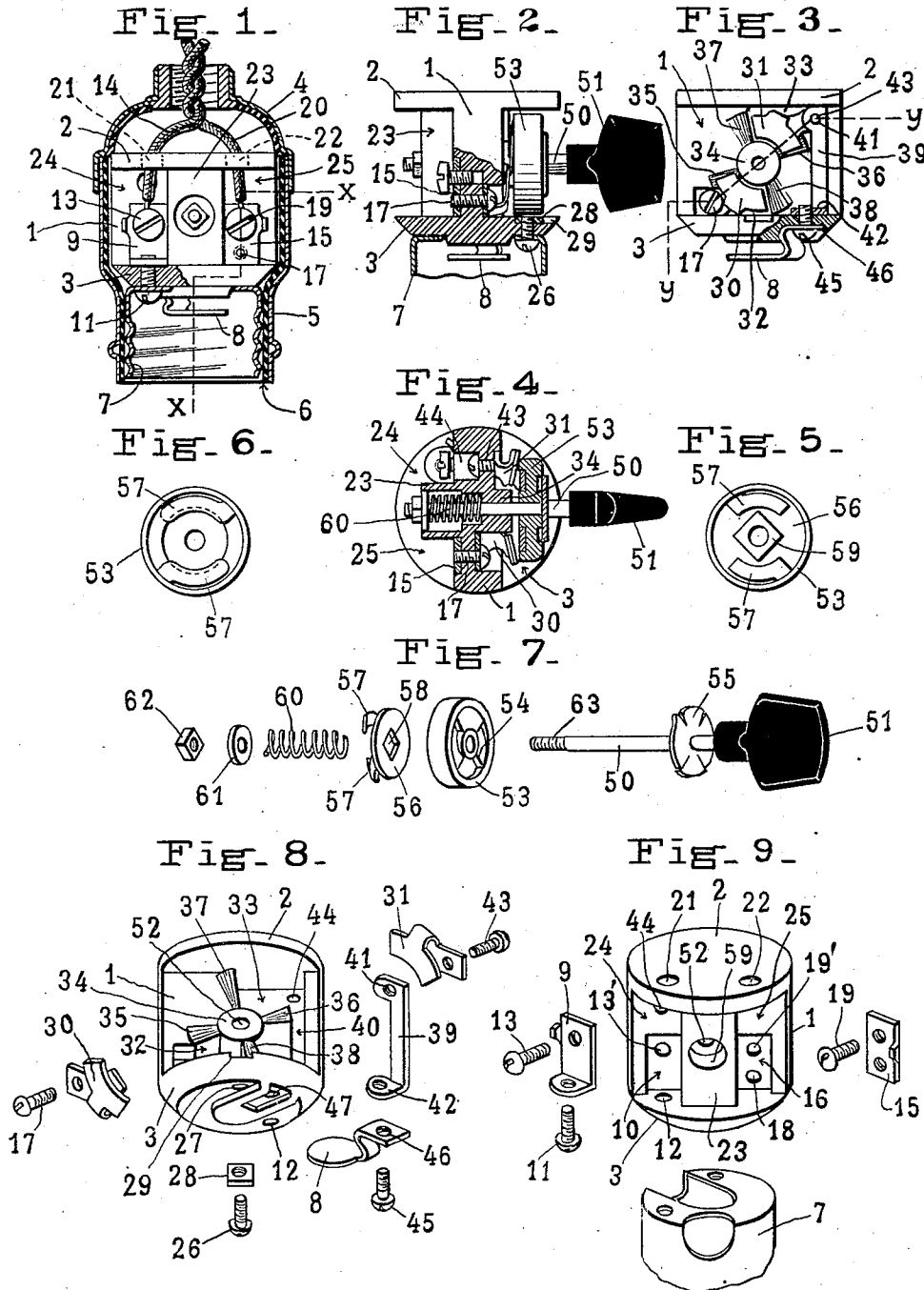


1,049,975.

Patented Jan. 7, 1913.

2 SHEETS—SHEET 1.



WITNESSES:

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ELECTRIC SWITCH.
APPLICATION FILED FEB. 18, 1911.

1,049,975.

Patented Jan. 7, 1913.

