

S. M. BLAKE & J. W. BATES.
 LOCK SWITCH FOR ELECTRIC CIRCUITS.
 APPLICATION FILED MAY 19, 1913.

1,132,700.

Patented Mar. 23, 1915.
 2 SHEETS—SHEET 1.

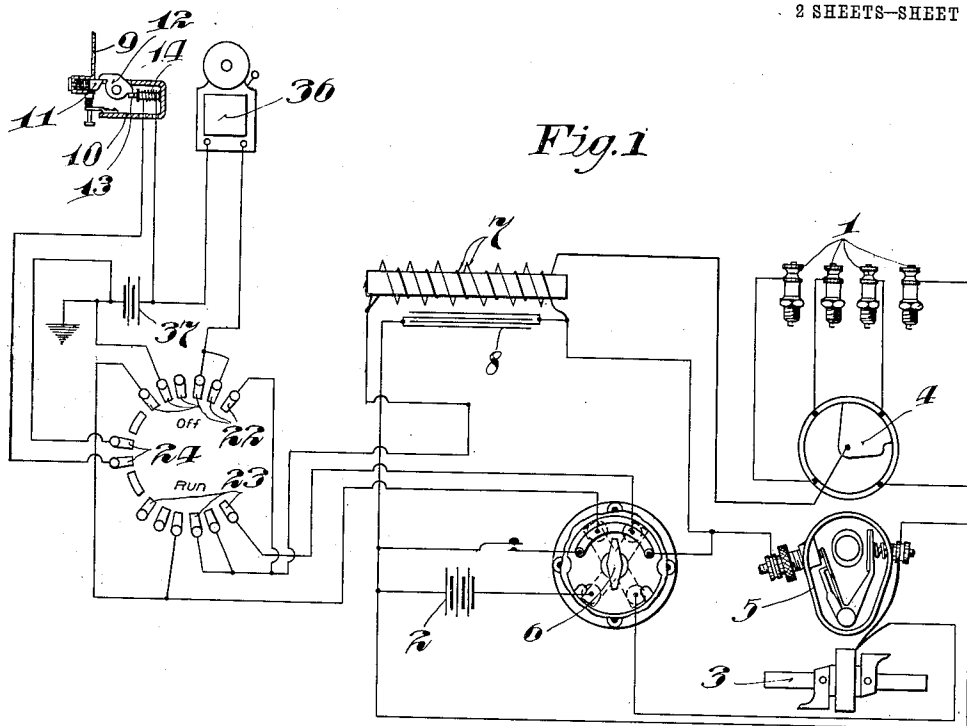


Fig. 1

Fig. 2 x3

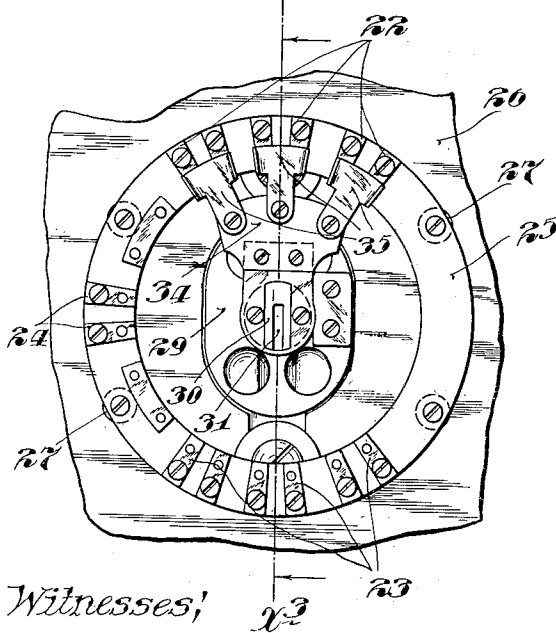
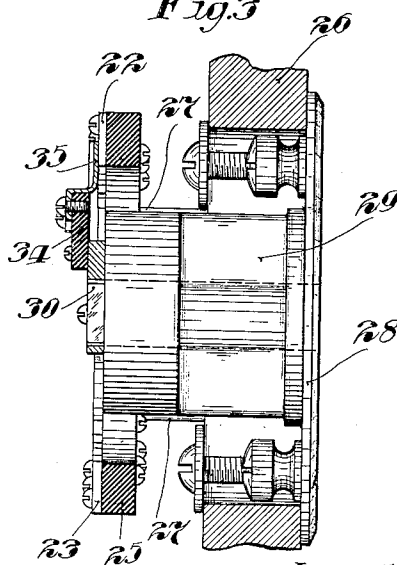


