T. D. ROBINSON.

CURRENT DIVERTER.

APPLICATION FILED NOV. 8, 1911.

1,140,317.

Patented May 18, 1915.

2 SHEETS—SHEET 1.

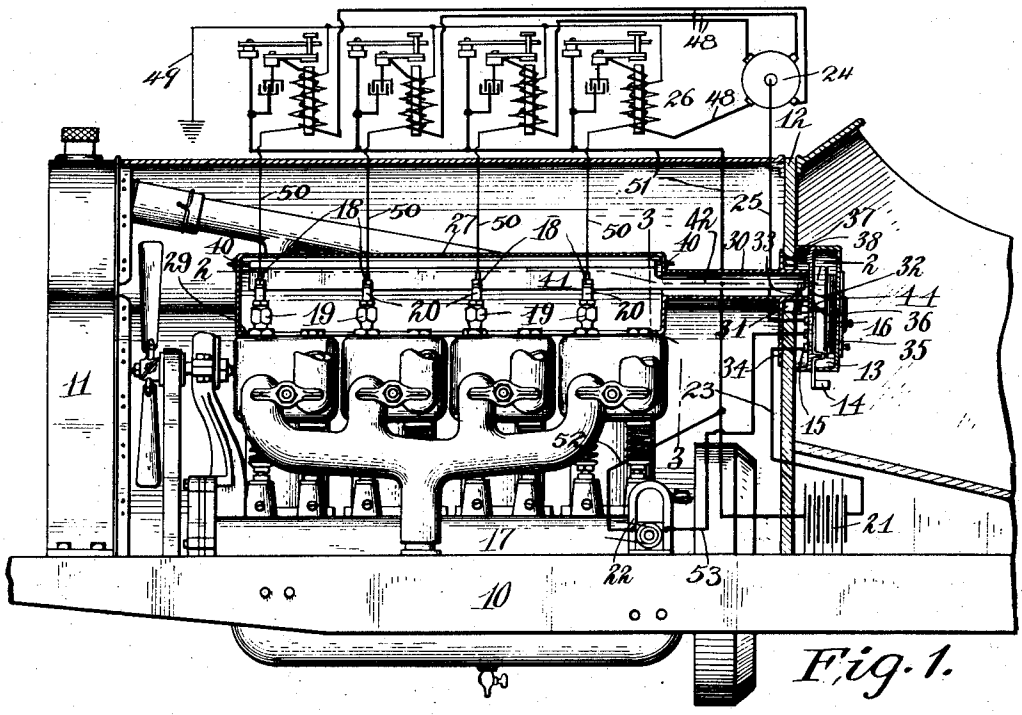
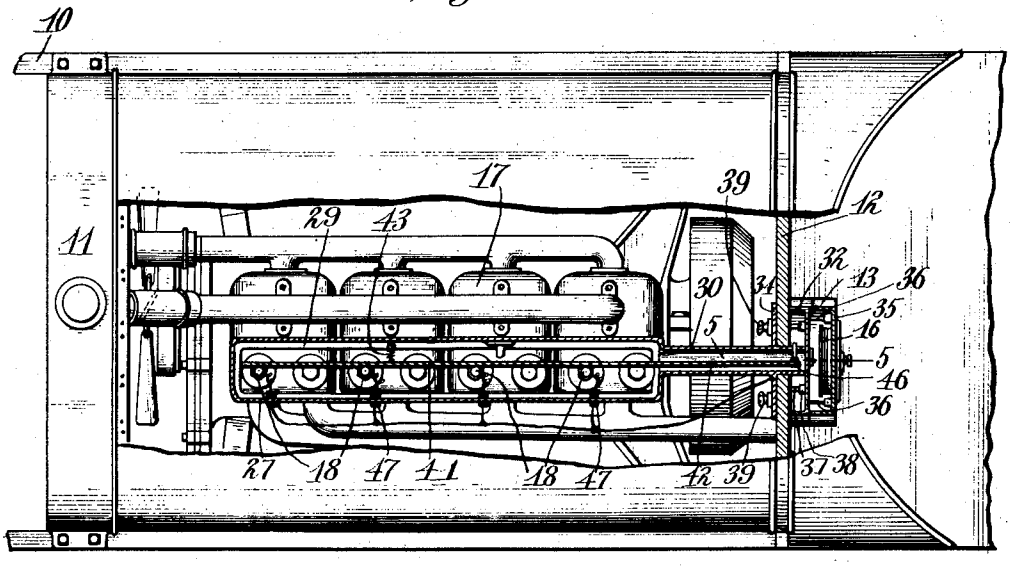


Fig. 1.

