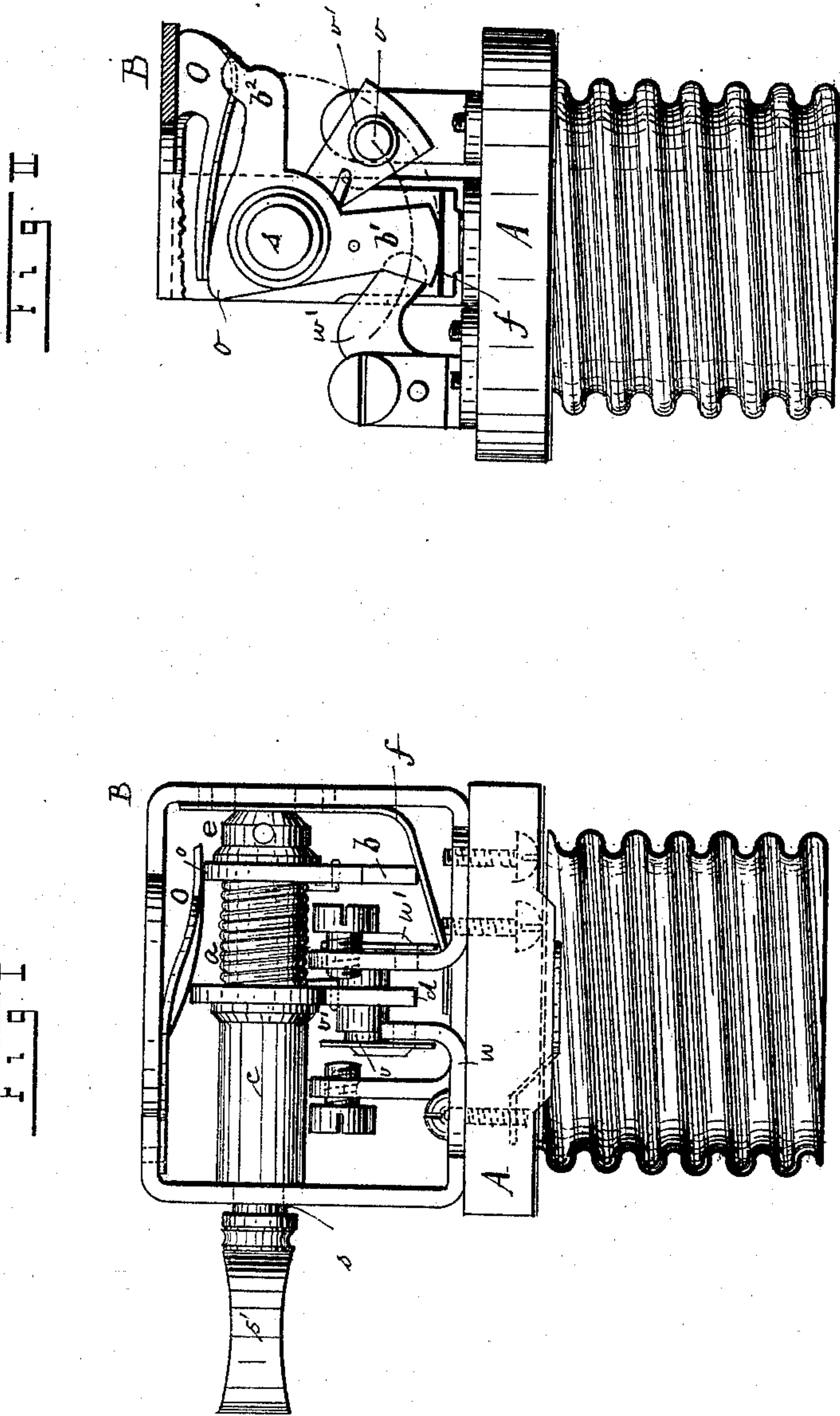


(No Model.)

C. A. P. WILLING & R. J. G. VIOLET.
ELECTRIC SWITCH.

No. 474,541.

Patented May 10, 1892.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CARL ALFRED PAUL WILLING AND RICHARD JULIUS GEORG VIOLET, OF
BERLIN, GERMANY.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 474,541, dated May 10, 1892.

Application filed May 26, 1891. Serial No. 394,207. (No model.)

To all whom it may concern:

Be it known that we, CARL ALFRED PAUL WILLING and RICHARD JULIUS GEORG VIOLET, of Berlin, Germany, have invented certain new and useful Improvements in Switches, of which the following is a specification.

