

Sept. 6, 1927.

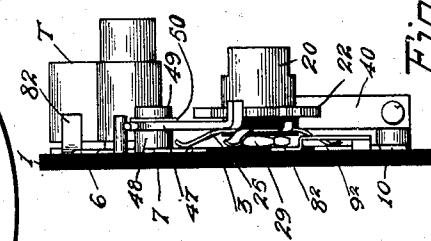
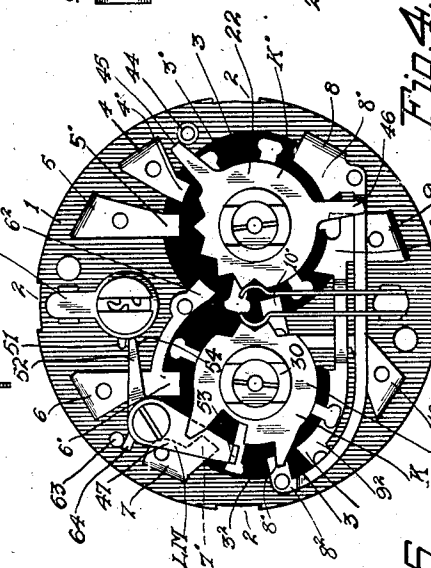
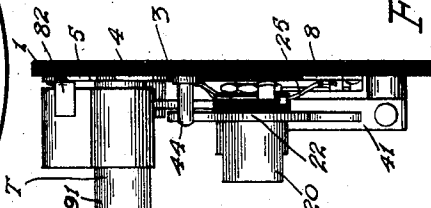
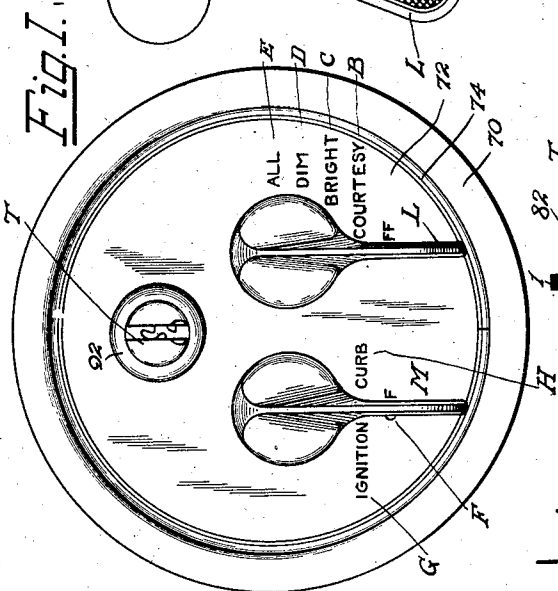
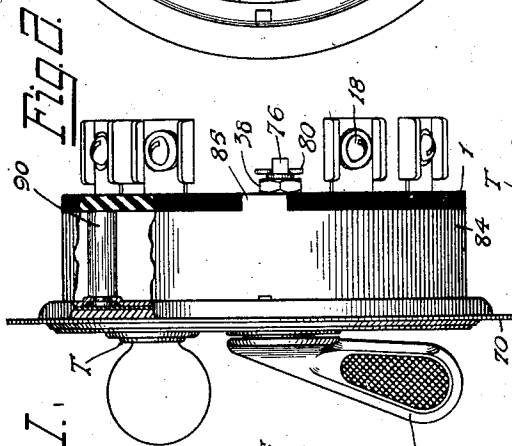
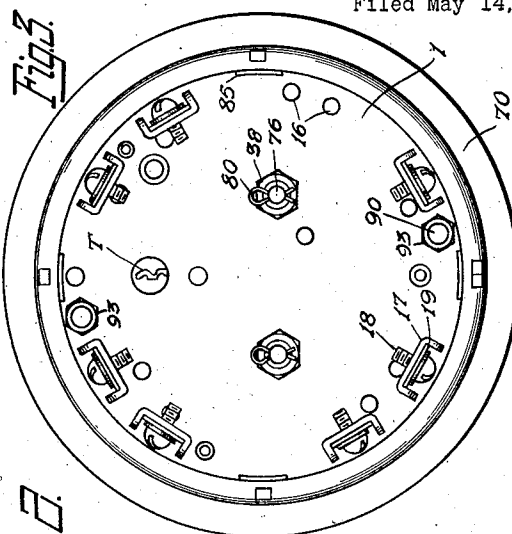
W. KAISLING

1,641,169

IGNITION SWITCH

Filed May 14, 1923

2 Sheets-Sheet 1



Inventor:
William Kaisling
By Curtis Camp.
Attorney.

Sept. 6, 1927.

