L. T. RHOADES.

ELECTRIC SWITCH.

APPLICATION FILED JAN. 3, 1911.

994,952. Patented June 13, 1911.

FIG. 1.

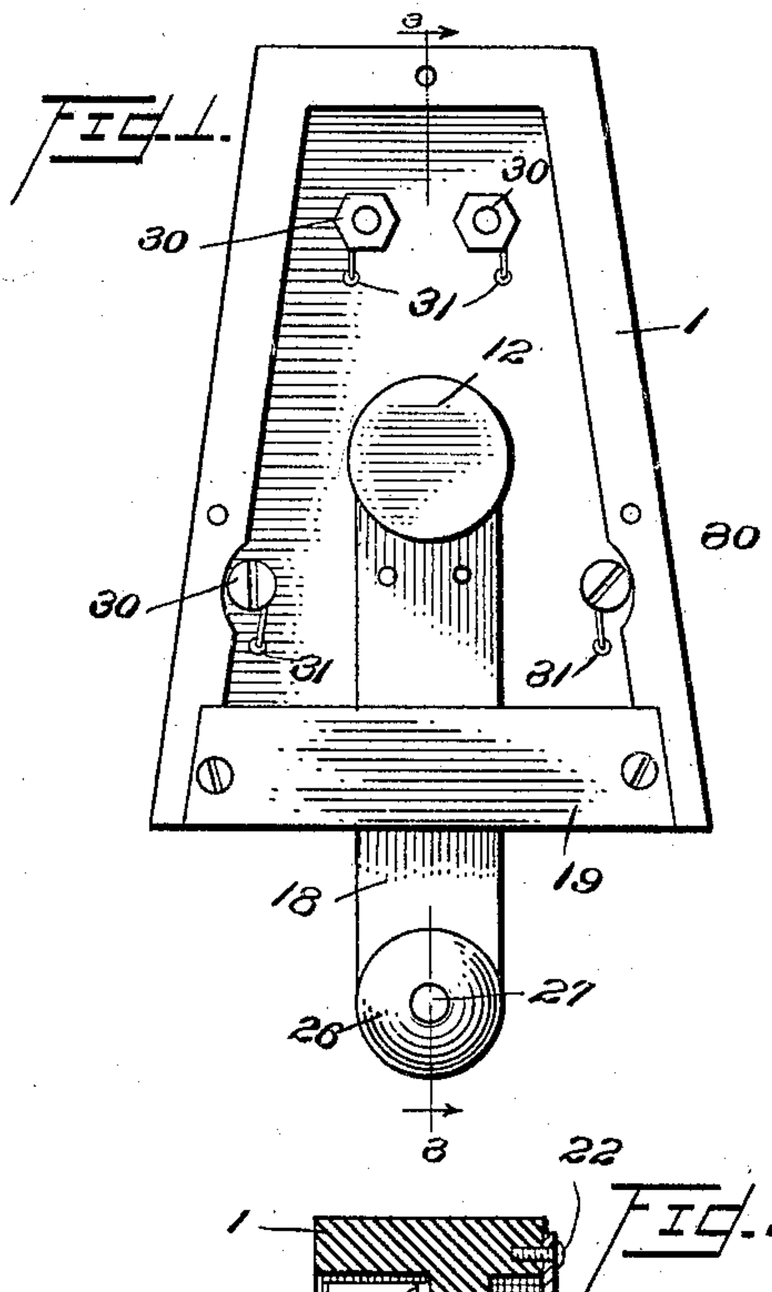


FIG. 2.

