No. 787,147. PATENTED APR. 11, 1905.

C. L. BUSCHMANN.

# LOCK FOR ELECTRIC SWITCHES.

APPLICATION FILED FEB. 20, 1903.

2 SHEETS—SHEET 1.

Fig 1.

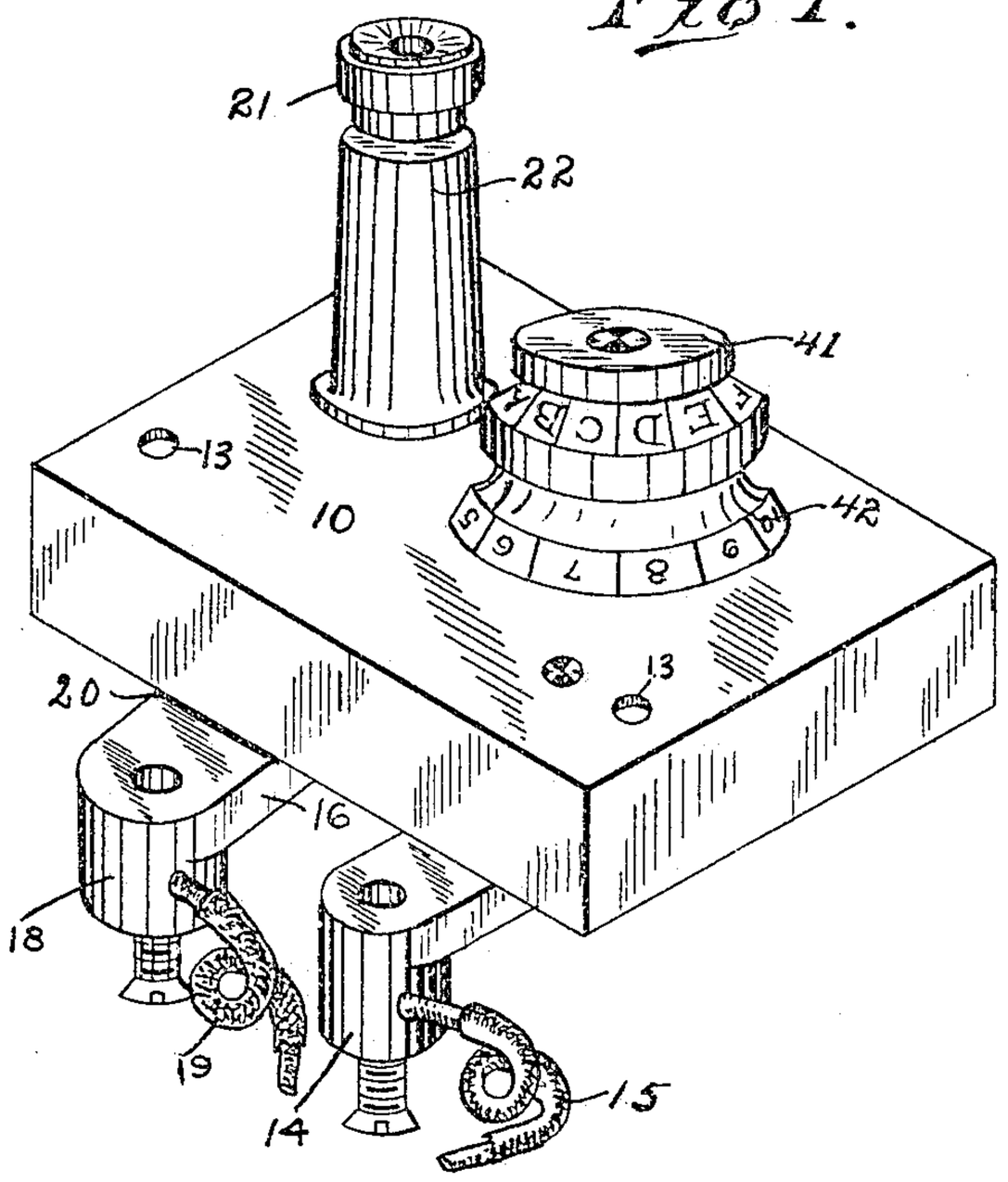
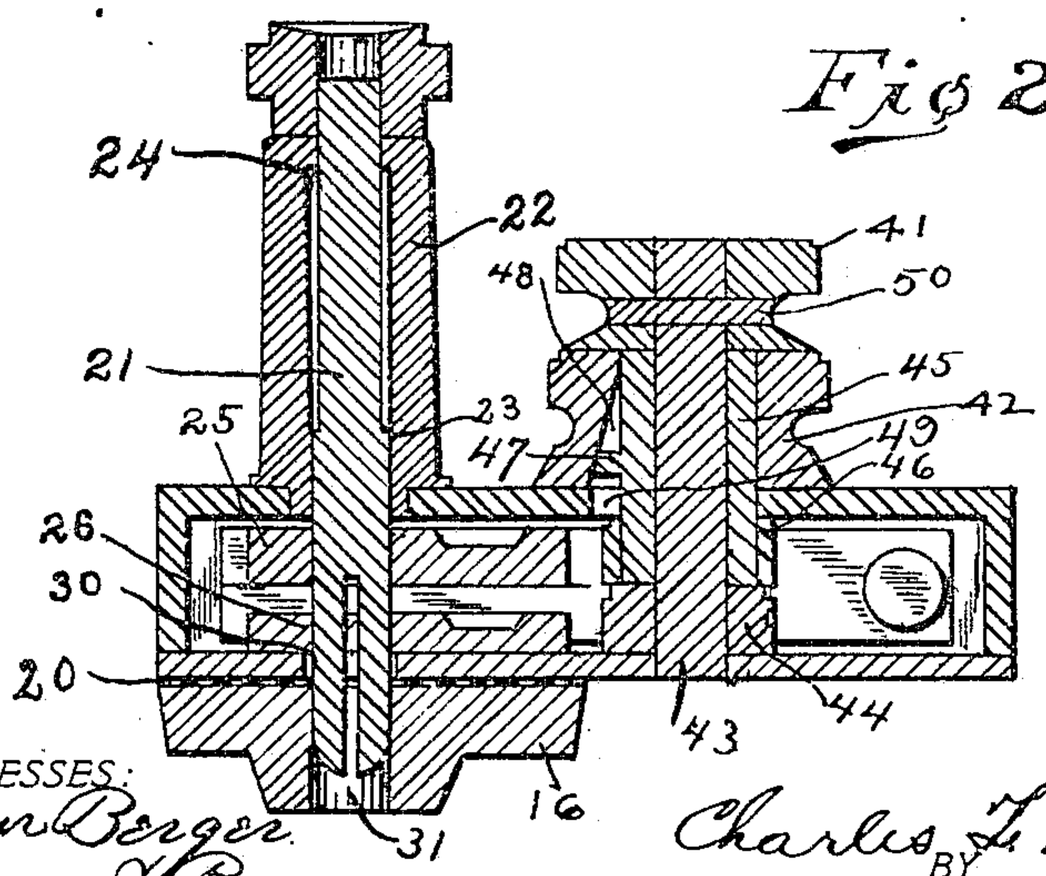