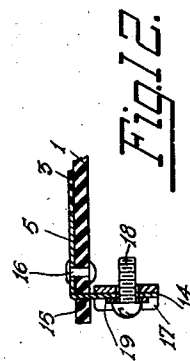
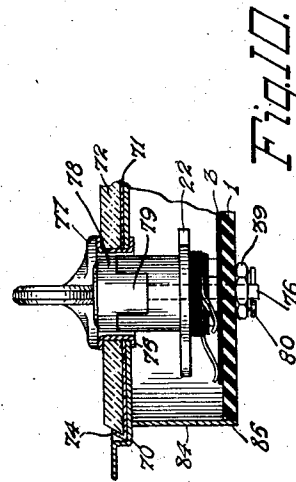
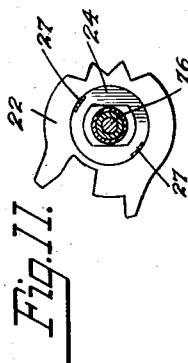
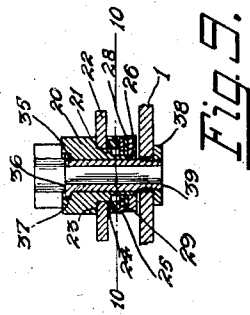
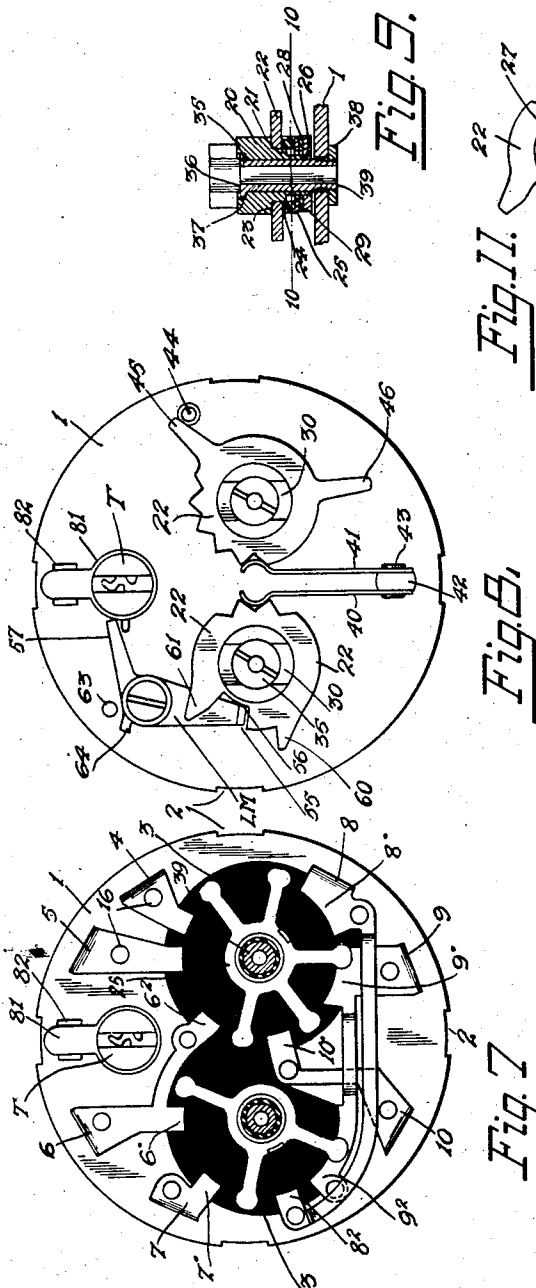
W. KAISLING

1,641,169

IGNITION SWITCH

Filed May 14, 1923

2 Sheets-Sheet 2



Inventor:
William Kaisling
By *Arthur S. Camp*
Fluorney.

UNITED STATES PATENT OFFICE.

WILLIAM KAISLING, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD AND SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

IGNITION SWITCH.

Application filed May 14, 1923. Serial No. 638,924.

My invention relates to electrical switches in general, and has to do more particularly with switches for controlling a plurality of circuits. The present embodiment of my invention is constructed more particularly for use in connection with ignition or lighting circuits for automobiles or the like.

An object of my invention is the provision of a switch of the class described, in which a feature of my invention is the provision of a mounting base having an insulation member secured thereon, and which insulation member has certain portions of its body cut out for receiving portions of stationary contact members secured to the base. The insulation member is of the same thickness as that of the contact members so that the open face of the contact members and of the insulation member are flush with each other; the portions of said contact members engaging the cut out portions in the insulation member are adapted to be engaged by rotatable contact springs to close certain circuits.

Another feature of my invention lies in the construction of the rotor element which carries the contact springs for engaging the stationary contact secured to the mounting base.

A further feature of my invention lies in the manner in which I rotatably secure the rotor elements of my switch on the base and in operative association with that portion of the stationary contact members engaging the insulation member secured to the base.

Another feature of my invention is the provision of an actuating lever for each of the rotor elements of my switch, each of said actuating levers being provided with a suitably shaped body portion for extending through a central opening in the rotor element with which it is associated and also provided with another body portion for engaging a slot in the rotor element so that when the lever is actuated the rotor element is caused to rotate. The manner in which I retain the actuating lever in operative engagement with the rotor element is also a part of this feature.

Still another feature of my invention is the provision of a pair of spring members mounted parallel to each other on a post secured to the base, and having their free ends suitably shaped for engaging serrated members of the rotor elements of my switch

for producing a snap action when the said rotor elements are rotated from one position to another position, and also to retain the rotor elements in the position to which they are rotated.

