

No. 668,798.

Patented Feb. 26, 1901.

JAMES JONES & JAMES JONES, JR.

ELECTRIC SWITCH.

(Application filed Feb. 20, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2.

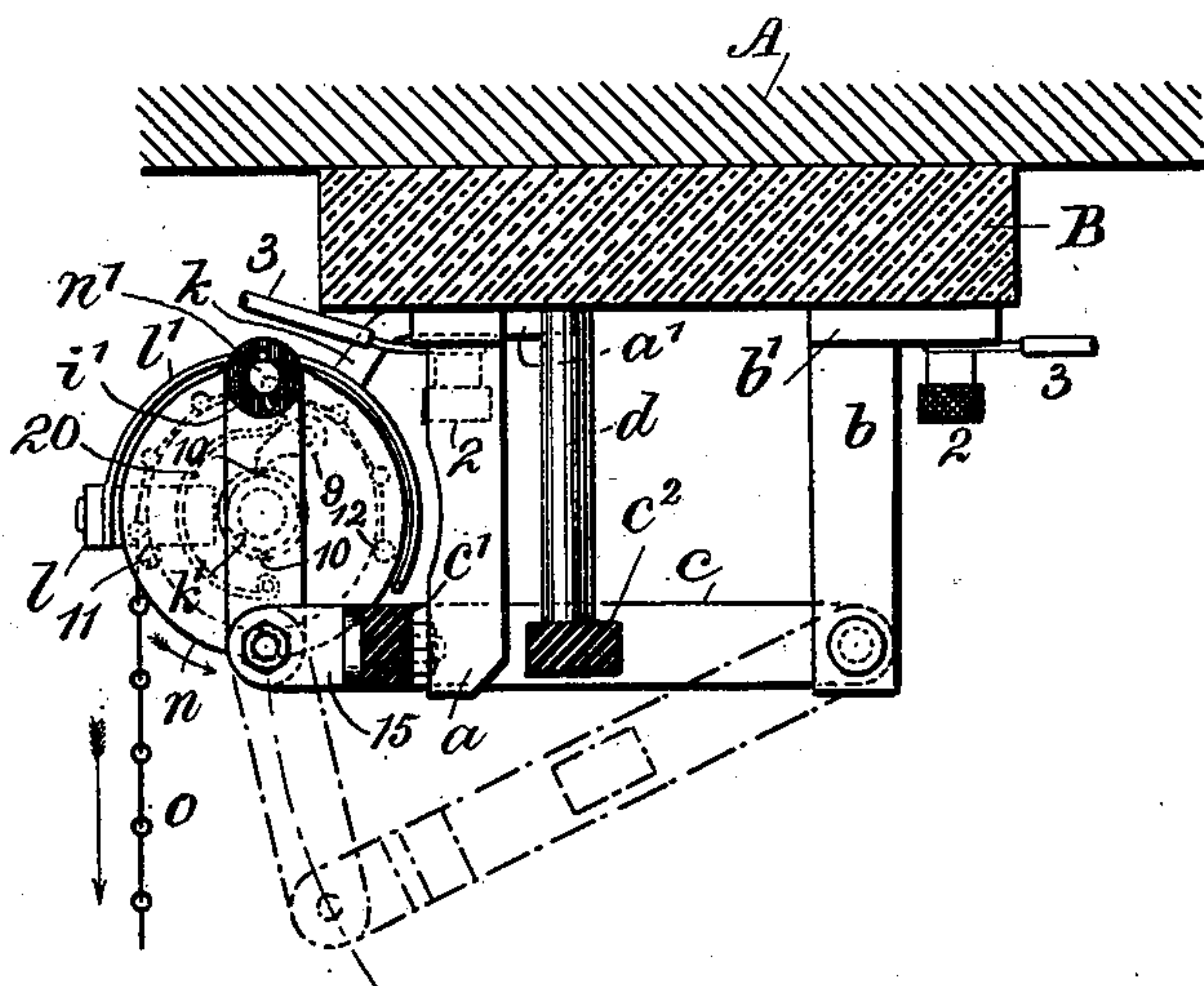
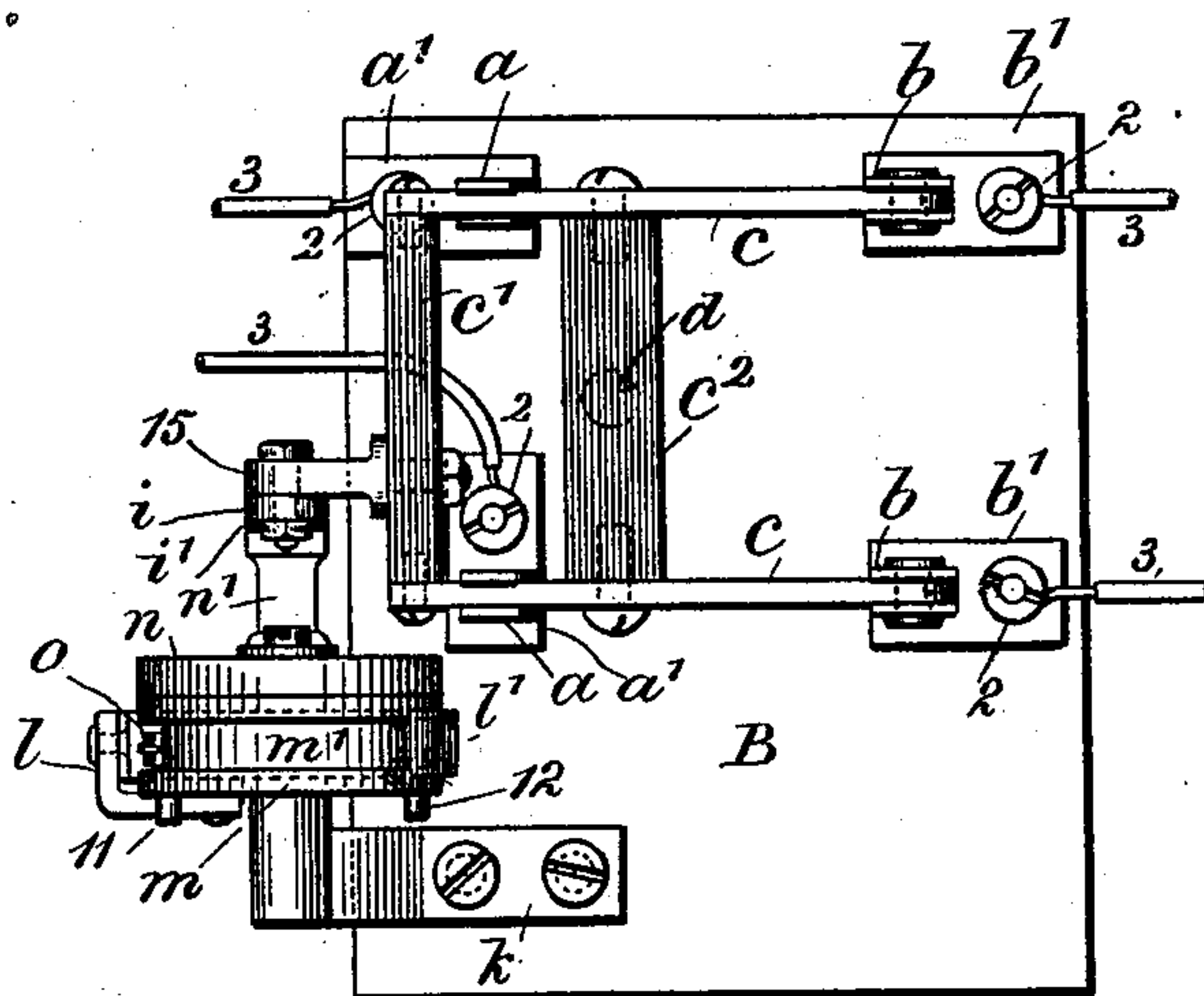


