

W. KAISLING.
SWITCH DEVICE.
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1,257,287.

Patented Feb. 19, 1918.

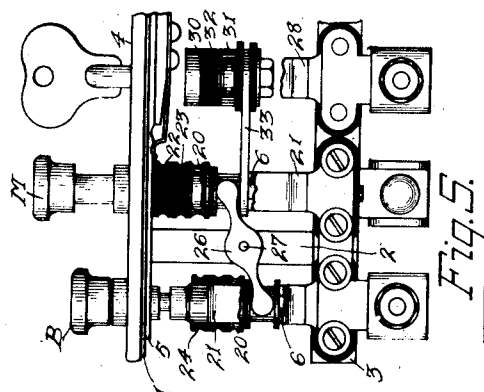


Fig. 5.

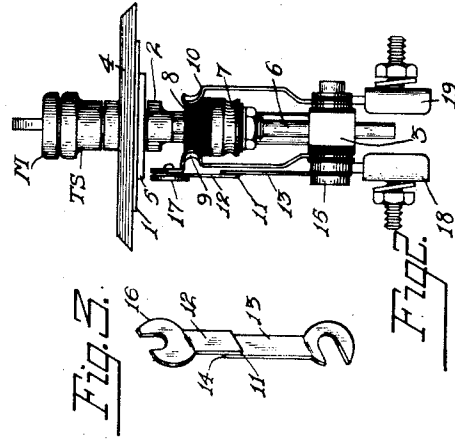


Fig. 6.

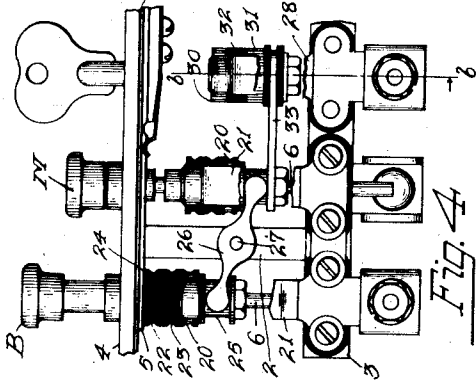


Fig. 7.

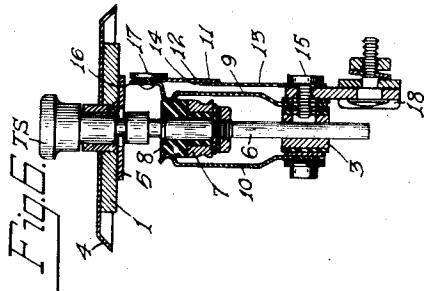


Fig. 8.

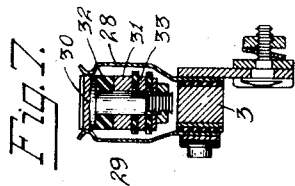


Fig. 9.

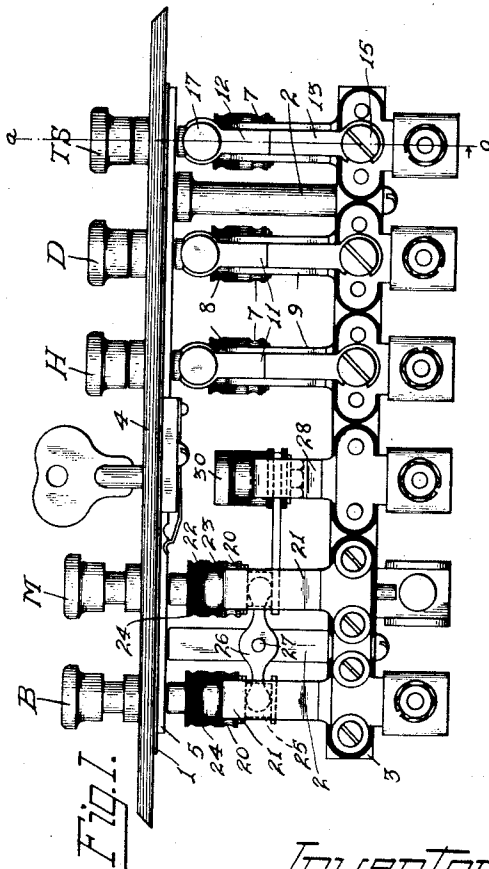


Fig. 10.

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UNITED STATES PATENT OFFICE.

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SWITCH DEVICE.

1,257,287.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM KAISLING, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Switch Devices, of which the following is a specification.

My invention relates to switching devices, and has for its object the provision of an improved device of this character in which a plurality of plungers are used, some of which are adapted for individual service and some of which are adapted for alternate service, and in which certain other switching elements are under the control of the plungers adapted for alternate use.

