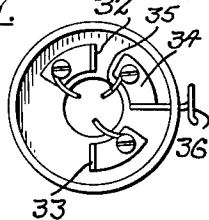


Fig. 8.

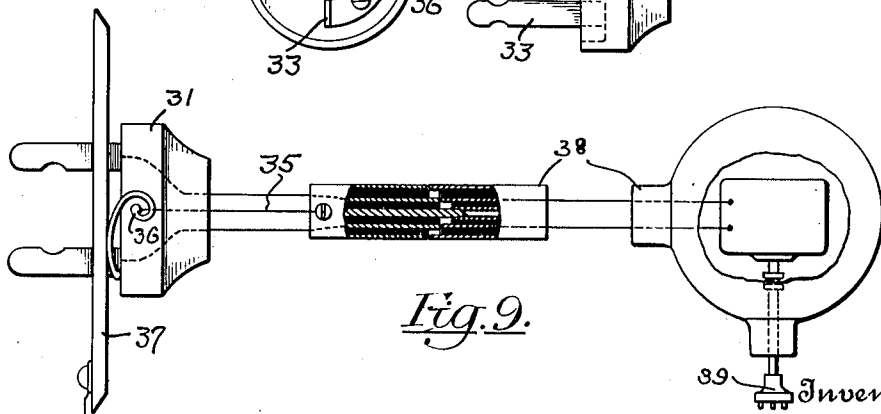
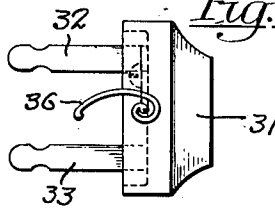


Fig. 9.

Witness:
Wm. H. Dorne

HERBERT G. DORSEY
By his Attorneys
Horsman and Horsman

39 Inventor

UNITED STATES PATENT OFFICE.

HERBERT G. DORSEY, OF DAYTON, OHIO.

SAFETY DEVICE FOR ELECTRIC CIRCUITS.

1,291,443.

Specification of Letters Patent.

Patented Jan. 14, 1919.

Application filed January 28, 1916. Serial No. 74,853.

To all whom it may concern:

Be it known that I, HERBERT G. DORSEY, a citizen of the United States of America, and residing at Dayton, in the county of Montgomery and State of Ohio, have invented a certain new and Improved Safety Device for Electric Circuits, of which the following is a specification.

My invention relates to safety devices for electric circuits and particularly for circuits temporarily completed through an attachment plug and in which are arranged electrically operated appliances, generally of the portable type. Briefly the object of my invention is to provide means for protecting the user of such an appliance from the danger of shock occasioned by contact with a metal part of the appliance which has become accidentally charged with the power current.

Several applications of my invention are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of an attachment plug of ordinary screw plug type modified in one particular in accordance with my invention;

Fig. 2 is a similar view of an attachment plug of the same type modified in a different manner in accordance with my invention;

Fig. 3 is an inverted plan of the latter;

Fig. 4 is a side elevation of a plug embodying my invention and inserted in a lamp socket having a grounded shell;

Fig. 5 is a view of a plug embodying my invention and inserted in a flush receptacle having a grounded face plate;

Fig. 6 is a more or less schematic representation of a power circuit showing different types of outlets and different types of attachment plugs all embodying my invention;

Figs. 7 and 8 are respectively inverted plan and side elevation of an attachment plug (or separable cap) of the blade or jack type;

Fig. 9 is a schematic side elevation of an installation in which a plug of this type is utilized.

In electrically operated devices of what may, for want of a better word, be styled the portable type, and in which the circuit is established through an attachment plug, such for instance, as small motors, vibrators, cooking and laundry utensils and other domestic and therapeutic appliances, mag-

netic chucks, lamps, telephones, violet ray, X-ray, high frequency apparatus, etc., the current carrying wires or other conductors, may make accidental contact with an exposed metal part of the appliance through a loose connection, burning out of insulation or otherwise. If the user happens to touch this now charged metal part of the appliance, he may receive a very serious shock. If this metal part is already connected to earth, however, the danger of shock is practically eliminated. The present invention provides convenient and practically automatic means for grounding the exposed metal portions of such appliances at the moment of the connection of the device in the power circuit.

The simplest manner of applying my invention is to supply the attachment plug of the appliance with an auxiliary contact which on the one hand is electrically connected to the exposed metal parts of the appliance, and on the other hand is adapted, on insertion in its receptacle, to make contact with a ground connection. Only attachment plugs of standard type, modified to embody my invention, have been illustrated in the accompanying drawings.

