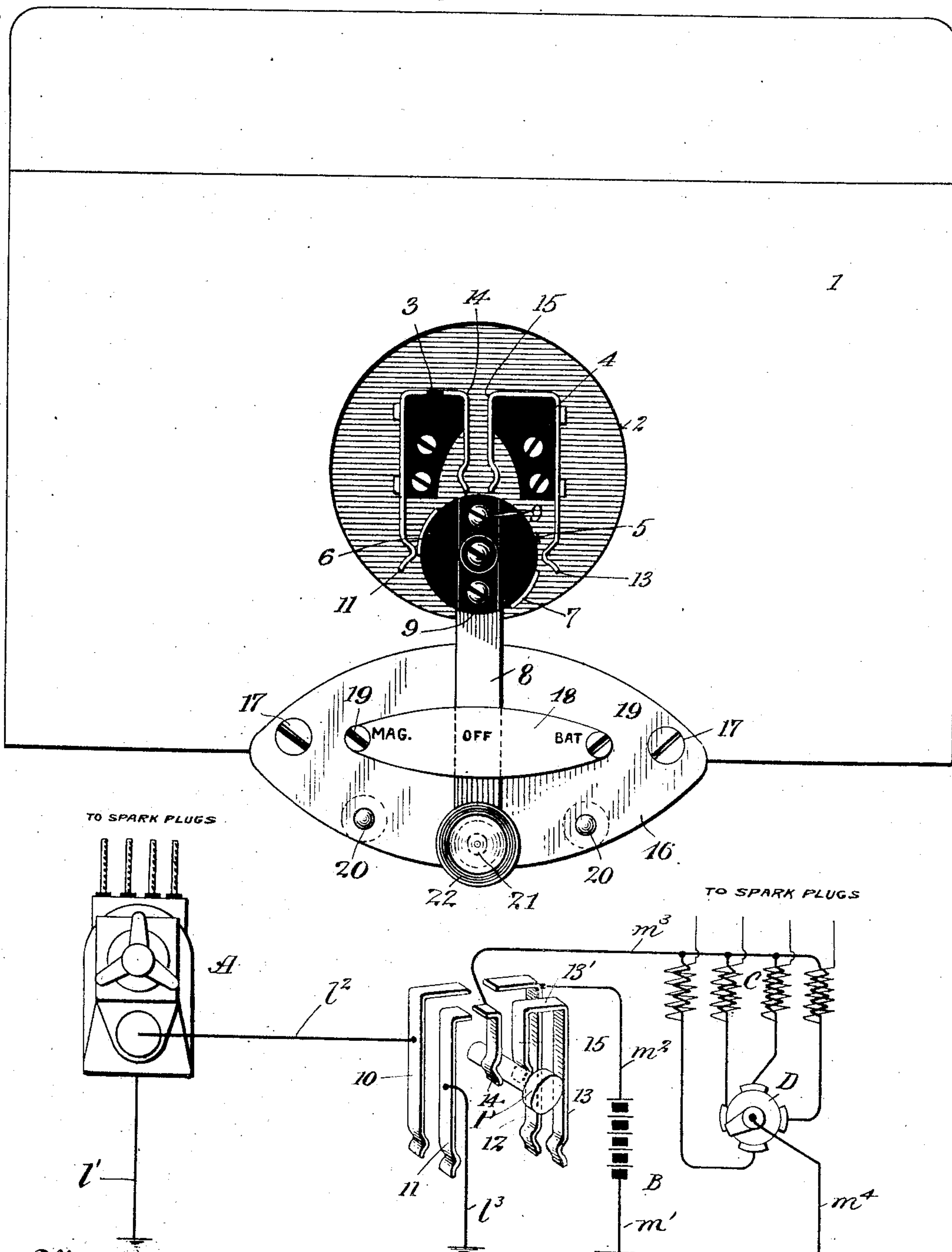


No. 891,017.

