April 17, 1934. C. M. PETERSEN 1,955,513

CIRCUIT STATUS INDICATING MEANS

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Fig.1.

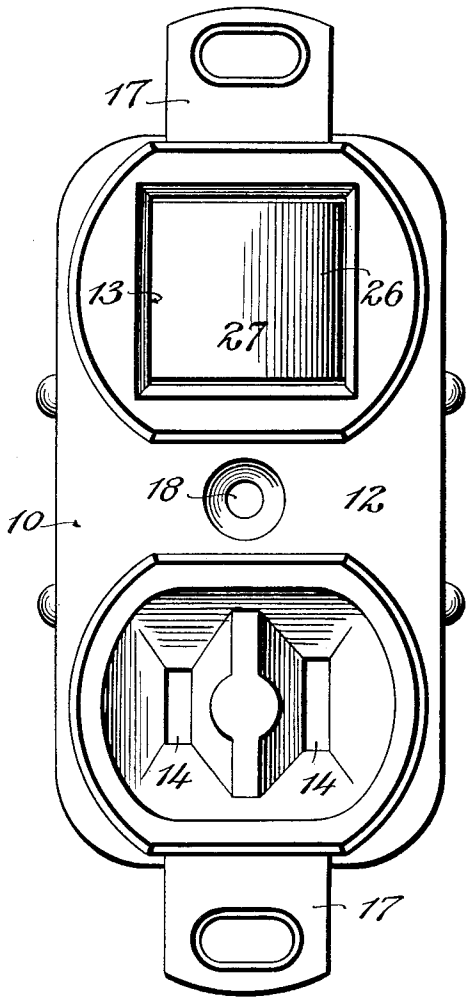


Fig.2

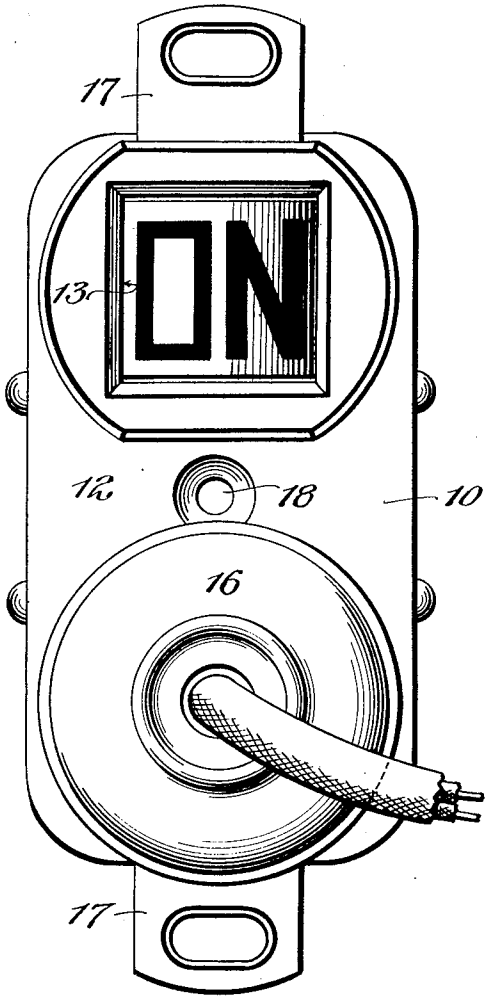


Fig.5.

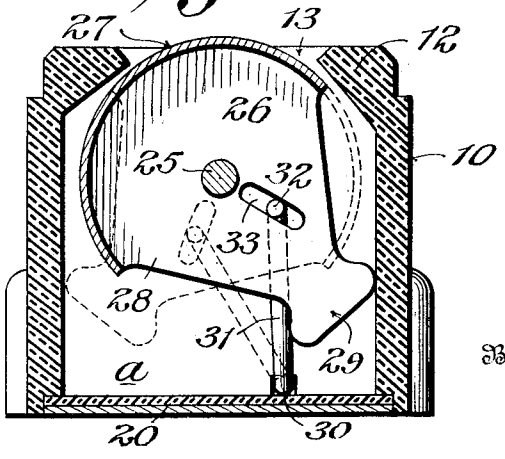
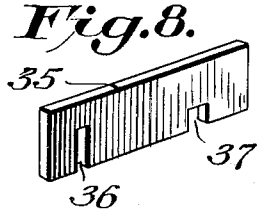


Fig.8.