Fig 2.

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2 SHEETS—SHEET 2.

Fig 3.

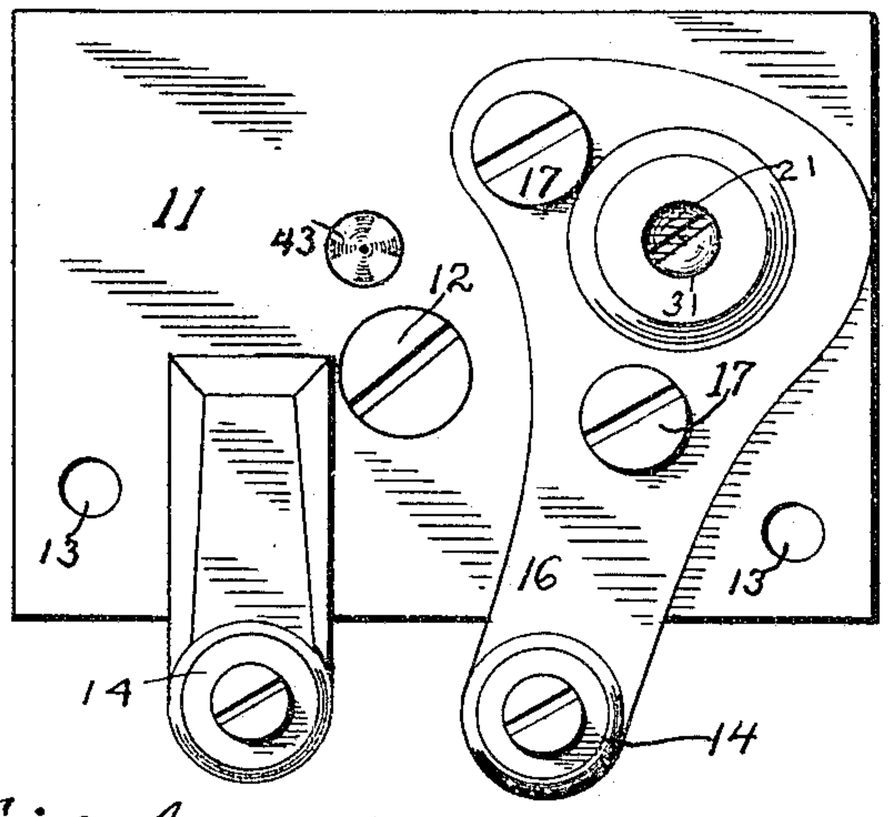



Fig 4

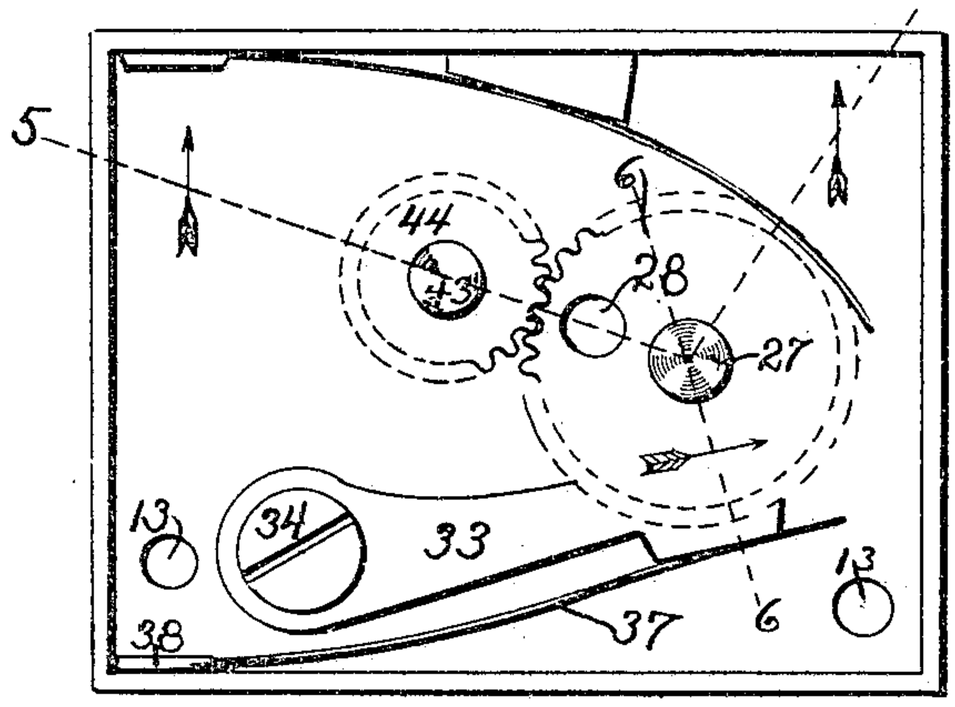



Fig 5.

