H. A. BEYNON.

ELECTRICAL SWITCH.

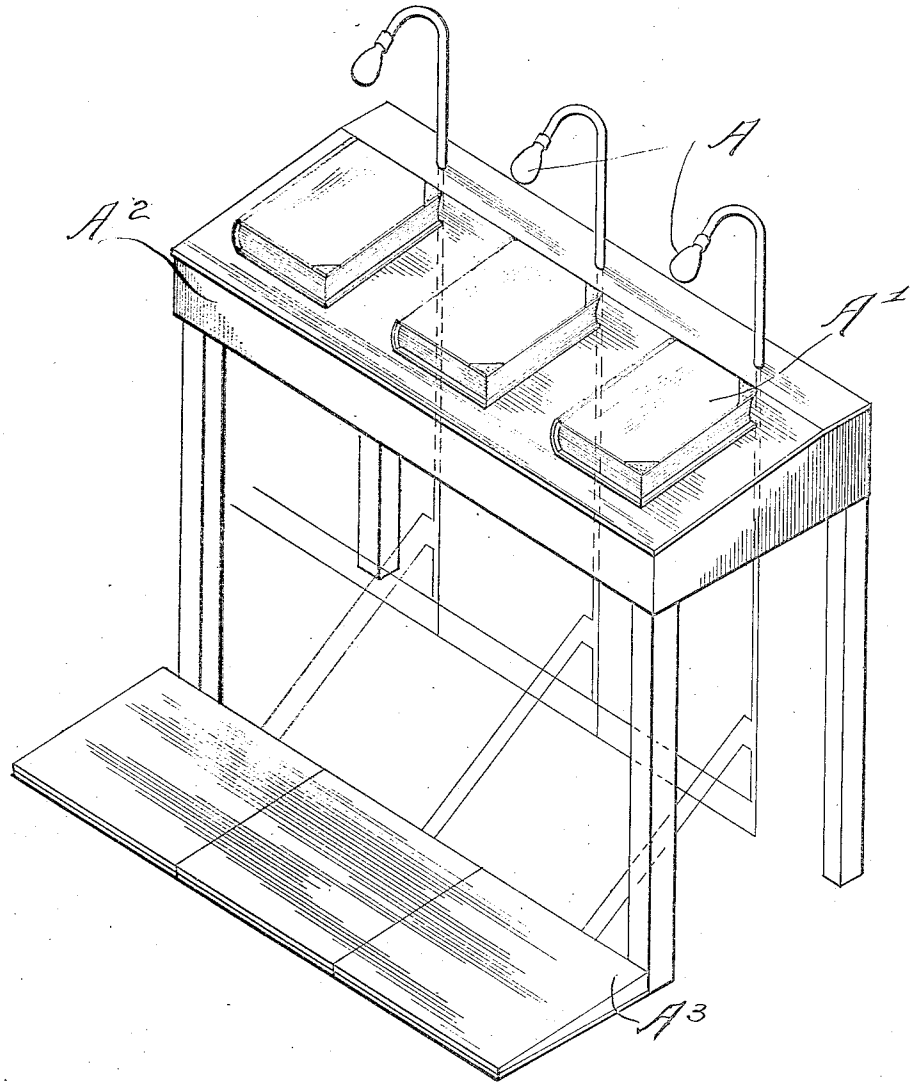
APPLICATION FILED MAY 11, 1907.

919,811.

Patented Apr. 27, 1909.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses

J. V. Angell.

J. E. Hannah

Inventor

Harry A. Beynon

by Charles W. Fiels Atty.

H. A. BEYNON.

ELECTRICAL SWITCH.

APPLICATION FILED MAY 11, 1907.

919,811.

Patented Apr. 27, 1909.