Another feature is the provision of a tumbler lock and the manner in which the same is supported in the front and back parts of the switch and the provision of a U-shaped member for preventing rotation of the lock casing or barrel.

Another feature is the provision of a locking member for locking one of the rotor elements of my switch in position so that the same may be moved to either of two positions but cannot be moved to a third position but when in its unlocked position may be moved to either of three positions.

A further feature is the provision of means for preventing the rotor element from being locked when the said rotor element is in a certain position.

Another feature of my invention is the provision of means for limiting the rotation of the key cylinder of the tumbler lock of my invention.

A further feature of my invention lies in the construction and manner in which the stationary contact members are secured to the base and associated with the rotatable elements of my switch.

The above mentioned features, as well as other desirable features and advantages not enumerated above, will be pointed out in the ensuing specification and appended claims.

For a more complete and better understanding of my invention, reference may be had to the accompanying drawings, in which like reference characters in the different views denote like parts, and in which:

Fig. 1 is a front plan view of my invention;

Fig. 2 is a right side view of Fig. 1, having a portion of the switch cut away;

Fig. 3 is a back view of the switch of my invention;

Fig. 4 is a view showing the inner structure of the back part of my invention;

Fig. 5 is a left side view of Fig. 4;

Fig. 6 is a right side view of Fig. 4;

Fig. 7 is another view of the inner structure of my invention;

Fig. 8 is a view of the rotor contact elements of my switch and the means for lock-

ing one of said elements in position, and also shows the spring means for giving a snap action to the rotor contact elements;

Fig. 9 is a sectional view of one of the rotor contact elements of my invention showing the same in its mounted position;

Fig. 10 is another view of one of the rotor contact elements of my switch, showing the same mounted between the back and front of the switch structure, and the actuating means for operating said rotor contact element;

Fig. 11 is a sectional view along the line 10-10 of Fig. 9; and

Fig. 12 is a sectional view of one of the contact members of my invention showing the same secured to the back of the switch.

Referring now in general to my invention, it comprises a lighting switch unit L, and an ignition switch unit M. The lighting switch unit L has a normal or "off" position A, and four operative positions B, C, D and E, which switch unit L, when in these different positions will close circuits to effect the burning of certain lamps of the automobile.

The ignition switch unit M has a normal or "off" position F, in which position the ignition apparatus is rendered inoperative, and two operative positions G and H. When switch unit M is in position G, the ignition circuit will be closed and when in position H a circuit will be closed for certain lamps of the automobile. I also provide locking mechanism which consists preferably of a pin-tumbler cylinder type lock T, which controls a pivotally supported locking member LM, which is adapted to lock the ignition switch unit M in position against being rotated to ignition or G position but will permit said switch unit M to be rotated to its curb or H position. The lock T is so arranged that the key k can only be removed from the cylinder of the tumbler lock T when the switch unit M is in its off or curb position but cannot be removed, when it is in its position G so that should the operator attempt to remove the key when the switch unit M is in its G position, he will be unsuccessful and will be apprised of the fact that the ignition circuit is closed.

Referring now more in detail to my invention, I will first describe the back structure of the same. The back structure comprises preferably a flat circular mounting base or plate 1 made of any suitable insulation material. In the periphery of the base or plate 1 are provided cut away portions 2 for purposes to be pointed out later. Suitably secured on the central portion of the base or plate 1 is a flat member 3 which is of suitable insulation material. A number of suitable contact members 4, 5, 6, 7, 8, 9 and 10 are provided, and are secured in suitable slots provided in the base or plate 1.

Contact members 6, 8, and 9 are operatively associated with both the ignition switch unit and the lighting switch unit, while contact members 4, 5 and 10 are only associated with the lighting switch unit and contact member 7 is only associated with the ignition switch unit. As each one of the contact members are secured to the base or plate 1 in the same identical manner, a description of one will suffice to give a clear understanding of the others. The contact members are stamped out of suitable conducting material.

Referring to Fig. 12 and assuming for the sake of explanation that the contact member shown, is contact member 5, it has its end portion 14 turned over to form a right angle with its main body portion. A slot 15 is provided in the base 1 and is of a size to receive and permit the protrusion of the end 14 of the contact member so that the lower face of the main body portion of the contact member will engage the upper face of the base 1 and when the contact member is in this position, a rivet 16, which extends through suitable openings in the base 1 and contact member 5 and has its end spun over, will secure the contact member 5 in its mounted position against displacement. To the end portion 14 which protrudes through the slot in the base 1, is secured a U-shaped member 17 by means of a screw 18 which passes through a suitable opening in a spring washer 19 and then through an opening in the portion 14 of the contact member and then has screw-threaded engagement with a suitable tapped orifice in the said U-shaped member 17. The U-shaped member 17, washer 19 and screw 18 are for the purpose of connecting an external conductor to the contact member. The other end 5' of the contact member 5 extends into and engages a notch in the edge of the portion 3' of the member 3. The contact members 4 and 10 also have their ends 4' and 10' respectively engaging notches in the portion 3' of member 3 and contact member 8 has its portions 8' engaging a notch in the portion 3'. An extension 8² of the contact member 8 engages a notch in the portion 3² of member 3. Contact member 9 has a portion 9' engaging a notch in the portion 3' and an extension 9² engaging a notch in the portion 3² of member 3. Contact member 7 has its end portion 7' engaging a notch in the portion 3² and contact member 6 has its end 6' engaging a notch in the portion 3² and its extension 6² engaging a notch in the portion 3' of member 3. The thickness of the contact members 6, 7, 8 etc., is such that while the bottom face of each, engages the base or plate 1, the upper faces of the portions of the contact members engaging the notches in the portions 3' and 3² of member 3 will be flush with the free face of said

member 3 for purposes to be hereinafter pointed out.