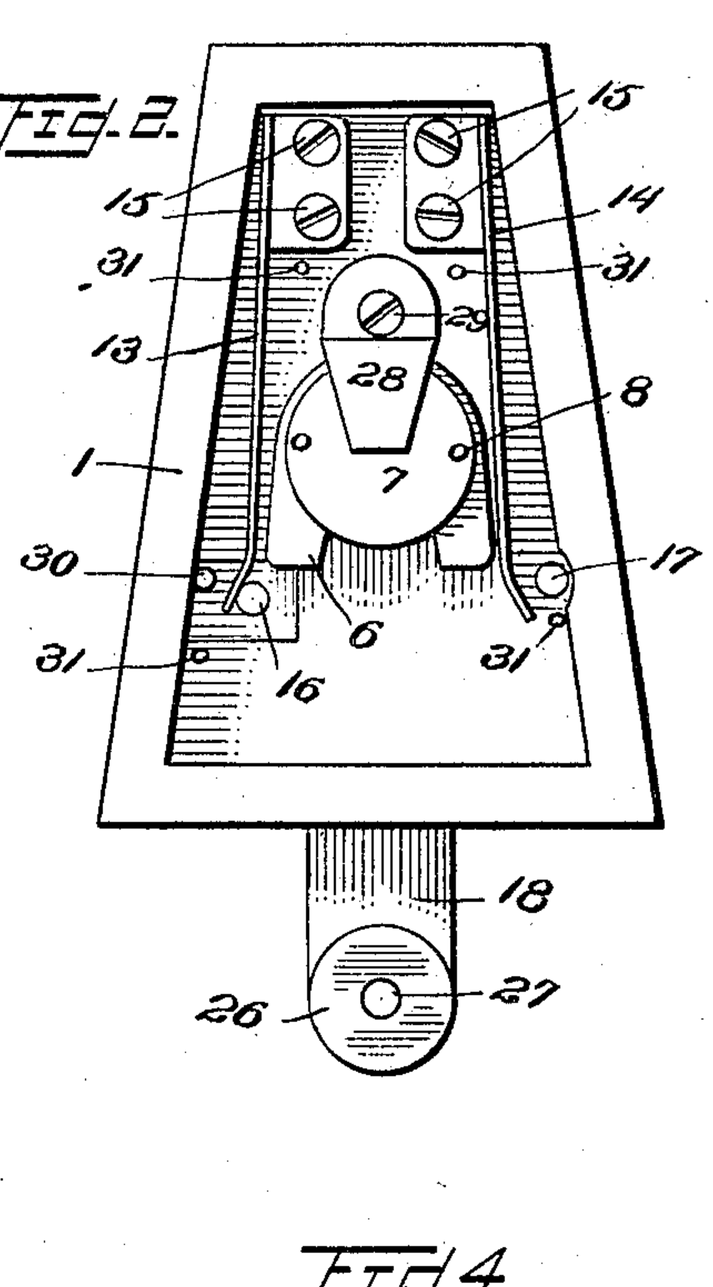
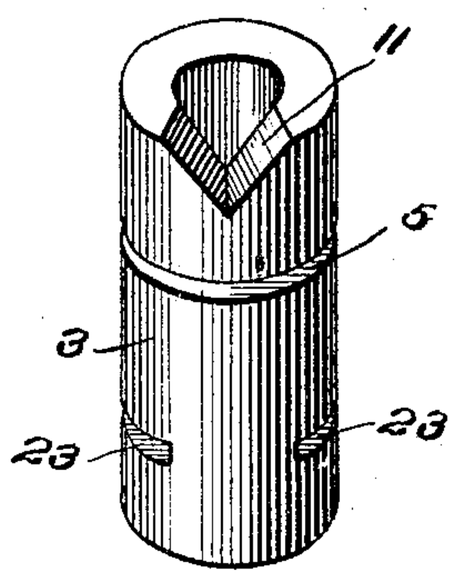


FIG. 3.

FIG. 4.



Witnesses

A. Strauss

R. N. Krenkel.

Inventor

Lewis T. Rhoades

By Joshua R. H. Potts.

Attorney

UNITED STATES PATENT OFFICE.

LEWIS T. RHOADES, OF MONT CLARE, PENNSYLVANIA, ASSIGNOR TO NEW YORK COIL COMPANY, OF NEW YORK, N. Y.