Fig. 2.



Witnesses:

Jacob Oberst, Jr.,

Eda M. Schweiger.

Theodore D. Robinson, Inventor.

By Emil Kuhard

Attorney.

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2 SHEETS—SHEET 2.

Fig. 3.

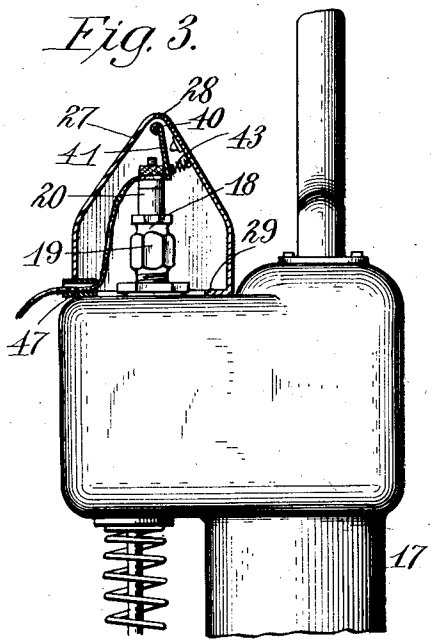


Fig. 4.

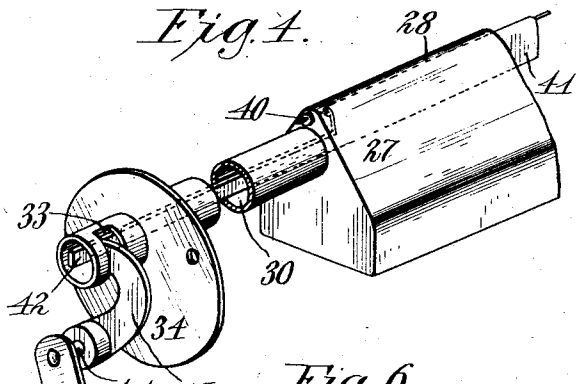


Fig. 6.

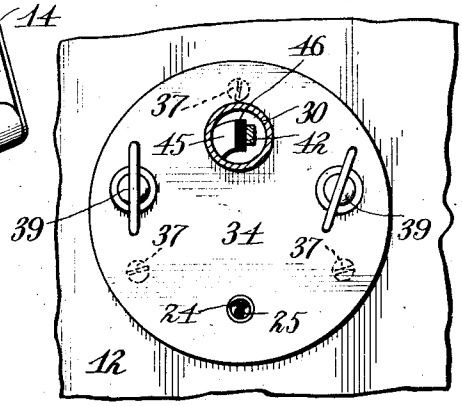


Fig. 5.

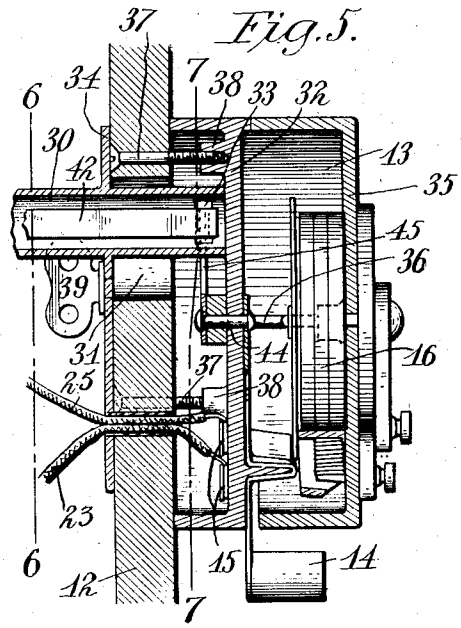
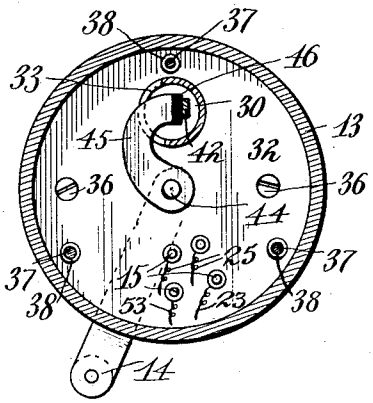


Fig. 7.



