

UNITED STATES PATENT OFFICE.

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IGNITION AND LIGHTING SWITCH.

Application filed January 12, 1920. Serial No. 351,026.

To all whom it may concern:

Be it known that I, WILLIAM KAISLING, a citizen of the United States, and residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Ignition and Lighting Switches, of which the following is a specification.

My invention relates to electrical switches in general and has to do more particularly with so-called combination lighting and ignition switches as are used on automobiles or the like. The switch of my invention is used for controlling the lighting and ignition circuits of an automobile, and an object of my invention is to produce a device of the above character which contains novel features of construction and combination of parts, all of which produce a simple, efficient and economical switch structure.

A feature of my invention is the provision of a lock of the pin-tumbler, cylinder type, which is used for locking the lighting and ignition units of the switch against actuation. When the locking element is in one position, the switch units are free to be actuated, but when the locking element is in its alternate position, the switch units are locked against actuation. The lock is operatively associated with a sliding locking plate which is suitably supported by a mounting plate, which mounting plate also carries the other mechanism of the switch.

Another feature of my invention is the means of supporting the lock in the mounting plate in conjunction with the cover plate to retain said lock in position and in operative relation with the said slidable locking plate.

The above features, as well as others, consist in the novel details of construction and combination of parts hereinafter more particularly pointed out in the ensuing specifications and in the appended claims.

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

Fig. 1 is a face view of my invention;
Fig. 2 is a right side view of Fig. 1;
Fig. 3 is a rear view of Fig. 1;

Fig. 4 is an interior face view of the switch mechanism, the cap of the switch being removed;

Fig. 5 is right side view of Fig. 4;

Fig. 6 is left side view of Fig. 4;

Fig. 7 is a bottom view of Fig. 4;

Fig. 8 is an interior face view with parts of the apparatus omitted to more clearly show the locking arrangement, the operating levers being at normal and unlocked;

Fig. 9 is a view similar to Fig. 8 but showing the locking mechanism in operated position;

Fig. 10 is a sectional view along the line 10—10 of Fig. 8;

Fig. 11 is a fragmentary view of a portion of the switch structure, illustrating another method of mounting the switch lock in association with the sliding locking plate;

Fig. 12 is a bottom view of Fig. 11;

Fig. 13 is a sectional view along the line 13—13 of Fig. 11;

Fig. 14 is a fragmentary view of a portion of the switch structure, illustrating still another method of mounting the switch lock in association with the sliding locking plate;

Fig. 15 is a bottom view of Fig. 14;

Fig. 16 is a sectional view along the line 16—16 of Fig. 14; and

Fig. 17 is sectional view along the line 17—17 of Fig. 4, illustrating the construction of the rotor element of one of the switch units.

Referring now in general to my invention as illustrated, 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 three operative positions B, C and D. In position B the side lights of the automobile lighting system are connected in circuit; in position C the auxiliary lights are connected in circuit, and in position D the head lights are connected in circuit; but I do not wish to be limited to this particular arrangement, as different combinations can be used without departing from the invention.

The ignition switch unit M has a normal or "off" position E and an operative position F, in which position the ignition apparatus is rendered operative, as will be more fully hereinafter described. I also provide locking mechanism which consists preferably of a standard pin-tumbler, cylinder type lock T, which controls a sliding locking plate LP, which is adapted to lock the lighting and ignition switch units L and M against actuation. The locking mechanism

is so arranged that it operates only when the ignition switch unit M is in its normal or "off" position E, but will operate to lock the lighting switch unit L in its positions A, B and C; but when in position D the lock cannot be operated. When the ignition switch unit M is in its position F, the lock T can only be turned part way by the key. Now, if the operator attempts to operate the lock T, he is at once aware that the ignition switch unit M is in its operative or "on" position F or the lighting switch unit M is in its "D" position.

Referring now more in detail to my invention as illustrated it comprises, preferably, a mounting plate 2 made of any suitable insulating material, such as bakelite, and having studs 3 and 4 fastened to it in any suitable manner, as by means of the nuts 5, which nuts 5 have screw-threaded engagement with the threaded portions of the studs 3 and 4, which extend beyond the rear face of the plate 2. The plate 2 is provided with a peripheral ridge 2', extending upwardly from the plate proper. The plate is also provided with a flange upon which the cover cap of the device rests. The stud 3 is provided for the ignition switch unit M and the stud 4 is provided for the lighting switch unit L. Springs 6, 7 and 8 are associated with the ignition switch unit M, and springs 9, 10, 11, 12 and 13 are associated with the lighting switch unit L. Springs 6, 7, 8, 9, etc., are similarly constructed so that, by describing one of them, the construction of the others is readily apparent. A tongue 14 of suitable material is provided with reduced ends 15 and 16, which form shoulders 17 and 18 upon the tongue 14. The tongue 14 is forced into a suitable opening 19 in the plate 2, which opening 19 is slightly smaller than the tongue 14, to provide a force fit; and the reduced portions 15 and 16, when the tongue 14 is in place, extend beyond the top and bottom surfaces of the mounting plate 2. The shoulders 17 and 18 protrude slightly beyond the top and bottom surfaces of the plate 2, and these protruding shoulders 17 and 18 are upset to hold the spring 6 against movement in the opening 19 in the plate 2. The spring 6 is formed out of spring metal and is provided with openings 20 in its one end, through which screws 21 pass, the said screws 21 having screw-threaded engagement with suitable tapped openings in the reduced portion 15 of the tongue 14, said screws 20 securing the said spring 6 to the tongue 14.

