

July 24, 1923.

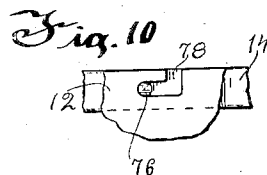
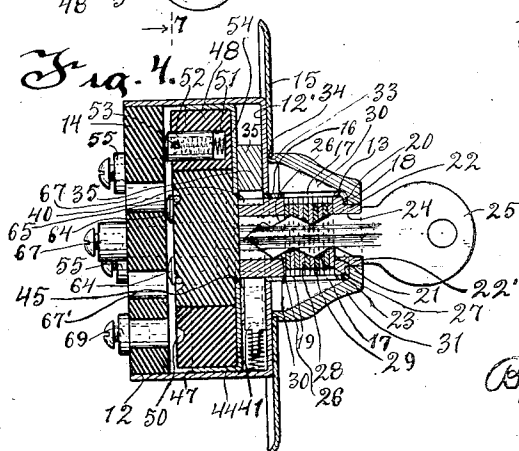
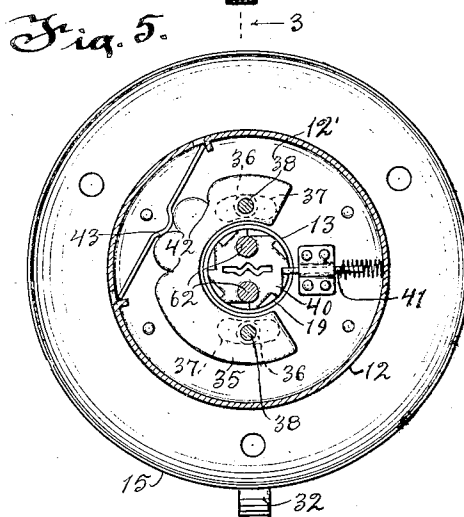
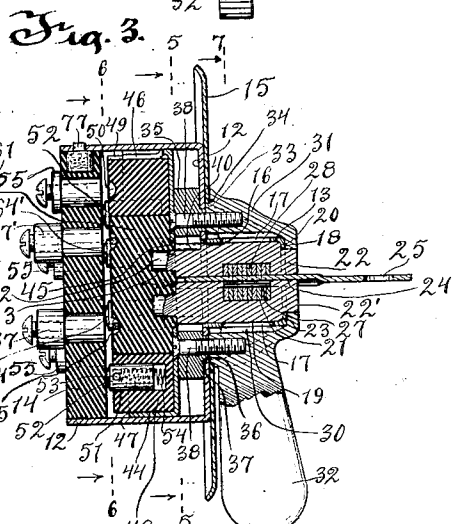
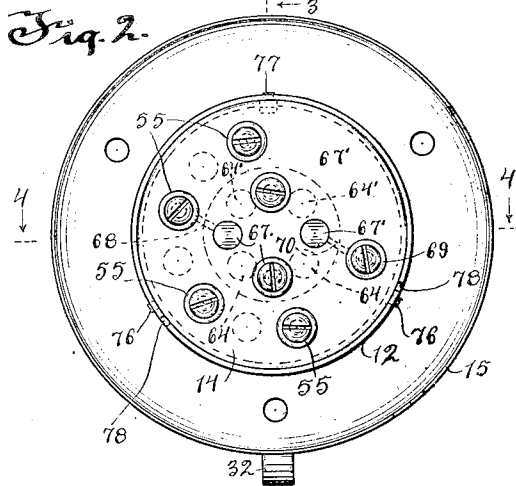
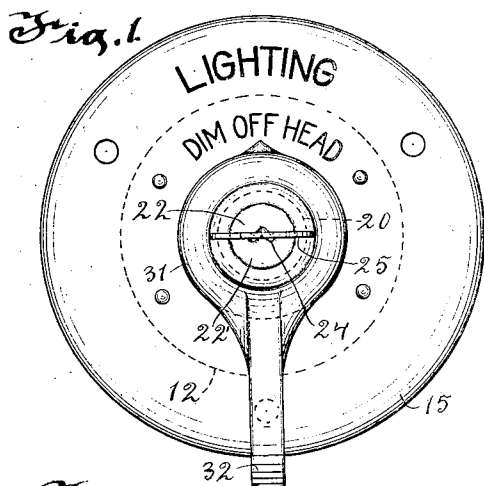
1,462,684

H. A. CLUM

LOCK SWITCH

Filed Oct. 16, 1916

2 Sheets-Sheet 1



INVENTOR

Harry A. Clum.