ELECTRIC SWITCH.

994,952. Specification of Letters Patent. **Patented June 13, 1911.**

Application filed January 3, 1911. Serial No. 600,386.

To all whom it may concern:

Be it known that I, LEWIS T. RHOADES, a citizen of the United States, residing at Mont Clare, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to improvements in electric switches, more particularly switches designed for use on automobiles and constructed to throw the battery and the magneto in and out of circuit with the spark plugs of the engine.

A further object is to provide a switch of the character described which is of the kick switch type, with improved means for operating the switch, and improved means for preventing any operation of the switch by unauthorized persons.

A further object is to provide an improved switch of this character which is provided with a screw holding the switch mechanism in operative relation, and which when removed prevents any operation of the switch, and further so construct the switch mechanism that the switch throwing block will automatically return to a neutral position from either of its extreme positions when the screw or plug is removed.

A further object is to provide a switch of this character which prevents any possibility of the mixing of circuits which frequently happens where the switch throwing lever acts as contact engaging means.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1, is a view in front elevation with the front plate removed. Fig. 2, is a similar view of the back or inner face of the device. Fig. 3, is a view in section on the line 3—3 of Fig. 1, and Fig. 4, is a detail enlarged perspective view of the barrel.

1, represents a block of non-conducting material which is recessed front and back to accommodate the several mechanisms hereinafter described. A bearing sleeve 2 is secured in an opening centrally of the block and provides rotary mounting for a tubular journal 3. This journal is held against longitudinal movement in the bearing sleeve 2 by means of a plate 4 which is bifurcated and projects into an annular groove 5 in the sleeve.

6, represents a block of non-conducting material having an opening to receive the inner end of said journal, and is provided with a plate 7 secured by screws 8 to the block 6, and closing the opening in the block. A screw 9 is fixed to this plate 7, and projects into the tubular journal 3, and is provided with a pin 10 projecting at right angles to the screw, and located in a V-shaped recess 11 in the inner end of the journal, for a purpose which will hereinafter appear.

12, represents a locking screw, the tubular shank of which is internally screw-threaded, said shank adapted to be projected into the journal 3 and to receive the screw 9, tightly clamping the block 6 on the journal and holding the pin 10 in the lower portion of the recess compelling the block to turn with the journal. This block is normally positioned centrally as shown in Fig. 2, and at each side of the block, spring contacts 13 and 14 respectively are secured by screws 15 to block 1. The spring contact 13 is normally in engagement with a fixed contact 16 normally closing an electric circuit which maintains the magneto inoperative. The other spring contact 14 is normally spaced from a fixed contact 17, but when said contacts 14 and 17 are together, the battery will be in circuit. In other words, this device is adapted for use in connection with the ordinary electric circuit arrangement for controlling the sparking of internal combustion engines of motor vehicles in which a battery is employed to start the engine, and then said battery circuit is broken and the magneto thrown into operation, said magneto circuit being normally held open by means of a branch circuit as is well understood.

To turn the journal 3, an arm 18 is provided and extends upward between parallel plates 19 and 20 in the lower portion of the recessed outer face of block 1, and upon the block a plate 21 is secured to the outer face of said block by means of screws 22. This

arm 18 is bifurcated and is forced into grooves 23 in the journal 3, and so as to bind the arm in such position to prevent its accidental removal. A spring tongue 24 is fixed to arm 18, and is provided with a knob or enlargement 25 to engage in any of a plurality of recesses or openings in plate 20 to hold the arm 18 in any of its three positions. On the lower end of this arm 18, a button is secured and comprises two members 26 which are located at opposite sides of the arm 18, and are secured to the arm by means of a rivet 27 which insures a relatively large knob or button on the end of the arm, so that it can be readily kicked to operate the switch, and by reason of the two members 26, the arm 18 may be kicked without any twisting action on the arm.