Witnesses:
Jacob Obers, Jr.,
Eda M. Schweiger.

Theodore D. Robinson, Inventor
By Emil Neuhardt
Attorney.

UNITED STATES PATENT OFFICE.

THEODORE D. ROBINSON, OF LOCKPORT, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AMPER ELECTRIC CO., INC., OF LOCKPORT, NEW YORK, A CORPORATION OF NEW YORK.

CURRENT-DIVERTER.

1,140,317. Specification of Letters Patent. Patented May 18, 1915.

Application filed November 8, 1911. Serial No. 659,167.

To all whom it may concern:

Be it known that I, THEODORE D. ROBINSON, a citizen of the United States, and resident of Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Current-Diverters, of which the following is a specification.

My invention relates to current-diverters, and more particularly to a current diverter adapted for use in automobiles in connection with lock-switches or the like.

In automobiles equipped with lock-switches to prevent use thereof by unauthorized persons and with a view of preventing theft, the lock-switches will not effectively serve their purpose, as one bent on using the automobile or stealing the same, can easily wire around the lock-switch and thus establish an electric circuit in which the spark-plugs are included and in this manner set the engine in motion.

The primary object of my invention is to provide means which will short-circuit or divert the current and prevent its passing through the electrodes of the spark-plugs even though a person bent on mischief or theft should wire around the lock-switch.

Another object of my invention is the provision of means for diverting the current from its passage through the electrodes of the spark-plugs controlled by the controlling lever of the switch.

A further object is to render the spark-plugs inaccessible when the circuit is rendered inoperative by the controlling lever of the switch.

A further object is the provision of means to prevent removal of the switch from its support when the circuit is rendered inoperative.

A still further object is, the production of simple, durable and highly efficient means whereby the above mentioned objects are attained.

With these and other objects in view, my invention consists in means controlled by the switch for short-circuiting or diverting the current so as to prevent its passage through the electrodes of the spark-plugs of an engine, and it further consists in the arrangement of devices and in the arrangement, construction, and combination of parts to be hereinafter described and more particularly pointed out in the subjoined claims.

In the drawings, Figure 1 is a sectional elevation through the front end of an automobile, showing my invention applied thereto in a representative form. Fig. 2 is a horizontal section taken on line 2—2, Fig. 1. Fig. 3 is a cross section taken on line 3—3, Fig. 1. Fig. 4 is a perspective view of one end of the shield containing the circuit breaker. Fig. 5 is an enlarged vertical longitudinal section taken on line 5—5, Fig. 2. Fig. 6 is a cross section taken on line 6—6, Fig. 5. Fig. 7 is a cross section taken on line 7—7, Fig. 5.

Referring now to the drawings in detail, like letters of reference refer to like parts in the several figures.

The reference numeral 10 designates the chassis of an automobile having at its front end the usual radiator 11, and a distance in rear thereof is the dash-board 12 to which is secured any form of switch 13 having the usual switch-lever 14 adapted to be swung into engagement with one or more sets of contacts 15. It is to be understood when one set of contacts are provided in the switch, it is for a battery or high tension magneto current, but when two sets are provided, one is for the battery current and the other for the magneto current; the last-mentioned arrangement being shown in the drawings.

The switch to be used in connection with my invention is a lock-switch, and although I have shown a permutation lock for locking the switch lever 14 in a position in which it breaks the circuit, it will be apparent that any other means may be used to lock the switch-lever in such position.

As various forms of locking means are known I deem it unnecessary to enter into detail regarding the operation of the lock-mechanism except to say that when the switch-lever 14 is moved out of engagement with both sets of contacts 15, the permutation mechanism 16 with the casing of the switch is actuated to lock the switch-lever and that the latter cannot be moved into engagement with either set of contacts except by proper adjustment of tumblers of said permutation mechanism, which can be adjusted only by guidance to the combination numerals usually provided for permutation locks.

The engine, while shown in the drawing in front of the dash-board as is usual, can be otherwise located, and is numbered 17; it

having the usual spark-plugs 18, one for each cylinder. Each spark-plug comprises an outer shell 19 which is threaded into the engine and a core 20 arranged centrally in said shell.