By Morsell, Kenealy & French,
ATTORNEYS

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H. A. CLUM

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2 Sheets-Sheet 2

Fig. 11.

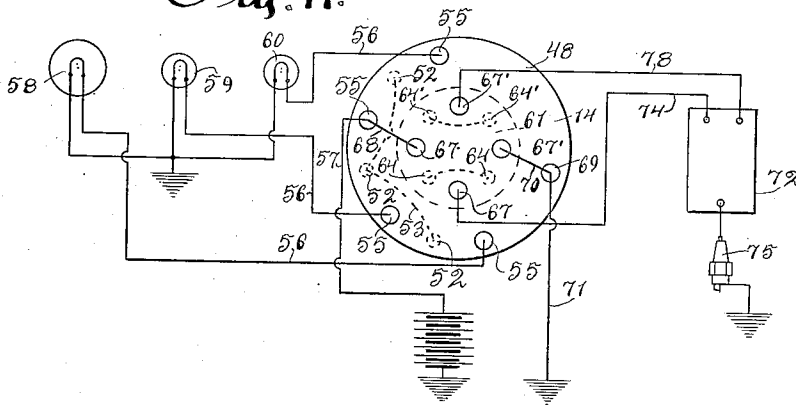


Fig. 6.

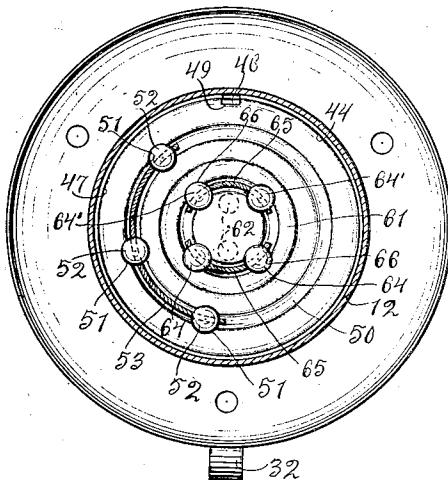


Fig. 7.

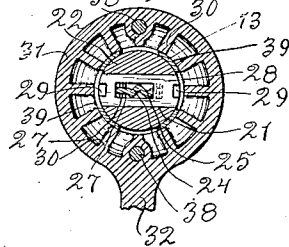


Fig. 9.

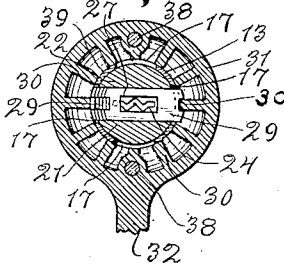
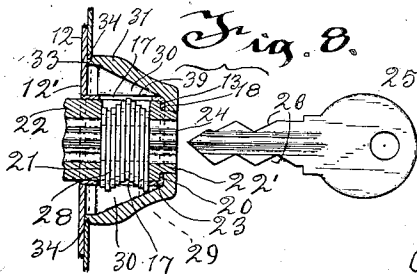


Fig. 8.



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UNITED STATES PATENT OFFICE.

HARRY A. CLUM, OF WAUWATOSA, WISCONSIN, ASSIGNOR TO CLUM MFG. CO., OF MILWAUKEE, WISCONSIN.

LOCK SWITCH.

Application filed October 16, 1916. Serial No. 125,788.

To all whom it may concern:

Be it known that I, HARRY A. CLUM, a citizen of the United States, and resident of Wauwatosa, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Lock Switches, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to improvements in lock switches more particularly, although not solely, adapted for controlling electric ignition and lighting circuits.

In automobiles or other self propelling vehicles it is the usual custom to provide means for locking the switch controlling the ignition circuits to prevent the surreptitious use of the vehicles. It is also the custom to combine both the ignition and the lighting switch in a unitary structure to reduce cost and size, and when thus combined only the ignition is locked. This arrangement permits the surreptitious turning on of the light circuits and consequently considerable current is wasted and at times the battery is exhausted.

Furthermore the sparking at the points of the ordinary make and break contacts causes injurious pitting and sticking of the parts and is not conducive to the smooth running of the engine controlled by the switch.