The free end 6' of the spring 6 is provided with a rounded or curved end portion which forms a contacting end which engages its associated switch unit. The portion 16 of the tongue 14 which extends beyond the bottom surface of the plate 2 forms a connecting terminal for the spring 6 and is provid-

ed with a saddle or clamping member 22, which provides means for securing an electrical conductor to the terminals formed by the portion 16. Screws 23 are provided with washers 24, which screws 23 have screw-threaded engagement with the clamping members 22 for securely holding the electrical conductor between the portion 16 of the tongue 14 of its associated spring 6 and the said clamping member 22.

Associated with the combination ignition switch as illustrated, I show an overload relay OR, which is used for the purposes well understood. The relay OR is secured to the supporting plate 30 in any suitable manner, and said plate 30 is in turn secured to the studs 3 and 4 by means of the nuts 31, which nuts 31 have screw-threaded engagement with the threaded portions of the studs 3 and 4.

The lighting switch unit L and the ignition switch unit M are each provided with a rotor element, and as both are similar in construction, a description of one of them will suffice. The rotor element associated with the lighting switch unit L comprises a supporting stud 32, a holding disk 33 for holding the lighting switch unit L in its different positions, as will be more fully hereinafter described, washers 34 and 35, a sleeve 36 of suitable insulation material, cams 37 and 38 of suitable insulation material, a cam 39 of suitable conducting material and a washer 40, which members are all supported upon the stud 32. The disk 33 is provided with an orifice of a size to permit its being slipped over the body portion 41 of the stud 32, and when the said member 33 is in place, it rests against the shoulder portion 42 of the stud 32. The insulation sleeve 36 is provided with an orifice of a size to permit its being slipped over the body portion 41 of the stud 32, the said sleeve 36, when in place, resting against the member 33. Washers 34 and 35 are provided with orifices of a size to permit them being slipped over the insulation sleeve 36, and the cams 37 and 38, which are of suitable insulation material, are also provided with orifices of a size to permit their being slipped over the insulation sleeve 36. The metallic cam 39 is also provided with an orifice of a size to permit its being slipped over the sleeve 36. The cam 39, when in place, rests between the two insulation cams 37 and 38. The washer 40 is also provided with an orifice of a size to permit its being slipped over the body portion 41 of the stud 32, and when the member 33, washers 34 and 35, cams 37, 38 and 39 and washer 40 are in place, a portion of the body 41 of the stud 32 protrudes slightly beyond washer 40, and this portion is upset or spun over, securing the said members upon stud 32 against displacement. To prevent the members 33,

34, 35, 37, 38, 39 and 40 from rotating about the stud 32. I provide a pin, 43, which is secured to the member 33, the said pin 43 extending through the members 37, 38 and 39 but insulated from the said member 39 by means of a sleeve of insulation 44 through which the said pin 43 extends. The member 33 is also secured to the stud 32 by means of a pin 45, the said pin 45 passing through the member 33 and the shoulder portion 42 and the stud 32. The stud 32 is also provided with a central opening 46 of a side to receive the supporting stud 4 of the lighting switch unit L, to permit the rotation of said lighting switch unit rotor. The insulation cams 37 and 38 are provided with wing portions 47 and 48, and the metallic member 39 is provided with wing portions 49 and 50, which wings cooperate with the free ends of the springs 9, 10, 11, 12 and 13, when the lighting switch unit L is moved to its several positions, as is readily understood.

The holding member 33 is in the form of a notch or toothed disk, and to cooperate with the disks 33 and 33' to yieldingly hold the lighting and ignition switch units L and M, respectively, in any of their operated positions, I provide a holding device H which comprises a centrally pivoted member 51, which carries rotatable rollers 52 and 53 in its bifurcated ends, said rollers 52 and 53 operating in connection with their corresponding disks 33' and 33 of the ignition switch unit M and the lighting switch unit L. The member 51 is pivotally supported at its center by a stud 54, which is suitably fastened to the mounting plate 2 by means of a nut 55, which nut 55 has screw-threaded engagement with the threaded portion of the stud 54. A spring 56 for yielding a holding member H against the disks 33 and 33' of the switch units L and M, is provided. The free end of the spring 56 rests against the bridge of the member H, the other end of the spring 56 being fastened to the mounting plate 2 by means of a screw 57 and nut 58. When one of the switch members is operated, the teeth of its disk are rotated against its associated roller, due to the action of the spring 56, and as the disk 33 advances the roller acts upon the next toothed notch so as to give a snap action to the switch member and at the same time hold the actuating members of the switch in place.