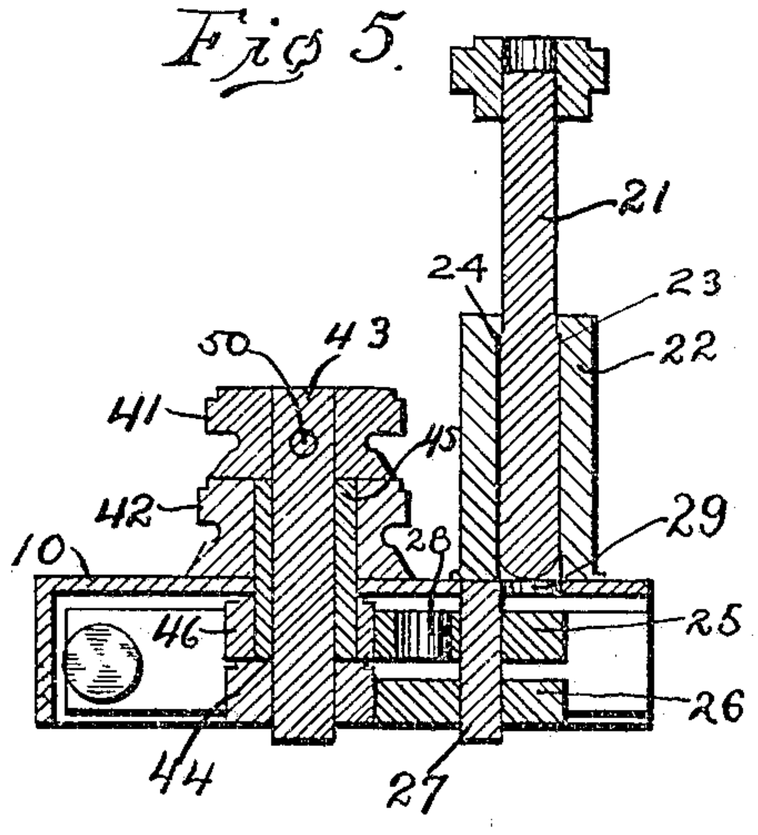



Fig 6.

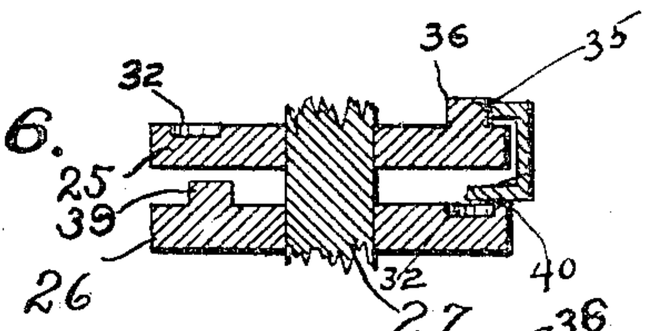



Fig 7.

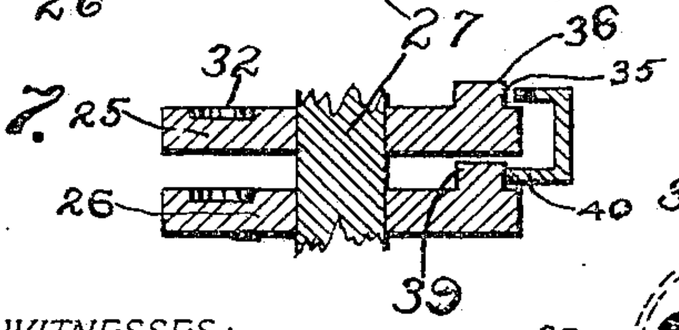



Fig 8.

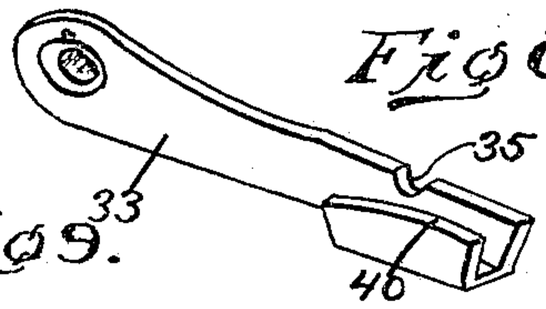
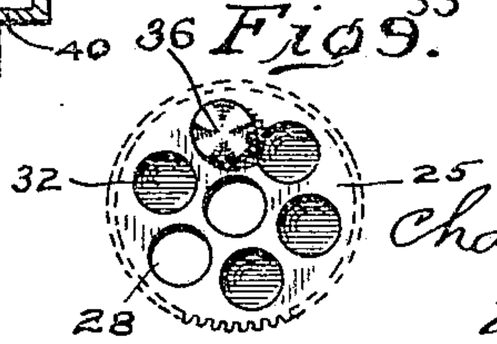



Fig 9.