2 SHEETS-SHEET 2.

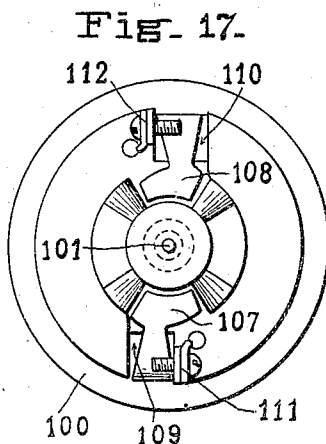
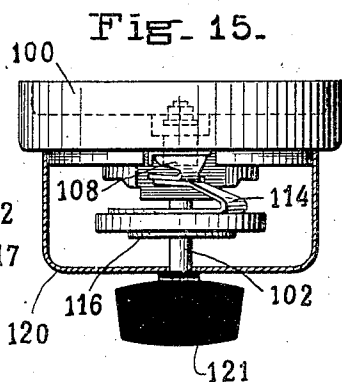
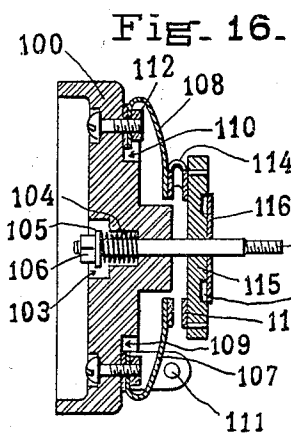
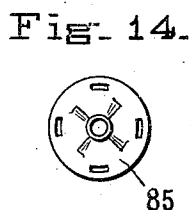
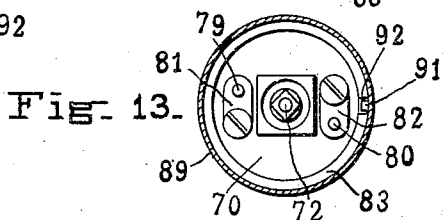
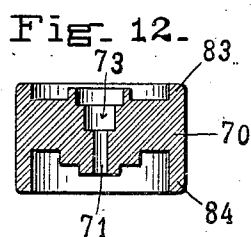
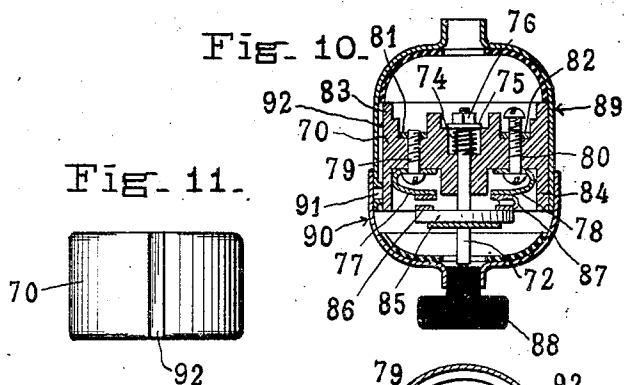


Fig. 20.

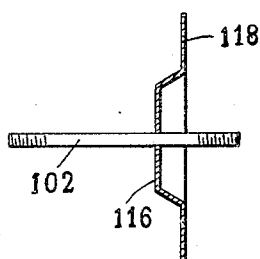


Fig. 18.

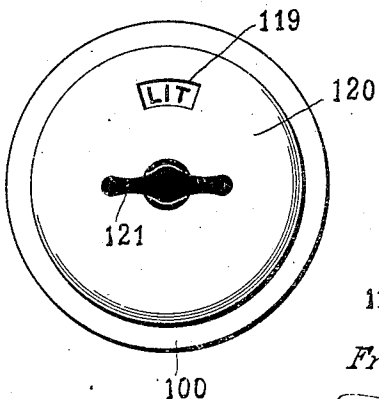
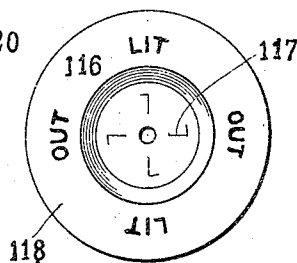


Fig. 19.



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UNITED STATES PATENT OFFICE.

FREDERIC BARR, OF NEW YORK, N. Y.

ELECTRIC SWITCH.

1,049,975.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed February 18, 1911. Serial No. 609,434.

To all whom it may concern:

Be it known that I, FREDERIC BARR, a citizen of the United States, and resident of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates particularly to hand operated snap switches and more especially to lamp socket switches although certain features are applicable to pendant and so called ceiling or wall switches.