A pair of rotor circuit closing elements K and K' are provided and are adapted to be rotatably supported on the base or plate 1 and as each rotor element K and K' is constructed in the same manner, and also rotatably supported on the base 1 in the same manner, a description of one will suffice. The rotor element comprises a cylindrical member 20 which has a central reduced portion 21, said reduced portion 21 being shaped so that it has two straight flat surfaces. A holding member 22, having its peripheral edge provided with a number of serrations or teeth, is provided, and which member 22 has a central opening of a size and shape to permit it to be slipped over the end of the member 20 so that its one face will engage the shoulders 23. The reduced portion 21 of member 20 and the central opening in the holding member 22 are of such shape and size that the said holding member 22 is prevented from rotating upon the reduced portion 21 of member 20. A spacing washer 24 of suitable insulation material is provided and has an opening to permit it to be slipped over the end of the member 20 so that the same will engage the bottom face of the holding member 22, the opening in said washer being of such a size and shape that it is adapted to engage the reduced portion 21 of member 20 to prevent rotation of said washer 24 on member 20. The washer 24 is of such a thickness that the reduced portion 21 of member 20 does not extend entirely through the opening in said washer. A metallic member 25 of suitable conducting material is provided, which has a number of contact springs integrally formed therewith for engaging and disengaging certain portions of the contact members that are engaging notches in the member 3 as will be more clearly pointed out later. The member 25 is provided with a central opening to permit it to be slipped over the reduced threaded end portion 26, of member 20, said opening being of a size so as not to permit said member 25 to make contact with said reduced end portion 26. The member 25 engages the lower face of the washer 24 and to prevent rotation of said member 25, a pair of lugs 27 are provided and integrally formed with the member 25 and are adapted to engage suitable notches in the washer 24 to prevent rotation of the member 25 relative to the member 20. A suitable insulation washer 28 is provided and fits over the reduced threaded end portion of member 20 and is adapted to engage the metallic member 25. To secure the holding member 22, washer 24 and spring contact carrying member 25 on the member 20, a hexagonal nut 29 is provided which has screw-threaded

engagement with the reduced threaded end portion 26 of member 20, and when tightened thereon the same member 22, washer 24 and member 25 are secured in position, as just described, against displacement while the washer 28 insulates the nut 29 from the contact spring carrying member 25. A transverse slot 30 is provided in the enlarged end portion of member 20 and is of a size to receive a portion of one of the actuating levers of the switch units M or L as will be more specifically hereinafter described.

To secure the rotor element on the base or plate 1, a cylindrical member 35 is provided which is adapted to fit into the central opening in the cylindrical member 20 so that its head 36 will engage a circular shoulder 37 formed in the member 20, the same member 35 being of sufficient length to extend through the cylindrical member 20, and also through suitably aligned openings in the member 3 and base 1 and to prevent its removal or displacement, a nut 38 is provided which has screw-threaded engagement with the threaded end 39 of the cylindrical member 35. The openings in the member 3 and base 1 are so positioned that when the rotor element is secured to the base 1 as just described the ends of the contact springs integrally formed with the member 25 will be operatively associated with certain contact members of the stationary contact members 4, 5, 6, etc. The central opening in the member 20 is of a size to permit rotation of the rotor element upon the cylindrical member 35 and the flexibility of the contact springs is such as to insure positive contact with the contact members with which they are operatively associated.

The rotor elements K and K' being adapted to be rotated to different positions to bring their respective spring contact wipers into engagement with certain ones of the stationary contact members associated with said rotor elements to close particular circuits and in order to maintain the rotor elements in the position to which they may be rotated, I provide a pair of leaf springs 40 and 41 which are secured parallel to each other to a post 42 by means of a rivet 43, said post 42 being suitably secured to the base 1. The leaf springs 40 and 41, are associated with the rotor elements K and K' respectively, and the free end of each of said springs is arcuate shaped and adapted to engage the teeth formed in the holding member of the rotor element with which the leaf spring is associated, as shown in Fig. 4. When the rotor element is rotated the arcuate shaped end of the leaf spring, associated with this rotating rotor element, will ride over the apex of the tooth advancing toward the arcuate shaped end of the leaf spring, and when the apex of the tooth has passed beyond the center of said arcuate shaped end,

