To all whom it may concern:

Be it known that I, ALBERT E. VEIGEL, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Electric Door-Switches, of which the following is a specification.

This invention relates to electric door switches, and the object of the invention is to provide an electric switch adapted to be placed within a door frame and operated by the opening and closing movements of the door to open and close an electric circuit for lighting and other purposes. Thus, the invention may be used to turn on a light in the lobby or entrance of a residence, or in any room or compartment within a building, whenever the entrance door is opened, and to extinguish this light upon closing the door. The device is also particularly constructed to permit the electric current to be turned on and off by hand whenever the door is open. For this purpose the switch is adapted to be rotated as well as reciprocated.

In the accompanying drawings, Figure 1 is a transverse section of a portion of a door jamb, showing my improved switch mounted therein with the door partly closed. Fig. 2 is a perspective view of the reciprocal and rotatable switch member, partly disassembled. Fig. 3 is a face view of the cover or jamb plate for the switch box, the latter being shown in dotted lines behind the plate. Fig. 4 is a vertical section and rear elevation on line 4–4 of Fig. 5, showing the switch parts positioned to close the electric circuit. Fig. 5 is a vertical section centrally through the switch box showing the main switch member pressed back by the door. Fig. 6 is a detail view corresponding in part to Fig. 4, showing the main switch member rotated to an off-position and seated within a recess to prevent it from turning.

The invention comprises a sheet metal box 2 of rectangular formation which is adapted to be confined within an opening in the jamb or frame 3 for a door 4 mounted on hinges or arranged to slide against the jamb. Box 2 is relatively long and narrow and is fastened in an upright position by screws engaged with ears or flanges 5 affixed to or forming integral parts of the box, and jamb 3 is mortised to seat the box a sufficient distance from the front face of the jamb so as to permit a front plate 6 and a brass cover plate 7 to occupy the mortised recess with the cover plate substantially flush with the front face of the jamb. The cover plate 7 is held in place by screws 8, and the front plate 6 is detachably secured to the box ears 5 by short screws 9, and said plates 6 and 7 are provided with matching openings centrally thereof through which a cylindrical main switch member 10 of fiber or other insulating material is adapted to project at the front of the jamb opposite the edge of door 4.

Inasmuch, as the intention is to rotate the main switch member 10 under certain circumstances, it is desirable that said switch member shall project a substantial distance from the face or cover plate 7 so that it may be easily grasped by the hand and rotated. This extra length of finger would make it difficult ordinarily to operate the member without strain or bind or breakage but this I overcome by countersinking a cup 11 in the edge of the door and sloping the bottom of this cup so that the end pressure on the switch member 10 is on a straight line axially of said member when initial engagement is made and the member pressed inward by the arc movement of the door. I also prefer to bevel the extremity of switch member 10 to provide a better thumb-hold and to keep said member from turning while it is being pressed inward by the movement of the door. That is to say, the bevel surfaces provide terminal straight edges across the front end of member 10 and a linear contact is effected with the flat sloping bottom during the arc or turning movement of the door.

The switch parts within the box comprise a metal contact disk 12 clamped between the inner end of main body 10 of the switch member and a separate extension 13 in screw-engagement with a stub screw 14 projecting centrally at the rear of said body 10, and said contact disk may be screw-engaged with said stub screw and the extension 13 serve as a lock nut as well as a support and guide for the main switch member, especially at the rear end thereof where it is slidably supported within an opening in the rear wall of the box. Parts 10 and 13 of the switch member are made of any suitable insulating material and a washer 14 of a
similar material is sleeved over extension 13 together with a metal washer 15 and a coiled spring 16. The coiled spring is interposed between the rear wall of box 2 and the washer 15 so as to press the insulating washer 14 against the contact disk 12 and thereby force the main switch member constantly outward. When the door is open the contact disk 12 is pressed and held upon a pair of spring contact strips or plates 17 and 18 seated in shallow recesses at the rear side of a porcelain block 19 through which member 10 slides and which block is fastened to the front plate 6 of the box by screws 20. Contact plates 17 and 18 have tapered extremities which extend toward each other but are placed apart on the horizontal median line of the switch block and main switch member, and each plate is held in place by an independent screw and nut 21. Terminal binding nuts 22 secure the electrical conductors 23 and 24 against nuts 21, and the conductors pass into the box through separate side openings 25.