Thus in Fig. 1 a screw plug of common construction is shown having the usual side and center contacts 10 and 11 diagrammatically connected to the wires 12 and 13 of opposite polarity in the cable 14 through which they are led for instance to the heating coil 15 of a table cooker 16. A third wire 17 in the cable leads from a terminal 18 secured to the metallic body of the cooker to auxiliary spring terminals 19, 20, 21 and 22 on the head 23 of the attachment plug. These auxiliary terminals on the plug are so arranged that when the plug is inserted in a suitable receptacle therefor, such as an ordinary lamp socket 24, they will make contact with the metallic casing of the socket. Inasmuch as the latter is electrically as well as mechanically connected through its bushing 25 with the conduit 26 and since the latter is ordinarily grounded, as diagrammatically represented at 27, it is obvious that upon the insertion of the plug in the socket, a grounded connection from the cooker body is at once automatically established.

It is unnecessary that the plug should carry as many as four auxiliary terminals. Thus in Fig. 2, a single terminal 21 is shown and this is so arranged and shaped that when

the plug is screwed in, the contact yields outward. This form is particularly useful in connection with flush receptacles such as shown in Fig. 5. Here the auxiliary contact 5 engages the face plate 28 which as usual is attached to the outlet box 29 into which screws the grounded conduit 30. The ground connection is thus again automatically established upon the insertion of the plug.

10 In Figs. 7 and 8 a plug of another type is shown having a cap 31 and plug jacks 32, 33, carried thereby as usual. A third terminal 34 is mounted on the plug for connection with the grounding wire 35 and this 15 terminal is connected to the spring contact 36 which, on the insertion of the plug jacks through grounded face plate 37 (Fig. 9) engages the latter and thus establishes a ground connection for the wire 35. This 20 wire may lead for instance to the metallic casing or handle 38 of a massaging instrument or vibrator 39.

Fig. 6 is a more or less diagrammatic illustration of a system employing a poly- 25 phase alternating current generator 40. The current is led through a three phase transformer 41 to a receptacle having three terminals 42 for the power circuit and a fourth terminal 43 on ring 44 for a grounded 30 connection 45 of any sort. The cooperating attachment plug 46 has the necessary three power circuit jacks 47 and the auxiliary terminal 48 which on the insertion of the plug, contacts with the ring 44 and 35 grounds the casing 49 which is connected through wire 50 with the auxiliary terminal 48. Within the casing is a three phase induction motor 51 which operates any suitable desired utensil.

40 A second utensil, for instance a heater 52, is operated from the same source of power. In this case a single phase transformer 53 is used and its secondary is grounded at 54. The receptacle 55 is of the polarized type as 45 is also the attachment plug 56. The metallic casing 57 of the heater is connected at 58 to the branch of the plug circuit which corresponds to the grounded side of the receptacle circuit, so that the ground connection is 50 automatically established upon the insertion of the plug.

A third fitting—here a portable light 59, is also connected in the power-circuit. In this case the ring 60 of the receptacle 61, 55 is grounded so that upon the insertion of the plug 62 for the lamp the auxiliary ter-

63 thereof connected to the lamp stand at 64 automatically establishes the grounded connection for the stand simultaneously with the completion of the lamp 60 circuit.

Examples embodying my invention might be endlessly multiplied with variations, but without better indicating the basic conception above described and set forth in what I 65 claim as my invention.

I claim as my invention:—

1. An attachment plug having power terminals and a grounding terminal, said grounding terminal being arranged to freely 70 engage and ride upon the casing member of a cooperating receptacle.

2. An attachment plug having power terminals and a spring grounding terminal, said grounding terminal being arranged to 75 have a free yielding engagement with the casing member of a cooperating receptacle, upon which casing said terminal rides.

3. An attachment plug having an insulating body provided with a gripping head, 80 power terminals mounted on said body, and a grounding terminal mounted on the exterior of the head and projecting in the direction of the power terminals, but adapted to freely engage and ride upon the casing 85 member of a cooperating receptacle.

4. An attachment plug having power terminals and a plurality of grounding terminals, said grounding terminals being arranged to freely engage and ride upon the 90 casing member of a cooperating receptacle.

5. An attachment plug having power terminals and a plurality of circumferentially spaced grounding terminals, said grounding 95 terminals being arranged to freely engage and ride upon the casing member of a cooperating receptacle.

6. In combination with a receptacle having power contacts, an insulating body and a grounded metallic casing element of an 100 attachment plug having power terminals and a grounding contact freely engaging and riding upon the grounded casing of the receptacle, substantially as described.

In testimony whereof I have signed my 105 name to this specification, in the presence of two subscribing witnesses.

HERBERT G. DORSEY.

Witnesses:

H. L. WILSON,
LOUIS PHILIPPS.