

(No Model.)

2 Sheets—Sheet 1.

S. DEACON.
ELECTRIC SWITCH.

No. 470,748.

Patented Mar. 15, 1892.

Fig. 1.

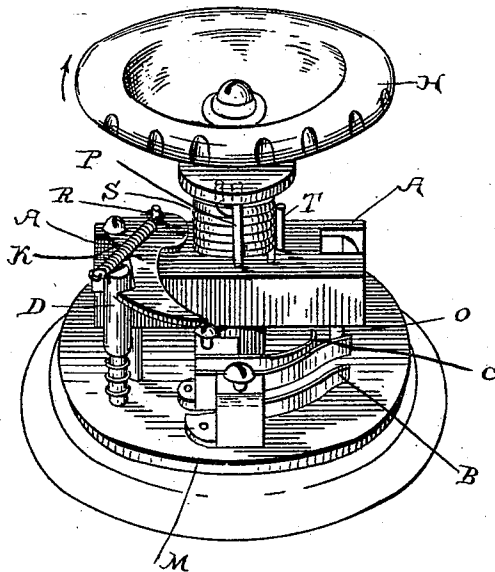
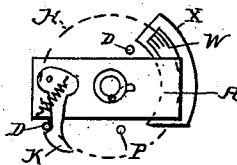


Fig. 4



Witnesses.
Wm R. Steward.
Geo H. Capel

Inventor
Samuel Deacon.
By his Attorney
H. B. Townsend

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

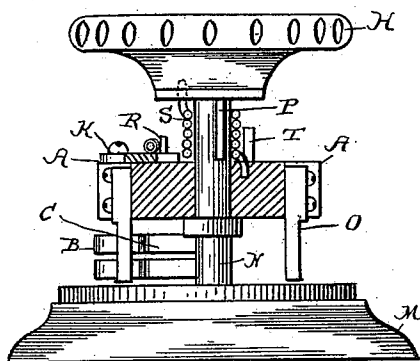
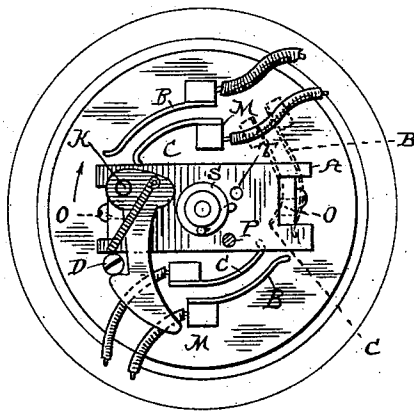


Fig. 3.



Witnesses
Geo. R. Steward.
Thos. H. Leavelle

Inventor
Samuel Deacon

By his Attorney
H. B. Townsend

UNITED STATES PATENT OFFICE.

SAMUEL DEACON, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE THOMSON-HOUSTON ELECTRIC COMPANY, OF CONNECTICUT.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 470,748, dated March 15, 1892.

Application filed March 18, 1889. Serial No. 303,788. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL DEACON, a citizen of the United States, and a resident of Lynn, in the county of Essex and State of Massachusetts, have invented a certain new and useful Improved Electric Switch, of which the following is a specification.

My invention relates to electric switches or devices for changing connections of electric circuits.

The object of the invention is to secure in the switch a quick movement of the parts in changing from one position to the other, so that on change of position that results in the breaking of a circuit the contact parts shall separate from one another by a rapid or snapping action.

The principle of my invention may be extended to producing the same quick or rapid movement when the parts move in direction to bring the contact-surfaces together so as to close a circuit.

The invention consists, essentially, in interposing between the moving parts of the switch and the actuating mechanism or handle a suitable spring, which may be subjected by said actuator to distortion, bending, compression, extension, or other action, and in holding the switch devices from movement when the actuating device is operated until the spring has been subjected to the desired degree of extension or compression, when, by the operation of suitable detent devices moving with said actuator, the moving parts of the switch shall be unlocked and will then be propelled or operated by the power stored in the switch through the operation of the actuating device.

My invention may obviously be carried out by very many forms of devices constituting the elements of the combination, the main principle consisting simply in using the power stored up in the spring by the actuating device to move the switch, suitable locking or detaining devices being used to hold the switch while the power is being stored up, and suitable detent or unlocking devices being connected to the actuator, so that when the same has moved to a predetermined extent or has produced a predetermined extension or compression of the spring the switch shall be released and allowed to move under the operation of the spring.

In the accompanying drawings, Figure 1 is a perspective view of a form of mechanism embodying my invention. Fig. 2 is a vertical section through the same. Fig. 3 is a plan of the same. Fig. 4 is a plan illustrating the application of my invention to a switch designed to have a movement of rotation in the same direction both for opening and closing the circuit.

M indicates a suitable base upon which the parts of the switch are mounted, and A the movable or rotating member of such switch. The part A is in this figure shown as in the form of a lever, which turns upon a suitable spindle N and carries one or more contact-pins O, which are adapted to close an electric circuit by moving in between two springs B C so as to bridge the gap between them. In this case the springs B C are supposed to form the two poles of the circuit which is to be made and broken. The form or construction of the contact devices and the arrangement of the circuits, however, constitute no part of my present invention, and I have not, therefore, shown them or described them with great particularity.

