(No Model.)

3 Sheets—Sheet 1.

A. STROMBERG.

ELECTRIC SWITCH.

No. 493,369. Patented Mar. 14, 1893.

Fig. 3

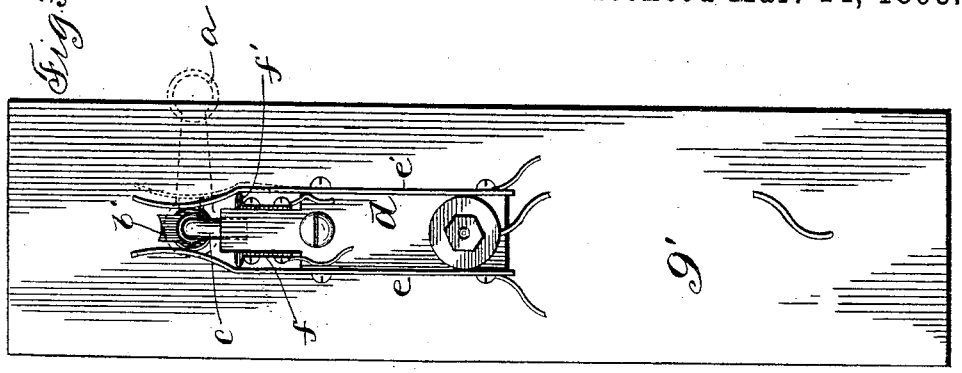


Fig. 2

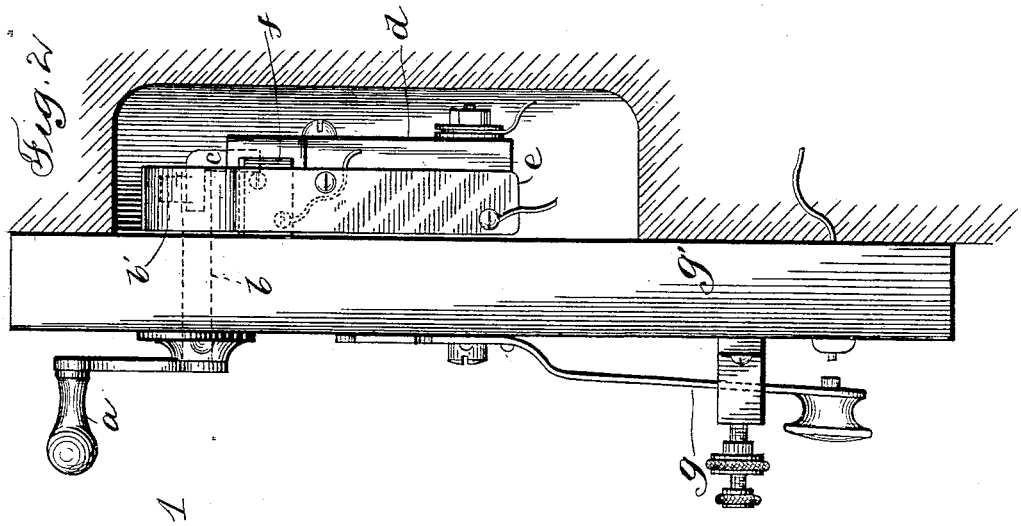
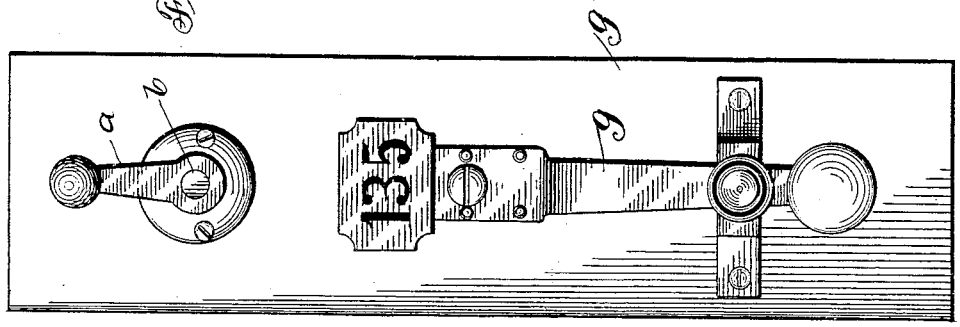


Fig. 1



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(No Model.)

3 Sheets—Sheet 2.

A. STROMBERG.

ELECTRIC SWITCH.