Fig. 3



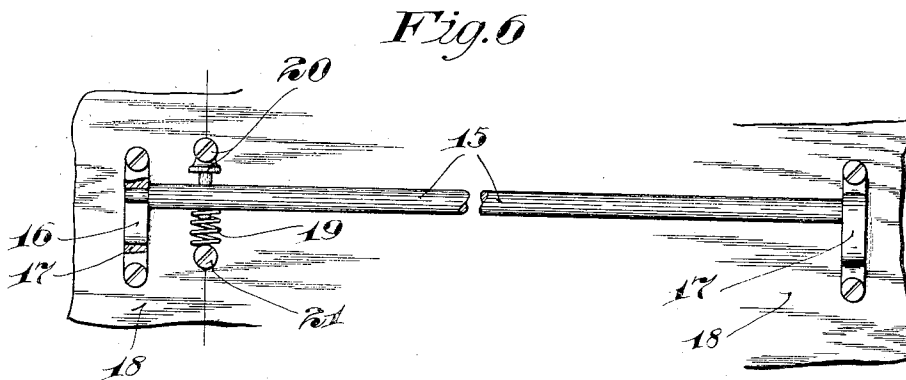
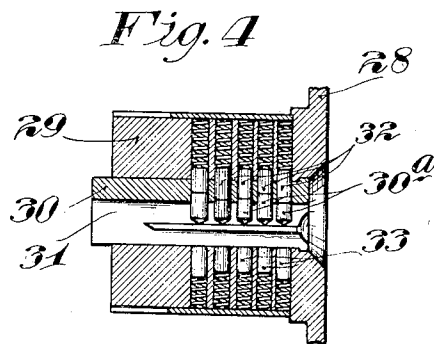
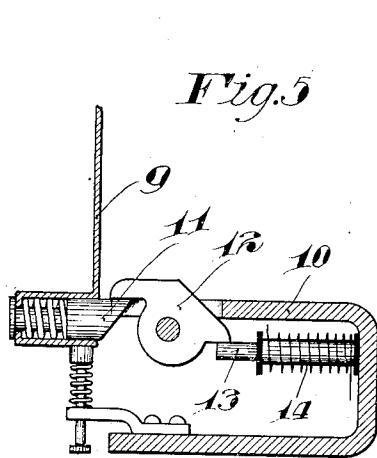
Witnesses,
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UNITED STATES PATENT OFFICE.

SAMUEL M. BLAKE AND JOSEPH W. BATES, OF MINNEAPOLIS, MINNESOTA.

LOCK-SWITCH FOR ELECTRIC CIRCUITS.

1,132,700.

Specification of Letters Patent.

Patented Mar. 23, 1915.

Application filed May 19, 1913. Serial No. 768,542.

To all whom it may concern:

Be it known that we, SAMUEL M. BLAKE and JOSEPH W. BATES, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Lock-Switches for Electric Circuits; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention has for its object to provide a simple and highly efficient burglar alarm and lock switch for automobiles, and to such ends, generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

Referring to the drawings wherein like characters indicate like parts throughout the several views, Figure 1 is a diagrammatic view showing our invention applied in an ignition system of the Remy type; Fig. 2 is an elevation showing the improved lock switch; Fig. 3 is a section taken on the line $x^* x^*$ on Fig. 2; Fig. 4 is a section through the lock of the lock switch showing the duplex or multiplex arrangement of tumblers; Fig. 5 is a detail view showing the means for locking the hood of the automobile; and Fig. 6 is a view in rear elevation showing a robe supporting rod applied to the back of one of the seats of the automobile, together with cooperating circuit closing devices for applying the alarm.

The numeral 1 indicates the sparking plugs of a four-cylinder explosive engine. The numeral 2 indicates the starting battery, the numeral 3 indicates the magneto, the numeral 4 the distributor, the numeral 5, the intermediate automatic circuit breaker, and the numeral 6 the throw-over switch for connecting, at will, either the magneto or the starting battery with the sparking plugs. The numeral 7 indicates the induction coils and the numeral 8 a grounded condenser. All of the parts so far described in detail are of a construction well known to all persons familiar with the Remy magneto system.

In Fig. 5, a portion of the engine hood is indicated by the numeral 9, and a front portion of the body frame is indicated by the numeral 10. Various kinds of locks or

latches may be employed in locking the hood 9 to the frame 10, but for this purpose we have shown a beveled nosed outwardly spring pressed bolt 11 seated in the hood 9 and engageable with a pivoted lock dog 12 pivoted to the frame 10, and itself normally held in operative position by the movable core 13 of the solenoid 14, which solenoid is also mounted on the frame 10. Any desired number of these hood locking or latching devices may be employed, but for the purpose of this case, it may be assumed that only one is employed and that the hood is otherwise so held that it cannot be raised as long as the latch bolt 11 is engaged with the lock dog 12.

In Fig. 6 the numeral 15 indicates a robe supporting bar, the ends of which are mounted in vertical seats 16 formed in keepers 17 secured, for example, on the back 18 of the front seat of the automobile, a coiled spring 19 normally holds one end of the bar 15 against a contact 20 secured on the seat back 18. The bar 15 may be assumed to be of metal. The spring 19 affords an electrical connection between the said bar 15 and a contact 21 on the seat back 18. The contacts 20 and 21 are insulated from each other, but there is an electrical connection established between the two when the end of the bar 15 is engaged with the contact 20. When the robe is placed on the bar 15, the latter is pressed downward and the electrical connection between the contacts 20 and 21 is temporarily broken, the purpose of which will presently appear.

