

Sept. 7, 1948.

D. S. ROSS

2,448,832

PIN ANCHORED ELECTRIC OUTLET AND SWITCH

Filed Sept. 14, 1943

3 Sheets-Sheet 1

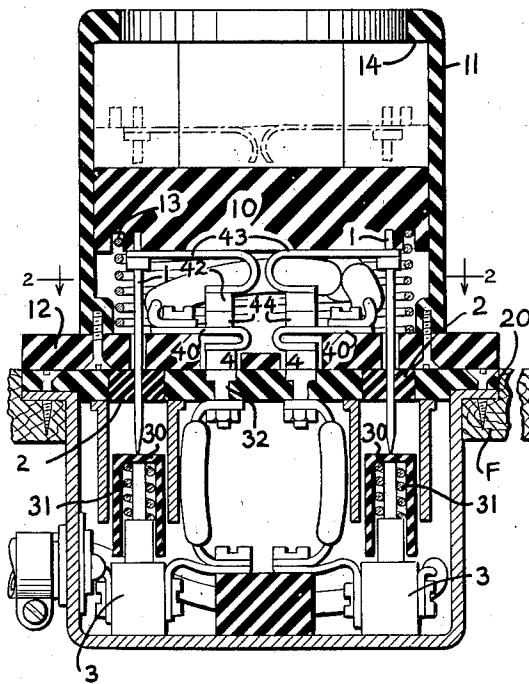


Fig. 1

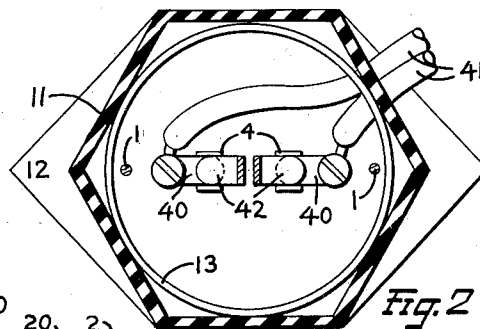


Fig. 2

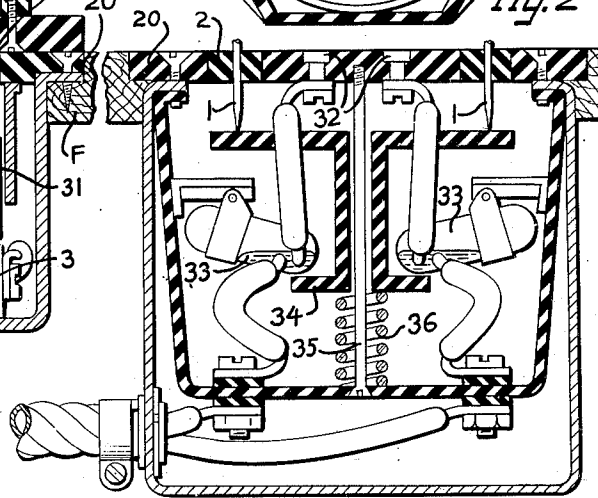


Fig. 3

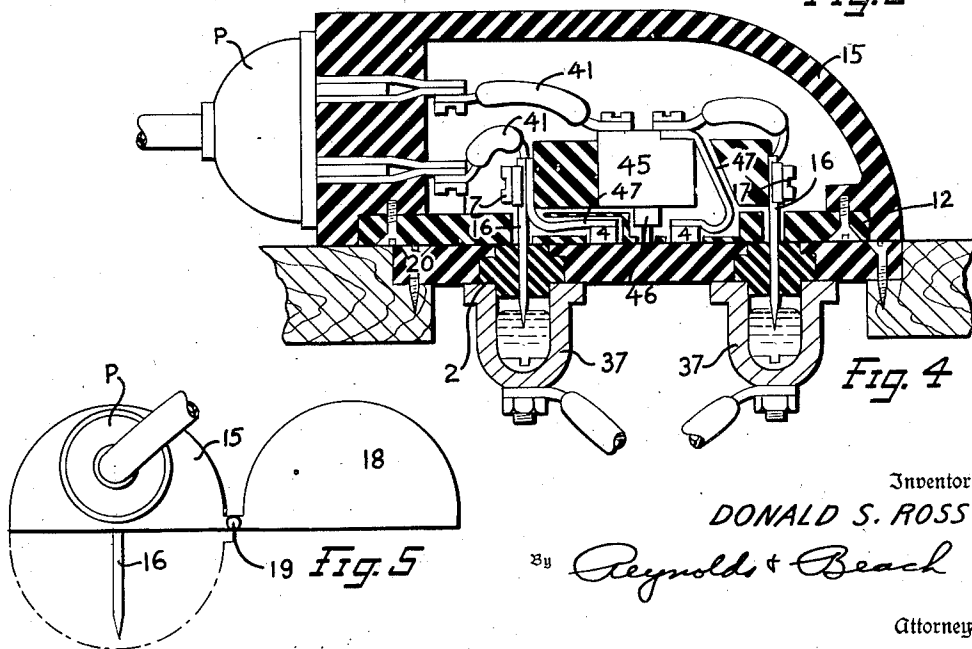


Fig. 4

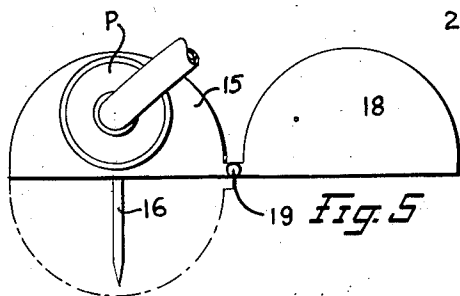


Fig. 5

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3 Sheets-Sheet 2

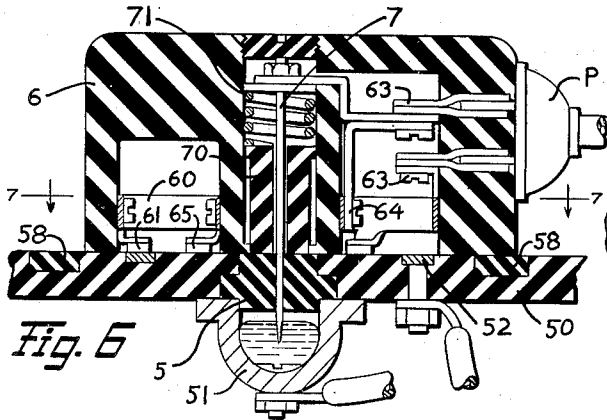


Fig. 6

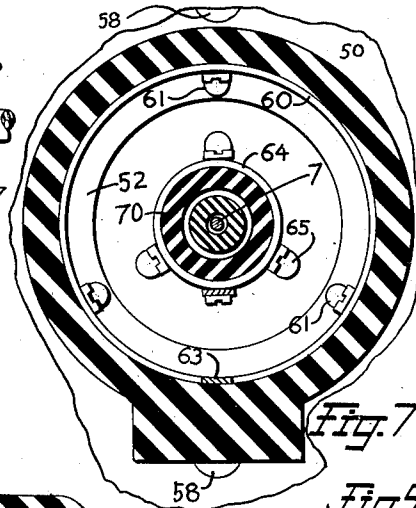


Fig. 7

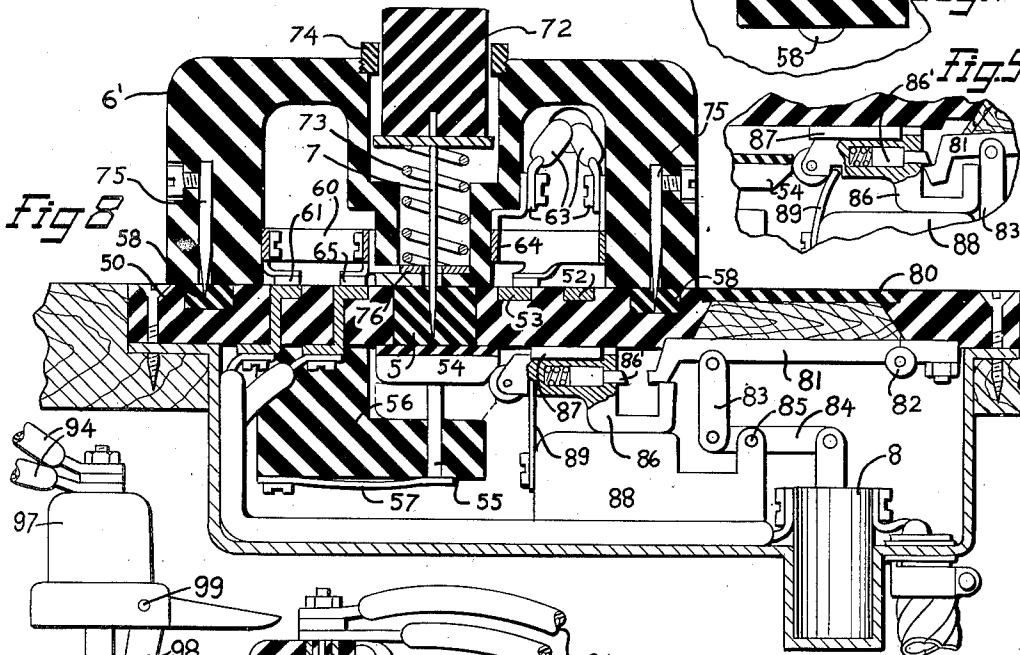


Fig. 8

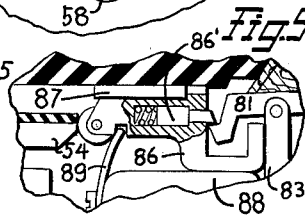


Fig. 9

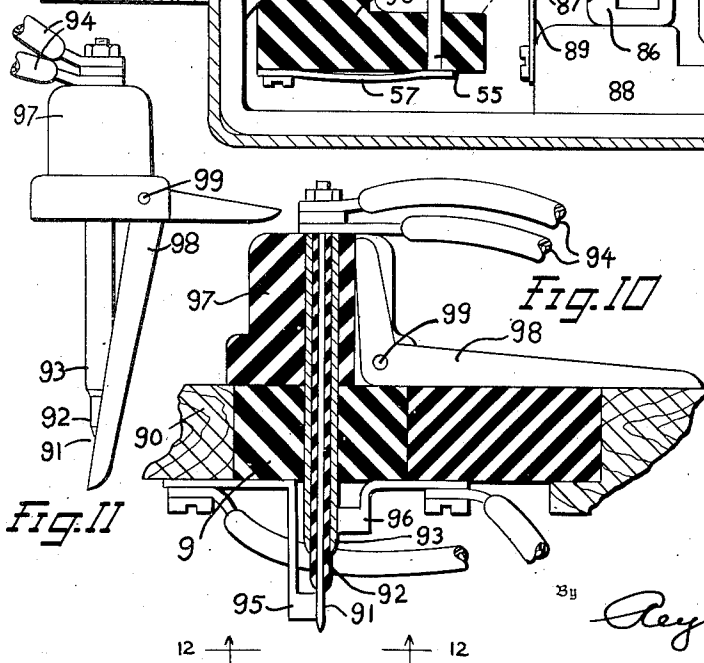


Fig. 10

Fig. 11

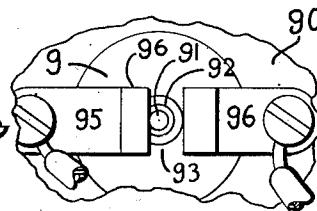


Fig. 12

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UNITED STATES PATENT OFFICE

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PIN ANCHORED ELECTRIC OUTLET
AND SWITCH

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Application September 14, 1943, Serial No. 502,281

16 Claims. (Cl. 200—51.09)

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My present invention relates to outlets generally flush with a floor or wall surface with imperforate exterior surfaces, and to outlet blocks suitable for use with such outlets, which in many respects are similar to the flush type outlets and blocks disclosed in my Patents Nos. 2,234,982, issued March 18, 1941, and 2,298,313, issued October 13, 1942. My present invention, however, differs in important particulars from the devices disclosed therein.

Such flush type outlets are wholly imperforate, thus leaving no holes, depressions, or apertures of any sort wherein dirt may collect, nor through which the line can be contacted or grounded. Thus they are particularly suitable for floor installations. Current is transmitted from the leads beneath the floor to the outlet block, and thence to the current consumer, by contact between terminals flush with the floor surface and with the surface of the applied outlet block, respectively, usually accompanied by closing of a switch actuated by such operative positioning of the outlet block, or the current transmission may be inductively accomplished. In either case rather accurate location of the outlet block upon the outlet is necessary, and this location must be maintained, against any tendency to lateral displacement of the outlet block. Such maintenance of positioning has been accomplished heretofore by transmission of an attractive force perpendicularly to the floor, magnetic, suction, or the like in nature, between the outlet block and the outlet. A more positive position-maintaining means is sometimes desirable, though it must still leave the outlet flush and imperforate when the outlet block is withdrawn. The provision of such position-maintaining means, ordinarily wholly divorced from the current transmitting means, is the primary object of this invention.

In general, therefore, my present structure was devised to anchor the outlet block positively against accidental displacement along a floor, for example, even though the outlet itself is imperforate and has no projection or depression to interengage with or to hold the outlet block. At the same time constructions having these advantages should be adapted for embodiment in both the switch controlled and the constantly energized varieties of outlet. If a switch is provided it may be either of the normally open type or capable of being held closed automatically.