the said arcuate shaped end will engage and rest between this tooth that just passed the center of the said arcuate shaped end and the next tooth, and due to the pressure of the leaf spring on the side of the tooth of member 22, a snap action will be produced as is well known, and if the rotor element is rotated no further, the said rotor element will be held in this position by the engagement of the leaf spring and the holding member of the rotor element. Should the rotor element continue rotating the arcuate shaped end of the leaf spring will ride over the apexes of the teeth on the holding member and when rotation ceases, the arcuate shaped end of said leaf spring will engage and rest between a pair of teeth formed with the holding member of the rotor element. To limit the degree of rotation of the rotor element K', I provide a stop pin 44 which is suitably secured to the base 1 and is adapted to be engaged by an arm 45 integrally formed with the holding member 22 when the rotor element K' is rotated in one direction, and is adapted to be engaged by the arm 46 integrally formed with said holding member 22 when the rotor element K' is rotated in the opposite direction.

The rotor element K is adapted to be locked in its "off" and curb positions but cannot be locked in its "on" or ignition position and in order to accomplish this, I provide an angularly shaped locking member LM which is pivotally mounted on the base 1 by means of a cylindrical member 48 secured to the base 1 and a screw 49 which extends through a washer 50 and through an opening in the locking member LM and which then has screw-threaded engagement with a tapped opening in the cylindrical member 48. The tumbler lock T is associated with the locking member LM and is provided with a pin 51 which is secured to the cylinder of the tumbler lock T and is adapted to engage the arm 52 of the locking plate 47 to cause the same to move about its pivot. An ear 53 is provided which is integrally formed with the locking member LM and is for the purpose of engaging the holding member 22 of the rotor element K to control the rotary movement of said rotor element K. The rotor element K, as shown in Fig. 4, is in its "off" position and should the key K be inserted into the tumbler lock T and turned to the right, the pin 51 would be caused to move to engage the edge 54 of the arm 52 of locking plate 47, and due to such engagement and the continued movement of pin 51, the locking plate 47 will move about its pivot and bring the ear 53 into the slot 55 in the holding member 22 of the rotor element K. When the ear 53 engages the edge 56 of the holding member 22, further movement of the locking member LM is pre-

vented, which in turn will prevent further movement of the cylinder and pin 51 of the lock T in this direction, and the key K is now in such position so as to permit its removal from the tumbler lock T. When the locking member LM is in the position just described the rotor element K may be rotated from its "off" position to its curb position due to the size and arrangement of the slot 55 but cannot be rotated to its "on" or ignition position.

To unlock the rotor element K to permit the same to be rotated to its ignition position, the key K is inserted into the lock T and rotated to the left to bring the pin 51 into engagement with the edge 57 of locking member LM, which will cause said locking plate to move about its pivot whereby its ear 53 will disengage the slot 55 in the holding member 22 of rotor element K. The rotor element K may now be rotated to its ignition position, and should it be attempted to lock the rotor element in this position, such attempt will be unsuccessful since the ear 53 of locking plate 47 will engage the edge 59 of the holding member 22 which will prevent further movement of the locking plate 47 and key K and should the operator attempt to remove the key, he will not be successful as the key will not be in the proper position, whereupon he is apprised of the fact that the rotor element is in its ignition position and must be moved to its "off" or curb position before he can lock the switch. When the locking plate is in its unlocked position as shown in Fig. 4 the rotor element K may be rotated to its ignition or curb position and to prevent the rotor element K from being rotated beyond its ignition or curb position arms 60 and 61 are provided and adapted to be engaged by the ear 53 of locking member LM as is obvious from the drawing. To limit the pivotal movement of the locking plate 47 to its unlocked position a stop pin 63 is provided and adapted to be engaged by the lug 64 integrally formed with the locking plate 47, and when lug 64 engages stop pin 63, LM will cease moving and the arm 52 of LM will prevent further movement of the pin 51 and cylinder of the lock T to the right.

The contact springs of the member 25 of each of the rotor elements K and K' are adapted to engage and disengage certain contact members of the stationary contact members 4, 5, 6, 7, etc., to close certain circuits and the engagement and disengagement of the same is controlled by rotating the rotor elements K or K' depending on the circuit desired to be closed. When the contact springs s are not engaging stationary contact members, they are engaging the insulation member 3 so that no circuit is closed through them.

Having described the interior and back

structure of my invention, I will now describe the front part and the manner in which the front and back parts are secured together to form a single operating unit, and also the manner in which the tumbler lock T is secured in place in my switch.

The front part comprises a cup-shaped member 70 in which is adapted to fit an escutcheon or designating plate 71 of suitable material, bearing the names of the different positions to which the switch units L and M may be operated. A transparent member 72, such as glass or the like is provided, and is of a size to fit into the cup-shaped portion of the cup-shaped member 70 to engage the escutcheon or designating plate 71, said member 72 being transparent for the purpose of permitting the reading of the names borne by the escutcheon 71. The escutcheon 71 and transparent member 72 are secured in the cup-shaped member 70 by means of a suitable ring 74 which engages the periphery of the member 72, said ring 74 being suitably secured to the member 70. A pair of studs 90 are secured to the member 70 for securing the front part and the back part of my switch together as will be pointed out later.