The tapered or beveled edges of the two contact plates are angularly related, that is, they diverge, and the contact disk 12 is an eccentric member, part circular and partly formed with two straight edges 27 inclined relatively to each other so that they may parallel the tapered or beveled edges of the contact plates when the contact disk is turned on its axis to place edges 27 in the same inclined planes as the beveled or tapered edges of the plates. In this position of parts the eccentric contact disk 12 cannot possibly bridge the gap between the two contact plates nor close the circuit. To further promote spaced relations the disk 12 is adapted to be socketed or seated in a recess 28 in the rear side of porcelain block 19 and said recess corresponds in outline to the outline of the disk to prevent the disk from being rotated, especially when pressed into the recess by spring 16. On the other hand the main switch member 10 may be pressed slightly inward and rotated or given a onehalf turn to place the disk in overlapping relation to both contact plates 17 and 18, so that the electric circuit will be closed when the door is open and the contact disk seated upon the two contact members 17 and 18. Closing of the door will press the disk 12 toward the rear and away from the contact plates and break the circuit, and an opening movement of the door will relieve the pressure on the spring and the electric circuit will be closed and the light turned on. If the door is to remain open any length of time, as in the summer months, it is only necessary to turn member 10 from an "on" position to an "off" position as indicated in Fig. 3. The same advantage rests in using the device in a door frame inside of a residence or building, in that it gives full and complete control of the illumination of a room or compartment at the door itself. The drawing discloses a switch mounted at the hinge side of the door, but it can also be used at the opposite side of the door frame, especially if member 10 is beveled to a greater degree or over a greater length than as shown so that it may operate in the same manner as the beveled latches commonly used in doors.

What I claim is:

1. An electric switch adapted to be actuated by a door, comprising a main bolt shaped switch member adapted to be rotated and reciprocated and provided with a lateral contact projection, and stationary contacts in engageable relations with said projection.

2. In connection with a door jamb and door, a box adapted to be mounted on the door jamb, a reciprocable and rotatable spring pressed switch member therein provided with a laterally extending plate, and stationary contacts adapted to be engaged by said plate.

3. An electric door switch, comprising a box adapted to be mounted within a door jamb, a block of insulating material within said box, provided with stationary contacts, a reciprocable member extending through said block and box having a contact member and a spring to press said member longitudinally in one direction, in combination with a hinged door having a sloping engaging portion retired inwardly from its jamb engaging edge opposite said reciprocable member.

4. An electric door switch, comprising a box having flanges adapted to secure said box within a door jamb, a front plate affixed to said flanges, a block of insulating material affixed to said plate having a pair of contacts secured thereto, a reciprocable and rotatable member extending through said block and plate provided with a contact, a spring adapted to press said member longitudinally, binding terminals for said pair of contacts, and a separate plate having an opening for said member to project there through and adapted to cover the said front plate affixed to said box.

5. An electric door switch, comprising a block of insulating material having a pair of stationary contacts mounted thereon, a reciprocable and rotatable member extending through said block and made in two parts with a contact member clamped therebetween, and a spring to press said member longitudinally and hold said contacts in engagement.

6. An electric door switch, comprising a box having a removable front plate, an insulating block having an opening therein and a set of contacts mounted thereon at the side of said opening, a cylindrical member
made in two parts secured together in screw engagement, a contact member clamped between said parts, and an insulating washer and coiled spring sleeved upon said cylindrical member.

7. An electric door switch, comprising an insulating block having an opening and a pair of spaced contact plates adjacent said opening, and a reciprocal and rotatable member having an eccentric contact member adapted to contact with said plates in one rotatable position and to be placed out of contact in another position, and a spring adapted to press said contact member in a direction toward said plates.

8. An electric door switch, comprising an insulating block having a central opening, and a pair of contact plates adjacent said opening and a recess adjacent said plates, and a rotatable and reciprocal member having a contact disk adapted to seat within said recess apart from said plates and to be turned in overlapping relation to said plates when said reciprocal member is partly rotated, and a spring adapted to press said member longitudinally to hold the disk either within said recess or in contact with said plates.

9. In combination, a box adapted to be secured within a door jamb, a switch block secured within said box having contacts, a rotatable and reciprocal cylindrical member having a contact disk adapted to be engaged and disengaged from said plates either by a rotatable or reciprocatory movement of said member, a spring to move said member longitudinally in one direction and said member projecting from said box, in combination with a swinging door having a part in its edge adapted to engage said member.

10. An electric door switch, comprising a box having a switch block therein provided with contacts, and a reciprocal and rotatable member having a contact disk adapted to engage said first named contacts either by a reciprocal or rotary movement of said member, said member having beveled end exposed outside of said box, in combination with a hinged door having a flat sloping engaging part for said beveled end.

Signed at Cleveland, in the county of Cuyahoga, and State of Ohio, this 22nd day of February, 1919.

ALBERT E. VEIGEL.