The construction adopted employs piercing points which when the outlet block is operatively applied to the outlet project from the one to penetrate resilient blocks carried by the other. It is undesirable to leave these piercing points projecting when the outlet block is purposely (or inadvertently) removed from operative position. While they may be, and in most cases are, divorced from the current transmission means, to

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leave them projecting invites damage to them, and injury to persons. Particularly is it unthinkable to leave them projecting if they are mounted in and project from the outlet in the floor, for this is then no longer a flush type outlet; still, it is almost as undesirable to leave them projecting from the outlet block. It is a further important object to provide such position-maintaining means which, by the action of disengaging the outlet block from the outlet, are automatically withdrawn into their mounting, either the outlet block or the outlet, as the case may be.

While the position-maintaining means, the piercing points mentioned above, are ordinarily divorced from the current conductors, or from switch-operating mechanism, their ability to perforate the surface of the outlet, for example, without leaving a permanent hole therein, makes possible their utilization as current conductors or as switch operators, in some instances, though still retaining their ability to retract automatically upon withdrawal from operative engagement.

A further object of my invention is to achieve such advantages by mechanism which is of simple and inexpensive character. Moreover, the principles of operation of my device are capable of being incorporated in a wide variety of different outlet structures, and certain of these may be constructed deliberately so that a varied selection of outlet blocks can be used with a single type of outlet, or, on the other hand, one outlet block can be used in conjunction with a number of different outlets, depending upon the type of installation and the characteristics of operation desired.

A variety of outlets and outlet blocks are disclosed in the drawings and described in detail hereafter as examples of various embodiments of outlets, outlet blocks, and combinations thereof constructed in accordance with my invention. It will be recognized that structures differing considerably in detail could be used in most instances and still obtain the same results, and such modifications of the devices illustrated for the most part will be apparent to those skilled in the art according to the particular installation or use for which they may be designed.

Where such points are used as current conductors it is also an object to prevent them from being injured by engaging electric terminals which are energized at the time of contact. It is desirable in many cases, however, that the outlet block be energized automatically immediately following its application to the outlet, and my invention affords such operation.