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CIRCUIT STATUS INDICATING MEANS

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Fig. 3.

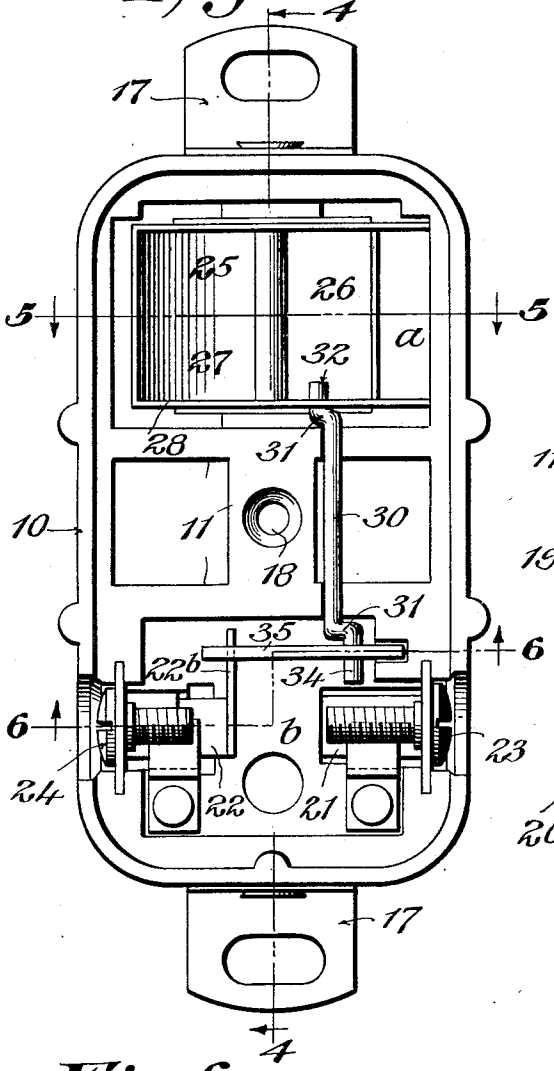


Fig. 4.

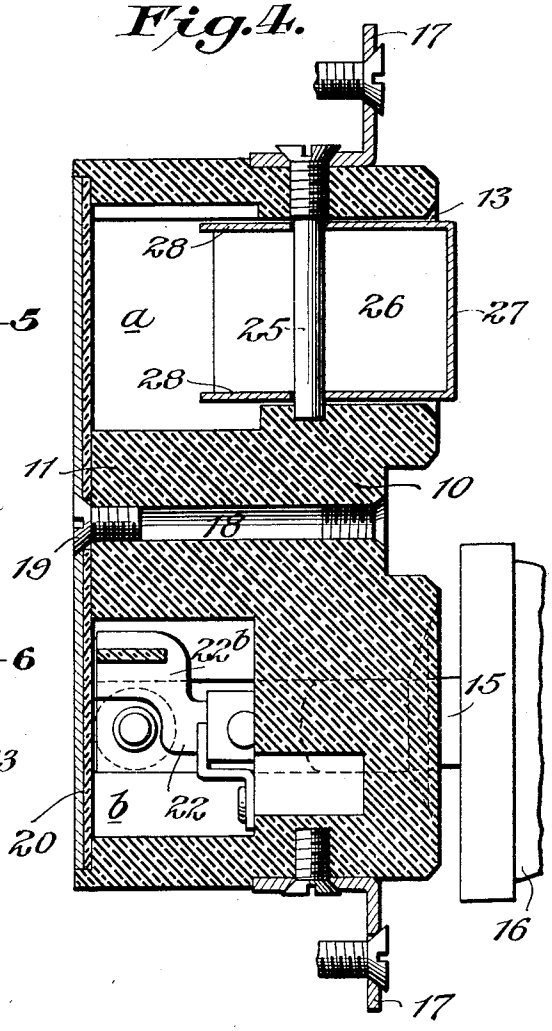


Fig. 6.