Our improved lock switch, so-called, in its present construction, is provided with six upper contacts 22 and six lower contacts 23, which contacts 22 and 23 are in diametrically opposite arrangement. Between the two groups of contacts 22 and 23, are two contacts 24. The said contacts 22, 23 and 24 are all insulated from each other, being preferably secured on an insulating ring 25, shown as secured to but spaced from the dash or front board 26 by spacing thimbles 27 (see particularly Figs. 2 and 3).

Axially located in respect to the bearing ring 25 and rigidly secured to an anchor plate 28, is a lock case 29, the projecting end of which terminates about flush with the face of said ring 25. The anchor plate 28 is rigidly secured to the front board 26 or other suitable support. Rotatably mounted

in the case 29 is a lock tumbler 30, having the usual key slot 31. This lock is of the general type, well known to the trade as a Yale cylinder lock or Eagle cylinder lock, but for the purposes had in view, is modified in an important particular, to-wit, instead of having the customary single series of yielding plungers for coöperation with the key, it is provided with a plurality of such series, being for the particular purpose to which it is, at present, applied, provided with two series of such prongs indicated by the numerals 32 and 33 in Fig. 4. The said two series of plungers are located diametrically opposite to each other in the case 29, and they coöperate with plungers 30^a in the tumblers 30. This permits the key to be inserted into or removed from the lock in two different positions instead of from a single position as has hitherto been necessary in locks of this kind.

To the front end of the tumbler 30 is rigidly secured a contact carrier in the form of a head 34 of insulating material. Three independent contacts 35 are secured to the said contact carrier 34 and are adapted to be engaged, at will, with the contacts 22, 23 and 24 of the so-called lock switch.

When the contact carrier 34 is turned into its upper position in Fig. 2, the three contacts 35 will engage with the three pairs of upper contacts 22; but when the said contact carrier is turned downward, the said three contacts 35 will engage with the three lower pairs of contacts 23. Here it should be noted that the key may be inserted into the slot 31 of the lock tumbler, or removed therefrom, in either one of the two extreme positions, just noted. This makes it possible to leave the lock tumbler locked in either one of the said two extreme positions, while the key is removed from the lock. The key remains in the tumbler while the contacts 35 are moved over the intermediate contacts 24.

The numeral 36 indicates an ordinary electrical bell or gong which will be applied to any suitable portion of the automobile. It will be noted that in the wiring illustrated in Fig. 1, all of the upper contacts 22, are utilized but only the two intermediate lower contacts 23 are operatively connected, the two outer pairs being in this particular instance, without use, and being provided only to make the lock switch universally applicable in different ignition systems, and to make it possible to interchangeably use either set of contacts 22 and 23.

The well known function of the switch 6 is to connect either the starting battery 2 or magneto 3 to the sparking plugs, at will. The numeral 37 indicates a battery which is connected to the solenoid 14 of the hood lock or latch.

In all of the several arrangements shown, when the lock switch is turned into running

position, either the magneto or battery circuits will be closed, depending on whether the switch 6 is set on the magneto or battery side. But in either case, running connections will be established, so far as the said lock switch is concerned. When the said lock switch is set in the so-called "off" position, the magneto will be grounded and the battery circuit to the sparking plugs will be opened. In all of the arrangements shown, if the throw-over switch 6 be moved from its neutral position onto the battery side, the battery circuit will still remain open in that part that leads to the sparking plugs, but will be closed through the bell or alarm device 36, thus giving warning that the machine is being tampered with.

To release the hood lock, the lock switch must be moved into an intermediate position, so as to cause one of its contacts 35 to overlap the contacts 23 and thus close the circuit from the battery 37 through the magnets 14 of said hood lock. In the arrangement shown, the key cannot be removed when the lock switch is in an intermediate position, but can be removed in either of the two extreme positions, and when the key is removed, the switch will be locked in one or the other of the said extreme positions, that is, either in a running position or in an "off" or inoperative position.

This improved lock switch and connections, while especially designed for use in connection with an automobile, is capable of many other uses in connection with various different kinds of electrical circuits where it is desired to lock the switch in certain positions.

What we claim is:

1. The combination with an electric switch having three sets of relatively fixed contacts and a set of coöperating contacts movable from engagement with the one and into engagement with the other of the relatively fixed contacts, of a key-actuated lock for the said movable contacts having two sets of key-actuated elements relatively arranged, in respect to the two sets of fixed contacts, so as to permit the key to be removed from the lock in either of its extreme positions in which said movable contacts are engaged with the one or the other of said end sets of fixed contacts but preventing said key from being removed from said lock when said movable contacts are engaged with said intermediate fixed contacts.

2. The combination with an electric switch having three sets of relatively fixed contacts and a set of coöperating contacts movable from engagement with the one and into engagement with the other of the relatively fixed contacts, of a key-actuated lock for the said movable contacts having two sets of key-actuated elements relatively arranged,

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5 gaged with the one or the other of said
end sets of fixed contacts but preventing
said key from being removed from said lock
when said movable contacts are engaged
with said intermediate fixed contacts, and

different circuit connections extending from 10
the said three sets of fixed contacts.

In testimony whereof we affix our signa-
ture in presence of two witnesses.

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JOSEPH W. BATES.

Witnesses:

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