It is one of the objects of the present invention to overcome the before mentioned objectionable features and provide a unitary lock switch for controlling both ignition and lighting circuits in which the switches controlling both circuits may be locked by a single key.

A further object of the invention is to provide a lock switch in which one of the switches is unlocked by the insertion of a key and the other switch is unlocked by a partial turning of the key, both switches being automatically locked when the key is withdrawn from the lock.

A further object of the invention is to provide a lock switch in which the polarity of the contact points of the ignition switch is automatically changed each time the switch is turned off and on to eliminate the injurious pitting and sticking of the contact points.

A further object of the invention is to provide a lock switch in which the parts are

locked together by means of a plurality of reciprocal tumbler plates controlled by a key having its opposite edges of reverse irregular shape.

A further object of the invention is to provide a lock switch in which the key is locked to the switch and can not be removed while the ignition portion of the switch is in the on position.

A further object of the invention is to provide a lock switch in which the parts may be assembled in construction or separated for repairs in a very simple manner.

A further object of the invention is to provide a lock switch in which the ignition circuit portion of the switch may be locked by turning the key to any one of a plurality of positions.

A further object of the invention is to provide a lock switch which is of simple construction, is strong and durable and is well adapted for the purpose desired.

With the above and other objects in view the invention consists of the improved lock switch and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a front view of the improved lock switch;

Fig. 2 is a rear view thereof;

Fig. 3 is a central vertical sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is a central horizontal sectional view taken on line 4—4 of Fig. 2;

Fig. 5 is a transverse sectional view taken on line 5—5 of Fig. 3;

Fig. 6 is a similar view taken on line 6—6 of the same figure;

Fig. 7 is a sectional detail view taken on line 7—7 of Fig. 3 with the key shown within the lock;

Fig. 8 is a sectional detail view similar in part to Fig. 4 with the key shown as withdrawn from the lock portion;

Fig. 9 is a sectional detail view similar to Fig. 7, the key having been withdrawn from the lock;

Fig. 10 is a detail view of a portion of the casing; and

Fig. 11 is a diagrammatic view of the electrical connections showing the switch members in their off positions.

Referring to the drawings the numeral 12 indicates the casing or support, 13 the forwardly projecting tubular extension or barrel and 14 the rear cover or plate which is formed of insulating material. The casing is of cup-like shape with its bottom portion 12' forming the front end of the casing and on which end a dial plate 15 is rigidly mounted. The central portion of the casing end is provided with an opening 16 to receive the inner open end of the extension or barrel 13 which is also rigidly connected thereto. The casing barrel 13 is formed of comparatively thin metal and is provided with elongated peripheral locking slots 17 and an outer end opening 18 of less diameter than the bore 19 of said barrel to form an annular shoulder 20. The locking slots 17, of which there are preferably four, are spaced equi-distant circumferentially from each other and are of a width corresponding to the width of the transversely extending tumbler slot 21 of the lock cylinder 22 which is revolvably mounted in the barrel 13.

The lock cylinder 22 is formed with a reduced forward end portion 22' which projects through the reduced outer end opening 18 of the barrel and the shoulder 23 formed by said reduced portion abuts against the shoulder 20 of the barrel and properly positions the two parts with respect to each other. A key slot 24 of irregular shape transversely extends longitudinally through the central portion of the lock cylinder and intersects the transverse tumbler slot 21. A key 25 having its two opposite edges 26 of reverse irregular shape and its width approximately the same throughout its tumbler engaging portion, is shaped or corrugated transversely to fit the key slot and is adapted to extend through the elongated medial openings 27 of the flat tumblers 28 reciprocally mounted in the cylinder slot when said key is inserted in the key slot. The flat tumblers extend transversely in and closely fit the cylinder slot and are all of a length corresponding to the diameter of the lock cylinder so that when their outer end portions are alined and flush with the periphery of the lock cylinder the cylinder may be freely turned within the barrel 13 of the casing by the key. While all of the elongated medial openings 27 of the tumblers are of the same length they vary in distance from the opposite ends of the tumblers and form an irregular opening or slot which in shape conforms approximately to the edge contour of the portion of the key engaged by the tumblers when said tumblers are in alined unlocked position as shown in Fig. 4. While the tumblers are arranged to fit the particular key shown it is obvious that the arrangement of the tumblers may be changed or the distances between the medial openings may be varied to fit various shaped