2 SHEETS—SHEET 2.

Fig 2

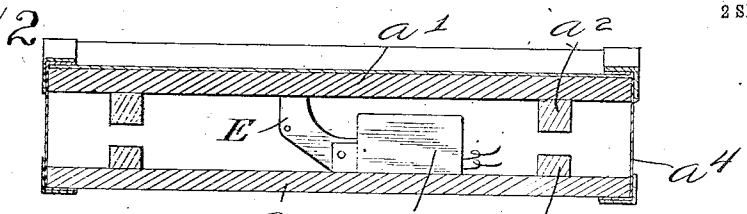


Fig 3

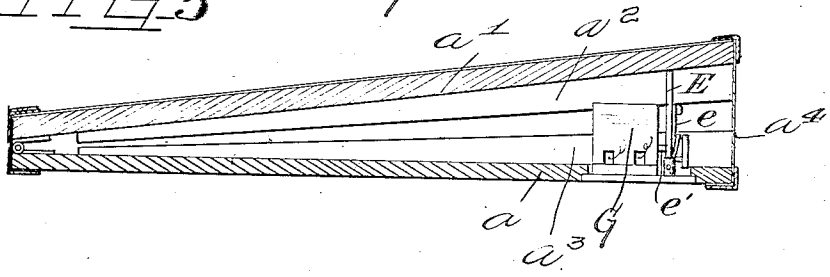


Fig 4

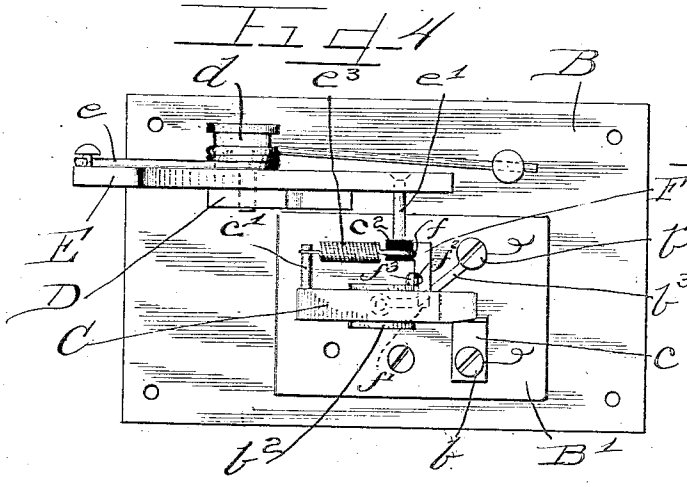


Fig 7

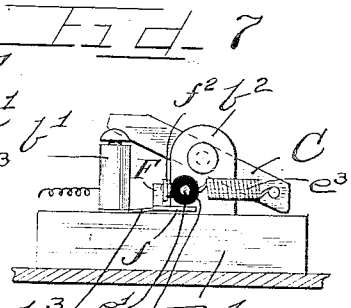


Fig 5

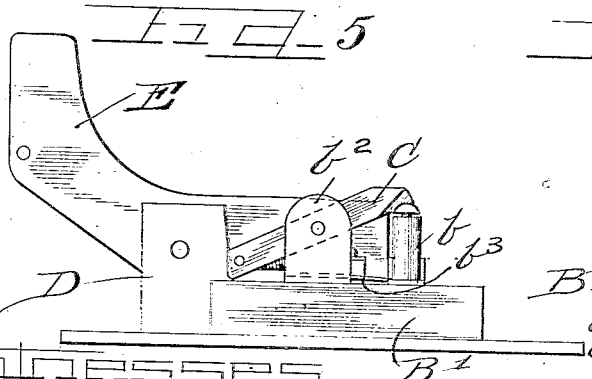
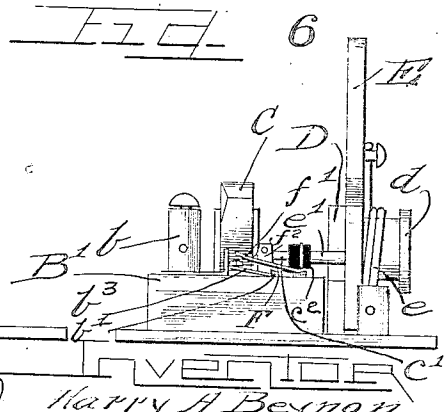


Fig 6



Witnesses

J. H. Angell.

W. E. Hamah

Inventor

Harry A. Beynon.

by Charles W. Miles.

Atty.

UNITED STATES PATENT OFFICE.

HARRY A. BEYNON, OF CHICAGO, ILLINOIS.

ELECTRICAL SWITCH.

No. 919,811. Specification of Letters Patent. Patented April 27, 1909.

Application filed May 11, 1907. Serial No. 373,146.

To all whom it may concern:

Be it known that I, HARRY A. BEYNON, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electrical Switches; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in electrical switches.

Heretofore in offices, factories, etc., where it is necessary for the employees to move from book to book as in book or stock-keeping or for the operator to move from bench to bench for different mechanical or other works, it is necessary for the employee or operator to manually switch on the electric light at each book or bench or switch on an individual motor to operate the machines and which he should switch off again on leaving to the next book or machine. This however in manually operated switches involves some inconvenience and loss of time and often the lights or motors are left in operation when the employees or operators are not using the same thereby causing considerable expenditure and loss of current.

It is an object of this invention to provide a device adapted to automatically make a circuit by the weight of the person using the light or machine and which automatically breaks the circuit upon the weight of the user being removed.

It is also an object of this invention to provide a device adapted to make and break the circuit quickly or with a snap, thereby preventing injurious effects otherwise caused by arcing thus prolonging the life of the contacts.