Additional objects of my invention, and examples of ways in which the above mentioned objects may be achieved, will be understood from the following description and the drawings of

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several exemplary outlet and outlet block constructions.

Figure 1 is a longitudinal sectional view through one form of outlet and outlet block, while Figure 2 is a transverse sectional view through the outlet block taken on line 2—2 of Figure 1.

Figure 3 is a longitudinal sectional view through a different type of outlet to which the outlet block of Figures 1 and 2 may be applied.

Figure 4 is a longitudinal sectional view through another form of outlet and outlet block, and Figure 5 is an end elevation view of such outlet block, in condition for application to an outlet.

Figure 6 is a longitudinal sectional view through an outlet and outlet block of still a different type, while Figure 7 is a transverse sectional view of the outlet block on line 7—7 of Figure 6. Figure 8 is a longitudinal sectional view through a further form of outlet and outlet block, which block may be used with the outlet of Figure 6, and which outlet will accommodate the outlet block of Figure 6. Figure 9 is a detail sectional view of latch parts in positions different from those of Figure 8.

Figure 10 is a longitudinal section through another outlet and outlet block, Figure 11 showing the outlet block in elevation removed from the outlet. Figure 12 is a fragmentary bottom plan view taken from line 12—12 of Figure 10.

Figure 13 is a longitudinal sectional view through an additional modification of my invention. Figure 14 is a top perspective view of the outlet, with the outlet block removed. Figure 15 is a transverse sectional view through the outlet block taken on line 15—15 of Figure 13.

The principal characteristic of all the various forms of my invention illustrated is the use of piercing points, pins or needles which are forced into a penetrable surface of the outlet for one or more purposes. Such surface may be any one of various soft, self-sealing materials, but rubber or similar substance is preferred. All of such pins positively interconnect the outlet block and the outlet so that the block cannot be slid laterally out of registry with the outlet. In the structure of Figure 1, for example, the outlet block has points 1 piercing buttons 2 embedded in the plate 20 of the outlet, which is set into the floor F flush with its upper surface. In this particular type of outlet the pins perform the additional function of closing normally open switches 3 by direct engagement of their points with caps 30 placed over the switch operating plungers. These caps are preferably of hard non-metallic material which will not dull the points of pins 1, and yet which is impenetrable by the pins. As these pins move downward through the buttons 2 after piercing them they will engage the caps 30 and force them downward in opposition to the compression springs 31, until switches 3 are closed to energize the electric floor terminals 32, against which the outlet block contacts 4 are pressed.

In all such outlet blocks it is important to shroud the anchor points when the outlet block is not in place over the outlet. In general such points may be either of the type fixed in the outlet block, which can be covered by an element movable relative to the block, or of the type themselves retractable into a cavity in the body of the outlet block. The points 1 shown in Figure 1 are of the latter type, being carried by a slide 10 which is separate from the outlet block but guided in the latter for movement toward and away from the outlet, by fitting slidably within a chamber

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in the outlet block body, formed by the wall 11 projecting upward from its base 12. Normally the slide 10 is urged away from the block base by a compression spring 13 encircling the points 1 and the electric contacts 4, and interposed between the slide and the base. Outward movement of the slide is arrested in the broken line position of Figure 1 by a flange 14 projecting inward beyond the inner surface of wall 11, to engage the end of the slide.

While the points 1 are rigid with the slide 10, the contacts 4 are not. The contacts 4 are connected by strips 40 to wires 41 leading to the electric load. Such strips are sufficiently resilient so that when the outlet block is not in place the contacts will project somewhat below the bottom of the block. As it is pressed down, however, the strips will yield to hold the contacts 4 in firm engagement with terminals 32. Although the wires are shown extending directly to the load they may instead be connected to conventional jacks carried by the wall 11 into which a conventional plug can be inserted. Such arrangement enables the outlet block itself to be disconnected from the load, although ordinarily such provision is not necessary because of the ease with which the outlet block itself may be removed from and replaced in proper position on the outlet.

When the block is not in place on the outlet the action of spring 13, normally urging slide 10 into the broken line position of Figure 1, retracts the points 1 sufficiently far so that their tips lie inwardly of the outer surface of the outlet block base 12. When it is desired to connect the load to the power source the operator presses the slide 10 downward with his thumb to compress spring 13, simultaneously projecting the points a considerable distance beyond the block base. This operation may be performed either before or after the outlet block has been placed on the outlet plate 20, but preferably afterward. As the slide is moved downward, therefore, the points will be forced through the penetrable buttons 2 and eventually into engagement with the switch caps 30. Unless the points are positioned to penetrate the buttons 2 the contacts 4 are not positioned properly for engagement with contacts 32; contrariwise, penetration of the buttons 2 by points 1 assures correct positioning of the contacts. At least before the points 1 have entered the outlet sufficiently far to close switches 3 it is desirable that the block contacts 4 be in engagement with the floor electric terminals 32. Preferably the block is placed on the base before projecting the points at all so that their lower ends will be braced against bending by the sides of the holes through base plate 12 as the pins are pushed into plugs 2. Even though the block should be pressed sidewise during such operation the pins can not be bent. As soon as switches 3 are closed by the action described, current will flow from the power supply through such switches, terminals 32, and contacts 4 to wires 41, and thence to the load.

If the thumb is now removed from the slide 10 it will be found that the parts will remain in the positions illustrated in Figure 1 in solid lines. While the spring 13 will move the slide into the broken line position when the points 1 are not embedded in buttons 2, it is sufficiently light so that the friction of the pins piercing buttons 2 to close switches 3 will prevent spring-induced movement of the slide after having been released by the operator. Thus the slide will remain in

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its inner position, to hold the block in place and switches 3 closed, until the operator forcibly pulls the outlet block away from the outlet, by grasping wall 11, to withdraw the pins from the buttons. At that time of course, the spring will act immediately to retract the pins 1 within the outlet block. Similarly, if the outlet block is accidentally displaced, the points 1 are immediately and automatically retracted.

It is also to be noted that during this disconnecting operation the withdrawal of pins 1 from buttons 2 will enable springs 31 to return switches 3 to "off" position, thus deenergizing electric terminals 32 before the outlet block can be removed completely from the outlet. Also, as long as these pins project any appreciable distance into the buttons the outlet block cannot be slid sideways relative to the outlet to uncover the floor terminals, or even sufficiently to move block contacts 4 laterally out of registry with them. Nevertheless slight tilting of the outlet block during withdrawal of the pins from the buttons will not injure them because the slide 10 can tilt somewhat relative to the block wall 11, and since the buttons 2 are of rubber or similar material, they will yield instead of bending the pins. Accurate registry of the pins with their apertures in the block base 12 is assured by forming slide 10 and block wall 11 of other than cylindrical shape. In Figure 2 the slide is shown to be of hexagonal cross section, and the block wall is of complementary hexagon shape. Thus while the slide can reciprocate freely within the outlet block, and can tilt slightly, it cannot turn appreciably about an axis perpendicular to the block base 12.

In Figure 1 each spring 31 may be the spring usually incorporated in a normally open switch 3, or it may supplement such switch spring. If the switch springs are sufficiently strong to return caps 30 positively and quickly springs 31 may be omitted. If the action of switch 3 is stiff, a rather strong spring force will be required to insure its return to "off" position, and consequently the slender pins 1 might have difficulty in exerting sufficient force to overcome the spring tension in closing the switch.