I wish it understood of course that when I use the word plungers that this is to include switch controlling mechanism such as would be applicable for use in accordance with my invention.

My invention further contemplates the provision of a structure whereby the switch mechanism is suitably combined with a protective device preferably in the form of a fuse, thus to make a more self-contained structure.

I will describe one form which my invention may take more in detail by referring to the accompanying drawing, in which—

Figure 1 is a side view of a key constructed in accordance with my invention;

Fig. 2 is an end view thereof;

Fig. 3 is a detail view of the protective device employed;

Fig. 4 is a partial view of Fig. 1 showing the parts in an alternate position, parts being broken away to more clearly reveal features of construction;

Fig. 5 is a view similar to Fig. 4 showing the parts in an alternative position;

Fig. 6 is a sectional view on line *a-a* of Fig. 1, and

Fig. 7 is a partial sectional view along line *b* of Fig. 4.

My improved key consists of the supporting plate 1 which by means of rods 2 is fastened to a parallel supporting strip 3. A suitable escutcheon plate 4 is provided and an interlocking plate 5 slidable along the plate 1 performs suitable locking functions as will presently appear. My improved key has a plurality of plunger actuating buttons, respectively B, M, H, D and TS. These buttons actuate suitable plungers 6

which are slidably mounted in the strip 3. The plungers H, D and TS respectively carry conducting rings 7 and insulating rings 8 which are adapted alternately to engage contact making springs 9 and 10 which are insulatingly mounted upon the strip 3 as readily apparent from Fig. 6. It will be noted that as these plungers move from one position to their alternative position they either close a circuit through the springs 9 and 10 or open it as the case may be.

A feature of my invention consists in mounting alongside of and partially upon one of the springs such as 9 a protective device 11 shown in perspective in Fig. 3. This protective device is so arranged that the two parts 12 and 13 thereof are soldered or otherwise fastened together at 14 as shown and when mounted in position alongside of the spring 9 as shown more particularly in Figs. 2 and 6, the tendency of the lower portion 13 is to spring toward the spring 9 and the tendency of the upper portion 12 is to spring in the opposite direction. These two elements 12 and 13 being of a springy nature are so formed that when mounted in place by means of the nut 15 and fastened to the upper protruding lip 16 of the spring, these parts 12 and 13 are bent so that should the parts become unsoldered as by undue heating, the upper extremity of the part 13 will immediately move into engagement with the spring 9 (Fig. 6) and the lower extremity of the part 12 will move away from said spring, thus opening the circuit between the two elements 12 and 13 of the protective device, and at the same time connecting one terminal of the circuit directly to spring 9. As already stated the lower extremity of the protective device is suitably held in position by the bolt 15 and the upper extremity is rigidly fastened to the upwardly extending lip 16 of the spring 9 preferably by being riveted thereto by the rivet 17. It will thus be seen that this switch structure provides in a self-contained manner not only the switching springs but also the protective device in a readily replaceable manner.

It will be noted by reference to Figs. 2 and 6 for instance that the circuit from the contact terminal 18 extends through the protective device 11 before it reaches the spring 9, from which it may extend by way of the

ring 7 to the spring 10 and the contact terminal 19.

Referring more particularly to Figs. 4, 5 and 7, it will be seen that my improved key also carries the push buttons B and M, likewise provided with actuating plungers 6. These plungers associated with the buttons B and M carry contacting rings 20 adapted for association with springs 21 similar in form to the springs 9 and 10. It will be noted that each one of the devices B and M however is capable of occupying three different positions, namely two extreme positions and an intermediate position. In order to accommodate the spring ends under these conditions there are provided two grooves 22 and 23 respectively for the insulating ring 24. When the buttons are in their intermediate position as shown in Fig. 1, then no contact is made through the springs 21 of either one of the devices B and M. When however the plunger B is in its elevated position as shown in Fig. 4, then the springs associated with this plunger have their circuit closed by the contact ring 20. Similarly when the plunger M is in its elevated position as shown in Fig. 5, its associated springs have their circuits closed. In the other two positions of each one of the plungers however the circuit through the associated springs is open. The plungers B and M are also provided with a collared portion 25 which is adapted to cooperate with a rocking bar 26 pivoted at 27 so that as one plunger moves down, the other one moves up and vice versa. The elements B and M are thus of an interlocking character.