keys so that no two locks may be controlled by the same key. When the key is withdrawn from the lock the tumbler openings will be in alined position with respect to each other and the outer ends of the tumblers will be out of alinement with each other and project through the locking slots 17 of the barrel 13 and lock the cylinder to the barrel. The opposite ends of the tumblers 28 are notched or recessed transversely as indicated by the numeral 29 to receive the inwardly extending radial locking ribs or teeth 30 of the hub 31 of the locking switch lever 32. The said hub portion 31 surrounds the barrel and the outer projecting end of the cylinder and bears against the face of the dial with an annular portion 33 of the hub extending into the center opening 34 of the dial 15. The locking ribs or teeth 30 bear against the periphery of the barrel and are so positioned as to register with the locking slots of the barrel when the switch lever is turned to either one of its three positions to permit the outer ends of the tumblers to project through the barrel slots and into the interspaces of the teeth of the switch lever and thus lock the cylinder and the switch lever to the barrel.

The hub portion of the switch lever is maintained in position against endwise movement on the barrel by means of a segmental member 35 which bears against the inner face of the end of the casing and is provided with projecting lugs 36 which extend through diametrically opposite segmental slots 37 in the casing end and engage the inner face of the lever hub. Screws 38 extending through the segmental member and the segmental slots and threaded into the lever hub secure the two parts together.

The peripheral locking slots 17 of the barrel are spaced equi-distant from each other in pairs diametrically opposite to each other so that the lever and the cylinder may be locked to the barrel when the key is turned into register with the barrel slots, and when the key is turned to an intermediate position it will register with the side portions 39 of the barrel between the slots and these side portions will prevent the reciprocation of the tumblers from their innermost position and prevent the withdrawal of the key from the lock.

In order to insure the rotation of the cylinder always in the same direction the inner end portion of the cylinder is formed with ratchet teeth 40 which are engaged by a spring actuated dog 41 mounted on the inner face of the casing end.

The periphery of the segmental member 35 is formed with notches or recesses 42 which are respectively engaged by a medial portion of the resilient dog 43 positioned within the casing. These notches correspond to the three positions of the light switch

lever and releasably hold the lever in either one of its positions.

The casing 12 is provided with a cup shaped movable partition 44 having a central opening 45 and a locking finger 46 projecting inwardly from the annular flange 47 of the partition. The partition fits within the casing with its flange extending outwardly and its inner end portion is rigidly connected to the segmental member and to the switch lever by the screws 38 before mentioned.

A lighting contact ring 48 positioned within the casing and the flanged portion 47 of the partition is formed with a peripheral locking recess 49 to receive the locking finger 46 of said partition and cause said ring to turn with the partition. The contact ring is formed of insulating material and its rear side face is provided with an annular groove 50 and three recesses 51 intersecting said groove to receive lighting contact plungers 52 reciprocally mounted therein. The lighting plungers 52 are electrically connected together by a flexible cable 53 and are provided with coiled springs 54 to resiliently maintain their working ends bearing against the inner face of the rear cover or plate 14. The said plate 14 is provided with lighting contacts 55 in circumferential alinement with the plungers 52 and these contacts are adapted to be connected to lighting circuit wires 56 and wire 57 leading to a battery or other source of electrical energy. These connections provide for turning the respective lamps 58, 59 and 60 on or off as the plungers are swung into or out of engagement with the contacts by means of the switch lever 32. The combination of lamps shown may be changed in any manner desired without departing from the spirit and scope of the invention.

An ignition switch member 61 positioned within the bore of the lighting ring member 48 is removably connected to the lock cylinder 22 by pins 62 which project from the inner end of the cylinder and enter recesses 63 in the switch member 61. This switch member 61 is provided with four rearwardly extending spring pressed contact plungers 64 and 64', similar to the lighting contact plungers 52, which are connected together in pairs by flexible electrical cables 65 to permit independent reciprocation of said plungers in the recesses 66 of the said switch member 61. These contact plungers 64 resiliently bear against the inner face of the rear plate 14 and are moved into engagement with four ignition contacts 67 and 67' which are mounted in said plate. One of the contacts 67 is connected to the battery contact 55 by a wire 68 and one of the contacts 67' is connected to a binding post 69 by a wire 70 and from thence to ground by a ground circuit wire 71. The other two

contacts 67 and 67' are connected to an ignition coil 72 or other device by circuit wires 73 and 74 and a spark plug 75 is shown as connected to the coil and to the ground. By the provision of the pairs of plungers 64 and 64' and the contacts 67 and 67' every quarter turn of the key 25, which turns the ignition switch member 61, will reverse the polarity of the ignition circuit and eliminate pitting and sticking at the points of make and break between the plungers and the contacts. As the lock cylinder can only be turned in one direction each time the ignition is turned off and on the said polarity will be automatically reversed.