Because of the stiffness inherent in the usual mechanical switch, especially of heavy duty type, it may be preferable to use an outlet such as shown in Figure 3 with the outlet block of Figures 1 and 2. Energization of terminals 32 in this modified outlet is controlled by tilting mercury switches 33, the leads of which are connected by flexible connectors to the power source and to the floor terminals. These switches are pivoted in such fashion that they can be tilted between circuit open and closed positions with very little effort. Following conventional practice, the glass tubes containing the mercury may be shifted lengthwise relative to their pivoted supporting bands to adjust their balance very delicately. They should be adjusted so that they will swing into the circuit closed position shown in Figure 3 when no external force is applied to them, but should be easily swingable into open circuit position by the application of a very slight force to them.

The switches may be tilted by engagement of the lower flange of a tube 34 with them, which tube is guided for vertical reciprocation by rod 35 extending centrally through the outlet. This tube is urged upward by a compression spring 36 reacting between the base of the outlet box and the tube's lower flange, but it need not be a strong spring, since the tube can be quite light, requiring only a very small force to raise it and to tilt the

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mercury switches 33 into open circuit position. Conversely, therefore, tube 34 can be depressed by a light pressure of pins 1 on its upper flange to free switches 33 for tilting into circuit closed position. The upper flange of this outlet should be made of hard, non-metallic material which will not injure nor be defaced by the points 1, and will not conduct electricity.

In view of the foregoing explanation as to the operation of the outlet block in conjunction with the outlet of Figure 1 the operation of this modified outlet will be readily apparent. When the outlet block is not in place upon the outlet spring 36 will maintain tube 34 in its upper position so that the mercury switches will be held in circuit open attitude. When the pins 1 are forced downward through the buttons 2 they will engage simultaneously the upper flange of tube 34 and slide it downwardly along rod 35 against the action of spring 36. As the lower flange of the tube is depressed the mercury switches will tilt of their own accord into circuit closed position, as indicated, to energize terminals 32. The tube will be held in this lower, circuit-completing position by the friction in buttons 2 of the pins 1 pressing the upper tube flange. Again it will be seen that the contacts 4 of the outlet block may be engaged with terminals 32 before the pins are moved to close the switches 33. It will be evident, therefore, that an outlet block of the type shown in Figures 1 and 2 may be used interchangeably with the outlets of Figure 1 and Figure 3.

Instead of the position-maintaining pins 1 in the outlet block of Figures 1 and 2 having as their secondary function the closing of switches in the outlet, they themselves may constitute current conductors when applied to an outlet of the type shown in Figure 4. This outlet has no switch mechanism, but, on the other hand, it has no exposed floor terminals, such as 32 in Figures 1 and 3, which should be deenergized when exposed. In this form of outlet the penetrable buttons 2 in the floor plate 20 serve as covers for mercury cups 37 mounted on such plate, each constituting an electric terminal. When the pins 1 have pierced the buttons 2 they may be moved on downward into the mercury in these cups.

Particularly when the pins are withdrawn from the mercury in cups 37 of this continuously energized outlet, an electric arc is likely to occur, which may burn the sharp points more or less severely if they are connected directly to the load. It is preferable, therefore, to provide in the outlet block of Figures 1 and 2, when it is to be adapted for use with a continuously energized outlet of the type shown in Figure 4, switch mechanism which will disconnect both pins from wires 41. An individual switch for each pin may include a switch point 42 carried by a strip 43 anchored to the pin slide 10 by its respective pin. This strip may be sufficiently resilient to move the switch point 42 slightly away from slide 10, but substantially less than the distance contacts 4 can be moved below the bottom of the block by resilient strips 40.

When this slide is in its outer position switch points 42 would be urged slightly away from the inner slide surface by the resilience of strips 43. As the slide is pressed downward with the outlet block in registry with the outlet of Figure 4, the pins 1 will be forced through the penetrable outlet buttons 2 into the mercury in cups 37. Because the outlet has no terminals capable of registering with contacts 4, and switch points 42 up to that time are in open circuit position, no

current can flow, and consequently no arcing will be produced upon contact of the pins with the mercury. By continued inward movement of slide 10, however, dipping the pins farther into the mercury in cups 37, the outlet block switch points 42 will be pressed into engagement with complementary switch points 44 mounted on the strips 40 which connect contacts 4 with wires 41. Such engagement of the switch points will close the circuit so that current will flow from the mercury cups through pins 1 and switch points 42 and 44 to the wires 41. Although these switch points will be closed similarly when this outlet block is applied to the outlets of Figures 1 or 3 pins 1 will not be shorted because of the insulating character of buttons 2 and caps 30 of the outlet in Figure 1, or the flange of tube 34 in the outlet of Figure 3.

Conversely, when the outlet block is being removed from the outlet of Figure 4 the pressure of the outlet against contacts 4 will be relieved as soon as the base 12 is lifted a short distance. Before the outlet block has been moved sufficiently to withdraw the ends of pins 1 from the mercury in cups 37, spring 13 remaining compressed and slide 10 in its lower position, the contacts 4 will be moved outward by the resilient deflection of the strips 40 sufficiently to withdraw switch points 44 from switch points 42 despite the slight resilience of strips 43 carrying them. In this manner disconnection of the load from pins 4 is insured by separation of contact points 42 and 44 before such pins are removed completely from the mercury in cups 37. As withdrawal of the pins is completed, therefore, no arcing can occur, and they will not be burned.

Structural features to prevent arcing between the conductor pins and the mercury in cups 37 during placement and removal of an outlet block may not be necessary if the load on the circuit is light or if it can be deenergized by other switch or plug and jack mechanism. In such event both the outlet and the outlet block switches may be omitted.

Figure 4 illustrates a different type of outlet block, whose wall or case 15 may be generally semicylindrical in shape, constructed by an insulating material, and the base 12 may be removably secured to it by screws. Instead of the pins 16 being long and reciprocable relative to the block walls, as in the outlet of Figures 1 and 2, they may be relatively short, being only long enough to project beyond the base 12 a distance approximately equal to the maximum projection of the pins 1 beyond the base in the outlet block of Figures 1 and 2. Dual purpose screws 17 may clamp these pins in position and connect to them wires 41 leading either to jacks on the outlet block for engagement by a conventional plug P, as shown, or directly to the load.

Since the pins 16 are not retractable into the outlet block when it is not in place over the outlet, a clam shell cover 18, also preferably of generally semicylindrical shape as shown in Figure 5, may be pivoted on the case 14 by a hinge 19. About this hinge the cover may swing into the broken line position in which the points 16 are completely shrouded within the cylindrical enclosure. Preferably a torsion spring is incorporated in the hinge so that as soon as the outlet block has been lifted from the outlet the cover will be swung automatically into point protecting position. Such spring should not be stiff enough to exert a substantial tilting force upon the outlet block proper when its points are embedded in the

outlet, so that no appreciable tendency to pry the outlet block off the outlet will be created.

A normally open switch 45, of the same general type as switch 3 of Figure 1, may be incorporated in this outlet block between contacts 4 and wires 41. The switch will be closed by engagement of its switch actuating plunger 46 with outlet plate 20 as the block is moved downward. The movement of the switch plunger required to close this switch will be related to the projection of pins 16 into mercury cups 37 so that the switch will not be closed by inward plunger movement until after the pins have dipped a substantial distance into the mercury. Conversely, as the outlet block is withdrawn to remove it, release of pressure on the switch plunger 46 will effect opening of the switch and consequent deenergization of the load before the points 16 are removed completely from the mercury, so that again no arcing between the points and the mercury can occur. As the cover 18 swings into the broken line position of Figure 5 after removal of the outlet block from the outlet, it will, of course, house the switch plunger 46 as well as pins 16.

Just as the outlet block illustrated in Figures 1 and 2 is adapted for interchangeable use with any of the outlets of Figures 1, 3 and 4, so the block of Figures 4 and 5 may be applied to either of the outlets of Figures 1 and 3. In such event, of course, the pins 16 no longer serve as conductors, but instead the contacts 4, which are like the contacts 4 in the outlet block of Figures 1 and 2, similarly carry the electric current. When an outlet block of either the Figure 1 or Figure 4 type is placed on the outlet of Figure 4 these contacts, of course, carry no current.