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No. 787,147. Patented April 11, 1905.

# UNITED STATES PATENT OFFICE.

CHARLES L. BUSCHMANN, OF INDIANAPOLIS, INDIANA.

## LOCK FOR ELECTRIC SWITCHES.

SPECIFICATION forming part of Letters Patent No. 787,147, dated April 11, 1905.

Application filed February 20, 1903. Serial No. 144,321.

*To all whom it may concern:*

Be it known that I, CHARLES L. BUSCHMANN, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Lock for Electric Switches; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

The object of this invention is to lock electric switches in any desired position.

The device herein shown to illustrate this invention is for locking electric switches in automobiles, both electric automobiles and those driven by explosive-engines and employing electric sparking apparatus; but I do not wish to limit the use of this invention to such apparatus, as it may be used in connection with any electric switch to hold the switch either open or closed.

Heretofore in automobiles removable plugs have been used for closing the electric circuit in the automobile. When a person leaves the automobile, he takes with him such plug, and when he returns to the automobile he inserts the plug. Much trouble results from forgetting this plug or laying it aside or losing it when wanted; and the purpose of this invention is to enable the plug to be retained irremovable in the device and to lock it in a position that leaves the electric circuit open. When desiring to start the automobile, the lock is operated so as to permit the plug to be moved to close the circuit. No person can operate the machine then without being able to operate the lock, and to make this latter more convenient I employ a keyless lock and various features calculated to make it practically impossible for one to operate the keyless lock who is not familiar with the combination.

The nature of this invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Figure 1 is a perspective view of the switch and locking apparatus as used in connection with automobiles, the plug being in position to close the circuit. Fig. 2 is a vertical section through the device shown in Fig. 1, cutting the center of the plug and tumblers. Fig. 3 is a bottom view of the device with the electric wires removed. Fig. 4 is a bottom view of the device with the bottom plate or lid removed. Fig. 5 is a section on the line 5 5 of Fig. 4 on a reduced scale. Fig. 6 is a central vertical section through the toothed stopping-gears and catch on the line 6 6 of Fig. 4, showing the wheels when they are in their locked position. Fig. 7 is the same, showing the wheels when they are in their unlocked position. Fig. 8 is a perspective view of the catch acting on the lower wheel. Fig. 9 is a plan view of one of the stop-wheels.

A suitable casing 10 is provided with a bottom 11, that is removable and is held in place by the screw 12. The apparatus is secured in place by suitable screws passing through the holes 13 in the casing and bottom. A suitable binding-post 14 is secured to the bottom, with which an electric wire 15 is connected. A plate 16 is likewise secured to the bottom 11 by the screws 17, and it carries the binding-post 18, to which a wire 19 is connected. This plate 16 is insulated from the casing by a strip of insulation 20, as seen in Fig. 2.

21 is a plug for opening and closing the circuit. When it is pushed down in the position shown in Figs. 1 and 2, it connects the casing, which is the terminal of the wire 15, with the plate 16, that is the terminal of the wire 19. When the plug 21 is elevated to the position shown in Fig. 5, the circuit is broken. The plug is mounted in a hollow post 22, extending up from the casing, and has a suitable head on it. The stem of this plug is turned down along the upper half thereof, so that the lower half will be larger in diameter and have a shoulder 23, that will act against a shoulder 24 in the post 22, formed by contracting the upper end of said post, whereby the upward or outward movement of the plug is limited and its entire removal prevented. In order for the plug 21 to reach the plate 16 and close the circuit, it must pass not only through the casing above, but through a pair of toothed wheels 25 and 26, mounted loosely on the short pin 27, which is secured in the top of