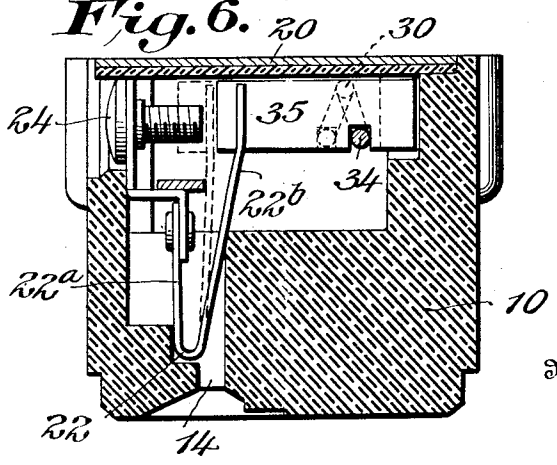
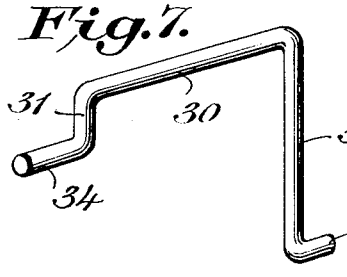


Fig. 7.



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CIRCUIT STATUS INDICATING MEANS

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Application November 9, 1931, Serial No. 573,987

2 Claims. (Cl. 173—330)

This invention relates to means for controlling an electric circuit and for visually indicating the status thereof; i. e., whether the circuit is closed or open, and has particular reference to a wall type receptacle embodying such means.

Many electrical appliances, particularly household electrical appliances such as pressing irons, ironing machines, warming pads and the like, afford no indication of whether current is or is not being supplied to the same, and as a consequence it not infrequently happens that a person after using such an appliance will leave the same with the current turned on, resulting in any instance in a useless consumption of current, and another condition of far greater concern, namely, the fire hazard resulting from such an act.

Accordingly, the general object of the present invention in its broader aspects is to provide, in combination with a circuit controller, means operable by the controller to afford a not easily ignored indication of the status of the controller and particularly a circuit closing status thereof, whereby the chance of a person carelessly leaving the controller in a circuit closing condition is materially reduced.

In connection with most appliances of the character heretofore mentioned the general rule is to equip the appliance with an extension cord provided with an attachment plug for insertion into a plug receptacle to close the appliance circuit. Accordingly, a special object of the invention is to provide, in a plug receptacle, means operable by the insertion of a plug to an operative or circuit closing position into the receptacle to indicate clearly and in a not readily ignored manner the closed status of the circuit, whereby, as aforesaid, the chance of a person leaving an appliance with the circuit thereto closed is materially reduced.

As indicated by the foregoing the present circuit status indicating means is automatically operable by the actuation of the circuit controlling means with which it may be associated, and in this connection, inasmuch as the indicating means is exposed and movable and therefore is subject to the possibility of being accidentally struck or engaged in such manner as to tend to move the same from its correct indicating position, a further object of the invention is to so connect said indicating means with its associated circuit controlling means as to permit the indicator to yield when so struck or engaged so as to avoid any danger of destroying its operative connection with the circuit controlling means, the said yieldable connection being adapted to return the indicator to its proper indicating position whenever for any reason it may be moved from such position.

With the foregoing and various other objects in view which will become more fully apparent as the nature of the invention is better understood, the same consists in the novel combination and arrangement of features as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the drawings, wherein like characters of reference denote corresponding parts in the different views:—

Figure 1 is a front elevation of an outlet receptacle equipped with indicating means in accordance with the invention and showing the normal status of the indicating means.

Figure 2 is a view similar to Fig. 1 showing the operative or circuit indicating status of the receptacle when the circuit controlled thereby is closed by the insertion of an attachment plug into the receptacle.

Figure 3 is a rear elevation of the receptacle with the rear cover thereof removed.

Figure 4 is a central longitudinal section on the line 4—4 of Fig. 3.

Figure 5 is a transverse section on the line 5—5 of Fig. 3.

Figure 6 is a transverse section on the line 6—6 of Fig. 3.

Figure 7 is a detail perspective view of an element constituting part of the connection between the circuit controlling means and the indicating means; and

Figure 8 is a perspective view of another element of the connection between the circuit controlling means and the indicating means.

