Feb. 5, 1935. H. HUBBELL, JR 1,989,693

SELF SEALING RECEPTACLE

Filed May 3, 1928

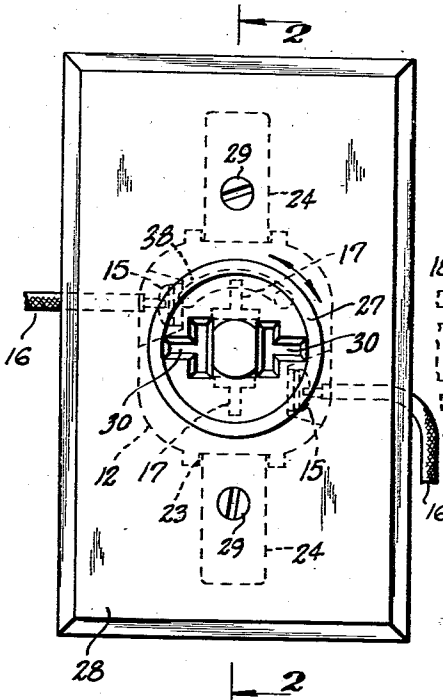


Fig. 1.

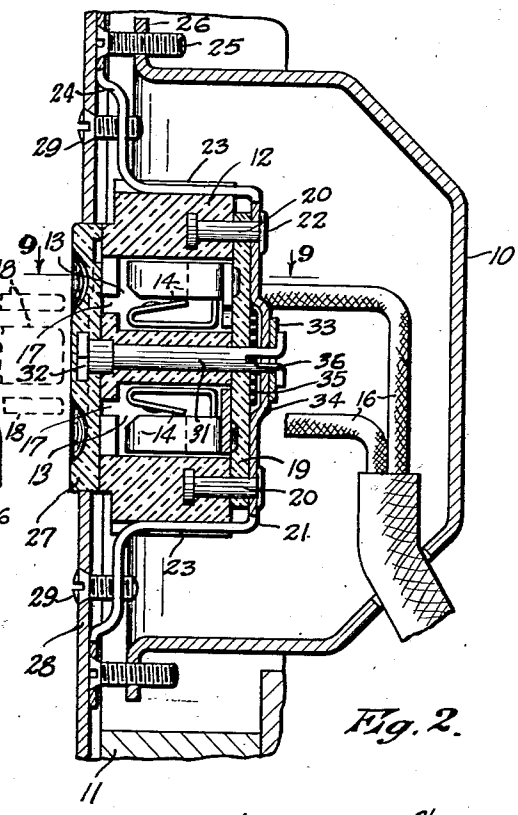


Fig. 2.

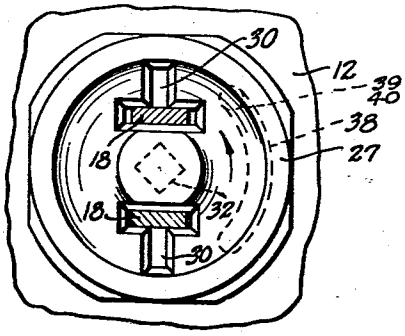


Fig. 3.

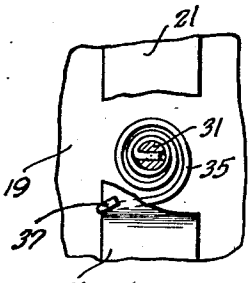


Fig. 5.

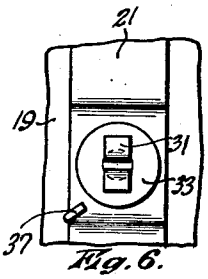


Fig. 6.

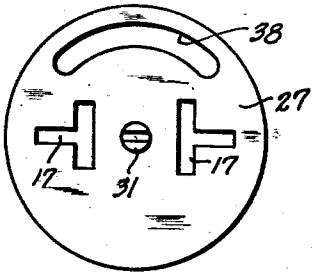


Fig. 4.

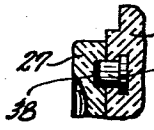


Fig. 7.

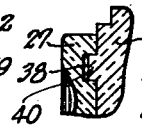


Fig. 8.

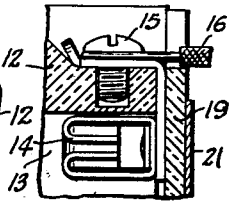


Fig. 9.