Fig. 1.



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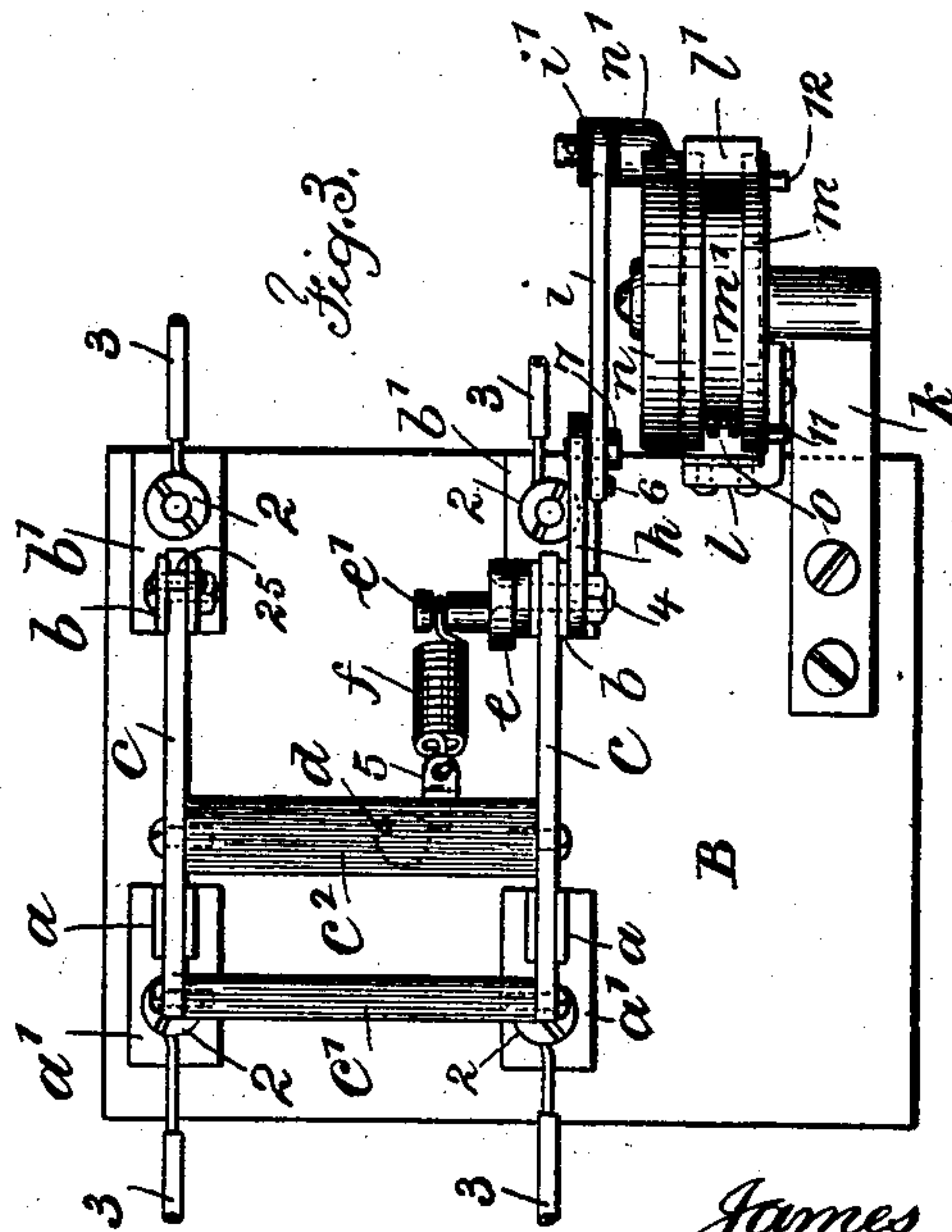