The rear cover or plate 14 is removably held in position by means of three pins 76 and 77 which engage bayonet slots 78 and an opening 79 in the case. The pins 76 are inserted in the bayonet slots and the plate is turned a slight distance until the pin 77 which is of a spring plunger type is in register with the opening 79 to permit the pin to be forced outwardly into locking engagement with the opening 79 of the casing.

Assuming that the parts of the switch are in the position shown in Figs. 1 and 11 both the ignition and lighting circuits are broken or disconnected and if the key be withdrawn from the switch both switch members will be locked in the off position. If the key is now inserted the tumblers will be reciprocated to permit the lighting switch to be turned to complete the circuit to the head lights or to the dimmer without in any manner affecting the ignition circuits. If it is now desired to complete the ignition circuits the key is given a one eighth turn or the distance of one locking dog tooth and this movement will complete the ignition circuits in reverse polarity from the previous on position and at the same time lock the key in the cylinder as the tumblers are in alined position with the side portions of the barrel and cannot be reciprocated to permit the withdrawal of the key. It will also be noted that in turning the ignition circuit on or off that the lighting circuit switch is not moved from its position of adjustment.

It will also be noted that while both switch members may be independently moved while the key is in the cylinder that when the key is withdrawn both switch members are in locked position and the ignition switch member is in off position.

From the foregoing description it will be seen that the lock switch is of very simple construction and is well adapted for the purpose described.

What I claim as my invention is:

1. A lock switch, comprising a casing provided with a projecting tubular portion; a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, a member con-

trolling the movement of one of the switch elements positioned to surround the tubular casing portion, a member controlling the movement of another switch element positioned within the bore of the tubular casing portion, and means locking one of the switch element moving members to the casing tubular portion.

2. A lock switch, comprising a casing provided with a projecting tubular portion, a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, a member controlling the movement of one of the switch elements positioned to surround the tubular casing portion, a member controlling the movement of another switch element positioned within the bore of the tubular casing portion, and means locking both of the switch element moving members to the casing tubular portion.

3. A lock switch, comprising a casing provided with a tubular portion, a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, means for preventing the retrograde rotation of one of the switch elements, a member within the tubular portion for rotating the last mentioned switch element, a member controlling the movement of another switch element positioned to surround the tubular casing portion and having a limited movement in either direction, and means carried by the member within the casing tubular portion for locking one of the switch element controlling members to the tubular casing portion.

4. A lock switch, comprising a casing provided with a tubular portion, a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, means for preventing the retrograde rotation of one of the switch elements, a member within the tubular portion for oscillating the last mentioned switch element, a member controlling the movement of another switch element positioned to surround the tubular casing portion and having a limited movement in either direction, and a plurality of tumblers carried by the member within the casing tubular portion for locking one of the switch element controlling members to the tubular casing portion.

5. A lock switch, comprising a casing provided with a tubular portion, a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, means for preventing the retrograde rotation of one of the switch elements, a member within the tubular portion for rotating the last mentioned switch element, a member controlling the movement of another switch element positioned to surround the tubular casing portion and having a limited movement in either direction, and a

plurality of tumblers carried by the member within the casing tubular portion for locking both of the switch element controlling members to the tubular casing portion.

6. A lock switch, comprising a casing provided with a tubular portion having a peripheral opening, a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, a locking cylinder mounted within the tubular portion and rotating one of the switch elements, a member for rotating the other switch element positioned to oscillate around the casing tubular portion, a plurality of tumblers carried by the cylinder and movable through the peripheral opening of the casing tubular portion and into locking engagement with the oscillatory member, and a key insertable in the lock cylinder for controlling the movement of the tumblers.