My invention contemplates that whenever either plunger B or M is in its contact making position, that there shall also be a circuit closed through springs 28 and 29. These springs are also insulatingly mounted upon the strip 3 and have their circuit controlled by a circuit controlling element consisting of the conducting rings 30 and 31 and the insulating ring 32. Now it will be seen from an inspection of Fig. 4 and Fig. 5 that whenever either plunger B or M is in an extreme position, that one of the rings 30 or 31 completes the circuit through the springs 28 and 29. When however the devices B and M are in their neutral or intermediate position, then the insulating ring 32 is between the bent fingers of the springs 28 and 29 and the circuit therethrough is thus opened. This is a particular advantage in automobile self-starting and lighting systems where the actuation of either device B or M means that the automobile is operating either from battery or the magneto and that under these conditions the generator of the lighting and charging system should be connected in circuit which is done through the springs 28 and 29. This circuit controlling element which controls the circuit through

the springs 28 and 29 is insulatingly mounted upon an arm 33, which arm 33 is rigidly mounted upon the plunger associated with the element M.

From what has been described the nature of my invention will be clear and one form of use will be apparent from what has just been stated.

Having however thus described one form which my invention may take, what I claim as new and desire to secure by Letters Patent is:

1. In a device of the character described the combination with a pair of circuit controlling plungers, means whereby said plungers interlock, a stationary circuit controlling element, and a movable circuit controlling element adapted to close circuit with said stationary circuit controlling element whenever said plungers are moved to their limiting positions.

2. In a device of the character described the combination with two circuit controlling plungers, a rocking arm associated with both plungers to interlock the same, a stationary circuit controlling element, and a movable circuit controlling element adapted to close circuit with said stationary circuit controlling element whenever either plunger is in its operative position.

3. In a device of the character described the combination with a plunger adapted to occupy three positions respectively two limiting positions and an intermediate position, a stationary circuit controlling element, and a movable circuit controlling element associated with said plunger and adapted to close circuit with said stationary circuit controlling element whenever said plunger is in either one of its limiting positions.

4. An electrical switch comprising a pair of switch actuating plungers, annular grooved elements carried by said plungers, a centrally pivoted link having its opposite ends within said plunger grooves whereby any actuation of either plunger will effect a corresponding actuation of the other plunger, and a third switch operating plunger associated with said first switch operating plungers whereby any movement of either of said first actuating plungers will cause a movement of said third actuating plunger.

5. An electrical switch comprising a reciprocating actuating plunger having a normal, an operative and a non-operative position, a second switch actuating plunger associated with said first plunger having a normal position and two operative positions, a link connecting said plungers whereby any actuation of said first plunger will effect a corresponding movement in the same direction of the second plunger, and contacts controlled by said plungers.

6. A switching device comprising a switch operating member having a normal, an operative and a non-operative position, a second switch operating member having a normal position and two operative positions, and link mechanism connecting said members whereby when said first member is moved to its normal, operative or non-operative position, the other member is moved in the same direction to its normal, first operative and second operative positions, respectively.

7. A switching device comprising a pair of switch operating members, each of said members having a normal, an operative and a non-operative position, an auxiliary switch operating member associated with and controllable by said pair of switch operating members having a normal position and a pair of operative positions, and link mechanism for said first members whereby when either one of said first members is moved to its normal, operative or non-operative position, the other of said first members is moved to its normal, non-operative or operative position, respectively, and said auxiliary member is moved to its normal and then to its operative positions.

8. A switching device comprising a pair of switch operating members, each of said members having a normal, an operative and a non-operative position, an auxiliary switch operating member associated with and controllable by said pair of switch operating members having a normal position and a pair of operative positions, link mechanism for said first members whereby when either one of said first members is moved to its normal, operative or non-operative position, the other of said first members is moved to its normal, non-operative or operative position, respectively, and said auxiliary member is moved to its normal and then to its operative positions, respectively, and means for locking the said switch operating members against effective operation.

9. An electrical switch comprising a re-

ciprocating actuating plunger having a normal, an operative and a non-operative position, a second switch actuating plunger associated with said first plunger, having a normal position and two operative positions, and mechanism connecting said plungers whereby an actuation of said first plunger to its operative position will move said second plunger to one of its operative positions, and an actuation of said first plunger to its non-operative position will move said second plunger to the other of its operative positions.

10. A device of the character described including a switch actuating member having a normal, an operative, and a non-operative position, a second switch actuating member having a normal position and two operative positions, mechanism connecting said switch actuating members whereby a movement of said first member to its non-operative position will move said second member to one of its operative positions, and the movement of said first member to its operative position will move said second member to the other of its operative positions.

11. An electrical switch comprising a switch actuating member having a normal, an operative, and a non-operative position, a second switch actuating member associated with said first member having a normal position and two operative positions, said plungers being so related that when said first plunger is moved to its normal position said second plunger will be moved to its normal position, and when said first plunger is moved to its operative or its non-operative position, said second plunger will be moved to its operative positions.

Signed by me at Chicago, county of Cook and State of Illinois, in the presence of two witnesses.

WILLIAM KAISLING.

Witnesses:

GEORGE E. MUELLER,
M. R. ROCHFORD.