A locking arrangement is provided whereby the lighting and ignition switch units L and M may be locked in their different positions. I, therefore, provide a pin-tumbler, cylinder lock T cooperating with a sliding locking plate LP. The cylinder lock comprises the usual lock case 60, which lock case is provided with the usual tumbler extension 61, and rotably mounted in the casing 60 is the key barrel or cylinder

62. The key barrel extends rearwardly from the casing 60, and this rearwardly extending portion 62' rests in a pocket or depression 63 in the mounting plate 1. The lock casing 60 is also provided with a square lug 64, preferably integrally formed therewith, the said lug 64 resting in a slot 65 cut in the ring portion 2' of the mounting plate 2, which ring portion 2' is formed by the inner circumferential edge of the cup-shaped portion 2² of the plate 2 and the outer circumferential edge of the plate 2. The lock barrel 62 resting in the pocket 63, which forms a seat for the said barrel 62, in conjunction with lug 64, which rests in the slot 65, centers said lock and prevents rotation of the same in the pocket 63 when the key of the lock is turned. The sliding locking plate LP, which is provided for locking the switching units L and M so that they cannot be operated, consists of a plate 70 provided with elongated slots 71 and 72, through which the studs 3 and 4 extend. The plate 70 is also provided with a U-shaped notch 73 of a size to permit it to span the lock barrel 62 which rests in the pocket 63 in the mounting plate 2. The slots 71 and 72 and the U-shaped notch 73, in association with the studs 3 and 4 and the key barrel 62, form guiding means for the plate 70, when the said plate is moved to lock or unlock the switch units L and M, as the case may be. To permit movement of the plate 70 when the key T is rotated to lock or unlock the switch units L and M, I provide a pin 75, which is secured to the rearwardly extending portion 62' of the key barrel 62, the said pin 75 cooperating with a pin 76, which is secured to the sliding plate 70 in any suitable manner. The plate 70 is also provided with angular extensions 77 and 78, which extensions are preferably integrally formed with the said plate 70, the said extensions 77 and 78 cooperating with the disks 33 and 33' of the switching units L and M. I have preferably arranged the ignition switch unit M so that it can only be locked in its normal or inoperative position, and I, therefore, provide a single slot 33² in the disk 33', while the disk 33 of the lighting switch unit L is provided with three slots 33³, 33⁴ and 33⁵, whereby the lighting switch unit L may be locked in its normal or two of its three operative positions. No slot is provided for the fourth operative position of the switch unit L, so that when the lighting switch unit L is in its position D and an attempt is made to lock the switch after the ignition switch unit is restored to its inoperative position, the key can only be turned part way and the operator is at once notified that the switch lever must be turned back to any of its positions A, B or C to enable him to lock the switch as is readily apparent.

The disks 33 and 33' of the units L and M are provided with angular, downwardly extending arms 80 and 81, which extend into slots 82 and 83, respectively, which slots are cut in the mounting plate 2. The extremities of the respective slots 82 and 83 limit the movements of the switch units L and M in their normal and farthest advanced positions.

In Fig. 8 I have shown the locking mechanism and operating members of the lighting and ignition switch units L and M in their normal position and unlocked; and in Fig. 9 I show the locking mechanism operated to lock the switching units L and M against movement, but also showing the mechanism at normal. To lock the switch units L and M, the key of the lock T is inserted and turned to the right until the pin 75 in the key barrel 62 engages the pin 76 in the plate 70. Continued rotation of the key in the lock T moves the plate 70 in an upward direction into the position shown in Fig. 9. The extensions 77 and 78 enter the slots 33² and 33³ of the switching units M and L, respectively, preventing the movement of said units. To unlock the switch units L and M, the key is turned to the left until the pin 75 engages pin 76 to move the plate 70 in a downward direction, and this downward movement of the sliding locking plate 70 withdraws the extensions 77 and 78 from the slots 33² and 33³.

To yieldingly hold the plate 70 in its locked or unlocked positions, I provide a flat spring 85 secured between the member H and the plate 2 by means of the stud 54, which holds the plate 70 in its different positions, the free end of the spring engaging the sliding plate 70. A cover or casing 90 is provided for enclosing the mechanism, and a top or name plate 91 is also provided, said cover 90 and name plate 91 being held together in any suitable manner and being provided with suitable openings to permit the passage of the studs 3 and 4. Handles 92 and 93 are secured to the studs 3 and 4 in any suitable manner, the said handles 92 and 93 being grasped by the operator to move the switching units L and M to their different operative positions. The cover 90 and plate 91 are also provided with a suitable opening 94 of a size to permit the passage of the forward end or head 62' of the key barrel 62, this opening 94 also forming a bearing for the head 62² of the key barrel 62 when it is rotated by the key.

From the above description, it will be seen that with the cylinder lock mounted with the rearwardly extending portion 62' of the barrel 62 resting in the pocket 63 and the lug 64 resting in the notch 65 and the barrel head 62² projecting through the opening 94 in the casing 90, the lock will be

rigidly secured in place between the casing 90 and the mounting plate 2. The opening through which the head 62² of the key barrel 62 projects and the rear portion 62' of the barrel 62 which rests in the pocket 63 in the mounting plate 2 both serve as bearings for the barrel 62 when it is rotated by the key, the said pocket 63 also seating the lock in position. The shoulder 95 formed by the barrel casing 60 abuts against the inner surface of the casing 90, preventing displacement of the lock in the pocket 63, and the lug 64 resting in the notch 65 prevents the lock from rotating as a whole when the key is turned.