One object of the invention is to provide a simple, inexpensive and reliable construction in compact form.

Another object is to provide a construction having yielding contact springs with a pronounced make and break without injuriously straining the contacts.

Another object is to provide a lamp socket switch in which the insulating base or block usually termed "porcelain," because made of that material, is in one piece and yet can be made cheaply and will properly support the various parts and insulate them where insulation is necessary and permit convenient connection where that is necessary.

In the preferred form of lamp socket switch the insulation block or "porcelain" as it will be termed for convenience consists of a body portion and two circular heads at opposite ends together with a rib at one side of the body between the heads. The circuit terminals are secured on one side of the body on opposite sides of the rib. The spring switch contacts are arranged in recesses on the opposite side of the body substantially on the diagonal connecting opposite corners of the body. The operating spindle passes through the body and rib of the porcelain and carries connecting spring arms to co-act with the spring switch contacts and a spiral spring and adjusting nut are provided on the opposite end of the spindle in a recess in the rib to permit yielding longitudinal movement of the spindle. One of the circuit terminals is connected to the usual screw socket terminal for a lamp, the other circuit terminal is connected to one of the switch contacts. The other switch contact is connected to the center lamp terminal. A ratchet is provided which turns with the spindle for operating the switch

member and arms and the face of the body of the porcelain adjacent the spring switch contacts is formed with boss and shoulders for separating and supporting the switch contacts and arms. The combination of an insulating base with separate spring switch segments of contacts and an insulating disk carrying the connecting spring switch arms and mounted on a rotatable spindle which is yieldingly drawn toward the boss by a spiral spring and adjusting nut, is also applicable to pendant and wall switches.

Figure 1, is a rear view and partial section of an incandescent lamp socket and switch embodying my invention and showing the circuit terminals and the connection from one terminal to the lamp socket terminal. Fig. 2, is a side view and partial section of the switch on the plane of the line X X of Fig. 1 and showing the connection from the other circuit terminal to one of the switch segments. Fig. 3, is a front view of the porcelain and switch segments and showing the electrical connection from one segment to the center lamp terminal. Fig. 4, is a horizontal plan and section of the switch on the plane of the line Y Y of Fig. 3. Fig. 5, is a rear view of the rotatable switch contact member showing the spring arms. Fig. 6, is a modification of the same. Fig. 7, is a perspective view of the switch spindle and parts carried thereby. Fig. 8, is a front perspective view of the porcelain and the separated switch segments and center lamp terminal and parts to be assembled therewith. Fig. 9, is a rear perspective view showing the circuit terminals and a lamp screw socket to be assembled therewith. Fig. 10, is a sectional view of a pendant switch embodying some of the features of my invention. Fig. 11, is a side view of the porcelain of Fig. 10. Fig. 12, is a vertical sectional view of the porcelain of Figs. 10 and 11. Fig. 13, is a plan view of the porcelain block and terminals of the pendant switch. Fig. 14, is a bottom view of the switch contact carrier of the pendant switch. Fig. 15, is a side view of a wall or ceiling switch embodying certain features of my invention, the cover being shown in section. Fig. 16, is a sectional view of a wall switch. Fig. 17, is a front view of the wall switch with the cover and rotatable switch member removed. Fig. 18, is a front view showing

the cover with an indicator opening. Fig. 19, is a front view of the spindle and indicator. Fig. 20, is a side view of the same.

The body 1 of the porcelain has the circular heads 2 and 3 integral therewith at the opposite ends. The parts are adapted to be inclosed in a shell of a cylindrical form composed for instance of the cap 4 and the body 5. Insulation fiber 6 may be employed to surround the switch block and parts inside the shell if desired. The threaded lamp terminal socket 7 and the center lamp terminal 8 are secured to the head 3 of the porcelain. The circuit terminal 9 is located in a recess 10 in the porcelain and connected to the lamp terminal 7 by means of a screw 11 which passes up through the hole 12 in the head 3 and screws into the foot of the terminal 9. The binding screw 13 is adapted to clamp the end of the conductor 14 in the terminal 9. A recess 13' may be provided back of the screw 13 for clearness. The other circuit terminal plate 15 is secured in the recess 16 in the body of the porcelain by means of a screw 17 which passes through the hole 18 and screws into the plate 15. The binding screw 19 is adapted to secure the end of the conductor 20 to the plate 15. A recess 19' may be provided to accommodate the rear end of the screw 19. The perforations 21 and 22 are provided in the head 2 of the porcelain for the passage of the conductors 14 and 20 respectively. The rib 23 which connects the heads 2 and 3 at the rear of the body 1 forms channels 24 and 25 on opposite sides at the bottom of which the circuit terminals 9 and 15 are located. These channels accommodate the conductors 14 and 20, the holes 21 and 22 being arranged at the upper ends as shown. A screw 26 may be used as additional means for securing the threaded lamp socket 7 by passing upward through the hole 27 and screwing into the nut 28 in the recess 29.