Pins 16 of the outlet block of Figures 4 and 5 are capable of closing switches 3 or 33 of the outlets of Figures 1 and 3, respectively, just as do pins 1 of the block of Figures 1 and 2. The pins may actuate the switches to energize terminals 32 before contacts 4 are engaged with them, however; whereas, with the other type of outlet block, the contacts 4 are preferably engaged with these terminals before the pins 1 are reciprocated into switch closing position by pressure on slide 10. This circumstance would be immaterial, however, if the load were disconnected from wires 41 by some switch, or plug P and its jacks, independent of the outlet and outlet block.

With switch 45 incorporated in the outlet block 15 in the manner shown, however, despite energization of terminals 32 arcing between the contacts 4 and such terminals, either during placement or removal of the outlet block, can be prevented. It is merely necessary that the strips 47 supporting contacts 4 flex sufficiently upon application of the outlet block to project these contacts beyond the outer face of the outlet block base 12 into engagement with terminals 32 before plunger 46 is reciprocated far enough by contact with the outlet to close switch 45. Conversely, raising of the outlet block will enable plunger 46 to move outward sufficiently to open switch 45 before contacts 4 are lifted clear of terminals 32. With this mechanism also, therefore, all chance of arcing between the block contacts and floor terminals is eliminated. Moreover, the two wires 41 cannot be shorted through the pins 1 or 16 when applied to an outlet of either the type shown in Figure 1 or that of Figure 3, because the pin contacted elements, the caps 30 of the former outlet and the flange of tube 34 in the latter outlet, are of insulating material.

While the various outlets and outlet blocks described above are all interchangeable, as discussed, none of these outlet blocks are designed for an outlet of the type shown in Figure 6 or in Figure 8, nor can either the outlet block of Figure 6 or that of Figure 8 be used with any of the above outlets. The principal reason for this lack of interchangeability is that in the previous types two pins in the outlet block pierce two outlet buttons, so that the outlet block can assume only two different positions relative to the outlet. In the modifications of Figures 6 and 8, however, only a single pin pierces a button located centrally within an annular terminal ring or rings, so that the outlet block may assume any angular position desired relative to the outlet, yet it cannot be shifted across the outlet. On the other hand, additional penetrable areas may optionally be provided for engagement by other pins on the outlet block to hold it in some particular angular position relative to the outlet.

The simplest type of outlet for this embodiment of my invention, shown in Figure 6, includes a penetrable button 5 made of rubber or similar material, held in the floor plate 50. Beneath the button 5 is a mercury cup 51 carried by such plate, to which one wire of a power supply is connected, while the other supply wire is connected to a ring 52 embedded in the outlet plate 50 in a position concentric with button 5. Where one of the terminals is in the form of an exposed ring 52, the power supply should be of the grounded terminal type in which one of the wires is a neutral or ground wire, and that wire should be connected to such ring, while the other is live.

The outlet block 6, made of insulating material, is cylindrical and hollow. Its diameter is somewhat greater than that of ring 52, so that it completely covers such ring when in place on the outlet. To its inner wall a band 60 is secured, carrying one, or preferably several, contact feet 61, which define a circle conforming to ring 52. One connection 63 of the load circuit leads to band 60 and the other to the upper end of a pin 7 which is anchored rigidly in a central bore of the outlet block. This pin is long enough so that, when piercing button 5, its end will dip well into the mercury in cup 51.

A different arrangement has been used in this outlet block to shroud the pin, although it might have been made retractable, as are the pins of the outlet block shown in Figures 1 and 2, or could have been shrouded by a clam shell type of cover, such as shown in Figure 5. Instead a shield in the form of sleeve 70, encircling pin 7 and of a length somewhat greater than the projecting portion of the pin, is guided for reciprocation in the central aperture of the outlet block. Whether such sleeve is of circular or other cross section is immaterial. The sleeve is urged by spring 71 toward a position in which most of it projects beyond the outlet block to shroud the projecting portion of the pin. The spring should not be strong enough to force the sleeve down in opposition to the friction of pin 7 in button 5 when the outlet block has been placed on the outlet. As the block is lifted from the floor plate 50, however, the spring will urge the sleeve outwardly to follow up withdrawal of the pin, so that when it has been removed from button 5 the sleeve will cover the pin completely.

Manipulation of outlet block 6 to place it upon the outlet merely requires locating it concentrically with ring 52 and pressing it downward, thus forcing pin 7 through button 5 to enter

mercury cup 51. The portion of the pin projecting beyond the lower face of the outlet block is long enough so that it will dip well into the mercury before feet 61 engage the ring 52, to complete the circuit. Conversely, these feet will be moved away from ring 52 to break the circuit before the end of the pin 5 is withdrawn from the mercury during the block removing operation. All possibility of arcing between the point 7 and the mercury is thus eliminated, despite the fact that no switch mechanism is included in either the outlet block or the outlet, and this will be true even though the load may not be otherwise disconnected from the outlet block.

In Figure 8 neither the outlet block nor the outlet has an automatically operable switch, but a manual switch is incorporated in the outlet in conjunction with an outlet block operated latch. As in the outlet of Figure 6, a penetrable button 5 is anchored in the floor plate 50 and a ring 52, concentric with the button, is connected to one terminal of the electric supply. In addition, however, a second ring 53, intermediate and concentric with button 5 and ring 52, is connected to the other wire of the electric supply. When used with an outlet of this type, therefore, the pin of the outlet block does not serve as a current conductor.

Since both terminal rings 52 and 53 are exposed when the outlet block is not in position on the outlet, the switch controlling flow of current to them should be in the "off" position while the outlet block is not in place on the outlet. The switch 8 may break both wires of the circuit, although interruption of the circuit through one may be sufficient if the other is neutral. This switch is operated by pressure on a diaphragm 80 flush with the floor surface, depression of which will swing arm 81 downward about pivot 82. This action reciprocates downward link 83, connected between such arm and one end of lever 84 to tilt such lever about a fixed fulcrum pivot 85. Since the opposite end of this lever is connected to the switch operating plunger the switch will be moved from "off" to "on" position by depressing the diaphragm 80. To lock the switch against movement into operative position by accidental pressure on diaphragm 80 when the outlet block is not on the outlet, therefore, it is merely necessary to latch one member in this linkage.

The type of latch selected for illustration engages the swinging end of arm 81, which is offset downward. It includes a hook 86 guided in ways 87 to move toward and away from the swinging end of arm 81 between unlocked and locked positions. The back of the hook rests on a base or pillow block 88, and when in latching position the tip of the hook is engaged as a column between this block and the swinging end of lever 81. Pressure on diaphragm 80 tending to swing that arm is therefore transmitted through the tip of the hook to the block 88, which prevents the arm being swung downward into switch actuating position by pressure on diaphragm 80. With the arm 81 thus latched, therefore, the entire switch actuating mechanism is rendered inoperative to close switch 8.

The latch hook may be reciprocated to place the downwardly offset end of arm 81 in registry with the hook's recess, so that it can be depressed to actuate the switch, by sliding the hook to the right in Figure 8 to the position of the parts shown in Figure 9. This movement is effected by pressure of pin 7 against a platform 54 car-

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ried by the end of a rod 55 reciprocable in a support 56. Normally this rod is held in its upper position by a leaf spring 57 engaging its lower end and secured to the support. As the pin 7 is pressed downward by slide 72, however, the platform 54 is depressed in opposition to spring 57, so that an inclined surface adjacent to hook 86 engages it, or preferably a contact roller carried by such hook, to wedge it to the right into the position of Figure 9, in which the tip of the hook has moved beyond the offset end of arm 81. Pressure upon diaphragm 80 will now depress this arm end into the hook's recess to move link 83 and lever 84 to close switch 8. When pressure upon platform 54 is released by withdrawal of pin 7 from button 5, and it is moved upward by spring 57, a second spring 89 will move hook 86 back to the left into latching position, in which the end of the hook is again interengaged between the offset end of arm 81 and the bed or pillow block 88.