This invention has for its object a device for instantaneously opening and closing electric circuits, and is so designed that on the closing-lever being actuated potential energy is first stored up, which on the release of an arresting device is transformed into kinetic energy, and thereby causes an instantaneous opening and closing of the circuits.

This invention is shown on the accompanying drawings, in which Figure I is a front elevation of the instantaneously-closing device attached to an incandescent lamp, and Fig. II is a side view of the same.

The device can, however, be employed for any other suitable purpose besides incandescent lamps.

B is a frame fastened to the bottom plate A of the incandescent-lamp holder, in which frame a rotatable pin *s*, having a handle *s'*, is mounted. A metal bushing *c* is mounted on this pin at one end, and approximately in the middle a loosely-revoluble closing-lever *d*. Near to the other end a releasing-lever *b* is fixed on the rotatable pin *s* and is secured thereto. It has two arms *b'* and *b²* at about an angle of ninety degrees, and is retained in its place by means of the washer *e*. Between the closing-lever *d* and the releasing-lever *b* on the rotatable pin *s* a spiral spring *a* is placed, one end of which is connected to the closing-lever *d* and the other end to the releasing-lever *b*. Both the closing-lever *d* and releasing-lever *b* are retained in their places on the rotatable pin by means of the metal bushing *c*, the spiral spring *a*, the washer *e*, and frame B. A metal pin *v* passes transversely through the closing-lever *d* near its free end and is preferably surrounded with an insulating-sleeve *v'*. The said metal pin in one position of the device rests between two spring contact-plates *w* and *w'*, which are inserted in the circuit which is to be opened or closed. The releasing-lever *b* is controlled on the one hand in the usual manner by means of a spring O acting on its projection *o*, which spring O

serves for holding the lever *b* in its different positions. On the other hand, however, it actuates a plate-spring *f*, fastened on the frame B. This check-spring O produces the tension of the spiral spring *a* and thereby the instantaneous opening and closing of the current-circuit. This is alternately influenced by the two arms *b'* and *b²* of the releasing-lever *b*. When in its uninfluenced position, it is nearest to the pin *s* and retains the closing-lever *d*, either when the circuit is opened or closed, till it is caught by one of the arms of the releasing-lever *b* and forced farther from the rotatable pin *s*.

The mode of action is as follows: If the pin *s* be rotated when the circuit is open, the spring *f* retains the closing-lever *d* for a sufficient time, until the spring is removed farther from the pivotal pin *s*, by means of the shank *b²* of the releasing-lever *b*. As, however, one end of the spiral spring *a* is fastened to the closing-lever and the other end to the releasing-lever, the one lever being held while the other rotates, the spiral spring is put in a state of tension during the rotating of the pivotal pin. The spring *f* is then forced down corresponding to the curve described by the shank *b²*, thus releasing the closing-lever at a given moment, whereby the potential energy is changed into kinetic. In this way the closing-lever *d*, with its metal pin *v*, is suddenly jerked between the two contact-plates *w* and *w'*. The process is a similar one for opening the circuit. On the turning of the pin *s* the spring *f* is first released and retains the closing-lever *d* in its position for a sufficient time to allow of its being bent outward again by the other lever *b'*. The breaking of the circuit is performed as instantaneously as was the closing of the same, described above.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In an electric switch, the combination, with the rotative switch-pin *s*, of the contact-lever *d*, mounted loosely thereon, the releasing-lever *b*, fixed on said switch-pin *s* and provided with arms *b'* and *b²*, the spring O, bearing on said releasing-lever *b*, the retaining-spring *f*, and the spiral spring *a*, of which

one end is connected with the closing-lever *d* and the other with the releasing-lever *b*, substantially as set forth.

2. In an electric switch, the combination,
5 with the frame B, of the rotative switch-pin *s*, the contacts *w w'*, the contact-lever *d v*, mounted loosely thereon, the releasing-lever *b*, provided with two arms and fixed rigidly on the pin *s*, the spring O, bearing on said re-
10 leasing-lever, the retaining-spring *f*, the spiral spring *a*, connected with the levers *b* and *d*,

and the contact-screw *v*, substantially as set forth.

In testimony that we claim the foregoing as our invention we have signed our names in 15 presence of two subscribing witnesses.

CARL ALFRED PAUL WILLING.
RICHARD JULIUS GEORG VIOLET.

Witnesses:

WILH. HÄBERLEIN,
MAX DITTRICH.