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Patented Feb. 5, 1935 1,989,693

UNITED STATES PATENT OFFICE

1,989,693

SELF-SEALING RECEPTACLE

Harvey Hubbell, Jr., Bridgeport, Conn.

Application May 3, 1928, Serial No. 274,892

2 Claims. (Cl. 173—330)

This invention relates to electric outlet receptacles such as are adapted to receive the contact blades of attachment plug caps to electrically connect portable electric devices, such as sewing machines, vacuum cleaners, lamps and so forth, to the house wiring system.

In the standard outlet receptacles which are used in large numbers at the present time the inlet slots for the knife blade contacts are open and exposed with the consequent liability of entrance of dust and dirt, and there is also danger of a child inserting a hair pin or other metal object through these slots into contact with the live electrical contacts in the receptacle, with the consequent liability of injury to the child and the electrical system.

It is, therefore, an object of the invention to provide an outlet receptacle which is self sealing so that as soon as the attachment plug cap is withdrawn from the receptacle the slots leading to the receptacle contacts are automatically closed against entrance of dust and dirt or the liability of a child inserting a metal object, as above indicated, to come in contact with the live contacts in the receptacle.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawing forming a part of this specification. In this drawing,

Fig. 1 is a front elevation of the receptacle showing it mounted with the usual face plate.

Fig. 2 is a vertical central section through the receptacle on a larger scale showing it applied in a wall outlet box, the section of the receptacle being substantially on line 2—2 of Fig. 1.

Fig. 3 is a front elevation of the sealing element showing it in position for insertion of a knife blade of an attachment plug cap, these blades being shown in section.

Fig. 4 is a rear elevation of the sealing plate.

Fig. 5 is a detail section and partial elevation showing the mounting for the spring for operating the sealing plate.

Fig. 6 is a rear elevation showing the means for mounting the support and operating means for the sealing plate.

Figs. 7 and 8 are detail sections through portions of the sealing plate, and

Fig. 9 is a detail section showing the means for mounting and protecting the receptacle contacts, the section being on substantially line 9—9 of Fig. 2.

The receptacle is shown as mounted in a standard wall outlet box 10 mounted in the usual manner in a recess in the wall 11, a base board or any other desired location. The receptacle comprises a body member 12 of insulating material having chambers 13 opening through the rear wall of this body member, in which chamber are mounted the spring receptacle contact members 14, and which are connected to suitable binding screws 15 for connection of the lead wires 16 of the house wiring system. On its front wall this body member is provided with suitable slots 17 for entrance of the knife blade contacts 18 of an attachment plug cap, which slots lead to the chambers 13 for entrance of these blades to engage the spring contacts 14 in the usual manner.

The rear entrance openings to the chambers 13 are closed by an insulating plate 19 secured against the rear wall of the body member by any suitable means, such as insert rivets 20, molded into the body member and passing through openings in the plate 19. The body member is mounted in a substantially U-shaped yoke 21 which may be a substantially flat metal strap extending along the outside of the plate 19, and having openings through which the rivets 20 extend and against which the free ends are spun over, as shown at 22, to secure the body member to the yoke and also to secure the insulating plate to the body member. The side arms of the yoke are preferably seated in grooves 23 in the opposite end walls of the body member, and extend outwardly to form end portions 24 by which the yoke and receptacle may be mounted in the wall box 10 by means of adjusting screws 25 threaded into the flange 26 of the wall box.

Mounted over the entrances to the inlet slots 17 is my improved sealing plate 27. This is a plate composed of insulating material, and is preferably circular although not necessarily so. It is secured to the front side of the body member 12 and extends into the usual opening in the face plate 28, which after the receptacle is mounted in the wall box is placed to cover the opening in the wall and give a neat and attractive appearance. The plate may be secured to the yoke 21 by the securing screws 29. The sealing plate has through it slots 30 which are of the same shape and spacing as the slots 17 in the front wall of the body member so that the slots 30 may be brought into alignment with the slots 17 for entrance of the knife blade contacts 18. This sealing plate 27 is mounted on a pivot pin or shaft 31, and this pin is preferably provided with a non-circular head such as a square head 32 molded into the sealing plate so that the plate is permanently attached to this pin and will rotate therewith. The pin is mounted to turn in the body

member 12, and extends entirely through the same and projects from the rear wall thereof. It also passes through the insulating plate 19 and the yoke 21 and has a split free end so that it may be turned over in opposite directions against the washer 33 on the outside of the yoke to secure the sealing plate in position. The yoke has a lateral offset 34 in which is mounted a coil spring 35. This spring has one end 36 extending into the slot in the forked end of the pin 31, and its other end 37 engages one side of the yoke so that when properly positioned the spring tends to rotate the shaft or pin 31 and with it sealing plate 27.