The switch contacts or segments 30 and 31 are located respectively in recesses 32 and 33 in the face of the body of the porcelain. The segment 30 is secured in place by the screw 17 which also secures the terminal plate 15 to the body as previously mentioned. On the face of the body 1 of the porcelain is a boss 34 which separates the two segments 30 and 31. Arranged around the boss 34 are the shoulders 35, 36, 37 and 38. The outer end of the switch segment 30 stands just above the shoulder 35 and the outer end of the switch segment 31 stands over the shoulder 36. The other shoulders 37 and 38 are arranged adjacent the inner or lower ends of the segments 30 and 31 respectively. The connector 39 is located in a groove 40 in the face of the porcelain and has two screw threaded perforations 41 and 42 at its upper and lower ends respectively. A screw 43 which passes through the hole 44 in the body

of the porcelain passes through the end of the switch segment 31 and screws into the hole 41 in the connector so as to hold the switch segment and the connector in place. The lower end of the connector is bent outwardly at substantially right angles so as to seat on the upper face of the lower head 3 of the porcelain. A screw 45 passes through the foot 46 of the center lamp contact 8 and up through a hole 47 in the porcelain head 3 and screws into the foot 42 of the connector 39 so as to secure the center lamp contact in place, and thus electrically connect it to the switch segment 31.

The spindle 50 has a suitable operating handle 51 and is supported in a bearing 52 in the body of the porcelain. The insulated disk 53 which will be termed the "carrier" is rotatably mounted on the spindle 50 and has the ratchet teeth 54 in its outer face adapted to be engaged by the teeth of the ratchet plate 55 which is fixed on the spindle 50. The contact member 56 is in the form of a plate having spring arms 57, 57 integral therewith and adapted to engage the switch segments 30 and 31. The contact plate is mounted in a recess in the back of the carrier 53 and has an opening 58 to fit the boss 59 in the back of the carrier so that the two parts rotate together. A socket 59 is provided in the rear of the rib 23 to accommodate the spiral spring 60, the disk or washer 61 and a nut 62 on the screw threaded end 63 of the spindle. The nut 62 may be adjusted to increase or decrease the pressure of the spring 60. It will be noted that the stationary switch segments 30 and 31 are in the form of springs and that the rotatable switch member has spring contact arms 57, 57. The spring 60 forms additional means of creating yielding pressure between the parts so that a quick make and break may be attained without necessitating successive compression of the switch segments or contact arms. This also makes it possible to use short switch segments and contact arms without danger of breaking them by the repeated action to which a switch is subjected in use. The shoulders 37 and 38 lift the contact arms 57, 57 and the carrier is rotated so as to cause them to snap over quickly on to the switch segments 30 and 31. The lower ends of the switch segments being located in the recesses 32 and 33, the switch arms cannot be rotated backward when in contact. Similarly the shoulders 35 and 36 prevent the backward rotation of the switch arms when the switch is in the "off" or "open" position. The shoulders 35 and 36 also serve as abutments for the outer ends of the switch segments 30 and 31 to prevent excessive depression in rotating the switch member. The shoulders 37 and 38 also tend to cause the switch contact member to rotate backward until the contact

arms 57, 57 rest on the face of the porcelain between the shoulders in case the spindle is released while the contact arms 57, 57 are resting upon the shoulders 37 and 38.

5 In the pendant switch the porcelain 70 has a central passage 71 for the spindle 72 and a socket 73 for the spring 74 and the washer 75 and nut 76. The spring switch segments 77 and 78 are connected by the screws 79 and 80 to the circuit terminal plates 81 and 82 respectively. A flange 83 is provided surrounding the circuit terminal plates and a flange 84 surrounding the switch segments. The insulating disk 85 carries the switch contact member having the connected spring arms 86 and 87. The spindle and rotary insulating carrier and spring switch arms are rotated by means of the handle or knob 88. The switch parts are
10 inclosed in a shell composed of the two parts 89 and 90 connected together in a suitable manner. One of the parts has an inwardly projecting lug 91 which fits into the groove 92 in the porcelain 70 so as to
15 prevent the porcelain from turning in the shell.