Referring in detail to the specific embodiment of the invention illustrated in the drawings, 10 designates generally the body portion or housing of a plug receptacle of the wall type which preferably is molded from insulating material but which may be formed in any other suitable manner from any material desired.

The housing 10 is of elongated form and of suitable depth, being closed at its sides, ends and front and open at its rear and being divided by a medial, transverse partition structure 11 into two end compartments designated as *a* and *b*, respectively. In the front wall 12 of the housing in alinement with the compartment *a* is formed a rectangular opening 13 of relatively large size, while in that portion of said front wall which overlies the compartment *b* is formed a pair of slots 14 through which are adapted to be inserted

the usual fingers 15 of an attachment plug designated as 16. The housing is equipped at its ends with metallic angle pieces 17 or with other suitable means for use in mounting the housing within an outlet box, and a central threaded opening 18 is formed in the housing for the accommodation of a screw to fasten a wall plate over the front of the housing and also to receive a screw 19 for fastening a rear cover 20 in closing relation to the open rear side of the housing.

Within the compartment *b* are suitably secured a pair of contact elements 21 and 22 to be engaged by the fingers 15, respectively, of the attachment plug 16 when said fingers are inserted into the slots 14, said contact elements being provided with binding screws 23 and 24, respectively, which are accessible through recesses formed in the side walls of the housing for the connection of current supply wires to said contact elements.

At least one of the contact elements 21 or 22 is of a laterally yieldable design and so disposed within the compartment *b* as to be moved laterally by the related finger 15 of the attachment plug 16 when the latter is operatively engaged with the receptacle. The contact element 22 is illustrated in the present instance as being laterally yieldable and disposed in the manner stated, said element, according to the specific embodiment thereof illustrated in the present instance, being of substantially U-shape and having one arm 22^a thereof suitably anchored to the housing with its other arm 22^b free and disposed normally in the path of the related plug finger 15, i. e., extending diagonally across the related slot 14, whereby, when said plug finger is entered in said slot and moved into the housing, said arm 22^b is flexed laterally as clearly illustrated by the dotted line showing in Fig. 6 of the drawings.

Rotatably mounted within the compartment *a*, preferably on an elongated screw 25 which is employed to fasten one of the attachment pieces 17 to the housing 10, is an indicator element designated generally as 26. This element is of segmental form and inclusive of a curved wall portion 27 projecting slightly through the opening 13, and the axis of rotation of said element, that is, the screw 25 extends longitudinally of the housing as shown whereby the indicator element is rotatable in directions transversely of the housing to expose different portions of the curved wall portion 27 thereof through said opening 13. For limiting rotary movement of said indicator in both directions the end walls 28 thereof through which the screw 25 extends are provided with stop formations 29 engageable with the side walls of the housing 10.

Rotatably seated in a groove or grooves formed in and opening through the rear edge of the partition structure 11 is a rod or shaft 30 which extends longitudinally of the housing and at each end is inwardly or forwardly directed as indicated at 31, said inward or forwardly directed portions or arms thereof extending, respectively, into the compartments *a* and *b* closely adjacent to the partition structure whereby the shaft 30 is held against endwise movement. The arm 31 that extends into the compartment *a* is accommodated between the partition structure 11 and the outer face of the adjacent end wall 23 of the indicator element within a space provided by forming a portion of the partition structure of reduced thickness, and said arm, which is relatively long, is extended outwardly at its free end, as at 32, parallel to the shaft 30 and operatively engaged within a cam slot 33 formed in the adjacent end of the indicator element whereby rotary movement of the shaft effects rotation of the indicator element. At the other end of the shaft 30 the arm 31 thereof which extends into the compartment *b* is relatively short, but, like the first arm, is extended outwardly at its free end, as at 34, thereby providing a crank for rotating the shaft, said crank being connected by a link element 35 with the inner or free end of the laterally movable arm 22^b of the contact 22, whereby insertion of the attachment plug fingers into operative engagement with the contacts 21, 22 with consequent lateral flexing of the contact arm 22^b is adapted to impart rotation to the indicator element in a manner which is apparent.