PATENTED JUNE 16, 1908.

R. VARLEY.
COIL BOX SWITCH FOR IGNITION SYSTEMS.
APPLICATION FILED MAR. 25, 1907.

Fig. 1.



Witnesses:
Hans S. Oberst.
Richard Varley

Fig. 2.

Richard Varley
By his Attorneys
Rosenthal & Lockridge

Inventor

UNITED STATES PATENT OFFICE.

RICHARD VARLEY, OF ENGLEWOOD, NEW JERSEY, ASSIGNOR TO VARLEY DUPLEX MAGNET COMPANY, A CORPORATION OF NEW JERSEY.

COIL-BOX SWITCH FOR IGNITION SYSTEMS.

No. 891,017.

Specification of Letters Patent.

Patented June 16, 1908.

Application filed March 25, 1907. Serial No. 364,496.

To all whom it may concern:

Be it known that I, RICHARD VARLEY, a citizen of the United States, residing at Englewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in a Coil-Box Switch for Ignition Systems, of which the following is a full, clear, and exact description.

My invention relates to ignition systems for explosion engines, and more particularly pertains to a form of foot switch on the front of the coil box by which the circuits of a magneto generator or battery for ignition purposes, are controlled.

The better class of motor vehicles are now commonly equipped with two entirely separate ignition systems, one of which depends upon a battery, and the other upon a magneto generator. By having two entirely separate ignition systems, the machine is not disabled in case of failure of either one. Moreover, the battery ignition can always be used to start the vehicle from a state of rest and the magneto ignition thereafter used so as to avoid exhaustion of the battery, and obtain a hotter spark at high speeds. It is desirable that these circuits be controllable in the easiest possible way, and preferably by the foot of the driver or chauffeur. A convenient and desirable way of rendering the dynamo or magneto inactive is to merely ground the potential terminal thereof by a single wire led to a convenient ground point or switch on the dash. On the other hand, the battery is simply open circuited to disconnect it. In carrying out the present invention, I secure all of these functions by a switch on the front of the coil box which is very simple, strong and durable, which makes the circuits efficiently, and which is operable by the foot of the driver.

The invention further consists in the features of construction and combination hereinafter set forth and claimed.

In the drawings: Figure 1 is a front view of a coil box with a switch embodying the principles of my invention applied thereto; Fig. 2 is a diagram of the electrical circuits.

Referring to the drawings in which like parts are designated by the same reference sign, 1 indicates the usual coil box of the motor vehicle, and which is commonly secured to the dash in front of the driver. The front of this box is recessed at 2, so as to form a

chamber or cavity in which the switch parts are contained.

3 and 4 indicate insulating blocks of hard rubber or suitable material which are screwed within the cavity 2, and which support certain spring blades forming part of the switch mechanism. Each of the blocks 3 and 4 has spring blades fastened thereto on both sides, all of the spring blades extending in parallel directions.

On a central line between the blocks 3 and 4 and symmetrically with respect thereto is pivoted a cylindrical block 5. The cylindrical block 5 carries copper segments 6 and 7, which constitute the switch elements.

8 denotes a handle or arm projecting radially downward from the block 5, and secured thereto by the screws 9.

The segments 6 and 7 cooperate with certain spring blades on the blocks 3 and 4. On the outside of the block 3 there are two blades 10 and 11, which engage the segment 6 at certain times. On the outside of the block 4 there are two spring blades 12 and 13 which engage the other segment 7. The position of the segments on the block 5 is such that the blades 10 and 11 are in contact with the segment 6 when the handle 8 is at its middle position, and also at its right-hand position of throw. The blades 12 and 13 engage the segment 7 at the right-hand position of the arm 8, but not at the central or left-hand position thereof. On the inside faces of the fixed blocks 3 and 4 there are spring blades 14 and 15, which receive between them a running plug P of the ordinary form.