In the wall or ceiling switch the insulating base 100 has a central bearing passage 101 for the spindle 102 and a socket 103 for the spring 104, washer 105 and nut 106. The spring switch segments 107, 108 are mounted in recesses 109, 110 and connect to the circuit terminals 111 and 112 respectively. The connected spring switch arms 113 and 114 are carried by the insulating disk 115 on the spindle 102. The driver 116 rotates with the spindle 102 and has one or more rearwardly projecting teeth 117 for engaging the carrier 115 and rotating it.
30 This driver also has a flange 118 with suitable indicating marks such as the words "lit" and "out" adapted to be brought into alinement with the opening 119 in the cover 120 so as to indicate when the circuit is "on" or "off" and the lights in the circuit "lit" or "out". The spindle 102 may be turned in one direction by means of a handle 121 which is screwed on to the outer end. The driver and indicator may be removed with
40 the spindle by simply unscrewing the nut 106.

I have claimed the construction and arrangement of the yielding switch contacts and arms and the yieldingly supported
55 spindle as applied to all the types of switches herein illustrated and have specifically claimed the construction of the lamp socket switch.

All the features of construction with the exception of the indicating feature of the wall or ceiling switch have been shown and described in my allowed application #571,275 filed July 11th, 1910, and this application is therefore a continuation of the
65 former application to that extent.

The right to claim the specific forms of construction of the pendant and wall switches is reserved for other applications.

What I claim is:—

1. In an electric switch, the combination 70 with an insulating body having a boss upon the front side with a spindle bearing in the center and a spring socket at the rear of the bearing, of elastic switch segments secured upon the body at the opposite sides of the boss and provided with circuit connections,
75 an insulating disk having a spindle fitted rotatably to said bearing and provided at its outer end with a button, and at its inner end with a threaded stem and shoulder as set forth, connected leaf springs upon the disk adapted to bear upon and connect the switch segments, a spiral spring applied to the spindle at the rear of the bed, and a nut set against the shoulder on the spindle for adjusting the leaf springs to press upon the switch segments. 80 85

2. In an electric switch, the combination with an insulating body having a boss upon the front side with a spindle bearing in the center and a spring socket at the rear of the bearing, of elastic switch segments secured upon the body at the opposite sides of the boss and provided with circuit connections, a spindle fitted to the said bearing and provided with a button upon its outer end, a driver plate attached rigidly to the spindle, an insulating disk applied to the spindle between the driver and the bed, the driver plate having prongs and the disk having recesses engaged with such prongs, a metal ring attached to the underside of the disk with opposite leaf springs adapted to bear upon and connect the switch segments, a spiral spring applied to the spindle at the rear of the bed, and a nut upon the spindle for securing the spring, to press the leaf springs elastically upon the switch segments. 90 95 100 105

3. In an electric switch, the combination with an insulating body having a boss upon the front side with a spindle bearing in the center and a spring socket at the rear of the bearing, of segmental seats at opposite sides of the boss with notches between the same and elastic switch segments held in such notches, each segmental seat having a raised step at one end projecting above the adjacent end of the switch segment, a spindle fitted to the said bearing and provided with a button upon its outer end, connected leaf springs mounted on the disk to bear upon and connect the switch segments, a spiral spring applied to the spindle at the rear of the bed, and a nut upon the spindle for securing the spring to press the leaf springs elastically toward the switch segments. 110 115 120 125

4. In an electric switch, the combination with an insulating body having a boss upon the front side with a spindle bearing in the center and a spring socket at the rear of the 130

bearing, of segmental seats at opposite sides of the boss with notches between the same and elastic switch-segments held in such notches, each segmental seat having a raised step at one end and projecting above the adjacent end of the switch segment and a shouldered block near the opposite end of the seat, a spindle fitted to the said bearing and provided with a button upon its outer end, a metal ring attached to the inner side of the disk with opposite leaf springs adapted to bear upon the switch segments, a spiral spring applied to the spindle at the rear of the bed and a nut upon the spindle for securing the spring to press the leaf springs elastically toward the switch segments.