The length of the shaft arms 31 is such that when the contact arm 22^b is in its normal position extending diagonally across its related slot 14, as illustrated by full lines in Fig. 6 of the drawings, approximately one-half of the curved wall 27 of the indicator element 26 is exposed through the opening 13 in the front wall of the housing and the other approximately one-half portion of said curved wall is concealed within the compartment *a*. Furthermore, the length of said shaft arms is such that the relatively small amount of lateral movement imparted to the contact arm 22^b by the insertion of the related contact finger 15 of the attachment plug into operative engagement with said contact arm imparts a sufficient amount of rotary movement to the indicator element 26 to bring the normally concealed portion of the curved wall 27 thereof into alinement with the opening 13 and to move the normally exposed portion of said curved wall to a concealed position within the housing. The normally exposed portion of the wall 27 of the indicator may be black or of any other relatively dull color and may or may not be provided with a suitable designation such as the word "off" indicating that the circuit between the contacts 21, 22 is open. On the other hand, the normally concealed portion of said wall 27 preferably is painted or otherwise brightly colored as, for example, red so that when the attachment plug 16 is operatively engaged with the receptacle, closing the circuit between the contacts 21, 22 and moving the normally concealed portion of said wall to a position exposed through the opening 13, the relatively large area of said exposed portion coupled with the bright or brilliant coloring thereof serves to afford a vivid, not easily ignored or overlooked indication that the circuit between the contacts 21, 22 is closed. Moreover, the brilliantly colored normally concealed portion of the indicator may further be provided in any suitable manner with the word "on" or with some equivalent designation in a bright color contrasting with the coloring of said wall portion, or alternatively, the normally concealed portion may, like the normally exposed portion, be of some dull color and the designation thereon may be of some brilliant color. Alternatively, too, an electric lamp may be employed in association with or in lieu of the indicator 26 to be lighted in any suitable manner when the attachment plug is operatively engaged with the receptacle. In any one of these ways, a person using an appliance is apprised in no uncertain manner of the closed or open status of the circuit supplying operating current for the appliance, and since the circuit status indicating means is visible from a considerable distance the chances of a person inadvertently or uninten-

tionally having an appliance with the circuit thereof closed is in a large measure reduced.

It constitutes a feature of the invention to so construct and arrange the connecting elements between the contact arm 22^b and the indicator 26 as to permit the ready assembly and disassembly of said elements with and from the other parts of the device; also, to provide an exceptionally simple, inexpensive construction embodying the features constituting the invention. Accordingly, with this end in view, the shaft 30 is, as aforesaid, seated in a groove or grooves in the partition structure 11 opening through the rear face of said structure, and the link element 35 is formed from a short length of sheet material such as metal or fibre and provided with a pair of notches 36 and 37 opening through the inner edge thereof to receive the free end portion of the arm 22^b and the outwardly directed free end or crank portion 34 of the related shaft arm 31, respectively, the width of said link being such that its rear or outer edge just clears the inner face of the rear cover 20 when the latter is applied to the receptacle housing. Thus, the placing of the shaft 30 in an operative position and its connection with the indicator 26, as well as assembly of the link 35 in operative relation to the contact arm 22^b and the crank 34 and also the removal of said shaft and link when the rear cover 20 is removed is greatly facilitated, while at the same time the rear cover when applied serves solely and efficiently as a practicable means of holding the shaft and the link in operative positions within the receptacle.

While only a single specific embodiment of the invention has been illustrated in the drawings and described herein, it is apparent that the structure shown may be modified in many respects to accomplish the same general purpose of the invention, all within the spirit and scope of the invention as defined in the appended claims which should be construed in the foregoing light.

I claim:—

1. An indicating receptacle including a receptacle body, movable plug contacts arranged within the body, a shiftable indicator carried by the body, and a mechanical operating connection between said shiftable indicator and one of the movable plug contacts whereby upon insertion and removal of the plug said contact will be moved to actuate said operating connection.

2. An indicating plug type receptacle including a body, spring contacts mounted within the body, a shiftable indicator, mechanical operating connections between one of the spring contacts and the indicator, said connections adapted to be operated upon engagement and removal of a plug with said contacts to actuate the indicator and certain of said connections being flexible and yieldable whereby manual manipulation of the indicator will not affect the engagement between the plug and its contact.

CARL M. PETERSEN.