From the construction herein described, it will be apparent that it is unnecessary to rigidly secure the lock to any member of the switch or casing, because when the casing is secured to the plate 2 by means of the nuts 96, the lock will be clamped between the casing 90 and mounting plate 2.

Referring now to Figs. 11, 12 and 13, I illustrate another method of mounting the lock. In the above figures I only illustrate a fragmentary portion of the switch structure, which is the same as described in connection with Figs. 1 to 11, inclusive, and comprises an ignition switch unit M and a lighting switch unit L' in association with the sliding locking plate LP'. The lock T' is also of the pin tumbler cylinder type and consists of a barrel casing 60' with the tumbler extension 61' and the key barrel 62³. The barrel 62³ extends rearwardly from the casing 60' in a suitable shallow pocket or depression 63' in the plate 2' and is of a size to receive the rear portion 62⁴ of the barrel 62³. Tumbler extension 61' rests in a notch 65' in the ring portion 2² of the mounting plate 2' and prevents rotation of the lock when the key is rotated. A pin 75' secured to the barrel 62³ in a suitable manner cooperates with the pin 76' in the sliding locking plate 70' to move it in an upward or downward direction to lock or unlock the switch units L and M, as previously described. A cover or casing 90' is provided, as shown in dotted lines Fig. 13, with a suitable opening of a size to permit passage of the forward end or head 62⁵ of the key barrel 62³.

It will be readily apparent from the above description that with the cylinder lock mounted with the rear end 62⁴ of the barrel 62³ resting in the pocket 63' and the tumbler extension 61' resting in the notch 65' and the head 62⁵ of the key barrel 62³ projecting through the opening in the casing 90', when the said casing is in place the said lock will be rigidly secured in place between the inner face of the cover or casing 90' and the mounting plate 2'. The opening through which the head 62⁵ of the key barrel 62³ extends to the casing 90' and the pocket

63' in which the rear end 62⁴ of the key barrel 62³ rests serve as bearings for the said barrel 62³ when the key is rotated, the said pocket 63' also seating the lock. The shoulder 95' formed by the barrel casing 60' rests against the inner face of the casing 90', preventing displacement of the barrel 62³ from the pocket 63', and the tumbler extension 61' which rests in the notch 65' prevents movement of the lock when the key is turned to lock or unlock the switching units L and M.

Referring now to Figs 14, 15 and 16, I illustrate still another method of mounting the lock, and the switch structure, which is only fragmentarily shown, is the same as previously described and comprises an ignition switch unit M² and a lighting switch unit L² in association with a sliding locking plate MP². The lock T², in addition to the key barrel 62⁶, casing 60² and tumbler extension 61² is provided with a pair of lugs 100 and 101, integrally formed with the casing 60² of the lock. The lugs 100 and 101 rest in a notch 65² in the mounting plate 2, and the rear portion of the barrel 62⁷ of the lock rests in a suitable shallow pocket or depression 63², for purposes as previously described. A casing 90² provided with an opening through which the head of the key barrel 62⁶ extends in association with the pocket 63² in which the key barrel rests, and the lugs 100 and 101 resting in the notch 65² of the mounting plate 2, secures the lock in place when the cover or casing is secured to the mounting plate 2, as described in connection with Figs. 11, 12 and 13. The lock barrel is provided with the two lugs 100 and 101 so that the holes may be drilled through the lock barrel into the tumbler extension, in order that the lock tumblers and springs may be easily inserted in the holes drilled in the tumbler extension. The holes through the side of the lock barrel opposite the tumbler extension are then plugged up.

While I have described various forms of my invention, it is to be understood that changes and modifications will readily suggest themselves to those skilled in the art, and, therefore, I do not wish to be limited to the exact structure as shown, but aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

What I claim as new and desire to secure by United States Letters Patent, is:

1. A device of the character described including a mounting plate provided with a peripheral ridge, a lock barrel, a recess cut in said mounting plate adapted to receive said lock barrel, a lock barrel casing for said lock barrel provided with one or more lugs adapted to fit into a notch in the peripheral ridge of said mounting plate to prevent rotation of said lock barrel casing, and

a locking plate member operatively associated with said lock barrel, said plate having a portion of its body extended for engaging said notch in said peripheral ridge.

2. A device of the character described including a mounting plate having a recess, a lock barrel adapted to extend into said recess, a cover cap adapted to fit over the opposite end of said lock barrel to prevent longitudinal movement of said lock barrel, a lock barrel casing for said lock barrel having an integrally formed lug extending at right angles to the lock barrel, a notch cut in said mounting plate adapted to receive said lug to prevent rotation of said lock barrel casing, and a locking plate operatively associated at right angles with said lock barrel, and having a portion of its body adapted to engage said notch in said mounting plate.

3. A device of the character described including a mounting plate provided with a peripheral ridge, a cover cap for said mounting plate, a lock barrel, an orifice in said cover cap and an orifice in said mounting plate adapted to receive opposite ends of said lock barrel, a lock barrel casing, a member extending out from said lock barrel casing adapted to fit into a notch in said peripheral ridge to prevent rotation of said lock barrel casing, and a locking plate operatively associated with said lock barrel, said locking plate having an integrally formed lug for engaging said notch in said peripheral ridge for guiding said locking plate relative to said lock barrel.