7. A lock switch, comprising a casing provided with a tubular portion having a peripheral opening, a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, a locking cylinder mounted within the tubular portion and rotating one of the switch elements, a member for rotating the other switch element positioned to oscillate around the casing tubular portion, a plurality of tumblers carried by the cylinder and movable through the peripheral opening of the casing tubular portion and into locking engagement with the oscillatory member, said tumblers having medial key engaging portions which are alined with each other when in locking positions, and a key insertable within the cylinder for moving the medial alined portions out of alinement with each other to unlock the switch.

8. A lock switch, comprising a casing provided with a tubular portion having a peripheral opening, a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, a locking cylinder mounted within the tubular portion and rotating one of the switch elements, a member for rotating the other switch element positioned to oscillate around the casing tubular portion, a plurality of tumblers carried by the cylinder and movable through the peripheral opening of the casing tubular portion and into locking engagement with the oscillatory member, said tumblers having elongated medial openings which are alined with each other when in locking positions, and a key insertable within the cylinder and tumbler openings for moving the elongated openings of the tumblers out of alinement with each other to unlock the switch.

9. A lock switch, comprising a casing provided with a barrel portion having elongated peripheral openings, a rotary switch element mounted within the casing, an os-

oscillatory switch element mounted within the casing, a locking cylinder mounted within the barrel and connected to the rotary switch element, said cylinder having a key opening and a tumbler opening intersecting the key opening, a member journaled to oscillate around the barrel and having a connection with the oscillating switch element, said oscillating member having inwardly extending teeth which may be moved into register with the elongated openings of the barrel, a plurality of reciprocal tumblers mounted within the tumbler opening of the cylinder and being movable through the peripheral openings of the barrel and into locking engagement with the teeth of the oscillating member to lock said member and the cylinder to the barrel, said tumblers having medial openings which are aligned with each other when in locking positions, and a key insertable within the key opening of the cylinder and through the tumbler openings for drawing the tumblers to unlocked positions within the cylinder.

10. A lock switch, comprising a casing provided with a barrel portion having elongated peripheral openings, a rotary switch element mounted within the casing, an oscillatory switch element mounted within the casing, a locking cylinder mounted within the barrel and connected to the rotary switch element, said cylinder having a key opening and a tumbler opening intersecting the key opening, a member journaled to oscillate around the barrel and having a connection with the oscillating switch element, said oscillating member having inwardly extending teeth which may be moved into register with the elongated openings of the barrel, a plurality of reciprocal tumblers mounted within the tumbler opening of the cylinder and being movable through the peripheral openings of the barrel and into locking engagement with the teeth of the oscillating member to lock said member and the cylinder to the barrel, said tumblers having outer recessed end portions which engage the teeth of the oscillating member and also having medial elongated openings which are aligned with each other when in locking positions, and a key having reverse irregular shaped edge portions insertable within the key opening of the cylinder and through the tumbler openings for moving the tumblers to unlocked positions within the cylinder.

11. A lock switch, comprising a casing provided with a barrel portion having elongated peripheral openings, a rotary switch element mounted within the casing, means for preventing the retrograde movement of the rotary switch element, an oscillating switch element mounted within the casing, a locking cylinder mounted within the barrel and connected to the rotary switch element, said cylinder having a key opening and a

tumbler opening intersecting the key opening, a member journaled to oscillate around the barrel and having a connection with the oscillating switch element, said oscillating member having inwardly extending teeth which may be moved into register with the elongated openings of the barrel, a plurality of reciprocal tumblers mounted within the tumbler opening of the cylinder and being movable through the peripheral openings of the barrel and into locking engagement with the teeth of the oscillating member to lock said member and the cylinder to the barrel, said tumbler having outer recessed end portions which engage the teeth of the oscillating member and also having medial elongated openings which are aligned with each other when in locking position, and a key having reverse irregular shaped edge portions insertable within the key opening of the cylinder and through the tumbler openings for moving the tumblers to unlocked positions within the cylinder.