At its lower end the arm 8 moves over the surface of the metallic plate 16, which is screwed or otherwise fastened to the coil box at the points 17. 18 denotes a plate which overlies the arm 8 and is fastened in properly spaced relation to the plate 16 for this purpose by the screws 19. 20 indicates spring impelled pins or plungers in the plate 16 which engage a depression 21 in the arm 8 so as to hold said arm in the positions to which it is moved either centrally or at the extreme limits of its throw. One of these pins is covered by the arm 8 in Fig. 1. The left-hand position of the arm is shown adapted to connect the magneto generator into circuit, the right-hand position to connect the battery into circuit, and the middle position to disconnect both systems. The lower end of the arm 8 has a roller or handle 22, which

may be kicked by the foot to move the lever from one side to the other. It is evident that the substantial construction of the arm 8 with its guiding plates 16 and 18 permits of the somewhat rough usage to which the switch mechanism is subjected when kicked by the foot in this way.

The electrical circuits and connections are as follows: A represents a magneto generator of a type in common use, having a distributor organized therewith. l^1 is the usual ground connection from this generator A, and l^2 represents a wire from the ungrounded or potential side of the armature. It is evident that if the wire l^2 is grounded in any way that the generator armature will be thereby short circuited and so rendered ineffective for ignition purposes. The wire l^2 is connected to the blade 10, and a ground connection is made from the spring 11 by wire l^3 . B is a battery having one terminal grounded by the wire m^1 , and having its other terminal connected by the wire m^2 to the spring blade 12. There is also a wire m^3 from the blade 14 to the usual coils C and the distributor D; this circuit being completed to ground at m^4 . The running plug being inserted between the blades 14 and 15, the battery circuit is completed by moving the arm 8 to its right-hand position. This engages the segment 7 with the two blades 12 and 13 so that a circuit is completed from battery B, through wire m^2 , blade spring 12, segment 7, blade 13, to blade 15 (which for convenience is made continuous and integral with the blade 13, by a connection 13'), running plug P, blade 14, through one or another of the coils C, and circuit controller D, to ground. The battery is therefore in circuit for proper ignition purposes. At this time the potential connection l^2 of the generator A is grounded because the segment 6 is in engagement with both the blades 10 and 11. The wire l^2 is therefore directly grounded at l^3 . This condition continues when the arm is moved into the central position shown in Fig. 1, since the segment 6 is long enough to still connect the blades 10 and 11. The battery is now dis-

connected because the segment 7 has moved away from the blades 12 and 13. Accordingly both ignition systems are inoperative when the arm 8 is at its central position. When the arm 8 is moved to its left-hand position, the segment 7 is still unconnected from the blades 12 and 13, so the battery is still unconnected, but the segment 6 is now moved out of engagement with the blades 10 and 11, so that the potential terminal l^2 of the generator A is no longer grounded at l^3 . Accordingly the generator becomes effective to operate its individual ignition system. It is to be understood that the ignition system of the generator A is entirely separate from that of the battery B, and being of the ordinary form is not shown in detail. Thus it will be seen that I accomplish all of the functions set forth in the preliminary part of this specification, rendering the battery ineffective when desired by open circuiting it, and rendering the generator ineffective by short circuiting its armature.

What I claim, is:—

1. In a coil box switch, a coil box having a recess in its front face, blocks in said recess, spring blades projecting downward in parallel directions from said blocks, a rotatable block having segments movable to engage certain of said blades, and having a depending lever, and a plug adapted to be inserted between the remaining of said blades to complete a circuit connection therebetween.

2. In a coil box switch, a pair of blocks each having spring blades depending from both side faces, a rotatable block having segments adapted to engage the blades of the outside faces of said blocks, and a plug adapted to be received between the blades on the inside faces of said blocks to complete a circuit connection therebetween.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

RICHARD VARLEY.

Witnesses:

WALDO M. CHAPIN,
MAY BIRD.