In the drawings I have illustrated by electrical symbols the batteries, as at 21, and the magneto generator, as at 22, which latter it is of course understood is actuated by the engine, as is common. When a magneto and batteries are employed, the batteries are included in the circuit and the magneto cut-out when starting the engine, and after the engine is started the switch-lever is moved to cut-out the batteries and include the magneto in the circuit. As stated, a set of batteries only may be used, or a high tension magneto-generator without the batteries. In either case, a single pair or set of contacts are used in the switch. The batteries 21 are connected by means of a wire 23 with one contact of one of the sets of contacts 15 of the switch, the co-acting contact of the switch having connection with a timer 24 (shown diagrammatically in Fig. 1) by wire 25. The terminals of the timer have connection with the primary coils of a coil box 26 (also shown diagrammatically in Fig. 1) by wires 48. The secondary coils of said coil box have connection with the engine by a wire 49, said last-mentioned wire being usually grounded to the engine so that the current passes through the engine to the shells 19 of the spark plugs. The secondary coils are also connected to the cores 20 of the spark plugs by wires 50. A wire 51 connects the batteries 21 with the coil box, as shown. This completes the battery circuit broken only by the switch and the timer 24. From the magneto 22 a wire 52 is connected to wire 51 leading to the coil box and a second wire 53 connects said magneto with one contact of the other set of contacts 15 of the switch, the co-acting contact having connection with the timer by means of the wire 25. This wire with the wires 48, 49, 50, 51 and the coil box 26 completes the magneto circuit broken only by the switch 13 and the timer 24. In the particular system of wiring shown there are therefore two pairs of contacts provided on the switch, one pair being used in connection with the battery and the other in connection with the magneto generator.

By moving the switch-lever 14 into engagement with one pair of contacts, a current is established through the circuit which includes the batteries, and by moving said switch-lever into engagement with the other pair of contacts a current is established through the circuit which includes the magneto generator.

The parts thus far described may be arranged, constructed, and connected in any approved manner as, by themselves, they form no part of my invention; in fact, such parts are used in various combinations, in some of which a current is broken to cause ignition of the explosive mixture drawn into the engine, for this reason I refer to the circuit being rendered "inoperative" in a generic sense to include all systems of ignition, such systems being common and their inclusion in the appended claims in specific form believed unnecessary.

In the drawings I have shown a four-cylinder engine, each having a spark-plug but it will be apparent that a single cylinder engine or an engine having any other number of cylinders can be equipped with my invention. Placed over or onto the engine so as to render the spark-plug inaccessible is a shield 27, which may be of any form and construction and made of any material suitable for the purpose. In the representative form shown I have provided for the use of a sheet-metal shield of substantially inverted V-shape formation in cross-section and having its ends closed, as at 28, and inwardly-directed flanges 29 adapted to provide proper bearing surface so that the shield may rest solidly on the engine. At its rear end, the shield has a tube 30 which extends through a comparatively large opening 31 in the dash-board and enters the base 32 of the switch-lock, said tube having a transverse slot 33 near its rear or free end, for a purpose to presently appear, and a comparatively wide flange 34 between said slot and the body of the shield. The cover 35 of the switch is secured to the base 32 by means of screws 36 passing through the base and taking into the cover so that access can only be had to these screws from the rear of the base and the base with its attached cover is secured to the dash-board 12 by means of screws 37 passing through said dash-board from the front and taking into lugs 38 in the base.

When the shield is positioned on the engine, the flange 34 thereof bears against the front of the dash-board, covering the screws 37 so that they cannot be removed except when the shield is removed, and the shield is removably fastened to the dash-board by means of thumb-screws 39 passing through the flange 34 and entering said dash-board. Arranged lengthwise in said shield and pivotally supported, as at 40, or otherwise, is a current diverter in the form of a contact plate 41 so positioned relative to the cores of the spark-plugs 18 that it may be moved to simultaneously contact with said cores. Said contact plate has a narrow extension 42 at its rear end which extends rearward the full length of the tube 30 so as to intersect a plane passing through the slot 33 in said tube. A rectractile spring 43 is provided to retain said contact-plate out of engagement with the spark-plugs, one end thereof

being secured to said plate and its other end to said shield.