the casing and extends through a hole in the bottom 11 of the casing, as seen best in Fig. 5. These wheels 25 and 26 are provided with holes 28 for the passage of the plug through them, and these holes are away from the center of the wheels and so located as to register with each other when the wheels are in proper position. These holes 28 in the wheels register with the hole 29 in the top of the casing, as seen in Fig. 5, and a hole 30 in the bottom of the casing and a hole 31 in the plate 16, as appears in Fig. 2, so that the plug can pass through the casing and the wheels to the plate 16 when all the holes are in alinement. When the holes in the wheels 25 and 26 are not in alinement, it is obvious that the plug 21 cannot pass through, and in order to render it more difficult to operate the lock, which will hereinafter be explained, the upper surfaces of the wheels 25 and 26 are provided with a number of recesses 32, which as said wheels rotate come in alinement with the plug and into which said plug may be moved, and whereby the person trying to work the device without the combination would be deceived, thinking the plug had entered the hole 28. Said wheels 25 and 26 are locked by a catch 33, pivotally mounted on a screw 34 and having a U-shaped inner end, so as to present two edges toward said wheels 25 and 26. The upper edge extends above the wheel 25 and has a notch 35 in it to engage a lug 36, extending upward from the wheel 25, as shown in Figs. 6 and 7. The notch 35 is so deep that when the lug 36 enters it the wheel 25 cannot be turned, because the catch is pressed inward by the flat spring 37, that is secured to the casing at 38. Furthermore, the lug 36 is so placed with relation to the hole 28 passing through said wheel 25 that when said wheel is locked the hole 28 will not be in alinement with the plug, and therefore it is impossible to insert the plug through the wheel 25, as seen in Fig. 5. Before the wheel 25 can be unlocked to rotate it into position to bring the hole 28 therein in alinement with the plug it is necessary to move the catch 33 away from the lug 36 on said wheel, and this can only be done by rotating the lower wheel 26 and bringing the lug 39 on it into engagement with the convex surface 40 on the catch 33, and it will push the catch back into the position shown in Fig. 7. The lower lip 40 of the catch 33 is wider than the upper one, as shown in that figure. When this is done and the parts are in the position shown in Fig. 7, the upper wheel can then be turned into position for its hole 28 to aline with the plug, and then the lower wheel can be turned into such position and the plug can be inserted. Those two wheels 25 and 26 are controlled and operated by a pair of knobs 41 and 42, that are outside the casing. The knob 41 is secured to a spindle 43, that passes down into the casing, and has secured on it a small spur-wheel 44, that meshes with the toothed wheel 26. The knob 42 is secured to a sleeve 45, which loosely surrounds the spindle 43 and has secured on its lower end a small spur-gear 46, that meshes with the upper wheel 25. Thus the upper knob actuates the lower wheel 26, and the lower knob actuates the upper wheel 25, which tends further to confuse and deceive a person who is not acquainted with the operation of the device. The lower knob is held on the sleeve 45 by a lug 47, extending from the sleeve into a recess 48 in the knob. A notch 49 is made in the top of the casing for the removal of the sleeve 45 and lug 47 when desired. The top knob is secured to the spindle 43 by a pin 50, that passes through both, and it is provided with a set of indicating-letters, as shown in Fig. 1, and the lower knob with corresponding indicating-numerals.

When the automobile is in use, and therefore the electric circuit closed, the plug 21 is down in the position shown in Figs. 1 and 2. When the automobile is stopped and the person leaves it, he draws the plug up into the position shown in Fig. 5 and turns the knobs 41 and 42 somewhat to throw off the combination. This causes the wheels 25 and 26 to be moved, so that the holes 28 will not register with the plug to allow it to be inserted again. At such time, if the knobs have been turned sufficiently far, the catch 33 will engage the lug 36 on the upper wheel 25 and lock it, as shown in Fig. 6, with the hole 28 out of line with the hole in the wheel below or with the plug. When a person returns to the automobile who understands the combination, he first turns the upper knob, which turns the lower wheel 26 until its lug 39 pushes the catch 33 out of engagement with the lug 36 on the upper wheel 25 and turns said upper knob to the proper stopping-place, when the hole in the lower wheel 26 will be in line with the plug 21. Then the lower knob is turned to bring the upper wheel 25 into proper alinement and the plug is forced through into the position shown in Fig. 2. The circuit being then closed, the automobile can be used.