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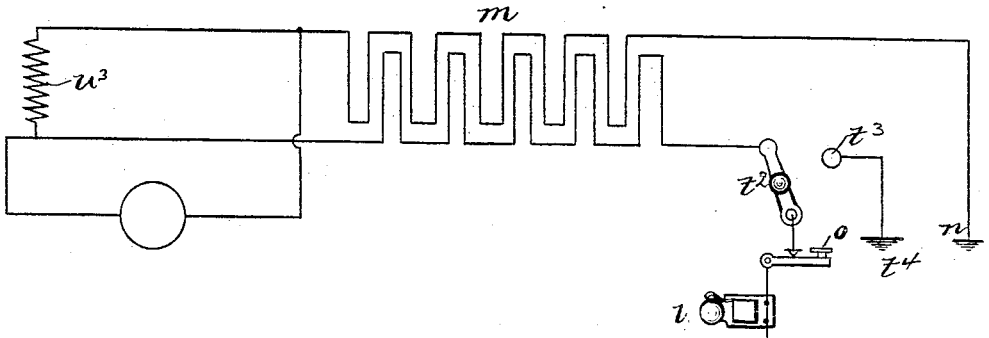
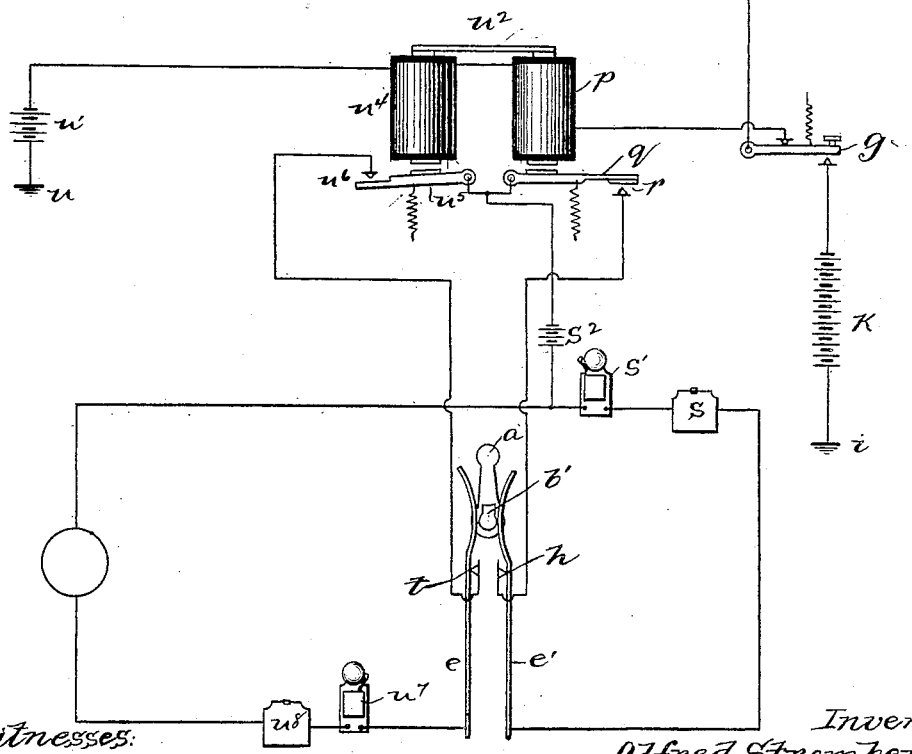


Fig. 4



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(No Model.)

3 Sheets—Sheet 3.

A. STROMBERG.

ELECTRIC SWITCH.