When only the construction described is used diaphragm 80 must be pressed continuously to keep switch 8 in closed position. Otherwise the return spring normally provided in a switch of this type would return its plunger, lever 84, link 83 and arm 81 to "off" position. To overcome the necessity of holding the diaphragm down, however, auxiliary latching mechanism, controlled by the engagement of pin 7 with platform 54, may be provided in the form of detent 86'. This detent, reciprocable axially of the hook shank, is urged by a spring to project its end into the hook recess. As the hook is wedged toward the offset end of arm 81 the detent will engage such arm end and be forced inward to tension its spring. If the diaphragm 80 is now depressed the arm end will be moved downward below detent 86' so that it will be projected by its spring into a position overlapping such offset arm end, as shown in Figure 9. Although pressure upon diaphragm 80 may be relieved, the switch spring cannot move arm 81 upward because its offset end will thus be held depressed beneath detent 86'. This relationship of the parts, corresponding to "on" position of the switch, will be maintained as long as hook 86 is held to the right by pressure of pin 7 on platform 54.

When pin 7 is withdrawn from button 5, however, and since projecting movement of detent 86' is limited, as shown in Figure 8, hook 86 will be moved by spring 89, as platform 54 is raised, to the left sufficiently so that the projecting end of the detent will no longer overlie the offset end of arm 81. Enough space will remain, however, between the detent end and the hook tip to accommodate such offset arm end, thus released; and it will be raised out of the hook's recess by the switch spring acting through lever 84 and link 83. All the parts are thus returned to positions corresponding to "off" position of the switch; and when the offset end of hook 81 has been lifted entirely out of the hook's recess spring 89 will continue to move the hook to the left until its tip is again interengaged between the base or pillow block 88 and the offset arm end, as in Figure 8. Thus the switch actuating mechanism will be again locked in "off" position until the next time pin 7 is forced downward through button 5 to depress platform 54.

The outlet block shown in Figure 8 is generally similar to that of Figure 6, but differs in certain respects. The outer terminal ring 52 is similarly engaged by feet 61 projecting downward from a band 60 secured to the inner wall of the

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hollow block 6'. An additional band 64 encircles a central core of the block, and carries feet 65 for engagement with ring 53. The bands 60 and 64 are connected, respectively, to the load wire terminals 63.

Instead of the pin 7 in this instance being immovable relative to the body 6' of the outlet block it is carried by and projects downward from a slide 72 reciprocable in a bore formed in the top of the outlet block 6'. The slide and pin are urged upward by a compression spring 73, received in a reduced inner portion of this bore to retract the pin into the block body, and such upward movement is limited by engagement of a stop collar 74 with a shoulder on the slide in a position in which the pin 7 is retracted completely within the body of the block.

In applying the outlet block 6' to the outlet of Figure 8 the contact feet 61 and 65 are placed on the terminal rings 52 and 53, respectively, which will locate pin 7 substantially above the center of button 5. As slide 72 is pressed downward pin 7 will pierce button 5 to engage the pin end with platform 54, in the relationship of the parts shown in Figure 8. Further downward movement of button 72 will now press the pin, and consequently the platform, downward to force hook 86 to the right into the unlocked position of the parts illustrated in Figure 9. If diaphragm 80 is now depressed switch 8 will be moved to "on" position to energize the terminal rings 52 and 53 and, through contact feet 61 and 65 and bands 60 and 64, the load wires 63. As previously explained, detent 86' will hold arm 81 to retain switch 8 in closed position for continuous energization of the load.

If it is desired to operate switch 8 in an intermittent manner the detent 86' may be removed from the outlet mechanism, but this is not necessary. Intermittent operation of the switch by manipulation of diaphragm 80 can be afforded without removing detent 86' if pin 7 is raised slightly, or pressed downward only far enough to move hook 86 to the right until its tip clears the offset end of arm 81, and not far enough to bring the detent into engagement with such arm end or into a position overlying it. The parts may be maintained in either this position or in detent engaged position by the friction of pin 7 in button 5 overcoming the combined force of spring 73 acting upward on slide 72, spring 57 acting upward on rod 55, and spring 89 urging hook 86 to the left.

Additional pins 75, optionally usable, may be received in recesses in the wall of the outlet block and held in place by set screws, so that their tips project a short distance beyond the outlet engaging face of the outlet block. These pins may be pressed into additional buttons, or a ring 58, of penetrable material, to prevent angular movement of the outlet block and to anchor it more securely against inadvertent lateral displacement. Similar additional pins may be incorporated in the outlet block 6' of Figures 6 and 7, and portions of permeable material 58 may be included in the outlet plate 50 of Figure 6.

While the outlet block 6', incorporating the retractable pin 7, is shown as applied to the outlet of Figure 8, it could also be used with the outlet of Figure 6. For this purpose a metal washer 76 is placed in the bottom of the block bore and connected to band 64, so that the pin 7 will be in circuit with such band through washer 76, spring 73 seating on it, and the pin holding plate engaged by the other end of spring 73. When the

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outlet block 6' is placed on the outlet of Figure 6, therefore, feet 61 will engage terminal ring 52, and feet 65 will be inoperative, engaging plate 50 of insulating material. Preferably slide 72 is pressed downward and pin 7 forced through button 5 into the mercury in cup 51 before feet 61 contact ring 52. Current will flow through the pin, spring 73, and ring 76 to band 64, instead of through feet 65 to this band, to complete the circuit.

Alternatively, the outlet block 6 shown in Figure 6 may be used with the switch controlled outlet of Figure 8. For this purpose such block also has a second band 64 encircling a central core portion and carrying feet 65 located to register with terminal ring 53. The method of applying this outlet block to the outlet of Figure 8 will be obvious, being accomplished in the same manner as placed on the outlet of Figure 6. Upon engagement of its pin 7 with platform 54 the latch mechanism will be actuated the same as when slide 72 is pressed downward in the use of outlet block 6; as described in detail above. It is to be noted that no problem of arcing between the block contacts and outlet terminals is presented in placing either of these outlet blocks, since application of the block merely releases a latch and no current will flow until after switch diaphragm 80 has been depressed.

While the type of outlet shown in Figures 10, 11 and 12 is considerably different from the structures discussed above, the same principles are involved. In this mechanism a penetrable button 9 is mounted in an outlet plate 90. A small locating aperture may extend through the center of such button to mark the proper location for insertion of the pin structure, but such aperture, when constricted, is too small for any appreciable amount of dirt to enter. The pin is of composite construction, including a metal core 91, an insulating sleeve 92 shorter than the core and encircling it, and a metal sleeve 93 encircling the insulating sleeve. The core and the metal sleeve constitute conductor elements, and are connected to separate load wires 94. The lower ends of the core and sleeve 93 are spaced so that, when this composite pin structure is forced through button 9, the core will engage one supply wire terminal 95, whereas the outer metal sleeve is engaged by the other supply wire terminal 96. Insulating sleeve 92 should cover enough of the core's length so that it cannot engage both terminals simultaneously to short them. These terminals are supported by strips which are somewhat resilient, so that the terminals are urged into firm contact with the core and metal sleeve, respectively.