An overhanging bracket 28 is secured by a screw 29 to block 1, said screw 29 also serving to hold the plate 4. This bracket 28 is spaced from the plate 7, which serves to prevent said plate and the block 6 from moving off the journal 3 when screw 12 is removed.

The electric wires which connect the several binding posts 30, as shown in Fig. 1, in the front of the block extend through openings 31 in the block, so that the connections may all be at the front, out of the way of the mechanism at the back, and permit a ready inspection of said connections at any time desired.

The operation is as follows: The parts as shown in Fig. 2, are in a neutral position, so that neither the battery nor the magneto are in circuit with the spark plug of the engine. If the arm 18 is turned in one direction, block 6 will force spring contact 14 against contact 17 to close the circuit between the battery and the spark plug. If the arm is moved in the opposite direction, block 6 will move contact 13 away from contact 16, opening the branch circuit, which holds the magneto out of operation.

To prevent any operation of the switch by an unauthorized person, it is simply necessary to remove the screw 12. When this is done, any turning movement of the journal 3 will merely ride the pin 10 in the recess 11, without turning the block 6, the latter merely moving inward and outward. The block 6 will return to the inoperative position shown in Fig. 2 whenever the screw 12 is removed. If the block is in position to hold either of the pairs of contacts together, the pressure of springs 13 or 14 will tend to return the block to its inoperative position. It will also be noted that as the arm or lever 18 is entirely insulated from any of the contacts, that there can be no mixing of circuits which frequently occurs with the apparatus in use.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an electric switch, the combination with a block of non-conducting material, of a tubular journal in said block, a contact operating block on said journal, a screw positioned within the hollow journal and normally holding said block on the journal, means for turning the journal, and contacts adapted to be engaged by said contact operating block, substantially as described.

2. In an electric switch, the combination with a block of non-conducting material, of a tubular journal mounted to turn in said block and having a cam recess in one end, a block mounted on said journal and adapted to operate electric contacts, a key or pin on said last-mentioned block positioned in said cam recess, and means normally holding said key or pin in said recess, substantially as described.

3. In an electric switch, the combination with a block of non-conducting material, of a tubular journal mounted to turn in said block and having a cam recess in one end, a block mounted on said journal and adapted to operate electric contacts, a key or pin on said last-mentioned block positioned in said cam recess, a screw on said block projecting into said journal, and an internally screw-threaded tubular screw engaging said screw on the block, and normally holding said key or pin in said recess, substantially as described.

4. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact operating block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said contact operating block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, and means engaging said screw and holding said key in the recess, substantially as described.

5. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact operating block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said contact operating block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, a tubular internally screw-threaded screw engaging the first-mentioned

screw, and holding said key in said recess, substantially as described.

6. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact operating block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said contact operating block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, a tubular internally screw-threaded screw engaging the first-mentioned screw, and holding said key in said recess, said journal having an annular groove, and a bifurcated plate secured to said block and projected into said groove, substantially as described.

7. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact operating block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said contact operating block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, a tubular internally screw-threaded screw engaging the first-mentioned screw, and holding said key in said recess, said journal having an annular groove, a bifurcated plate secured to said block and projected into said groove, a bracket secured to said first-mentioned block and projecting over the contact operating block, substantially as described.

8. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, a tubular internally screw-threaded screw engaging the first-mentioned screw, and holding said key in said recess, an arm or lever secured to said journal, and means on said lever frictionally holding said lever in either of its operative or its inoperative positions, substantially as described.

9. In an electric switch, the combination with a block of non-conducting material, of a tubular journal in said block, a contact operating block on said journal, a screw normally holding said contact operating block on the journal, means for turning the journal, and contacts adapted to be engaged by said contact operating block, said first-mentioned block recessed front and rear, fixed contacts in the rear recess, spring contacts in the rear recess operated by said contact operating block, and binding posts in the front recess connected with said contacts, and said block having openings therethrough for the passage of electric wires from the back to the front recess for attachment to the binding posts, substantially as described.