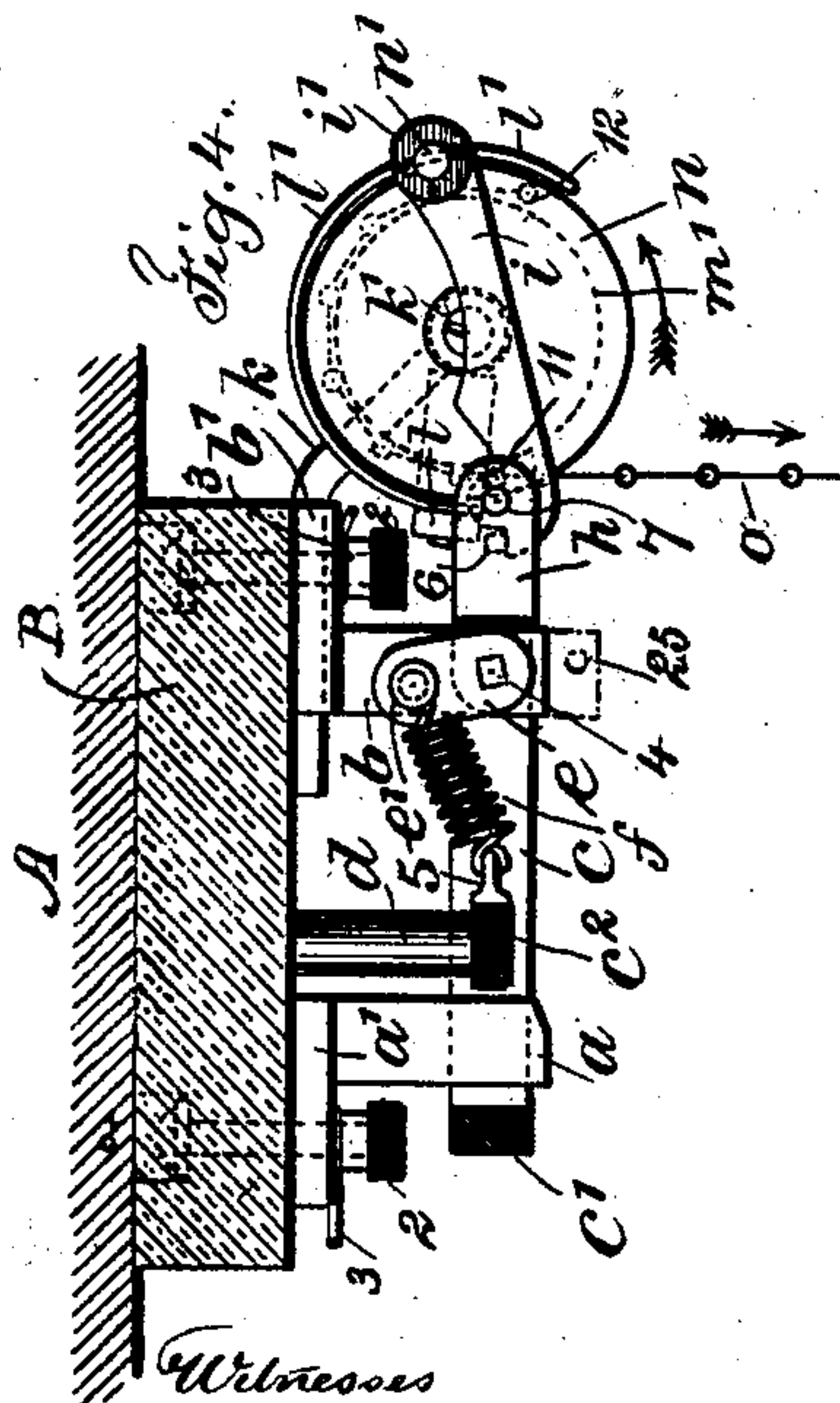
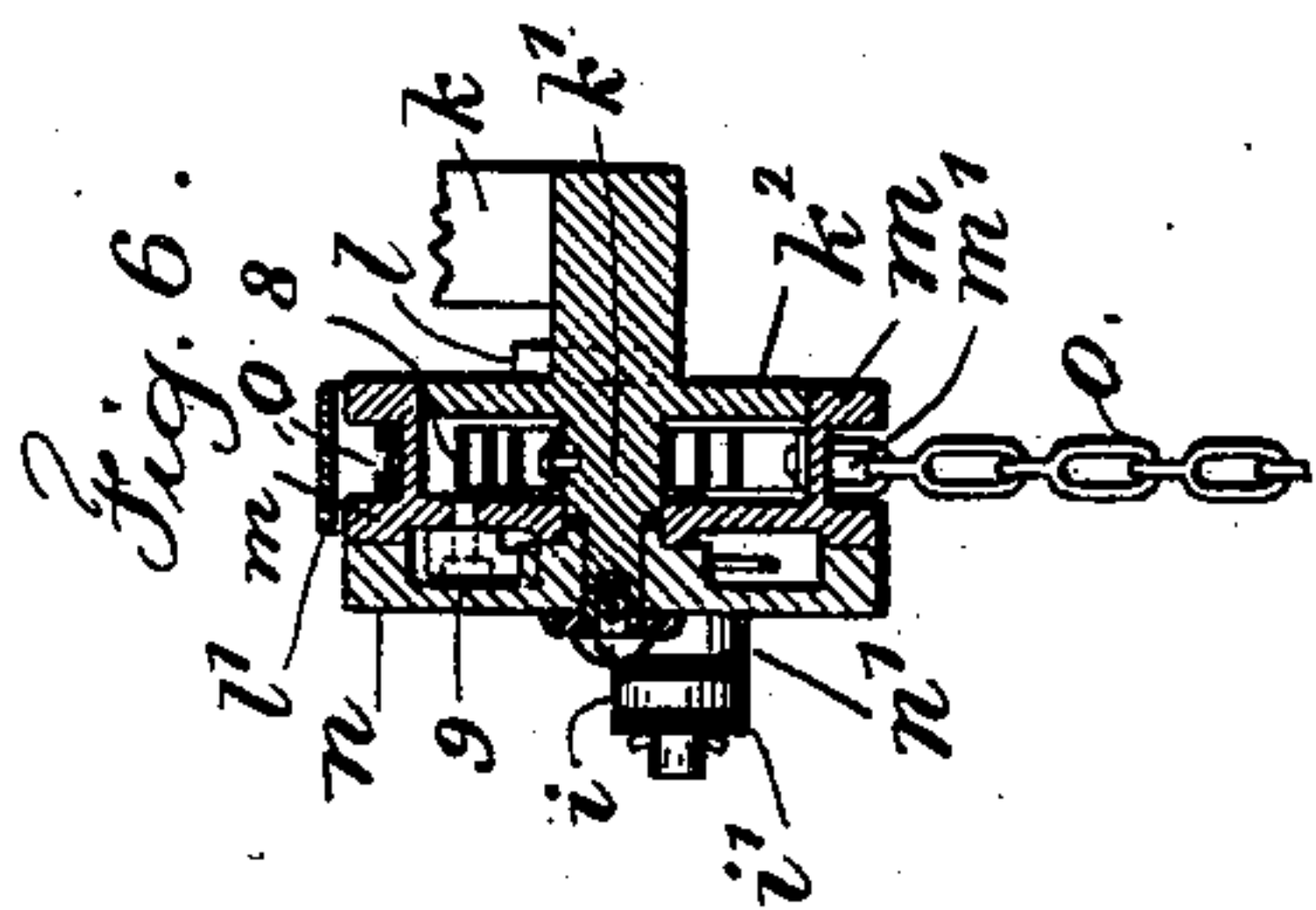