To protect the portion of the pin assembly above the floor and to serve as a handle a collar 97 of insulating material is formed around the pin assembly. Furthermore, as in the other modifications of my outlet, it is desirable to shield the pin structure when it is not engaged with the outlet. For this purpose a shell 98 is hinged upon a pivot 99 extending transversely of the pin structure, to swing from a position resting on the floor and extending outward from collar 97, as shown in Figure 10, to the pin shrouding position of Figure 11. The shield may be urged toward such shrouding position by a torsion spring associated with pivot 99. When it is desired to swing the shield from its protecting position to that shown in Figure 10 so that the pin structure may be inserted into the outlet button 9, upward pressure is applied to the

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handle extending laterally from the shield, which overcomes the spring force. The shield is held in such projecting position until the pin has been inserted into the outlet. The friction of the pin element with the button 9 will, of course, be ample to overcome the slight tendency to raise collar 97 resulting from pressure of the shield against the floor plate by the shield spring.

In Figures 13, 14 and 15 a different application of the principles of my invention is exhibited in conjunction with magnetic mechanism somewhat similar to that shown in my Patent No. 2,234,982, issued March 18, 1941. This type of outlet is particularly desirable for heavy duty use, such as for supplying power to machines of various types in factories. All wiring may be embedded in the concrete floor F and run to the various junction boxes B, in which this type of outlet may be installed. The outlet itself is carried by a floor plate 100 fastened to the junction box by screws. The switch mechanism for controlling energization of terminals 101 may be housed within a casing which can be installed as a unit and wires W merely connected to the exterior terminals.

The switch itself may be of the mercury type, incorporating a tube 103 containing a small amount of mercury. One such tube would be sufficient if only one wire of the circuit were to be deenergized. If the outlet is connected to a source of current having both wires live, however, flow of current through both wires should be interrupted. Two mercury tubes 103 are illustrated, so that the outlet can be used for either system. These are mounted side by side in a cradle 104 supported by rod 105 to tilt between the circuit closed position of Figure 13 and the open circuit position of Figure 14.

In this type of outlet the switch may be closed by a permanent magnet 106 housed within the outlet block 107. Preferably this magnet is of the horseshoe type, and when the block is placed over the outlet in proper position the poles of the magnet will be aligned respectively with extension pole pieces 108 embedded in the floor plate 100. When these pole pieces are magnetized by application of the outlet block they will attract and draw upwardly a bar armature 109 having a tubular shank 110 pinned to the cradle 104 carrying the mercury tubes. To guide movement of the armature upward into proper registry with the pole pieces 108 a pin 111, threaded or otherwise secured in floor plate 100, has a knob on its lower end projecting downwardly into the tubular shank 110.

Wires extending upward from the mercury switch tubes 103 are connected to terminals 101. These are located for engagement by contacts 112 suspended by resilient folded strips 113 secured to the outlet block, so that when the outlet block is not in operative position the contacts project somewhat below its lower surface. When the block is placed upon the outlet, therefore, these contacts engage the terminals 101, and the pull of magnet 106 draws the lower face of the outlet block down against the upper face of the floor plate so that the contacts engaging the terminals are pressed upward flush with the lower surface of the outlet block. This action stresses the folds of strips 113 so that a continuous resilient force pressing the contacts against the terminals is produced. The magnet also, of course, by magnetizing extension pole pieces 108, moves armature 109 upward to close switches 103. Conversely, when the outlet block is lifted the

resilient folds of strips 113 press the contacts 112 outward as the block is raised. When the magnet is withdrawn and the extension pole pieces 108 are thus demagnetized the armature 109 falls away from such pole pieces to tilt the mercury switches 103, thus to deenergize the terminals 104. Thin sheets of insulating and non-magnetic material 114 beneath the poles of magnet 106; and additional similar sheets 115 beneath the extension pole pieces 108; prevent shorting of the terminals 101 through the magnet or through the armature 109, and also insure that no residual magnetism will cause the armature to be held in raised position after the magnet has been lifted.

The resilient strips 113 may be connected directly to wires leading to the load, but preferably they are formed integral with or secured to jack terminals 116, as shown in Figure 15, which are arranged for engagement by a plug P of conventional type. These contacts and jack members are received beneath the arch of the permanent magnet. For ease in placing and removing the outlet block a handle 117 may be formed on or secured to its top.

Instead of being integral with the block body the handle preferably controls the operation of anchor points 118 which may be projected into soft buttons 119 of rubber or similar material. These points are carried by slide rods 120 secured to opposite ends of a bridging plate 121, such as by a nut screwed upon a threaded shank on the shouldered upper end of each rod. The handle 117 is fastened to the plate 121, and the rods slide through apertures in the ends of the outlet block. The lower end 122 of each rod 120 may be enlarged, so that its upward movement will be limited by engagement against internal shoulders 123 in the block apertures. Plate 121 may be lifted sufficiently far above the upper surface of the block to retract the points of pins 118 above its lower surface. The plate, rods and pins may be held in such raised position by a detent 124 engaging in a complemental notch 125 in each rod.

If the outlet block is not in place upon the outlet plate 121 will be held in raised position by engagement of the detent in the slide rod notches. When the outlet block has been put in place over the outlet, handle 117 may be pushed downward to disengage the detents from the rod notches, and to force them downward to project pins 118 into the soft buttons 119. The pins will then prevent lateral shifting of block 107 in any direction, as previously explained in connection with the other forms of outlet described above.

When it is desired to remove the outlet block intentionally it is only necessary to pull upward on handle 117, which will raise rods 120 to withdraw pins 118 from buttons 119. Engagement of the enlarged rod ends 122 with shoulders 123 will exert a lifting force on the outlet block proper to lift magnet 106 out of operative position, and thereafter to disengage contacts 112 from terminals 104. Since initial upward movement of the handle and plate relative to the block will enable detents 124 to move inwardly again into notches 125, the points will be held retracted so that they cannot be damaged or injure anything until the handle is again pressed down to apply the block to the outlet.

Pins 118 may conveniently be phonograph needles or similar short, sharp pins. To enable these to be replaced readily they may be received in sockets in the enlarged ends 122 of rods 120 and held therein by set screws 126. The points may

either be secured in the rod sockets when disconnected from plate 12 and removed from the outlet block, or access apertures 127 may be provided between the rod receiving apertures and the block exterior for insertion of a screwdriver to rotate the respective set screws 126.

What I claim as my invention is:

1. In an electric outlet, a floor plate, an imperforate insert of soft, resilient self-sealing material mounted in said floor plate, an outlet block adapted to be positioned over said floor plate, a slender holding pin carried by said outlet block and having a sharp end capable of piercing the soft material of said imperforate insert to restrain movement of said outlet block parallel to said floor plate, and means carried by said outlet block operable automatically to shield said pin when the outlet block is removed from said floor plate.

2. In an outlet block for application to an electric outlet, a holding pin carried by said outlet block for penetrating an outlet engaged by the outlet block to restrain movement thereof laterally of the outlet, and a cover pivoted on the outlet block to swing about an axis generally perpendicular to the pin, swingable thereover to shield said pin when the outlet block is removed from the outlet.

3. An electric outlet comprising a floor plate, exposed electric terminals carried by said floor plate, an outlet block, electric contacts carried by said outlet block for engagement with said terminals when the outlet block is placed on said floor plate, an insert of resilient, penetrable self-sealing material mounted in said floor plate, a holding pin carried by said outlet block operable to pierce said insert when the outlet block is in place on the outlet to restrain relative lateral movement thereof, a switch adapted to energize one of said electric terminals, and switch control means beneath said penetrable material insert and engageable by said pin piercing said insert to condition said switch for energization of the terminal controlled thereby.