4. A device of the character described including a mounting plate provided with a peripheral ridge, a cover cap for said mounting plate, an orifice in said cover cap, a recessed orifice in said mounting plate, a lock barrel adapted to fit into the recess in said mounting plate, a lock barrel casing having a shoulder adapted to fit against the inner peripheral surface of said cover cap to hold said lock barrel in position, a lug extending out from said lock barrel casing adapted to fit into a notch in the peripheral ridge of said mounting plate to prevent rotation of said lock barrel casing, and a slidable locking plate operatively associated with said lock barrel, said plate having an integrally formed lug for engaging said notch to guide said locking plate relative to said lock barrel.

5. A device of the character described including a mounting plate provided with an orifice, a lock barrel adapted to fit into said orifice, a cover cap for said mounting plate provided with an orifice through which said lock barrel protrudes, said cover cap and mounting plate preventing longitudinal movement of said lock barrel, a lock barrel casing provided with one or more members extending out at right angles to the lock barrel, a groove cut in said mounting

plate adapted to receive said member to prevent rotation of said lock barrel casing, rotatable contact members, and a locking plate operatively associated with said lock barrel for locking said contact members in certain positions, said locking plate having an integrally formed member for engaging said groove to maintain said locking plate in operative position relative to said rotatable members and said lock barrel.

6. A device of the character described including a mounting plate, a recess in said mounting plate, a key-controlled lock barrel for locking a device against movement, said lock barrel adapted to extend into the orifice in said mounting plate, a cover cap provided with an orifice through which the opposite end of said lock barrel protrudes, a lug formed upon said lock barrel casing extending out at right angles to the lock barrel, a groove cut in said mounting plate adapted to receive said lug to prevent rotation of said lock barrel casing, and a locking plate operatively associated at right angles with said lock barrel for locking said second device against movement, said locking plate having an integrally formed extension for engaging said groove to maintain said locking plate in operative position relative to said second device and said lock barrel.

7. A device of the character described including a mounting plate provided with a peripheral flange, a recess in said mounting plate, a lock barrel adapted to fit into said recess, a cover cap for said mounting plate provided with an orifice, the opposite end of said lock barrel being adapted to fit into said last orifice, a lock barrel casing provided with an integrally formed ear extending out at right angles to the lock barrel, an orifice cut in said peripheral flange adapted to receive said ear, rotatable contact members, and a locking plate operatively associated with said lock barrel for locking said contact members in certain positions, said locking plate having an integrally formed member for engaging said second orifice to maintain said locking plate in operative position relative to said rotatable members and said lock barrel.

8. A device of the character described including a circular mounting plate, an orifice cut in said mounting plate, a lock barrel adapted to fit into said orifice, a cover cap provided with an orifice into which said lock barrel extends, said cover cap and mounting plate preventing longitudinal movement of said lock barrel, a lock barrel casing for said lock barrel, a peripheral flange for said mounting plate having a notch cut therein, an outwardly extending member for said lock barrel casing adapted to fit into said notch to prevent rotation of said lock barrel casing, rotatable contact

members, and a locking member operatively associated with said lock barrel for locking said contact members in certain positions, said locking member having an integrally formed member for engaging said notch to maintain said locking member in operative position relative to said rotatable members and said lock barrel.

9. A device of the character described including a mounting plate, a member mounted thereon, a key-controlled lock, a lock barrel and a lock barrel casing for said lock, a cap for enclosing said lock mechanism and said member, an orifice in said cap, a recess cut in said mounting plate, one end of said lock barrel adapted to extend into the recess of said mounting plate, and the other end of said lock barrel adapted to fit into the recess in said mounting plate, a peripheral flange for said mounting plate, an outwardly extending lug for said lock barrel casing adapted to fit into a notch in said peripheral flange, a locking plate operatively associated with said lock barrel and adapted to lock the said member in certain positions against actuation, said locking plate having an integrally formed lug for engaging said notch to maintain said locking plate in operative association with said lock barrel and said member, and means for securing said cover cap to said mounting plate.

10. A device of the character described including an ignition switch having an off and an on position, a lighting switch having an off and a plurality of on positions, a common locking mechanism for said switch, and means for preventing operation of said locking mechanism when said ignition switch is in its on position or said lighting switch is in one of its on positions.

11. A combined ignition and lighting switch for use on automobiles or the like, locking mechanism common to said switches for preventing actuation thereof, said ignition switch having an on and off position, said lighting switch having an off and a plurality of on positions, and means for preventing operation of said common locking mechanism if said ignition switch is in its on position, or said lighting switch is in a certain one of its on positions.

12. A device of the character described including a mounting plate, a stud connected thereto supporting a lighting switch, a second stud connected thereto supporting an ignition switch, a slidable locking device for preventing actuation of said switch, locking mechanism for actuating said slidable locking device, a slot cut in said locking device through which said locking mechanism extends, and other slots cut in said locking device through which said studs extend, said slots forming guiding means for said slidable locking device.

13. A device of the character described including a mounting plate, a pair of studs connected to said mounting plate supporting a pair of electrical switches, a slidable locking plate for preventing actuation of said switches, locking mechanism for actuating said slidable locking plate, and slots cut in said locking plate through which said studs and said locking mechanism extend, said slots forming guiding means for said slidable locking plate.