12. A lock switch, comprising a casing provided with a barrel portion having elongated peripheral openings, an insulating plate forming the rear cover for said casing and provided with a series of contacts arranged in concentric circles, a movable ring of insulating material positioned within the casing and having a plurality of movable contacts which engage some of the contacts of the plate, a rotary member formed of insulating material mounted within the casing and the bore of the insulating ring and having a plurality of movable contacts which engage other of the contacts of the plate, a locking cylinder mounted within the barrel and connected to the rotary switch member, said cylinder having a key opening and a tumbler opening intersecting the key opening, a member journaled to oscillate around the barrel and having a connection with the movable ring, said oscillating member having inwardly extending teeth which may be moved into register with the elongated openings of the barrel, a plurality of reciprocal tumblers mounted within the tumbler opening of the cylinder and being movable through the peripheral openings of the barrel and into locking engagement with the teeth of the oscillating member to lock said member and the cylinder to the barrel, said tumblers having medial openings which are aligned with each other when in locking position, and a key insertable within the key opening of the cylinder and through the tumbler openings for moving the tumblers to unlocked positions within the cylinder.

13. A lock switch, comprising a casing provided with a barrel portion having elongated peripheral openings, an insulating plate forming the rear cover for said casing and provided with a series of contacts arranged in concentric circles, a movable ring

of insulating material positioned within the casing and having a plurality of movable contacts which engage some of the contacts of the plate, a rotary member formed of insulating material mounted within the casing and the bore of the insulating ring and having a plurality of movable contacts which engage other of the contacts of the plate, a locking cylinder mounted within the barrel and connected to the rotary switch member, said cylinder having a key opening and a tumbler opening intersecting the key opening, a member journaled to oscillate around the barrel and having a connection with the movable ring, said oscillating member having inwardly extending teeth which may be moved into register with the elongated openings of the barrel, a plurality of reciprocal tumblers mounted within the tumbler opening of the cylinder and movable through the peripheral openings of the barrel and into locking engagement with the teeth of the oscillating member to lock said member and the cylinder to the barrel, said tumblers having outer recessed end portions which engage the teeth of the oscillating member and also having medial elongated openings which are alined with each other when the tumblers are in locking positions, and a key having reverse irregular shaped edge portions insertable within the key opening and through the tumbler openings for moving the tumblers to unlocked positions within the cylinder.

14. A lock switch, comprising a casing provided with a barrel portion having elongated peripheral openings, an insulating plate removably connected to the casing and forming the rear cover for said casing and provided with a series of contacts arranged in concentric circles, a movable ring of insulating material freely removably positioned within the casing and having a plurality of movable contacts which engage some of the contacts of the plate, a rotary member formed of insulating material freely removably mounted within the casing and the bore of the insulating ring and having a plurality of movable contacts which engage other of the contacts of the plate, a locking cylinder mounted within the barrel and connected to the rotary switch member, said cylinder having a key opening and a tumbler opening intersecting the key opening, a member journaled to oscillate around the barrel and having a connection with the movable ring, said oscillating member having inwardly extending teeth which may be moved into register with the elongated opening of the barrel, a plurality of reciprocal tumblers mounted within the tumbler opening of the cylinder and movable through the peripheral openings of the barrel and into locking engagement with the teeth of the oscillating member to lock said member and

the cylinder to the barrel, said tumbler having outer recessed end portions which engage the teeth of the oscillating member and also having medial elongated openings which are alined with each other when the tumblers are in locking positions, and a key having reverse irregular shaped edge portions insertable within the key opening and through the tumbler openings for moving the tumblers to unlocked positions within the cylinder.

15. A lock switch, comprising a casing provided with a barrel portion having elongated peripheral openings, an insulating plate removably connected to the casing and forming the rear cover for said casing and provided with a series of contacts arranged in concentric circles, a movable ring of insulating material freely removably positioned within the casing and having a plurality of movable contacts which engage some of the contacts of the plate, a rotary member formed of insulating material freely removably mounted within the casing and the bore of the insulating ring and having a plurality of movable contacts which engage other of the contacts of the plate, a locking cylinder mounted within the barrel and connected to the rotary switch member, said cylinder having a key opening and a tumbler opening intersecting the key opening and also having ratchet teeth formed on its inner end portion, a spring actuated dog mounted within the casing and engaging the ratchet teeth for preventing retrograde rotation of the cylinder, a member journaled to oscillate around the barrel and having a connection with the movable ring, said oscillating member having inwardly extending teeth which may be moved into register with the elongated openings of the barrel, a plurality of reciprocal tumblers mounted within the tumbler opening of the cylinder and movable through the peripheral openings of the barrel and into locking engagement with the teeth of the oscillating member to lock said member and the cylinder to the barrel, said tumbler having outer recessed end portions which engage the teeth of the oscillating member and also having medial elongated openings which are alined with each other when the tumblers are in locking positions, and a key having reverse irregular shaped edge portions insertable within the key opening and through the tumbler openings for moving the tumblers to unlocked positions within the cylinder.