It is a further object of this invention to provide an exceeding simple device which is cheap to manufacture and install.

The invention consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

On the drawings: Figure 1 is a view illustrating devices embodied in my invention applied to a plurality of lights each for an independent book. Fig. 2 is a transverse section of the actuating support with a snap switch embodied in my invention secured therein. Fig. 3 is a longitudinal section of the same. Fig. 4 is a top plan view of the snap switch. Fig. 5 is a side elevation thereof. Fig. 6 is an end elevation of the same, with one of the binding posts broken away. Fig. 7 is a side elevation with the actuating lever and mechanism omitted.

As shown in the drawings: A indicates lights each of which is appropriated to one of the ledgers A′ positioned convenient distances apart upon the desk A^2. Said lights are turned on independently by the weight of the operator upon the hinged support A^3 which is similar to the one shown in my prior patent No. 828,373, dated Aug. 14th, 1906, and which comprises a lower board a to which is hinged a top board a' and strips a^2—a^3 are secured to the top and bottom boards to limit the closing thereof. A flexible covering a^4 of canvas or other suitable material is secured to the top and bottom boards to prevent dirt and obstacles from getting between the boards and which limits the upward movement of the top board a' as shown in Fig. 3.

The switch comprises a base B provided with suitable apertures to receive the screws or bolts by which it is secured to the board a. Rigidly secured upon said base B is a slab B′ of suitable insulating and refractory material upon which are rigidly secured tubular internally threaded terminal posts b—b' each of which has a transverse aperture therethrough to receive the ends of the conducting wires and a screw is threaded axially into each post to firmly bind said wires to insure good contact.

A support b^2 of suitable conducting material is rigidly secured on said slab B′ and is electrically connected to said post b' by means of a strip b^3 which is secured beneath said post and to the support in any preferred manner. As shown in Fig. 6, pivotally secured on said support is a contact bar C having one side thereof from about its middle beveled or slightly inclined inwardly to engage the contact member c secured rigidly in position on said slab for such engagement by the post b. Secured on said base B in any preferred manner is a standard D to which is pivoted a bent lever E. A spring e is coiled intermediate its ends around an enlarged hub on the pivot d and its ends are directed

oppositely and rigidly secured respectively to the upper and outer end of the lever E, and to the base B, by any suitable means to hold the upwardly directed end of said lever normally elevated.

A pin e' is secured to the inner or lower end of the lever E and is provided with an insulating washer c^2 on its inner end to which and the pin c', on the contact bar C is engaged a pulling spring e^3. A lever F provided with a lug f^2 is pivoted to a lug f^3 on the standard b^2. Said lever has its outer end f extending into position to be engaged by the insulating washer c^2 and its opposite end f' extends beneath the inner end of the contact bar C and acts to give an initial impulse to the inner end of the contact bar, thereby coacting with the spring e^3 to break the circuit instantaneously.

A housing or casing G of suitable insulating material is secured on said slab in any preferred manner and incloses the contacts and mechanism except the lever E. Said casing is provided with notches for the lead wires from the binding posts b—b' and also a notch for the movement of the pin e' as shown in Fig. 3.

The operation is as follows: The base B is rigidly engaged to the bottom board a in any preferred manner and the lead wires connected. In this position the upper end of the lever E bears against the top board a', normally holding the same elevated and the pin e' exerts a downward tension on the spring e^3 which holds the outer end of the contact bar depressed in which position the inner end of the contact bar C and the contact c are out of engagement. The circuit remains open until the operator or employee desires to use the light or motor or both a light and a machine or motor at which time said operator steps upon the upper board a' which may serve as a mat and thus forces the outer end of the lever E, downwardly. This elevates the inner end of the lever and the pin e' thereby exerting an upward pull on the spring which snaps the outer end of the contact bar C upward throwing the inner end into engagement with the contact c in which position the circuit is closed. The light or machine will obviously remain in operation until the operator leaves this desk or machine at which time the spring e having had its tension increased by the downward movement of the lever forces the lever to normal position. Just before reaching normal position the washer c^2 on the pin e' strikes the outer end of the lever F thereby throwing the inner end upwardly against the inner end of the contact bar C which together with the tension on the spring e^3 snaps said bar out of engagement with the contact c.

It is obvious the snap switch described prevents arcing which would otherwise soon cause serious injury to the contacts.

The strips a^2—a^3 prevent the hinged support a' from closing more than sufficiently to actuate the switch.

By beveling the lower half of the contact bar the same is self-adjusting for as the bar wears away the upper part of the side of the bar is worn down so that it in time becomes beveled or inclined to engage the contact c thus insuring good contact.