14. A device of the character described including a mounting plate, a pair of studs connected to said mounting plate supporting a pair of electrical switches, a slidable locking plate for preventing actuation of said switches, locking mechanism for actuating said slidable locking plate, slots cut in said locking plate through which said studs and said locking mechanism extend, said slots forming guiding means for said slidable locking plate, and a cover cap for holding said switches and said locking mechanism in position.

15. A device of the character described including a mounting plate having a peripheral ring, a pocket cut in the said mounting plate, a notch cut in said peripheral ring, a lock including a casing, a key barrel within said casing projecting from one end thereof and resting in said pocket to retain said lock in place, and a lug on said casing extending out at right angles to said casing and resting in said notch, and a slidable locking plate operatively associated with said key barrel, said locking plate being provided with an integrally formed extension which engages said notch for retaining said locking plate in operative association with said key barrel.

16. The combination with a lock, a mounting plate having a pocket formed therein and a peripheral ring, a notch cut in said peripheral ring, a casing for said lock, a key barrel within said casing set partially in said pocket, a lug on said casing extending into said notch for retaining said lock in position, rotatable members secured to said mounting plate, a locking member operatively associated with said rotatable members and said key barrel, said locking member having an integrally formed lug engaging said notch to maintain said locking member in position relative to said key barrel and said rotatable members.

17. A device of the character described including a mounting plate having a peripheral ring and a cover cap for said mounting plate, a lock mounted between said plate and cover, a casing for said lock having a key barrel rotatably contained therein, said key barrel projecting rearwardly therefrom, a pocket in said mounting plate into which the said barrel is seated, a lug on said casing extending out perpendicular to said casing

and projecting into a notch in said peripheral ring, an orifice in said cover through which the head of said key barrel projects, a shoulder formed by said casing against which the said cover rests to prevent displacement of said lock, rotatable members secured to said mounting plate, a locking member operatively associated with said rotatable members and said key barrel, said locking member having an integrally formed lug for engaging said notch to maintain said locking member in position relative to said key barrel and said rotatable members.

18. A device of the character described including a mounting plate having a peripheral ring, a cover for said mounting plate, a lock, a casing for said lock containing a key barrel rotatable therein, a pocket in said mounting plate in which said barrel partially sets, an extension integrally formed with said casing and projecting into a notch in said peripheral ring, a shoulder formed by the said casing, the head of said key barrel projecting through an orifice in said cover, the said cover resting against said shoulder to prevent displacement of said lock, a locking member associated with said key barrel, a lug secured to said key barrel for operating said locking member, said locking member having an integrally formed extension for engaging said notch to prevent the disassociation of said locking member and said key barrel.

19. An ignition switch and a lock for locking said switch operable only when said switch is in "off" position, a lighting switch associated with said ignition switch and having a plurality of "on" positions, said lock operable to lock said ignition switch when said lighting switch is in an "on" position and inoperable when said lighting switch is in another "on" position.

20. An electrical switch having a plurality of "on" positions and an "off" position, mechanism for locking said switch, said mechanism inoperable when said switch is in one "on" position, and operable when said switch is in another "on" position or in its "off" position.

21. An electrical switch having a plurality of "on" positions, manually operated mechanism for locking said switch in an "on" position, and apparatus effective on placing said switch in another "on" position to prevent the effective operation of said locking mechanism.

22. A lighting switch and an ignition switch, said switches having a common locking mechanism effectively operable to lock the lighting switch in an "on" position and the ignition switch in an "off" position, and apparatus effective when said lighting switch is in another "on" position to prevent locking of said switches.

23. A pair of electrical switches inde-

pendently adjustable to "on" and "off" positions, respectively, common locking mechanism for said switches operable to lock them when both are in "off" position, and
 5 inoperable when either of said switches is in an "on" position.

24. A pair of electrical switches selectively adjustable to "on" and "off" positions, one of said switches adjustable
 10 to a plurality of "on" positions, common locking mechanism for said switches operable to lock them when one switch is "on" and the other "off," and apparatus to prevent the effective operation of
 15 said mechanism effective when said one switch is in a different "on" position.

25. An ignition switch and a lighting switch, the latter having a plurality of "on" positions, mechanism for locking the ignition switch, apparatus controlled by placing
 20 the lighting switch in one "on" position to prevent the locking of the ignition switch, said apparatus ineffective to prevent the locking of the ignition switch when the
 25 lighting switch is in another "on" position.

26. A pair of selectively adjustable electrical switches, mechanism operable to lock said switches, each switch having in "on" position, and apparatus effective by placing
 30 either switch in "on" position to prevent said mechanism from being operated to lock the other switch.

27. A switch device comprising a lighting switch and an ignition switch, locking
 35 mechanism common to said switches for preventing movement thereof, a plurality of "on" positions and "off" positions for said lighting switch, and "on" and "off" position for said ignition switch, actuating means
 40 for said locking mechanism rendered inoperable by placing said lighting switch in a certain one of its "on" positions and operable when said switch is in another "on" position.