The lever of the switch unit M is provided for rotating the rotor element K and the lever of the switch unit L is provided for rotating rotor element K' and since both are constructed and engage the front part of my switch and engage the rotor elements K and K' respectively in the same identical manner, a description of one will suffice. A ferrule 75 engages suitable aligned openings in the member 70, escutcheon 71 and member 72 and is secured therein against displacement by having its ends spun over. The ferrule 75 serves to retain the members 70 and 72 and escutcheon 71 together. The lever of the switch unit is L-shaped and is adapted to have one of its legs 76 extend through the opening in the ferrule 75 and central opening in the cylindrical member 35 of the rotor element associated with this lever, so that the flange 77, which is integrally formed with said lever, will engage the turned over end of the ferrule 75, and a cylindrical portion 78 of said lever will engage the opening in said ferrule 75 and also engage the end of the member 20 of the rotor element, while the portion 79 of the lever will engage the transverse slot 30 in the end of the member 20 of the rotor element. The leg 76 extends beyond the nut 39 and is provided with an opening for receiving a cotter pin 80, said cotter pin serving to prevent the removal of the lever from the rotor element. The ferrule 75 also serves as a bearing for the cylindrical portion 78 of the lever. The base 1 is provided with a suitable opening for receiving the end of the cylinder of the terminal lock T which carries the pin 51, and

in order to prevent rotation of the casing or barrel 81 of lock T, a U-shaped member 82 is provided for receiving a portion of the casing 81 of the lock T, said member 82 being secured to the base 1. The front and back parts of my switch are separated by an enclosing and separating band 84 which is of suitable metal and is of a size to fit on the edge of the base 1, so that the lugs 85 which are integrally formed with said band 84 will engage the cut out portions 2 in the periphery of said base 1. The back of the cup-shaped member 70 will engage the other edge of the band 84 and the studs 90 will extend through suitable openings in the base 1 and the end 91 of the cylinder of the lock T will engage and slightly protrude through a ferrule 92 provided in the front part of the switch, and the back of member 70 will engage the end of the casing 81 of said lock T. The other end of the cylinder of the lock T engages an opening in the base 1, so that the pin 51 is operatively associated with the locking member LM. A pair of nuts 93 are provided which have screw-threaded engagement with the ends of the studs 90 protruding through the base 1 whereby the band 84 and tumbler lock T are clamped in position between the front and back parts of the switch. When the nuts 93 are engaging the studs 90 and are tightened up against the base 1, the front and back parts of my switch are secured in place and separated from each other by the band 84 to form a single operating unit.

When the switch is assembled as just described above the rotor element K' may be rotated to any one of its operative positions by operating the lever of the switch unit L; when the rotor element K is in its unlocked position it may be rotated to any one of its operative positions by operating the lever of the switch unit M, but can only be moved to its off or curb position when in its locked position as was pointed out in detail above.

While I have described and shown a preferred embodiment of my invention it is to be understood that I do not wish to be limited to the exact structure as shown and described but intend to cover all modifications and changes which may come within the scope and spirit of the appended claims.

Having described my invention what I claim as new and desire to secure by United States Letters Patent is:—

1. In a device of the character described, a mounting plate, an insulation member, a plurality of stationary contact members secured to said mounting plate and having a portion of their body engaging notches in said insulation member, a contact spring carrying element, means for rotatably supporting said element on said mounting plate, a lever for engaging said element for rotating said element to cause the contact

5 springs carried by said element to engage and disengage certain ones of said stationary contact members, said lever adapted to extend through said element, and means for engaging said lever to prevent displacement of the same.

2. In a device of the character described, a mounting plate, an insulation member secured on said mounting plate, stationary 10 contact members secured to said plate and having their ends protruding through openings in said plate and their other ends engaging notches in said insulation member, rotatable elements, means for securing said 15 rotatable elements on said mounting plate and in operative relation with the ends of said contact members engaging said insulation member, said rotatable elements adapted to open and close circuits through said 20 contact members.

3. In a device of the character described, a mounting plate, an insulation member secured on said mounting plate, stationary 25 contact members secured in said plate and having end portions extending into cut out portions in the periphery of said insulation member, a rotor contact carrying element provided with a central opening, a member for engaging and extending through the 30 opening in said element for rotatably supporting said element on said plate against displacement in operative association with said contact members and insulation member.

35 4. In a device of the character described, a mounting plate, an insulation member secured to said plate, and provided with notches, contact members secured to said mounting plate and having end portions 40 engaging the notches in said insulation member, a contact spring carrying element having a central opening, means for engaging said central opening and said mounting plate for rotatably supporting said element 45 on said plate and in operative association with said contact members and insulation member, said element being rotatably operable to cause the contact springs carried by said element to engage and disengage the 50 end portions of said contact members to close and open circuits, said contact springs when not engaging said contact members engaging said insulation member.

5. In a device of the class described, a 55 mounting plate, stationary contact members secured on said mounting plate, contact spring carrying elements, each provided with a central opening, a pin for each of said elements, and adapted to engage the 60 central opening in said elements and to engage said plate for rotatably supporting said elements on said plate and in operative association with said contact members, said elements adapted to be rotated to different 65 operative positions relative to said contact

members, serrated members for said elements, and a pair of spring members secured on said plate and in operative engagement with the serrations of said serrated members, and adapted to produce a snap action of said 70 elements, when said elements are rotated and to retain said elements in position to which they are rotated.