The pivot-pin 44 of the switch-lever 14 is rotatable in the front wall of the base 33 and projects into said base, it having secured thereto within said base an arm 45 provided with a tip or facing of fiber 46 or other insulating material and being so positioned relatively to the slot 33 in the tube 30 that when the switch-lever is moved into a position in which it is out of engagement with the two pairs of contacts, it will have entered the slot 33 and forced the contact plate 41 against the cores of the spark-plugs. When the parts are so positioned the circuit is broken, and in the attempt to wire around the switch with a view of establishing an electric-current through the spark-plugs, the current will be short-circuited so that it passes from the cores of the plugs into the contact plate 41 and from there through the shield into the engine, thus skipping the electrodes of the spark-plugs and preventing ignition of the explosive mixture in the combustion-chambers of the engine. Under such conditions the shield cannot be removed to render the spark-plugs accessible, even though the thumb-screws 39 are removed, as the switch operated arm 45 has entered the slot 33 in the tube 30 and prevents lengthwise movement of said tube which is necessary when removing the shield. The circuit wire 25 passes through insulators 47 fitted in openings in the shield so as to prevent short-circuiting when the switch-lever is moved into running position and the insulating tip or facing on the arm 45 serves the same purpose under like conditions.

From the foregoing it is clear that when the switch-lever 14 is moved into idle position and locked it will be impossible to run the engine even if the person intending to surreptitiously use the automobile or if bent on theft should wire around the switch and that at such times access cannot be had to the spark-plugs nor can the switch be removed, except by destroying the shield, switch or coöperating parts, which would of course attract attention and result in the detection of the miscreant.

The results attained by means of my invention can be produced with various constructions and arrangements of parts and I therefore do not limit myself to the means and devices shown as they are merely representative of the many ways and means that may be employed without departing from my invention.

Having thus described my invention, what I claim is,—

1. The combination with an explosive engine having a plurality of cylinders, each cylinder being provided with a spark device, of a primary circuit, a switch to open or close said primary circuit, a secondary circuit including said spark devices, and a current diverter in said secondary circuit adapted to simultaneously short circuit the sparking elements of said spark devices when the switch in said primary circuit is in inoperating position.

2. The combination with an explosive engine having a spark device, of a primary circuit, a switch in said circuit, a secondary circuit in which said spark device is included, and a current diverter in said secondary circuit adapted to short circuit the sparking elements of said spark device when the switch in said primary circuit is in inoperating position.

3. The combination with a multiple-cylinder engine, each cylinder having a spark device, of a primary circuit, a switch in said primary circuit, means to lock said switch in inoperating position, a secondary circuit including said spark devices and a current diverter in said secondary circuit adapted to short circuit the sparking elements of said spark devices when the switch in said primary circuit is in inoperating position.

4. The combination with a multiple-cylinder explosive engine having spark devices, of a primary circuit, a lock switch in said primary circuit, a secondary circuit including said spark devices, a current diverter in said secondary circuit, and means actuated by said lock switch adapted to place said current diverter into operating position when said lock switch is locked.

5. The combination with a multiple-cylinder explosive engine, each cylinder having a spark plug, of a primary circuit, a switch in said primary circuit, a secondary circuit, and a current diverter in said secondary circuit adapted to be brought into contact with one part of each spark plug by manipulation of said switch.

6. The combination with a multiple-cylinder explosive engine, of a sparking circuit for each cylinder including a spark plug, a primary circuit, a switch in said primary circuit and a pivoted plate included in said sparking circuit adapted to be brought into contact with one part of each spark plug by manipulation of said switch.

7. The combination with an explosive engine, of a primary circuit, a lock-switch in said primary circuit, a secondary circuit, an ignition device in said secondary circuit, and a current diverter in said secondary circuit caused to be actuated by said lock-switch to short circuit said spark device, said lock-switch being adapted to be locked in inoperating position and cause said current diverter to be retained in position to prevent passing of the current through the igniting elements of said ignition device.

8. The combination with an explosive engine, having ignition devices, of means for

creating and conducting electric current to said ignition devices, a lock-switch for controlling the electric current used to ignite the explosive mixture within said engine, and a current diverter for short circuiting the current and preventing its reaching the igniting elements of said ignition devices.

9. The combination with an explosive engine having spark plugs, of means for creating and conducting electric current to said spark plugs, a lock-switch for controlling the electric current used to ignite the explosive mixture within said engine, a shield adapted to cover the spark plugs of said engine, a current diverter in said shield normally out of contact with said spark plugs and adapted to engage the latter to short circuit the spark plug terminals, said current diverter being actuated by said lock-switch.