28. A switch device comprising a lighting switch and an ignition switch, said switches operable independantly of each other, locking mechanism comprising a key lock and mechanism operable thereby and common to
 50 said switches for preventing actuation of said switches, an "off" and a plurality of "on" positions for said lighting switch and an "on" and "off" position for said ignition switch, means associated with each of said
 55 switches for cooperating with said mechanism, said means blocking said mechanism when the ignition switch is in "on" position, and also when said lighting switch is in a particular "on" position, said means
 60 associated with said lighting switch being ineffective to block said mechanism when said switch is in another "on" position.

29. A switch device comprising a lighting switch and an ignition switch, a key and
 65 associated apparatus comprising the locking

mechanism for locking said switches against actuation, an "off" and a plurality of "on" positions for said lighting switch and an "off" and "on" position for said ignition switch, means associated with each of said
 70 switches for cooperating with said apparatus for rendering ineffective said locking mechanism when said lighting switch is in a certain one of its positions and said ignition switch is in its normal position.

30. A switch device comprising a light switch and an ignition switch, an "off" and a plurality of "on" positions for said light switch, an "off" and an "on" position for
 80 said ignition switch, a locking device common to said switches, means for operating said locking device to lock said light switch in any of its positions but a certain one, the said locking device being rendered ineffective to lock said switches when said switch
 85 is in said certain one position.

31. A switch device comprising a light switch and an ignition switch, a normal and a plurality of operative positions for said light switch, a normal and an operative
 90 position for said ignition switch, a locking device common to said switches, operating means for said device operable when said ignition switch is in its normal position only when said light switch is in any of its positions but one.

32. A device of the character described including a pair of switches each including a manually operated switch member and a
 100 contact for engagement thereby, a common support for said members having bearings one for each said member, a common clamping device for holding said switch members on said support, common means for yieldingly holding the switches in adjustable positions, and a member firmly secured to said
 105 clamping device and extending through said common support and adapted to receive a nut to secure said clamping device to said common support.

33. A device of the character described including a pair of switches each including a rotary contact member, a common switch support having bearings one for each said
 115 member, a common clamping piece for holding said members in adjusted relation to said bearings, a spring common to said contact members exerting pressure to hold them yieldingly in their rotarily adjusted positions, and a member firmly secured to
 120 said clamping device and extending through said common support and adapted to receive a nut to secure said clamping device to said common support.

34. A device of the character described
 125 including a pair of switches, each having a rotary contact maker comprising a hub with peripheral conducting and insulating portions, contact springs to be engaged by said hubs, a support carrying said springs
 130

and having rotary bearings one for each said contact maker, locking mechanism for said device carried by said support, a member for attachment to said support to hold
 5 said contact makers rotatably adjusted to said bearings and to hold said lock in proper assembly position on said support, and a common spring device for yieldingly holding said contact makers in position when
 10 rotated into certain positions.

35. A device of the character described including a pair of switches having each a rotarily adjustable contact maker, a lock
 15 controlling device for said contact makers, a support carrying said contact makers and having bearings for them respectively, a notched member for each contact maker and rotatable therewith, a common spring for
 20 yieldingly holding said contact makers in rotarily adjusted position, said spring co-operating with said notched members to that end, and a member for attachment to said support to hold said contact makers
 25 and said lock controlling device in proper bearing relation to said support.

36. A device of the character described including a pair of switches having each a manually adjustable contact maker and a
 30 contact to be engaged thereby, a support having bearings one for each of said contact makers, locking mechanism and a contact making for said device adapted to be locked thereby, said mechanism carried by said
 35 support, a spring pressure device common to said contact makers to hold them in their manually adjusted positions, said device carried by said support, and common clamping means to hold both said contact makers and said locking mechanism in
 40 proper assembly positions on said support.

37. A device of the character described including a pair of switches having a common spring for yieldingly holding them in
 45 their switching positions, a support for said spring, said support having also bearings for said switches, and carrying a lock and mechanism for locking a member of said device, and a common piece for attachment
 50 to said support, said piece serving to maintain proper relation between said bearings and said switches and to hold said lock in adjusted position.

38. A device of the character described including a pair of switches, said switches
 55 having a common spring for yieldingly holding them in adjusted positions and individual parts to be acted on by said spring to that end, a support for said spring, said support having also bearings for said
 60 switches respectively, a member for each of said switches having an annular groove, and a common clamping device having orifices adapted to fit onto the annular grooves of said last members for holding the

switches properly assembled with respect to the bearings. 65

39. A device of the character described having a supporting element and a pair of switch devices manually adjustable with respect to said element, contacts having fixed
 70 positions with respect to said element for engagement by said switch devices, a lock supported by said element, one of said devices adapted to be locked thereby, a common device for holding said devices and
 75 said lock in correct assembly positions with respect to said element, and a common pressure exerting element for holding said devices in their respective adjusted positions.

40. A device of the character described having a supporting element and a pair of switch devices manually adjustable with respect to said element, contacts having
 80 fixed positions with respect to said element for engagement by said switch devices, a lock supported by said element, one of said devices adapted to be locked thereby, a common device for holding said devices and said lock in correct assembly positions with
 85 respect to said element, means for holding said devices in their switched positions by spring pressure, and a pin common to said devices cooperating with said means to hold it properly spaced with respect to the
 90 devices. 95

41. An electrical switch comprising an adjustable switch member, and contacts arranged to be switched to different relations by means of said member, mechanism for
 100 locking said member against actuation including a key-operated lock, a slidable locking plate to engage and hold the switch, and operated by means of said lock and a leaf spring in direct contact with said plate to
 105 yieldingly hold it in position.