4. An electric outlet comprising a floor plate, exposed electric terminals carried by said floor plate, an outlet block, electric contacts on said outlet block for engagement with said terminals when the outlet block is placed on said floor plate, an insert of penetrable material mounted in said floor plate, a holding pin carried by said outlet block operable to pierce said insert when the outlet block is in place on the outlet to restrain relative lateral movement thereof, a switch adapted to energize one of said electric terminals, switch operating means beneath said penetrable material insert and engageable by said pin piercing said insert to move said switch to closed position for energizing the terminal controlled thereby, flexible means supporting said electric contacts from said outlet block for engagement with said terminals prior to movement of said switch to closed position by said pin when said outlet block is being placed on the floor plate, and means to move said switch to open circuit position during withdrawal of said pin prior to disengagement of said electric contacts from said terminals while said outlet block is being removed from said floor plate.

5. An electric outlet comprising a floor plate, an electric terminal supported from said floor plate, an insert of soft, resilient material in said floor plate, an outlet block adapted to be positioned over said floor plate, a holding pin carried by said outlet block for penetrating said soft ma-

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terial insert to restrain movement of said outlet block parallel to said floor plate, electrical conductors in said outlet block for connection to a load, a contact carried by said outlet block for engagement with said terminal, a switch housed within said outlet block and interposed between said contact and one of said electrical conductors, and means operable automatically by application of said outlet block to said floor plate to close said switch.

6. An electric outlet comprising a floor plate, exposed electric terminals carried by said floor plate, an outlet block, electric contacts carried by said outlet block for engagement with said terminals when the outlet block is placed on said floor plate, an insert of penetrable material mounted in said floor plate, a holding pin carried by said outlet block, a slide guiding said pin for lengthwise reciprocation from a cavity in said block entirely shielding said pin into a position piercing said insert when the outlet block is in place on the outlet to restrain relative lateral movement thereof, a switch adapted to energize one of said electric terminals, switch control means beneath said penetrable material insert and engageable by said pin piercing said insert to condition said switch for energization of the terminal controlled thereby, and means carried by said outlet block operable to retract said pin into such block cavity when the outlet block is removed from the outlet.

7. An electric outlet comprising a floor plate, an electric terminal supported from said floor plate, an insert of soft resilient material in said floor plate, an outlet block adapted to be positioned over said floor plate, a holding pin rigidly secured to said outlet block for penetrating said soft material insert to restrain movement of said outlet block parallel to said floor plate, an electric contact carried by said outlet block for engagement with said electric terminal, electrical conductors in said outlet block for connection to a load, a switch housed within said outlet block and interposed between said electric contact and one of said electrical conductors, and means operable automatically by application of said outlet block to said floor plate to close said switch.

8. An electric outlet comprising a floor plate, an insert of soft resilient material in said floor plate, an electric terminal beneath said soft material insert, an outlet block adapted to be positioned over said floor plate, a holding pin carried by said outlet block for piercing said soft material insert to restrain lateral movement of said outlet block parallel to said floor plate and to engage said electric terminal beneath said insert, electrical conductors in said outlet block for connection to a load, a switch housed within said outlet block and interposed between said holding pin and one of said electrical conductors, and means operable automatically by application of said outlet block to said floor plate to close said switch after engagement of said holding pin with said terminal.

9. An electric outlet comprising a floor plate, an insert of soft resilient material in said floor plate, an electric terminal beneath said soft material insert, an outlet block adapted to be positioned over said floor plate, a holding pin carried by said outlet block for piercing said soft material insert to restrain lateral movement of said outlet block parallel to said floor plate and to engage said electric terminal beneath said insert, and means carried by said outlet block oper-

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able automatically to shield said pin when the outlet block is removed from said floor plate.

10. In an electric outlet, an imperforate floor plate, an outlet block adapted to be operatively positioned over said floor plate, leads supported beneath the floor plate, included in a power circuit, wires carried by the outlet block leading to a current consumer, disposed and arranged for connection, through the floor plate, with said leads, when the outlet block is operatively positioned over the floor plate, and a holding pin carried by one of the outlet block or floor plate, and a resilient penetrable element carried by the other, the pin being normally retracted when the two are separated, but projecting in piercing position when the two are relatively operatively positioned, and penetrating said penetrable element to restrain lateral movement of said outlet block.

11. Means for connecting an electric outlet to a load circuit, comprising an outlet block, terminals supported in said outlet block in position for application to external electric outlets, from which terminals extend leads in the load circuit, piercing points separate from said terminals, guided within said outlet block for movement relative to such block, resilient means reacting between said outlet block and said piercing points to retract the latter normally within the outlet block, and means operable in conjunction with the placement of said outlet block and its terminals in operative relationship to the external outlets, to project said piercing points from the outlet block, for penetration of an externally located member, to prevent lateral displacement of said outlet block while its terminals are connected to the outlets.

12. Means for connecting an electric outlet to a load circuit, comprising an outlet block, terminals supported in said outlet block in position for application to external electric outlets, from which terminals extend leads to the load circuit, piercing points separate from said terminals, guided within said outlet block for movement relative to such block, resilient means reacting between said outlet block and said piercing points to retract the latter normally within the outlet block, means movable relative to the outlet block to connect said terminals to such outlets, and means connected for operation by said latter means, and operatively connected to the piercing points, to project the latter during connection of the terminals to the outlet, for penetration of an externally located member, thereby to prevent lateral displacement of said outlet block while its terminals are connected to the outlets.

13. In combination with an electric outlet having current supply means for connection to a separable load circuit, and a cover plate, and having an imperforate but penetrable area in its cover plate, an outlet block having within it load circuit energizing means supported for disposition in operative relationship to said current supply means by the placement of the outlet block upon said outlet cover plate, a piercing point separate from said circuit energizing means, mounted in and for movement relative to said outlet block in position to register with said imperforate penetrable area when the current supply means and the circuit energizing means are in correct relative operative disposition, means active upon said piercing point to retract it within the outlet block, and means operable in conjunction with such placement of the outlet block and its circuit energizing means to project said piercing point, to penetrate the registering penetrable area, and

thereby to retain the outlet block in proper operative disposition.

14. In combination with an electric outlet having a cover plate, and current supply means for connection to a separable load circuit, and having a penetrable but self-sealing area in its cover plate located in predetermined relationship to the current supply means, an outlet block having load circuit energizing means supported therein for disposition in operative relationship to said current supply means, by the proper placement of the outlet block upon said outlet, a piercing point mounted in said outlet block in position to register with said penetrable area when the current supply means and the circuit energizing means are in correct relative operative disposition, means operatively associated with said piercing point to enclose the same, but disposable in nonenclosing position by proper placement of the outlet block and its circuit energizing means, and by movement of the piercing point towards and into said penetrable area, and means active to move parts to point-enclosed position upon removal of said point from said penetrable area.

15. In combination with an electric outlet having a cover plate, and current supply means, including a normally open switch means, for connection to a separable load circuit, and having a penetrable but self-sealing area in its cover plate located in predetermined relationship to the current supply means, and in registry with the switch means, an outlet block having load circuit energizing means supported therein for disposition in operative relationship to said current supply means, by the proper placement of

the outlet block upon said cover plate, a piercing point mounted in said outlet block in position to register with said penetrable area, and with the switch means therebeneath, when the current supply means and the circuit energizing means are in correct relative operative disposition, and upon penetration of said penetrable area to operatively engage said switch means, and means carried by said outlet block operable automatically to shield said pin when the outlet block is removed from said outlet.

16. Means for connecting an electric outlet to a load circuit, comprising an outlet block, terminals supported thereby for connection to external circuits, a slender, sharp-pointed holding pin, means mounting said pin for projection from and for retraction into said outlet block in a position to penetrate a penetrable portion of an outlet engaged by the outlet block to restrain movement of the outlet block laterally of the outlet, and means carried by said outlet block operable automatically to retract said pin into the outlet block when said outlet block is removed from the outlet.

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