By "switch-releasing means" I mean the means for releasing the plug, so that it may be moved into position to close the circuit. Herein the wheels 25 and 26 are the switch-releasing means; but I do not wish to be limited to said wheels.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with an electric switch, of a casing, a plurality of obscured means for preventing the operation of the switch, and mechanism outside the casing for controlling said obscured means.

2. The combination with an electric switch, of a casing, a plurality of obscured means for

preventing the operation of the switch, and a plurality of similar indicators outside the casing that indicate the position to which the said obscured switch-releasing means must be moved to permit the operation of the switch.

3. The combination with the terminals of an electric circuit, of a plug for connecting said terminals to close the circuit, a wheel movable in the path of the plug with an opening through it for the passage of the plug, and means for moving said wheel when the plug is withdrawn so that the wheel will intercept the closing movement of the plug and prevent its closing movement as desired.

4. The combination with the terminals of an electric circuit, of a plug for connecting said terminals to close the circuit, a toothed wheel movable in the path of the plug with an opening through it for the passage of the plug, a casing in which said wheel is mounted, a gear-wheel meshing with said toothed wheel, and means outside of the casing for rotating said gear-wheel for moving said toothed wheel into and out of the path of said plug.

5. The combination with the terminals of an electric circuit, of a plug for connecting said terminals to close the circuit, a toothed wheel movable in the path of the plug with an opening through it for the passage of the plug, a casing in which said wheel is mounted, a catch for engaging and locking said toothed wheel in a position to intercept said plug, a gear-wheel meshing with said toothed wheel, means outside of the casing for rotating said gear-wheel and moving said toothed wheel into and out of the path of said plug, and external means for releasing said catch.

6. The combination with the terminals of an electric circuit, of a plug for connecting said terminals to close the circuit, a pair of toothed wheels movable in the path of the plug with an opening in each registering with each other for the passage of the plug, a casing in which said wheels are mounted, a catch for engaging and locking one of said toothed wheels in a position to intercept said plug, means on the other toothed wheel for releasing said catch when said wheel is rotated, and external means for independently rotating said toothed wheels.

7. The combination with the terminals of an electric circuit, of a plug for connecting said terminals to close the circuit, a pair of toothed wheels movable in the path of the plug with an opening in each registering with each other for the passage of the plug, a casing in which said wheels are mounted, a spring-actuated catch with two faces, one beside each wheel, one of said faces being notched and the other convex, a pin in each of said wheels for engaging said faces on the catch, the pin adapted to engage the convex face of the catch being located so as to engage and push said catch out of the way of the lug on the other wheel, and external means for independently rotating said toothed wheels.

8. The combination with the terminals of an electric circuit, of a plug for connecting said terminals to close the circuit, a pair of toothed wheels movable in the path of the plug with an opening in each registering with each other for the passage of the plug, a casing in which said wheels are mounted, a catch for engaging and locking one of said toothed wheels in a position to intercept said plug, means on the other toothed wheel for releasing said catch when said wheel is rotated, a spur-gear meshing with each of said toothed wheels, and independent means outside the casing for actuating said spur-gears.

9. The combination with the terminals of an electric circuit, of a plug for connecting said terminals to close the circuit, a pair of toothed wheels movable in the path of the plug with an opening in each registering with each other for the passage of the plug, a casing in which said wheels are mounted, a catch for engaging and locking one of said toothed wheels in a position to intercept said plug, means on the other toothed wheel for releasing said catch when said wheel is rotated, a spur-gear meshing with each of said toothed wheels, a sleeve extending through the casing on which one of said spur-gears is mounted, a spindle extending through said sleeve on which the other spur-gear is mounted, and a pair of knobs one placed above the other mounted on said sleeve and spindle respectively and provided with suitable indicating-marks.

In witness whereof I have hereunto affixed my signature in the presence of the witnesses herein named.

CHARLES L. BUSCHMANN.

Witnesses:

V. H. LOCKWOOD,

NELLIE ALLEMONG.