While I have shown my device applied to electric light circuits it is obvious that the same may be used in connection with motors in lieu of a hand switch and it is further seen that immediately the operator leaves the light or machine the same is automatically switched off, thereby preventing any possible waste of light or energy.

Many details of construction may be varied and numerous changes may be made without departing from the principles of this invention and I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art.

I claim as my invention:

1. An electrical switch comprising an insulating slab, a contact rigidly engaged thereto, a standard secured to the slab, a pivoted contact bar secured to said standard, mechanism adapted by manual operation to actuate said pivoted contact bar to close a circuit, means for automatically actuating the mechanism adapting the pivoted contact bar to break a circuit and oscillating means pivoted to the standard transversely of the pivoted contact bar adapted to strike the contact bar and coact with said mechanism to instantaneously break the circuit.

2. In a device of the class described the combination with a suitable base of contacts thereon, one having a beveled face means adapted to oscillate one of said contacts to make or break the circuit instantaneously comprising an oscillating lever, pins, one secured to the oscillatable contact and one to the lever, a spring secured at its ends to the pins, insulation on one of said pins and a lever actuated by the insulated pin adapted at one end to engage the oscillating contact to impart an initial impulse thereto in breaking the circuit.

3. In a device of the class described the combination with a suitable support of a contact secured thereon, a movable contact bar supported on said base, an operating lever pivoted on said base having an outer, upwardly directed end, a spring connecting opposite ends of the operating lever and contact bar, a lever having one end positioned beneath the contact bar, means secured at one end to the operating lever for automatically actuating the last named lever to shift said bar out of contact instantaneously when pressure is released and a hinged support adapted to bear on the upwardly directed end of the operating lever.

4. In a device of the class described the combination with a slab of posts secured thereon, a contact member rigidly secured to one of said posts, a contact bar electrically connected with the other post and pivoted to swing to engage the contact member, said bar having a beveled face to engage the contact member, a lever having the outer end directed upwardly, spring connections between the lever and contact bar, means operating the lever to actuate the contact bar to close the circuit by the weight of an operator and a spring connected to the lever and the slab for automatically returning the lever and last named means to normal.

5. In a device of the class described the combination with an insulating support of terminal posts secured thereon, a movable contact bar on said support, means electrically connecting one of said posts and said bar, a contact member secured to the other post, a lever pivoted adjacent the contact bar, a pin secured thereto, a spring connecting the pin and contact bar, insulation on the end of said pin and a pivoted lever adapted at one end for engagement with the insulated end of the pin and at its opposite end to strike one end of the contact bar to aid the spring in instantaneously actuating the bar to break the circuit.

6. In a device of the class described the combination with terminal posts of a contact member connected with one post, a support, a contact bar pivoted thereon provided with a beveled face to engage the contact member, a strip of conducting metal providing connections between one of said terminal posts and said support, a bent lever pivoted adjacent the contact bar having a vertically directed end, a pin secured to the lever, an insulating washer on the end thereof, a pin secured to the contact bar, a spring connecting said pins, said lever adapted to be actuated to swing said bar to engage the contact member and means automatically returning the lever to normal to swing said bar out of engagement with the contact member.

7. In a device of the class described the combination with a base of an insulating slab supported thereon, terminal posts secured to said slab, a standard secured to the slab, a contact bar pivoted to the standard, means electrically connecting one of said terminal posts and bar, a lever pivoted on the base provided with an upwardly directed end, operative connections between said lever and contact bar adapted to move the contact bar to make and break the circuit when said lever is actuated, means for manually operating the lever in making the circuit and a spring engaged at one end to the base and engaged around the pivot and secured at its opposite end to the upwardly directed end of said lever thereby automatically returning the lever to normal.

8. In a device of the class described the combination with a base of an insulating slab thereon, contacts supported thereby, one of which is movable, a spring connected with the movable contact, mechanism actuating the spring to actuate the movable contact, to engage the other contact, means automatically returning said mechanism to normal and a lever actuated by a part of said mechanism to strike the contacting end of said movable contact and coacting with the spring to snap the movable contact to normal position.

9. In a device of the class described the combination with a base of an insulating slab thereon, contacts supported thereby, one of which is movable and normally out of contact with the other, a spring connected with the movable contact, mechanism actuating the spring to actuate the movable contact to engage the other contact, means automatically returning said mechanism to normal, a lever actuated by a part of said mechanism when returning to normal to strike said movable contact and coacting with the spring to snap the movable contact to normal position, a housing or casing covering the contacts and part of the mechanism and a hinged support adapted to bear against the spring actuating mechanism.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

HARRY A. BEYNON.

Witnesses:
K. E. HANNAH,
J. W. ANGELL.