6. In a device of the character described, a mounting plate, stationary contacts secured 75 on said mounting plate, a rotor element, having a central opening, and adapted to be rotated to different positions, a member for engaging and extending through said central opening and through an opening in said 80 mounting plate for rotatably supporting and retaining said rotor element upon said mounting plate, contact springs carried by said rotor element and adapted to engage and disengage said stationary contacts, said 85 contact springs being so shaped to insure positive contact between said contact springs and said stationary contacts, a holding member for said rotor element provided with serrations, a leaf spring for engaging a pair 90 of said serrations to retain said rotor element in its rotated position, and to effect a snap action of said rotor element when rotating.

7. In a device of the character described, a mounting plate, stationary contacts secured 95 on said mounting plate, a rotor element, having a central opening, and adapted to be rotated to different positions, a member for engaging and extending through said central opening and through an opening in said 100 mounting plate for rotatably supporting and retaining said rotor element upon said mounting plate, contact springs carried by said rotor element and adapted to engage and disengage said stationary contacts, said 105 contact springs being so shaped to insure positive contact between said contact springs and said stationary contacts, a holding member for said rotor element provided with serrations, a leaf spring for engaging a pair of 110 said serrations to retain said rotor element in its rotated position, and to effect a snap action of said rotor element when rotating, a stop pin secured to said mounting plate, and members integrally formed with said 115 holding member for engaging said stop pin to limit the degree of rotation of said rotor element.

8. In a device of the character described, a mounting plate, stationary contacts secured 120 thereon, a contact spring carrying element provided with a transverse slot in its one end and a central opening throughout, a member for engaging said central opening and said mounting plate for rotatably supporting 125 said rotor element on said plate so that the contact springs carried by said element may be rotated into engagement and disengagement with said stationary contacts, and an actuating member for engaging said 130

slot in said rotor element for effecting rotation of said rotor element

9. In a device of the character described, a mounting plate, stationary contacts secured on said plate, a rotor element having contact springs for engaging and disengaging said stationary contacts, a central opening throughout said rotor element, a member for engaging said central opening and said mounting plate for rotatably supporting and retaining said rotor element on said mounting plate and said contact springs in operative relation with said stationary contacts, a holding member for said rotor element, a leaf spring mounted on said mounting plate, and adapted to engage said holding member to retain said rotor element in position to which it is rotated, and means supported on said mounting plate and adapted to be engaged by said holding member for limiting the degree of rotation of said rotor element.

10. In a device of the character described, a base member, stationary contacts mounted thereon, a rotor element having contact springs for engaging and disengaging said stationary contacts, means for rotatably supporting and retaining said rotor element on said base member, said rotor element adapted to be rotated to different positions, a holding member for said rotor element provided with serrations, a leaf spring for engaging said serrations to retain said rotor element in its different positions and to effect a snap action of said rotor element when rotated, means for locking said element, said locking means engaging said holding member, and means permitting said rotor element to be rotated to one of its positions when it is in its locked position.

11. In a device of the character described, a base member, stationary contacts mounted thereon, a rotor element having contact springs for engaging and disengaging said stationary contacts, means for rotatably securing said rotor element on said base member, said rotor elements adapted to be rotated to different positions, a holding member for said rotor element provided with serrations, a leaf spring for engaging said serrations to retain said rotor element in its different positions, means for locking said rotor element against movement in one direction but permitting movement in the other direction, said locking means engaging said holding member, and means for limiting the degree of rotation of said rotor element when said rotor element is in its unlocked position.

12. In a device of the character described, a mounting plate, stationary contacts secured thereon, a rotor element provided with contact springs, means for rotatably securing said rotor element on said mounting plate so that said contact springs are in op-

erative association with said stationary contacts, said rotor element adapted to be rotated to different positions, a holding member for said rotor element provided with serrations, a leaf spring for engaging said serrations to retain said rotor element in its different positions, locking means for locking said rotor element to prevent it from being rotated to all of its positions but to permit it to be rotated to some of its positions, said locking means engaging said holding member, and means, including said locking means, for limiting the amount of rotation of said rotor element.

13. In a device of the class described, a mounting plate, stationary contacts secured on said mounting plate, a rotor element rotatably supported on said mounting plate and adapted to be rotated to different positions, contact springs for said rotor element and adapted to engage said stationary contacts, a holding member for said rotor element, said holding member being provided with serrations, a leaf spring for engaging said serrations to retain said rotor element in its different positions, a locking member pivotally supported on said mounting plate and adapted to engage said holding member to lock said rotor element so that the same may be rotated to only certain ones of said positions.