In the rear wall of the sealing plate is a curved recess 38 into which may project a stop lug in the body member. This stop lug may be a short stud or pin 39 molded into the body member and projecting at its free end into this recess, as shown in Fig. 7, or it may be a lug 40 molded in one piece with the body member and extending into the recess, as shown in Fig. 8. It will be obvious that these elements may be reversed if desired so that the recess is in the body member and the stop lug is on the plate. This stop lug cooperating with the ends of the recess will limit turning movements of the sealing plate.

When assembled the recess 38 and the stop lugs 39 or 40 are so arranged that the sealing plate 27 may have a movement of approximately ninety degrees. When assembled the spring 55 is tensioned so that it tends to swing or turn the sealing plate 27 to a position shown in Fig. 1 with the slots 30 in this plate out of alignment with the slots 17 in the body member. It will be clear that in this position the slots 17 in the body member are closed by the sealing plate against entrance of dust and dirt and it will be impossible for a child to force a hair pin or other object through the slots 17 to the live spring contacts 14. However, when one wishes to insert the knife blades of an attachment plug cap, the ends of these blades as indicated at 18, Fig. 3, may be placed in the slots 30 in the sealing plate with their ends resting against the front wall of the body member 12. Then by merely turning the cap clockwise or to the right a quarter revolution the blades will turn the sealing plate 27 to the position of Fig. 3 bringing the slots 30 in the sealing plate in alignment with the slots 17 in the body plate and permitting the contact blades to be forced into the receptacle by merely pushing inwardly on this receptacle in the usual manner. The knife blades now engage the receptacle contacts 14 in the usual manner. As soon as the knife blades are withdrawn from the receptacle the spring 35 will turn the sealing plate in the opposite direction a quarter revolution to the position of Fig. 1, again closing the entrance to the slots 17. Movement of the sealing plate in this direction is limited by the stop lug 39 or 40 engaging one end of the curved recess 38. It will, therefore, be apparent that the entrance to the slots in the body member are automatically closed as soon as the attachment plug cap is withdrawn from the receptacle, the spring retains the sealing plate in closed position until it is again turned as indicated above, to bring the slots in the plate into alignment with the slots in the receptacle. I have, therefore, with this construction produced a self sealing receptacle which is effectively sealed when not in use.

Having thus set forth the nature of my invention, what I claim is:

1. An electric receptacle comprising an insulating body member having chambers opening through the rear wall thereof, spring contacts in said chambers, said body being provided with knife blade contact openings in its front wall leading to said chambers, a sealing plate mounted over said openings and provided with similar openings adapted by turning movement of said plate to be brought into alignment with the openings in the body, a pivot pin secured to said plate and extending through said body, an insulating plate on the rear of said body over the entrances to said chambers, a yoke extending transversely at the rear of said latter plate on which the body is mounted and provided with arms for mounting in a wall outlet box, a coiled spring mounted between the yoke and the insulating plate and connected to said pin, said spring tending to turn the sealing plate to close the openings in the front of the body member, and means to limit said turning movements.

2. An electric receptacle comprising an insulating body member having chambers therein, spring contacts in said chambers, said body being provided with knife blade contact openings in its front wall leading to said chambers, a sealing plate mounted over said openings and provided with similar openings adapted by turning movement of the plate to be brought into alignment with the openings in the body, a pivot pin secured to said plate and extending through said body, a yoke on which the body is mounted, said yoke including a portion extending across the rear of the body and provided with arms for mounting in a wall outlet box, said pivot pin at its inner end extending through said yoke, a coil spring at one side of the yoke and about said pin, said spring having one end anchored to the pin and having its other end anchored on the yoke, and said spring tending to turn the sealing plate to close the openings in the front of the body member.

HARVEY HUBBELL, JR.