The actuating device of the switch is shown in the present instance as consisting of a disk H, adapted to be grasped by the hand and turned. The actuator H, also mounted on the spindle N, although it might be otherwise mounted, as is obvious, connects with a spring S, the opposite end of which spring connects with the lever A, as indicated, so that on turning the actuator H in the direction of the arrow the spring will be wound up, provided the lever A during the operation be held from movement.

A simple form of device which may be used for detaining or holding the lever during the storage of the power in the spring consists of a pivoted dog K, adapted to engage with a pin or stud D, mounted on the base M. The dog K may be mounted on the switch-lever itself, as shown.

A cam pin or projection P, carried by the actuator H, so as to move therewith in the operation of winding or storing power in the spring, is arranged, as shown, to come into engagement with the cam surface or edge of the dog, so as to remove the same from engagement with the stop D after the actuator H has been moved to a predetermined extent.

The devices just described are but one of many devices which will readily suggest themselves to mechanics as means for holding and releasing the switch A under the conditions required.

The operation of the devices so far described is as follows: On turning the handle H in the direction of the arrow the lever A will be held by the dog K and power will be stored in the spring until the pin or cam P releases the switch, when said switch will suddenly move under the action of the spring into position to either close or open the connection between the springs B C. In Fig. 1 of the drawings the switch is supposed to be in position to open the connection under the condition illustrated, and the movement just described would result in a sudden closing of the circuit. A suitable stop may be employed for limiting the movement of the switch in the direction just described, and a reverse movement of the switch may be produced by means of the pin or projection T, extending from the switch-lever A and adapted to be engaged by the pin P or some other part of the actuator on reversing the movement of the handle H. In this operation the spring will be subjected to extension beyond its normal condition, provided the switch-lever A be held from movement. The means for detaining the switch during the storage of power in the spring under this condition might be the friction between the pins O and the spring-contacts hugging the same, the springs in this case performing the office of a lock or catch. This detaining or locking action might be increased by a suitable conformation of the springs where they grasp pin O. When the actuator has moved to a predetermined extent, the force exerted upon the lever A will be such as to forcibly unlock or detach it from the springs, whereupon it will move away from connection with the springs by the operation of the spring S, in which the power applied to the actuator has been stored.

It is quite obvious that the position of the contact-springs might be shifted ninety degrees, so that the circuit would be closed when the lever A is in the position shown and the circuit would be opened when the catch K is released after turning the handle H in the direction of the arrow.

The switch might be made to work to alternately open and close the circuit by moving in the same direction under the operation of the actuator H, also moving in the same direction with every operation. To attain this result, it would simply be necessary to place an extra pin D at the opposite side of the switch, as indicated in Fig. 4. In this figure I have shown the switch-lever as carrying a spring W, adapted to move into and out of contact with a plate X, and to thereby open and close a circuit formed through the plate and the switch-lever. In the position of the parts indicated in this figure the circuit is supposed

to be closed, and on moving the actuator H the spring will be wound as before, and finally the switch will be released and will move around one hundred and eighty degrees, or until the dog K engages with the opposite pin D. If the actuator H be now moved again, the operation will be repeated and the switch will move around another one hundred and eighty degrees, and be restored to connection with the contact-plate X. It is obviously not necessary that the switch should move one hundred and eighty degrees at each operation, the extent of movement being determined in each case by the distance between the pins D and the location of the contact-plates in the path of movement of the contact-spring W.

It is not essential to the operation of the switch of my invention that the spring be interposed between the actuator H and the arm A, for, as shown in Fig. 5, one end of the spring S may be attached to a fixed point P, and a movement of the handle H in the direction of the arrow will extend the spring until the pin D is released from the detent K, at which instant the spring acts to quickly open the switch at B.

What I claim as my invention is—

1. The combination, substantially as described, with an electric switch, of an actuating mechanism, a connecting-spring between the switch and actuating mechanism, and a catch or holding device engaging with the switch for holding the same from movement while the spring is being subjected to strain by the actuator, as and for the purpose described.

2. The combination, with an electric switch, of a spring applied to said switch, an actuator for putting the spring under strain, devices engaging with the switch for holding the same from movement under the strain of the spring, and means for releasing said switch when the actuator has been moved to a predetermined extent and the spring subjected to a predetermined strain.

3. The combination, with an electric switch, of a spring connecting said switch with an actuator adapted to put the spring under strain, a catch or holding device engaging with the switch for holding the same from movement while the spring is being subjected to strain by the actuator, and a releasing device moving with the actuator and adapted to engage the catch and release the switch from said catch when the actuator has been moved to a predetermined extent, as and for the purpose described.

Signed at Lynn, in the county of Essex and State of Massachusetts, this 7th day of March, A. D. 1889.

SAMUEL DEACON.

Witnesses:

J. W. GIBBONEY.

D. M. BARTON.