14. In a device of the class described, a mounting plate, stationary contacts secured on said mounting plate, a rotor element rotatably supported on said mounting plate and adapted to rotate to different positions, contact springs for said rotor element adapted to engage said stationary contacts, a holding member for said rotor element, a locking member pivotally supported on said mounting plate and adapted to engage said holding member to lock said rotor element so that the same may be rotated to only certain ones of said positions, and members integrally formed with said holding plate and adapted to be engaged by said locking member to limit the degree of rotation of said rotor element but to permit it to be rotated to all of its positions.

15. In a device of the class described, a mounting plate, contact members secured on said mounting plate, a rotor element provided with contact springs for making contact with said contact members and adapted to be rotated to different positions, means for rotatably securing said rotor element on said mounting plate, a holding member for said rotor element, a locking member pivotally supported on said mounting plate for locking said rotor element to prevent the same from being rotated to all of its positions but to permit it to be rotated to more than one of its positions, and a tumbler lock for operating said locking member.

16. In a device of the class described, a mounting plate, contact members secured on said mounting plate, a rotor element provided with contact springs for making contact with said contact members and adapted to be rotated to different positions, means for rotatably securing said rotor element on said mounting plate, a holding member for said rotor element, a locking member pivotally supported on said mounting plate for locking said rotor element to prevent the same from being rotated to all of its positions but to permit it to be rotated to more than one of its positions, a spring member mounted on said mounting plate for engaging said holding member to retain said rotor element in its different rotatable positions, a tumbler lock, a pin for said tumbler lock for operating said locking member, and means for controlling the amount of movement of said pin.

17. A switch of the character described, including a front and back structure, stationary contacts secured on said back structure, a rotor element provided with contact springs for making contact with said stationary contacts, means for rotatably securing said rotor element on said back structure and between said front and back structures, an actuating lever for extending through said front structure and into engagement with said rotor element for actuating the said rotor element, a locking member for locking said rotor element, lock mechanism secured in and between said front and back structures for operating said locking member, a U-shaped member secured to the back structure for retaining said lock mechanism in its mounted position and means for securing said front and back structures together to form a unitary structure.

18. A switch of the class described including a front structure and a back structure, contact members secured on said back structure, a rotor element provided with contact springs for engaging and disengaging said contact members, means for rotatably securing said rotor element upon said back structure so that the contact springs are in operative association with said contact members, a locking member for locking said rotor element against being rotated to a certain position, lock mechanism, including a rotatable cylinder provided with a pin and a casing for said cylinder, for actuating said locking member, said lock mechanism being secured in and between said front and back structures, means for preventing rotation of said casing, and means for securing said front and back structures together to form a unitary operating structure.

19. A switch of the class described, including a front and back structure, contacts secured on said back structure, a rotor element provided with contact springs for mak-

ing contact with said contacts, said rotor element having a central opening through-out, and a transverse slot in its one end, a cylindrical member for engaging the central opening in said rotor element and for extending through an opening in said back structure for rotatably supporting and retaining said rotor element upon said back structure, an actuating lever, extending through said front structure into engagement with said transverse slot and through said cylindrical member, for actuating said rotor element, and means for engaging the end portion of said lever extending through said cylindrical member for preventing displacement of said actuating lever.

20. A switch of the class described including a front and back structure, stationary contacts for said back structure, a rotor element having contact springs, means for rotatably supporting said rotor element on said back structure so that said contact springs are in operative association with said stationary contacts, a holding member for said rotor element, a locking member pivotally supported on a mounting plate and adapted to engage said holding member to lock said rotor element so that the same may be rotated to only certain positions, an L-shaped actuating lever, having its one leg extending through said front structure into engagement with and through said rotor element and back structure for actuating said rotor element, and means for preventing longitudinal movement of said lever, and for securing said lever in operative position in said switch.

21. A switch of the class described including a front structure and a back structure, contact members secured on said back structure, a rotor element provided with contact springs for engaging and disengaging said contact members, means for rotatably securing the said rotor element upon said back structure so that the contact springs are in operative association with said contact members, a locking member for locking said rotor element against being rotated to a certain position, lock mechanism, including a rotatable cylinder provided with a pin and a casing for said cylinder, for actuating said locking member, said lock mechanism being secured in and between said front and back structures, means for preventing rotation of said casing, means for controlling the degree of rotation of said cylinder and pin, and means for securing said front and back structures together to form a unitary operating structure.

22. A switch of the character described including a front plate and a back plate, a switch mounted between said plates, and an operating lever for said switch extending through said front plate, said switch and

said rear plate, and locking means for said switch whereby said switch is operable to only certain positions when said locking means are actuated.

5 23. A switch of the character described including a front plate and a back plate, a switch mounted between said plates, an operating lever for said switch extending through said front plate, said switch and
10 said rear plate, locking means for said switch whereby said switch is operable to only certain positions when said locking means are actuated, and means at the rear
15 of said switch for preventing longitudinal movement of said lever.

24. A switch of the character described including a movable switch member, a pivotally mounted locking member for preventing actuation of said switch member, said locking member allowing said switch mem- 20
ber to be moved to only one of its operable positions when said locking member is actuated, and a member formed integrally with said pivotally mounted locking member for limiting the movement thereof. 25

Signed by me at Chicago, in the county of Cook and State of Illinois, this 10th day of May, 1923.

WILLIAM KAISLING.