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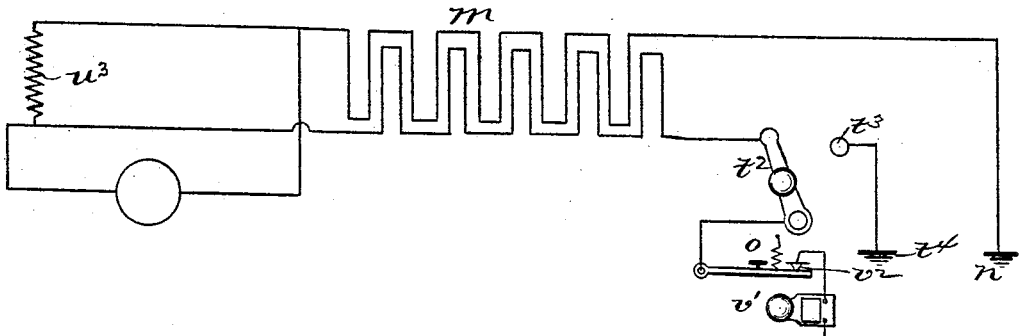
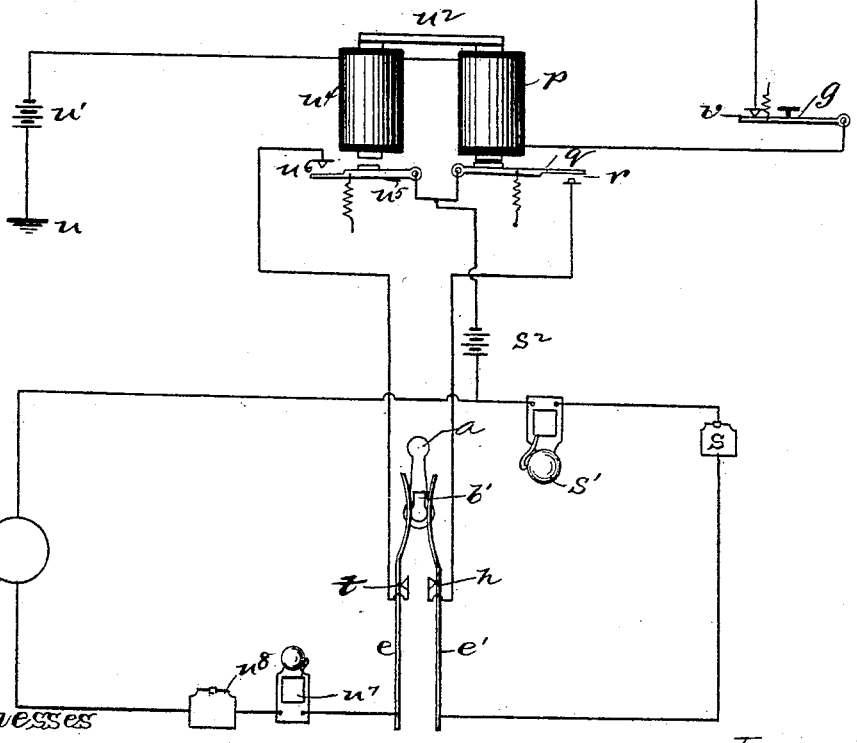


Fig. 5



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UNITED STATES PATENT OFFICE.

ALFRED STROMBERG, OF CHICAGO, ILLINOIS.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 493,369, dated March 14, 1893.

Application filed November 1, 1892. Serial No. 450,642. (No model.)

To all whom it may concern:

Be it known that I, ALFRED STROMBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Switches, (Case No. 6,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to electric switches which are employed in burglar alarm systems, or in other electric signaling systems. It is designed more particularly to be used in connection with the system shown and described in my application Serial No. 425,268.

Referring to the accompanying drawings, Figure 1 shows an elevation of my switch. Fig. 2 shows a side view thereof. Fig. 3 shows a back view thereof. Fig. 4 shows in diagrammatic form the protected district and the switch of my invention included in the local alarm circuit. Fig. 5 is a similar diagrammatic illustration of the protected district, the switch of my invention being also included in the local alarm circuit, a slight modification being made in the arrangement of the circuits.

Like parts are indicated by similar letters of reference throughout all the views.

Referring to Figs. 1, 2 and 3, I have shown therein the switch in its idle position, the handle a being fastened upon a rod b, said rod being journaled upon an angular rod c, said rod c being supported upon block d. Mounted upon block d are line springs e, e', as also are contact plates f, f'. To the rod b is affixed a switch block b' which impinges upon the line springs e or e', according as the switch a is swung to the left or the right.

In Fig. 3 I have shown the position of the line spring e' when the switch a is swung to the right, the said position being shown in dotted lines. Swinging the switch a to the left or to the right serves to break connection between the contact plate f' or contact plate f, which are mounted upon the block d, and the line springs e' or e.

Referring to Fig. 4 I have shown the line springs of the switch connected in circuit at the central station. The calling key g, shown mounted upon the lower portion of the block g' in Figs. 1 and 2, is placed in the circuit from the protected district, through the relay at central station to ground. During the time that the subscriber's district is protected it may be desired to signal said subscriber. In such a case to prevent the local alarm from being unnecessarily sounded switch a is swung to the left, breaking circuit at t. When the switch a is so turned, calling key g is depressed so as to close the circuit from ground i, through the battery k, through said calling key g to the alarm bell l at the subscriber's station, through the protected district m to ground at n. The subscriber upon receiving the signal, answers by depressing the key o which breaks the circuit to the central station, thereby de-energizing the magnet p, allowing the armature lever q to fall and complete circuit at r, through line spring e' which has been allowed to assume its normal position, individual annunciator s and alarm bell s', battery s^2, thence back to r by lever q.