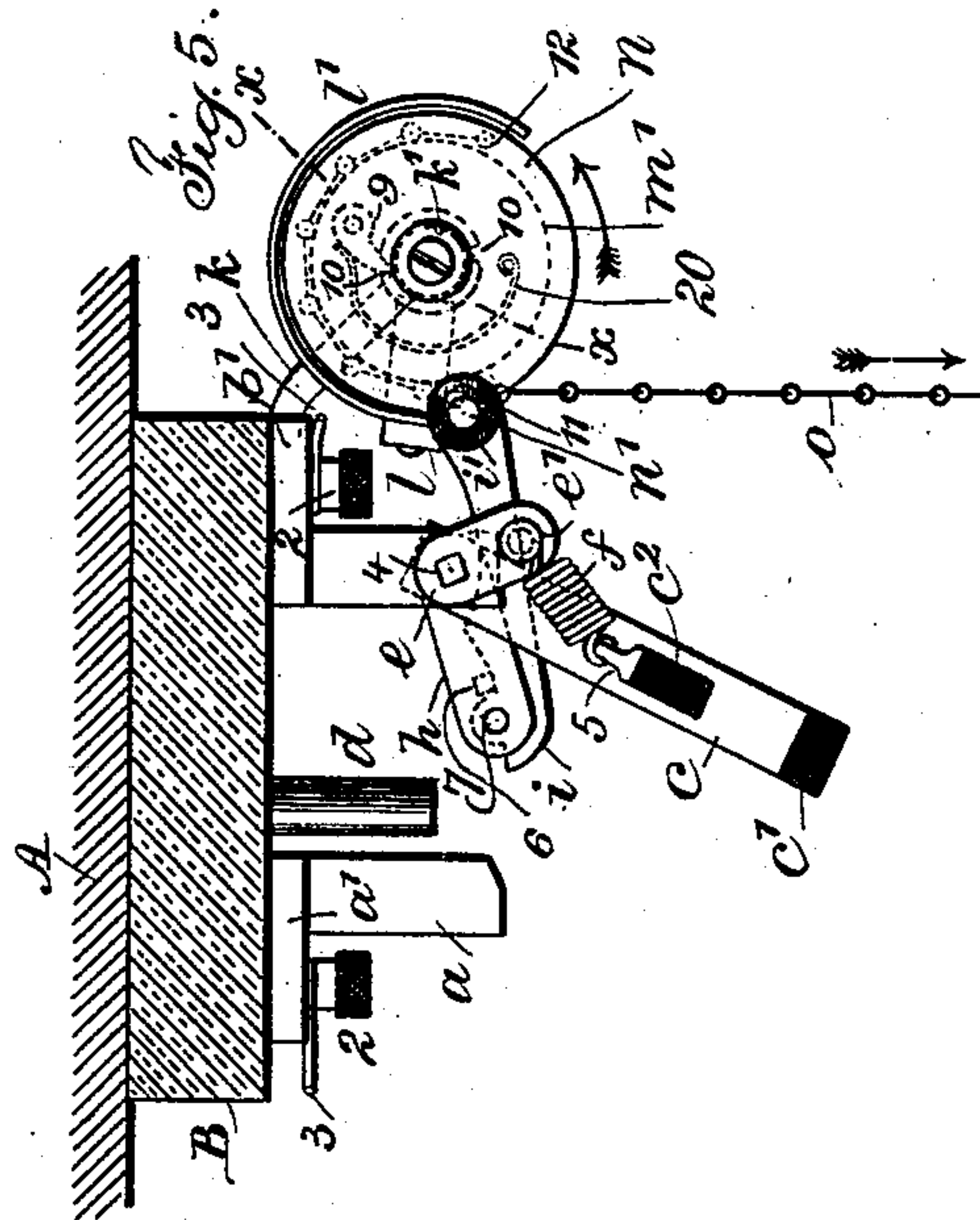
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UNITED STATES PATENT OFFICE.