10. In an electric switch, the combination with a block of non-conducting material, of a tubular journal mounted to turn in said block and having a cam recess in one end, a block mounted on said journal and adapted to operate electric contacts, a key or pin on said last-mentioned block positioned in said cam recess, means normally holding said key or pin in said recess, said first-mentioned block recessed front and rear, fixed contacts in the rear recess, spring contacts in the rear recess operated by said contact block, and binding posts in the front recess connected with said contacts, and said block having openings therethrough for the passage of electric wires from the back to the front recess for attachment to the binding posts, substantially as described.

11. In an electric switch, the combination with a block of non-conducting material, of a tubular journal mounted to turn in said block and having a cam recess in one end, a block mounted on said journal and adapted to operate electric contacts, a key or pin on said last-mentioned block positioned in said cam recess, a screw on said block projecting into the said journal, an internally screw-threaded tubular screw engaging said screw on the block, and normally holding said key or pin in said recess, said first-mentioned block recessed front and rear, fixed contacts in the rear recess, spring contacts in the rear recess operated by said contact block, and binding posts in the front recess connected with said contacts, and said block having openings therethrough for the passage of electric wires from the back to the front recess for attachment to the binding posts, substantially as described.

12. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact operating block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said contact operating block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, means engaging said screw and holding said key in the recess, said first-mentioned block recessed front and rear, fixed contacts in the rear recess, spring contacts in the rear recess operated by said contact operating block, and binding posts in the front recess connected with said contacts, and said block having openings therethrough for the

passage of electric wires from the back to the front recess for attachment to the binding posts, substantially as described.

13. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact operating block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said contact operating block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, a tubular internally screw-threaded screw engaging the first-mentioned screw, and holding said key in said recess, said first-mentioned block recessed front and rear, fixed contacts in the rear recess, spring contacts in the rear recess operated by said contact operating block, and binding posts in the front recess connected with said contacts, and said block having openings therethrough for the passage of electric wires from the back to the front recess for attachment to the binding posts, substantially as described.

14. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact operating block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said contact operating block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, a tubular internally screw-threaded screw engaging the first-mentioned screw, and holding said key in said recess, said journal having an annular groove, a bifurcated plate secured to said block and projected into said groove, said first-mentioned block recessed front and rear, fixed contacts in the rear recess, spring contacts in the rear recess operated by said contact operating block, and binding posts in the front recess connected with said contacts, and said block having openings therethrough for the passage of electric wires from the back to the front recess for attachment to the binding posts, substantially as described.

15. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact operating block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said contact operating block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, a tubular internally screw-threaded screw engaging the first-mentioned screw, and holding said key in said recess, said journal having an annular groove, a bifurcated plate secured to said block and projected into said groove, a bracket secured to said first-mentioned block and projecting over the contact operating block, said first-mentioned block recessed front and rear, fixed contacts in the rear recess, spring contacts in the rear recess operated by said contact block, and binding posts in the front recess connected with said contacts, and said block having openings therethrough for the passage of electric wires from the back to the front recess for attachment to the binding posts, substantially as described.

16. In an electric switch, the combination with a block of non-conducting material, of a tubular journal projecting through said block, and having a cam recess in its inner end, a contact block of non-conducting material having an opening to receive the inner end of said journal, a plate secured on said block, a screw on said plate projecting into the journal, a key on said screw located in the recess in the journal, a tubular internally screw-threaded screw engaging the first-mentioned screw, and holding said key in said recess, an arm or lever secured to said journal, and means on said lever frictionally holding said lever in either of its operative or its inoperative positions, said first-mentioned block recessed front and rear, fixed contacts in the rear recess, spring contacts in the rear recess operated by said contact block, and binding posts in the front recess connected with said contacts, and said block having openings therethrough for the passage of electric wires from the back to the front recess for attachment to the binding posts, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEWIS T. RHOADES.

Witnesses:
M. A. BARNEY,
R. F. DENNIS.