16. A lock switch, comprising a casing provided with a barrel portion having elongated peripheral openings, an insulating plate forming the rear cover for said casing and provided with a series of contacts arranged in concentric circles, a movable ring of insulating material positioned with-

in the casing and having a plurality of movable contacts which engage some of the contacts of the plate, a rotary member formed of insulating material mounted within the casing and the bore of the insulating ring and having a plurality of movable contacts which engage other of the contacts of the plate, a locking cylinder mounted within the barrel and connected to the rotary switch member, said cylinder having a key opening and a tumbler opening intersecting the key opening, a member journaled to oscillate around the barrel and having a connection with the movable ring, means for resiliently maintaining the oscillating member in any one of a plurality of positions of rests, said oscillating member having inwardly extending teeth which may be moved into register with the elongated openings of the barrel, a plurality of reciprocal tumblers mounted within the tumbler opening of the cylinder and movable through the peripheral openings of the barrel and into locking engagement with the teeth of the oscillating member to lock said member and the cylinder to the barrel, said tumbler having medial openings which are aligned with each other when in locking position, and a key insertable within the key opening of the cylinder and through the tumbler openings for moving the tumblers to unlocked positions within the cylinder.

17. A lock switch, comprising a casing provided with a barrel portion having elongated peripheral openings, an insulating plate removably connected to the casing and forming the rear cover for said casing and provided with a series of contacts arranged in concentric circles, a movable ring or insulating material freely removably positioned within the casing and having a plurality of movable contacts which engage some of the contacts of the plate, a rotary member formed of insulating material freely removably mounted within the casing and the bore of the insulating ring and having a plurality of movable contacts which engage other of the contacts of the plate, a locking cylinder mounted within the barrel and connected to the rotary switch member, said cylinder having a key opening and a tumbler opening intersecting the key opening and also having ratchet teeth formed on its inner end portion, a spring actuated dog mounted within the casing and engaging the ratchet teeth for preventing retrograde rotation of the cylinder, a member journaled to oscillate around the barrel and having a connection with the movable ring, means for resiliently maintaining the oscillating member in any one of a plurality of positions of rests, said oscillating member having in-

wardly extending teeth which may be moved into register with the elongated openings of the barrel, a plurality of reciprocal tumblers mounted within the tumbler opening of the cylinder and movable through the peripheral openings of the barrel and into locking engagement with the teeth of the oscillating member to lock said member and the cylinder to the barrel, said tumbler having outer recessed end portions which engage the teeth of the oscillating member and also having medial elongated openings which are aligned with each other when the tumblers are in locking positions, and a key having reverse irregular shaped edge portions insertable within the key opening and through the tumbler openings for moving the tumblers to unlocked positions within the cylinder.

18. A lock switch, comprising a casing provided with a barrel, a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, a locking cylinder mounted within the barrel and connected to the rotary switch element, a lever mounted to oscillate partly around the barrel and having a connection with the oscillating switch element, locking means carried by the cylinder for locking the cylinder and the lever against movement, and a key controlling the locking means.

19. A lock switch, comprising a casing provided with a barrel, a rotary switch element mounted within the casing, means for preventing retrograde movement of the rotary switch element, an oscillating switch element mounted within the casing, a locking cylinder mounted within the barrel and connected to the rotary switch element, a lever mounted to oscillate partly around the barrel and having a connection with the oscillating switch element, locking means carried by the cylinder for locking the cylinder and the lever against movement, and a key controlling the locking means.

20. A lock switch, comprising a casing provided with a barrel, a rotary switch element mounted within the casing, an oscillating switch element mounted within the casing, a locking cylinder mounted within the barrel and connected to the rotary switch element, a lever mounted to oscillate partly around the barrel and having a connection with the oscillating switch element, locking means carried by the cylinder for locking the cylinder and the lever to the barrel, and a key controlling the locking means and being non-removably connected to the cylinder when the rotary switch element is in its on position.

In testimony whereof I affix my signature.
HARRY A. CLUM.