JAMES JONES AND JAMES JONES, JR., OF BROOKLYN, NEW YORK.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 668,798, dated February 26, 1901.

Application filed February 20, 1899. Serial No. 706,114. (No model.)

To all whom it may concern:

Be it known that we, JAMES JONES and JAMES JONES, Jr., citizens of the United States, residing at the borough of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Electric Switches, of which the following is a specification.

Our invention relates to electric switches especially adapted, in connection with arc-lights and incandescent-lamp chandeliers, to being placed upon a ceiling or side wall. Heretofore in operating electric switches for arc-lights and incandescent-lamp chandeliers the current has usually been made or broken by operating a cord or chain in opposite directions to give motion to the switch-bar, the cord passing over a pulley. This arrangement was very liable to get out of order.

In carrying out our invention the switch-bar is actuated in either direction to make or break the circuit by a rotary barrel turned in one direction by pulling upon a flexible device, such as a depending chain, and the same is returned in the reverse direction by a spring. This action causes a pawl to engage the ratchet of a disk upon the shaft of the barrel, and the disk has a link pivoted thereto at one end and to a stud on the switch-bar at the other end. The rotation of the barrel turns the disk a half-revolution at a time and either pushes the link down to move the switch-bar away from the front post and break the circuit or raises the link and switch-bar to engage the post and close the circuit.

In the preferable form of our invention the link is connected to and actuates devices which strain and bring a spring under tension first in one direction and then in another to pull the switch-bar away from the front post and break the circuit or toward and into engagement with the front post to make the circuit. These devices are hereinafter more particularly described.