10. The combination with an explosive engine having ignition devices, of means for creating and conducting electric current to said ignition devices, a shield covering said ignition devices, a lock-switch for controlling the electric current used to ignite the explosive mixture in said engine, a contact element in said shield normally out of contact with said ignition devices and adapted to engage the latter to short circuit the igniting elements of said ignition devices, said lock-switch when in inoperating position locking said shield against removal and maintaining said contact element in operating position.

11. The combination with a multiple-cylinder explosive engine having electrically-controlled ignition devices, of means for creating and conducting electric current to said ignition devices, a switch controlling the passage of the current through the igniting elements on said ignition devices, and a current diverter adapted to short circuit the igniting elements of said ignition devices when said switch is in inoperating position.

12. The combination with an explosive engine having an electrically-controlled ignition device, of means for creating and conducting electric current to said ignition device, a switch controlling the passage of the current through the igniting elements in said ignition device, a shield covering said ignition device, and a current diverter in said shield normally out of contact with said ignition device and adapted to engage the latter to short circuit the igniting terminals thereof, said switch when in inoperating position locking said shield against removal and maintaining said current diverter in operating position.

13. The combination with an explosive engine having an ignition device, of means for creating and conducting current to said ignition device, a lock-switch for controlling the electric current used to ignite the explosive mixture in said engine, a current diverter normally in inoperating position and adapted to be actuated by said lock-switch so as to move into operating position, said current diverter short circuiting the current from the igniting elements of said ignition device.

14. In an automobile, the combination with an explosive engine and ignition devices for the same, of means for creating and conducting electric current to said ignition devices, a lock-switch for controlling the electric current used to ignite the explosive mixture drawn into said engine, a shield set upon said engine and to inclose the spark-plugs of the engine, said shield having a tube extending into said switch, a contact-element in said shield normally out of contact with said spark-plugs and adapted to engage the latter to short-circuit the current, said contact-element having a part entering said tube, and means controlled by said switch and adapted to engage the portion of said contact-element extending into said tube.

15. In an automobile, the combination with an explosive engine and electric ignition devices for the same, of means for creating and conducting electric current to said ignition devices, a lock-switch for controlling the electric current used to ignite the explosive mixture drawn into said engine, a shield set upon said engine to inclose the spark-plugs of the engine, said shield having a tube extending into said switch, a contact-element in said shield normally out of contact with said spark-plugs and adapted to engage the latter to short-circuit the current, said contact element having a part entering said tube, and means controlled by said switch and adapted to engage the portion of said contact-element extending into said tube and to prevent removal of said shield from the engine.

16. In an automobile, the combination with an explosive engine and means for creating and conducting an electric current through the spark-plugs of said engine including a switch having a switch-lever, of a shield resting on said engine and having a tube extending into said switch and provided with an opening near its free end, a contact-plate in said shield normally out of contact with said spark-plugs and having an extension entering said tube, and an arm movable with said switch-lever and adapted to enter said opening to force said contact-plate against said spark-plugs.

17. In an automobile, the combination with an explosive engine and means for creating and conducting an electric current through the spark-plugs of said engine including a switch-lever and means to lock said switch-lever in the position in which it

breaks the current, of a shield resting on said engine to cover the spark-plugs and having a tube extending from one end thereof, a contact-element in said shield normally out of contact with said spark-plugs, and means interposed between said contact-element and said switch-lever for actuating said contact-element on movement of said switch-lever to one position, said means extending in part through said tube.

18. In an automobile having a dash-board, the combination with an explosive engine and means for creating and conducting an electric current through the spark-plugs of said engine including a switch secured to one side of said dash-board and having a switch-lever, of a shield covering said spark-plugs and having a tube entering said switch, said tube having a flange bearing against the opposite side of said dash-board, screws threaded through said last-mentioned side of said dash-board and taking into the casing of said switch, said screws being covered by the flange on said tube, a circuit-breaker in said shield adapted to prevent the current reaching the electrodes of said spark-plugs, and means actuated by said switch-lever to engage said tube and prevent removal of said shield and to actuate said circuit-breaker.

19. The combination with an explosive engine having an ignition device and means for creating and conducting electric current to said ignition device, of means for diverting the electric current at said ignition device, and means for rendering the circuit inoperative and simultaneously locking said diverting means in diverting position.

In testimony whereof, I have affixed my signature in the presence of two subscribing witnesses.

THEODORE D. ROBINSON.

Witnesses:
EMIL NEUHART,
JACOB OBERST, Jr.