5. In an electric switch for a key socket, the combination with the vertical insulating body having at the lower end a seat for a lamp socket with a central lamp contact mounted thereon and the screw shell secured about the same upon the seat, of a horizontal bearing in the vertical body with a boss at one end of the same and a spring socket at the opposite end, segmental seats at opposite sides of the boss with notches between the same and elastic switch-segments held in such notches, each segmental seat having a raised step at one end and a shouldered block at the opposite end, a spindle fitted to the said bearing with a button on its outer end, an insulating disk carried by the spindle, connected leaf springs mounted upon the disk to connect the switch segments when in contact therewith, a spiral spring applied to the socket in the bed and a nut upon the spindle for securing the spring.

6. In an electric switch for a key socket, the combination with the vertical insulating body having integral head plates at its upper and lower ends with the screw shell attached to the lower head plate and a central lamp contact mounted upon the said head plate within the said shell, of a horizontal bearing in the vertical body with a boss at one end of the same, an upright rib upon the body at the opposite end of the bearing with a spring socket therein, and circuit holes extended through the upper head plate at the sides of the rib, segmental seats arranged diagonally upon opposite sides of the boss with notches between the same and switch segments held in the notches, one of said segments being adjacent one end of said body and the other segment being adjacent the opposite end of said body, circuit terminals upon the rear side of the body, one of said segments being connected to one of said terminals, a central lamp contact having connection with the other switch segment and a screw socket connected with the other terminal, a spindle fitted to the said bearing with button upon its outer end, an insulating disk carried by the spindle, connected leaf springs mounted upon the disk to connect

the switch segments when suitably turned, a spring upon the spindle in the spring socket and a nut upon the spindle to secure the said spring.

7. In an electric socket switch, an insulating block having recesses in one face and circuit terminals fitted in said recesses, one of said terminals having a foot projecting therefrom, said block having recesses in its opposite face and switch segments located in said latter recesses, a screw connecting one of said circuit terminals with one of said switch segments, lamp terminals on one end of said block, a screw connecting said foot and one of said lamp terminals to said block, a connector fitted in a recess in said block and connected to the other switch segment and having a projecting foot and a screw securing the foot of said connector and the other lamp terminal to said block and a switch member for connecting said switch segments.

8. In a lamp socket switch, the combination of an insulating block, lamp terminals on one end thereof, switch segments mounted on one face of said block, said block having a groove, a connector fitted in said groove, a screw securing one end of said connector and one of said switch segments to said block and a screw connecting the other end of said connector and one of said lamp terminals to said block.

9. In a lamp socket switch, an insulating block consisting of a body and a head integral with one end thereof, said body having recesses in one face and circuit terminals in said recesses one of said terminals having a foot, said body having recesses on the opposite face and switch segments located in said latter recesses, a screw connecting one of said terminals with one of said switch segments, lamp terminals, a screw for securing one of said lamp terminals to said foot of the other circuit terminal, a connector secured to the other switch segment and having a foot portion and a screw connecting the other lamp terminal with said foot portion of said connector and a rotary switch contact member co-acting with said switch segments.

10. In a lamp socket switch, the combination of a shell, an insulating block consisting of a body portion having an integral head on one end positioned in said shell, a spindle extending through said body portion, a rotary switch member carried by said spindle, switch segments connected to said body portion substantially on the line of a diagonal to said body portion, one of said segments being adjacent one end of said body and the other segment being adjacent the opposite end of said body and screws passing through said body portion for securing said switch segments in place.

11. In a lamp socket switch, the combina-

tion of an insulating block consisting of a body portion and a head integral therewith, lamp terminals, switch segments mounted on one face of said body portion, said body portion having a groove, a connector located in said groove and having one end connected to one of said switch segments and having the other end bent over to form a foot secured to said head and electrically connected with one of said lamp terminals.

12. In an electric lamp switch, an insulating block, two circuit terminals fitted in recesses in said block, two switch segments fitted in recesses in said block, two lamp terminals fitted to one end of said block, a screw connecting one of said circuit terminals to

one of said lamp terminals and securing said members to said block, a screw connecting the other circuit terminal to one of said switch segments and securing said members to said block, a connector fitted in a recess in said block, a screw for connecting the other switch segment to said connector and securing said members to said block and a screw connecting said connector and the other lamp terminal and securing said members to said block.

FREDERIC BARR.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."