In the drawings, Figure 1 is an inverted plan, and Fig. 2 is a partial section with the switch closed, representing our improvement. Fig. 3 is an inverted plan; Fig. 4, a partial section with the switch closed; Fig. 5, a partial section with the switch open, and Fig. 6 a transverse section through the rotary barrel and the ratchet-and-pawl device approxi-

mately upon the line xx of Fig. 5. Figs. 3 to 6, inclusive, show the preferable form of our improvement.

In all the figures, A represents the ceiling, and B a ceiling-block of non-conducting material, such as slate. Upon this block as a base the front posts a , with their bases a' , and the back posts b , with their bases b' , are mounted in the usual manner.

The switch-bar is composed of the metallic parts c and the transverse connections c' c^2 of insulating material, and the bars c are pivoted to the back posts b . A stop-post d , preferably of insulating material, extends downward from the ceiling-block and acts against the transverse piece c^2 of the switch, and binding-posts 2 and circuit-wires 3 are employed upon the respective bases a' b' . The parts just enumerated are well known and do not require further description.

A bracket k is secured to the ceiling-block B, and to this bracket the spindle k' is connected. This spindle carries a disk k^2 , and the parts k k' and k^2 are preferably integral. To the disk k^2 an arm l , having a curved shoe l' , is connected, the curved shoe extending over the surface of the barrel m and slightly more than half-way around its periphery. The barrel m is upon the spindle k' , and the same receives the disk k^2 , and said barrel is grooved peripherally for a flexible device, such as a chain o , one end of which is connected to said barrel, the groove being shown at m' . One end of an internal spring 8 is connected to the spindle and the other end to the barrel to cause the barrel to partially rotate in one direction when returning to a normal position. Upon the outer face of said barrel is a pawl 9 and a spring 20, and the extreme end of the spindle k' receives a disk n , recessed on the inner surface adjacent to the barrel, and the hub of said disk is provided with teeth 10, engaged by the pawl 9, and said disk is provided upon its surface with a post n' , to which a link i is pivoted. The curved shoe l' acts to retain the chain or flexible device in the groove of the barrel m .

Insulating material i' around the post n' preferably consists of a sleeve passing through the link and a disk at each side of the link. This prevents the current passing from the switch to the pawl-and-ratchet mechanism

and so to the chain and to the operator. The link *i* is pivotally connected at its other end to a stud 15, secured to the transverse part *c'* of the switch. On the outer surface of the barrel *m* we provide two stops 11 and 12, which respectively take against the upper and under side of the arm *l* to limit the movement.

In the operation of the device shown in Figs. 1 and 2 the chain or flexible device *o* is pulled down in the direction of the arrow, and the ratchet-and-pawl device is operated also in the direction of the arrow. This movement imparts a half-rotation to the disk *n*, swinging the link *i* and pushing the switch-bar down into the position shown by dotted lines, Fig. 2, breaking the circuit, and when the chain is released it is wound up by the spring-actuated barrel to the normal position. When again pulled upon, the chain actuates the parts, raising the link and switch-bar back into the position shown by full lines, where the switch-bar engages the front posts and again completes the circuit.

In the preferable form of our invention, (shown in Figs. 3 to 6, inclusive,) one of the switch-pivots is the short shaft 4 in one of the back posts. To one end of this short shaft the crank *e* is secured and to the other end the crank *h* is secured, and the two cranks in relation to one another are slightly more than a right angle. The crank *e* has a stud *e'*, and the contractile spring *f* is connected to the stud *e'* at one end and to an eyeblock 5 at the other end, the eyeblock being secured to the transverse piece *c'* of the switch. The crank *h* is provided with a stop 6, and the link *i* is pivoted at one end to this crank at 7 and to the other end upon the post *n'*. In the movement of these parts by the barrel and ratchet-and-pawl device, as hereinbefore described, the link *i* turns the crank *h* downward and swings the crank *e* toward the pawl-and-ratchet device, straining the spring *f*, and when the axial line of the spring passes by the center of the short shaft 4 toward the position of the parts shown in Fig. 5 the spring acts by its contraction and pulls the switch-bar away from the divided front posts *a* and breaks the circuit, bringing the parts into the position shown in Fig. 5. In this position it will be noticed that the stop 6 of the crank *h* is brought from the position shown in Figs. 3 and 4 at one side of the pivot 7 to the other side. The release of the chain first returns the parts actuated thereby to the normal position, as hereinbefore stated, and when the chain is again pulled upon, with the parts in the position shown in Fig. 5, another half-rotation is imparted to the barrel to operate the ratchet-and-pawl device and the disk *n*, and through the intervention of the link *i* the crank *h* is pulled down or over toward the ratchet-and-pawl device and the crank *e* is turned upward toward the ceiling-block B, and as the axial line of the spring again passes by the short shaft 4 the spring is