42. An electrical switch including a front plate and a back plate, relatively stationary contacts carried by the back plate, a contact maker to engage said contacts having
 110 an actuating element extending through said front plate, locking mechanism operated through said front plate including a movable locking member for preventing movement of said contact maker, and spring
 115 pressure means in direct contact with said member to yieldingly hold it, said member when adjusted changing the point of contact.

43. An electrical switch comprising an adjustable switch handle and contacts arranged to be switched to different relations by means of said handle, mechanism for
 120 yieldingly holding said switch in said different switching relations, said mechanism including a pair of elements the one having a surface in contact with a surface of that other, and spring means pressing said
 125 surfaces together, locking mechanism in-

cluding a part of said switch for engagement by said mechanism to hold said switch against actuation by said handle, and spring-pressure means having a surface pressed against said locking mechanism to yieldingly hold said mechanism.

44. An electrical switch including a manually adjusted switch member and a contact adapted to be closed by the operation of said member, a key lock for locking said member against actuation; a slidable plate actuated by said lock in locking said member, and having an integrally formed part to directly engage and hold said switch, and a spring-pressed device having a surface in contact with said plate to yieldingly hold it in position.

45. An electrical switch including a manually adjusted switch member and contacts adapted to be switched to different relations by means of said member, a key-operated lock for locking said member against actuation; a slidable plate cooperating with said lock, an element of said switch for engagement by said plate whereby manual adjustment of said switch is blocked, and a spring-pressure device in contact with a surface of said plate to yieldingly hold it in various positions.

46. An electrical switch including a circuit-changing member, a control-plate rigid with said member, said plate including the following elements integrally formed in it, a serrated part for yieldingly holding said member in various positions, an upset portion to limit the forward and back travel of said member, and a lock cooperating portion adapted to be held to block the adjustment of said member.

47. An electrical switch including a circuit-changing member, a control-plate rigid with said member, said plate including the following elements integrally formed in it, a serrated part for yieldingly holding said member in various positions, an upset portion to limit the forward and back travel of said member, a lock cooperating portion adapted to be held to block the adjustment of said member, and a supporting element for said switch having integrally formed stops to be engaged by said upset portion at the end of the forward and back travel of the switch.

48. An electrical switch including a circuit-changing member, a control-plate rigid with said member, said plate including the following elements integrally formed in it, a serrated part for yieldingly holding said member in various positions, an upset portion to limit the forward and back travel of said member, a lock cooperating portion adapted to be held to block the adjustment of said member, a spring-pressed element cooperating with said serrated part, and a

supporting element for said switch having integrally formed stops to be engaged by said upset portion at the end of the forward and back travel of the switch.

49. An electrical switch including a circuit-changing member, a control plate rigid with said member, said plate including the following elements, a serrated part for yieldingly holding said member in various positions, an upset part to limit the forward and back travel of said member, a lock cooperating part adapted to be held to block the adjustment of said member, a key-operated locking apparatus adapted to engage and hold said lock cooperating part, and a supporting element for said switch having integrally formed stops to be engaged by said upset part at the end of the forward and back travel of the switch.

50. An electrical switch including a circuit-changing member, a control plate rigid with said member, said plate including the following elements, a serrated part for yieldingly holding said member in various positions, a stop part to limit the forward and back travel of said member, a lock cooperating part adapted to be held to block the adjustment of said member; a key-operated locking apparatus adapted to engage and hold said lock-cooperating part, spring-pressure means cooperating with said serrated part and said locking apparatus to yieldingly hold them in their various positions, and a supporting element for said switch having integrally formed stop mechanism to be engaged by said stop part at the end of the forward and back travel of the switch.

51. An electrical switch including a circuit-changing member, a control plate moving with said member, said plate including the following elements, a serrated part for yieldingly holding said member in various positions, a part to limit the forward and back travel of said member, a lock cooperating part adapted to be held to block the adjustment of said member, a key-operated locking apparatus adapted to engage and hold said lock cooperating portion, and spring-pressure means cooperating with said serrated part and said locking apparatus to yieldingly hold them in their various positions.

52. An electrical switch including a circuit-changing member, a control mechanism movable with said member, said mechanism having the following elements, a serrated part for yieldingly holding said member in various positions, a part to limit the forward and back travel of said member, a lock cooperating part adapted to be held to block the adjustment of said member, a spring-pressed element cooperating with said serrated part, a key-operated locking appa-

ratus adapted to seize and hold said lock cooperating part, and a spring-pressure element engaging said locking apparatus to yieldingly hold it in its various positions.

- 5 53. An electrical switch comprising an adjustable switch member and contacts adapted to be switched to different relations by means of said member, mechanism for locking said member against actuation

including a key-operated lock, a pair of 10 elements the one having a surface in frictional engagement with a surface of the other to yieldingly maintain said locking mechanism in unlocked position.

Signed by me at Chicago, in the county 15 of Cook and State of Illinois, this 8th day of January, 1920.

WILLIAM KAISLING.