If during the day it is desired to signal the subscriber, calling key g is depressed, which completes the circuit from ground i to battery k, from battery k, through switch, alarm bell l, and the subscriber's switch t^2 which has previously been swung upon button t^3, to ground t^4. The subscriber responds by depressing the key o, which breaks the circuit from the protected district to central station. Now just previous to the depression of key o the circuit is complete from ground u, battery u', relay u^2, key g, alarm bell l, switch t^2, to ground t^4. Therefore when circuit is broken at o armature lever q falls and completes circuit through the alarm bell s' and individual annunciator s, thus indicating to the operator that the subscriber has received the signal. The local circuit controlled by the relay p is adapted to be closed to sound an alarm when, for any reason, the circuit passing through the protected district is broken, the electro-magnet of the relay is de-energized permitting the armature g to fall and close the local circuit. The local circuit controlled by the relay n^4 is adapted to be closed when, for any reason, the resistance n^3 is cut out of the circuit passing through the protected district. When this resistance is cut out, as by a short circuit or ground, the electro-magnet of the relay n^4 is sufficiently energized to attract the armature n^6, thus closing the local circuit.

In Fig. 5 I have shown the same apparatus

and circuit connections that I have shown in Fig. 4, with the exception that battery k is dispensed with.

During the time that the subscriber's district is protected, if it is desired to send a signal to said subscriber, calling key g is depressed, which breaks the circuit at v, which causes the single stroke alarm bell v' to sound, which alarm bell is used in place of the double stroke alarm bell l shown in Fig. 4. The switch a is turned to the left breaking circuit at h before the operator sends this signal to the subscriber. The subscriber returns the signal as described in connection with Fig. 4.

During the day when the subscriber has cut out his protected district by short circuiting the current from central station to ground at t^4, if it should be desired to signal said subscriber, the operator by breaking the circuit at v causes the single stroke alarm bell v' at subscriber's station to sound. The subscriber returns a signal by depressing key o which breaks the circuit from central station at v^2, which causes the magnet p to be de-energized, which results in completing the circuit at r through the alarm bell s', thus giving the desired return signal. During the entire time that the protected district is short circuited the switch a must be in such a position as to break circuit at t in order to prevent the alarm bell u^7 from being constantly rung. For, as described in Letters Patent No. 483,728, granted to me October 4, 1892, the resistance u^3 at the subscriber's station being cut out, when said subscriber places the switch t^2 upon button t^3 the magnet u^4 has its electro motive force increased sufficiently to attract the armature lever u^5, which causes circuit to be completed at u^6, through line spring e and alarm bell u^7, individual annunciator u^8 and battery s^2, back to point u^6 by the armature lever u^5. Therefore in order to prevent the alarm s' from constantly sounding circuit is broken at t. I have shown the switch of my invention thus connected in circuit with the system described in my application Serial No. 425,268, and also in Fig. 5 I have shown how with the use of my switch and a single stroke bell, the battery k may be dispensed with, and all the essential results accomplished which are accomplished in the system shown in Fig. 4.

By the construction of my switch by which the lever a has four stops at which it is held in its revolution, I am enabled to place the circuits operated by said switch securely in the desired position, and at the same time by a glance at the switch to determine in what condition each circuit is.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is—

1. In an electric switch, the combination with contact springs normally resting against their contact points, of a shaft carrying upon one end a handle, a cam mounted upon said shaft between said springs and of a length greater than the semi-distance between said springs, said shaft adapted to be rotated, whereby one or the other of said springs may be lifted from its contact point, the end of said cam being adapted to fit said springs to hold the shaft in its new position, substantially as described.

2. In an electric switch, the combination with contact springs normally resting against their contact points and situated at the rear of the board, of a shaft passing through said board and carrying at its front end a handle, a cam mounted upon said shaft between said springs and of a length greater than the semi-distance between said springs, said shaft adapted to be rotated in either direction to lift one or the other of said springs from its contact, the end of the cam being adapted to fit the springs to hold the shaft in its new position; whereby the position of said handle may indicate the condition of the line as to electrical connection, substantially as described.

3. In an electric switch, the combination of a line spring e' normally included in the circuit in which are the alarm bell s, individual annunciator s', battery s^2 and armature lever q, with a line spring e normally included in the circuit in which are the alarm bell u^7, individual annunciator u^8, battery s^2 and armature lever u^5, and battery k, adapted to ring the subscriber's alarm bell l when key g is depressed, together with a key o included in the circuit from the subscriber's station to central station; whereby the subscriber may signal the central station, substantially as shown and described.

4. In an electric switch, the combination of a line spring e' normally included in the circuit in which are the alarm bell s, individual annunciator s', battery s^2 and armature lever q, with a line spring e normally included in the circuit in which are the alarm bell u^7, individual annunciator u^8, battery s^2 and armature lever u^5, together with a key g included in circuit from the central station to the subscriber's station; whereby when said key is depressed, the single stroke bell v' included in the same circuit with said key g is caused to alarm the subscriber, a key o being provided whereby the subscriber may signal the central station, substantially as shown and described.

In witness whereof I hereunto subscribe my name this 29th day of October, A. D. 1892.

ALFRED STROMBERG.

Witnesses:
W. CLYDE JONES,
GEORGE L. CRAGG.