strained and by its contraction draws the switch-bar upward toward the ceiling-block and returns the parts into the position shown in Fig. 4 to again complete the circuit.

The free end of the post *b*, Figs. 3, 4, and 5, the companion post to the one having the short shaft 4, is lengthened (see dotted lines, Fig. 4) and provided with a cross-pin 25, that acts as a stop for the part *c* of the switch-bar to prevent said switch-bar being pulled too far downward when assuming the position of the parts Fig. 5.

Our improved device is exceedingly simple and is positive in its action.

We claim as our invention—

1. In an electric switch, the combination with the pivoted switch-bar, of a disk and a barrel in the same plane, and a pivotal support therefor, a ratchet and pawl between and respectively connected to the disk and barrel, a chain or similar flexible device hanging from the barrel for actuating the same in one direction, and a spring for returning the barrel and flexible device to a normal position and a connection from the disk to the pivoted switch-bar, substantially as set forth.

2. In an electric switch, the combination with the pivoted switch-bar, of a disk and a ratchet-and-pawl device, a barrel and a flexible hanging device therefrom for actuating the barrel in one direction and a spring for returning the barrel and hanging device to the normal position, and a connection from the disk and the ratchet-and-pawl device to the pivoted switch-bar, substantially as set forth.

3. In an electric switch, the combination with the pivoted switch-bar, of a contractile spring connected at one end to the switch-bar, a shaft and crank thereon and a stud on the crank to which the other end of the contractile spring is connected, a second crank, a link and means for actuating the said parts for swinging said crank for about a half-rotation in alternate directions to strain the spring and cause the same to move the switch-bar, substantially as set forth.

4. In an electric switch, the combination with the pivoted switch-bar, of a contractile spring connected at one end to the switch-bar, a shaft and a crank thereon and a stud on the crank to which the other end of the contractile spring is connected, a second crank on the other end of the shaft, a link pivoted to said crank and a stop on the crank adjacent to the end of the link and means substantially as specified for moving the link and swinging the cranks in first one direction and then in the other for straining the spring and moving the switch-bar to make and break the circuit, substantially as set forth.

5. In an electric switch, the combination with the pivoted switch-bar, a contractile spring connected therewith and means for applying tension to the spring, of a flexible hanging device to be operated by hand, a spring-barrel and ratchet-and-pawl device

operated by the flexible hanging device and a connection therefrom to the spring-straining mechanism, substantially as set forth.

5 6. In an electric switch, the combination with the pivoted switch-bar, a contractile spring and means for applying tension to the spring, of a barrel *m* and a support therefor, a flexible hanging device for turning the barrel in one direction, and a spring within the
10 barrel for returning the same to the normal position, a disk having teeth and a spring-actuated pawl engaging the teeth, a post upon the disk and a connection therefrom to the mechanism for straining the spring, substan-
15 tially as set forth.

7. In an electric switch, the combination with the pivoted switch-bar, a helical spring and means for applying tension to the spring, of the barrel *m* and a support therefor, a flexi-

ble hanging device for turning the barrel in 20 one direction, a spring within the barrel for returning the barrel to the normal position, a disk having teeth and a spring-actuated pawl engaging the teeth, a post upon the disk and a connection therefrom to the mechanism 25 straining the helical spring and a sleeve and disks of insulating material around the post of said disk, and between which disks and about which sleeve the pivoted end of the straining mechanism is connected and from 30 which the same is insulated, substantially as set forth.

Signed by us this 30th day of January, 1899.

JAMES JONES.

JAS. JONES, JR.

Witnesses:

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HAROLD SERRELL.