

(No Model.)

E. OXLEY.
ELECTRIC SWITCH.

No. 586,075.

Patented July 6, 1897.

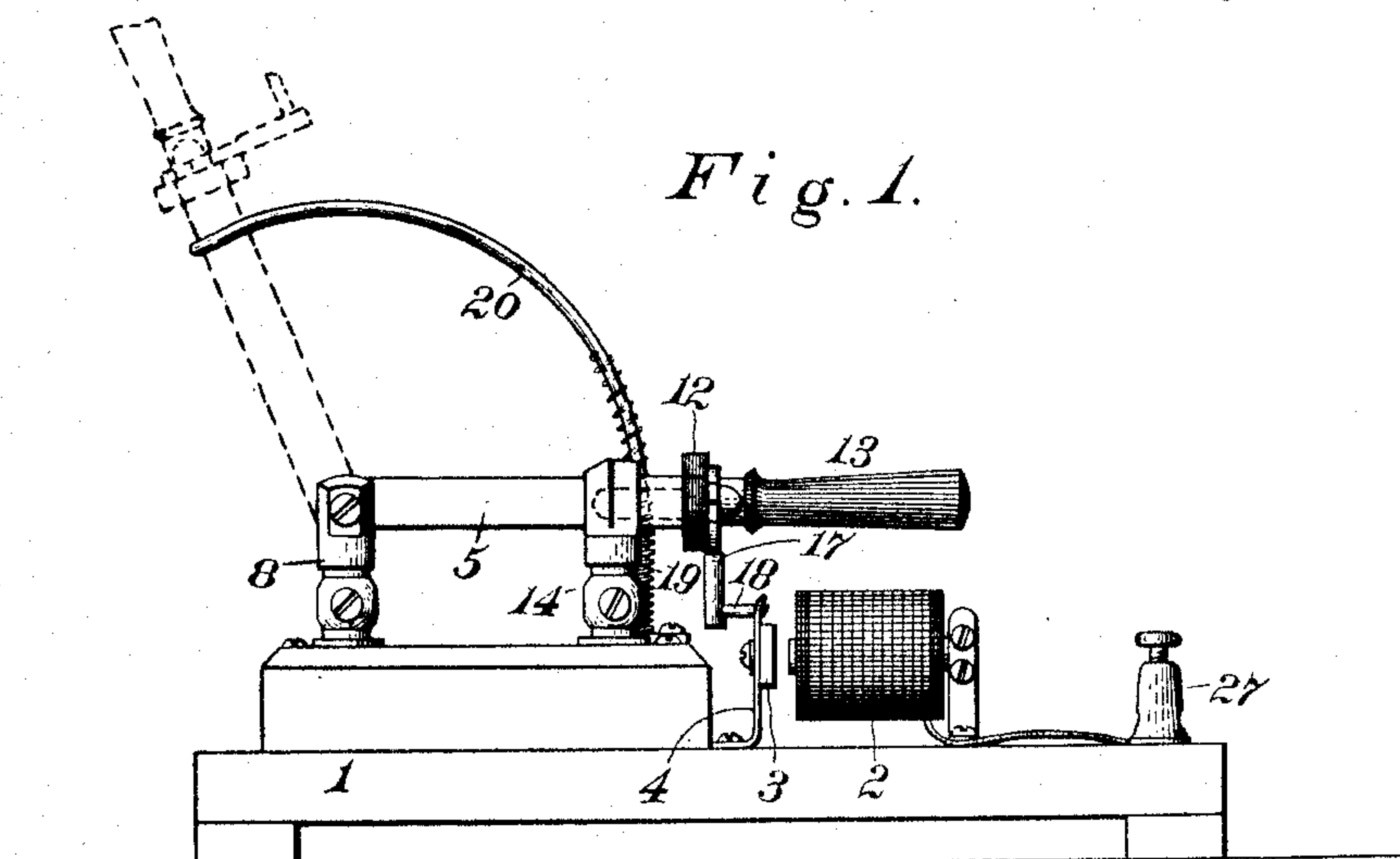


Fig. 2.

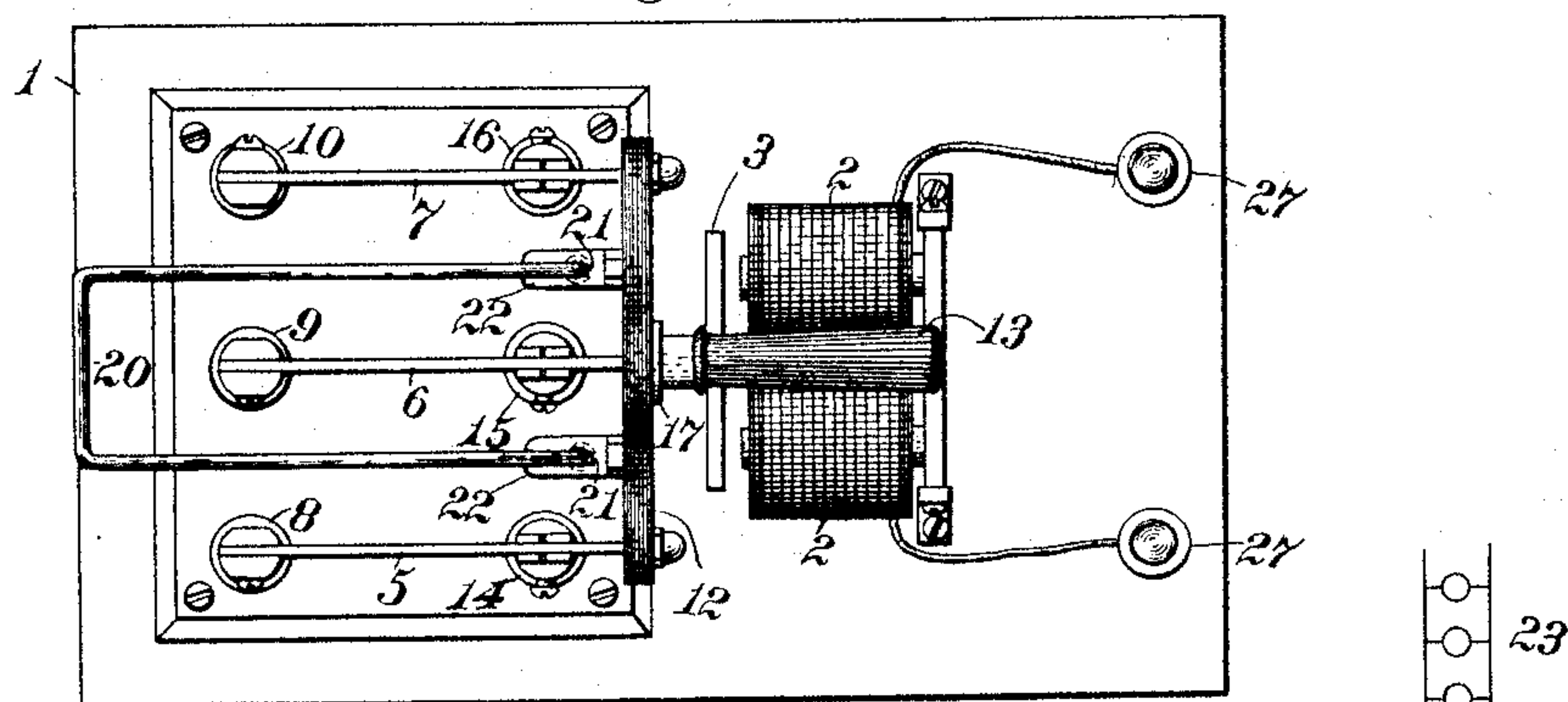
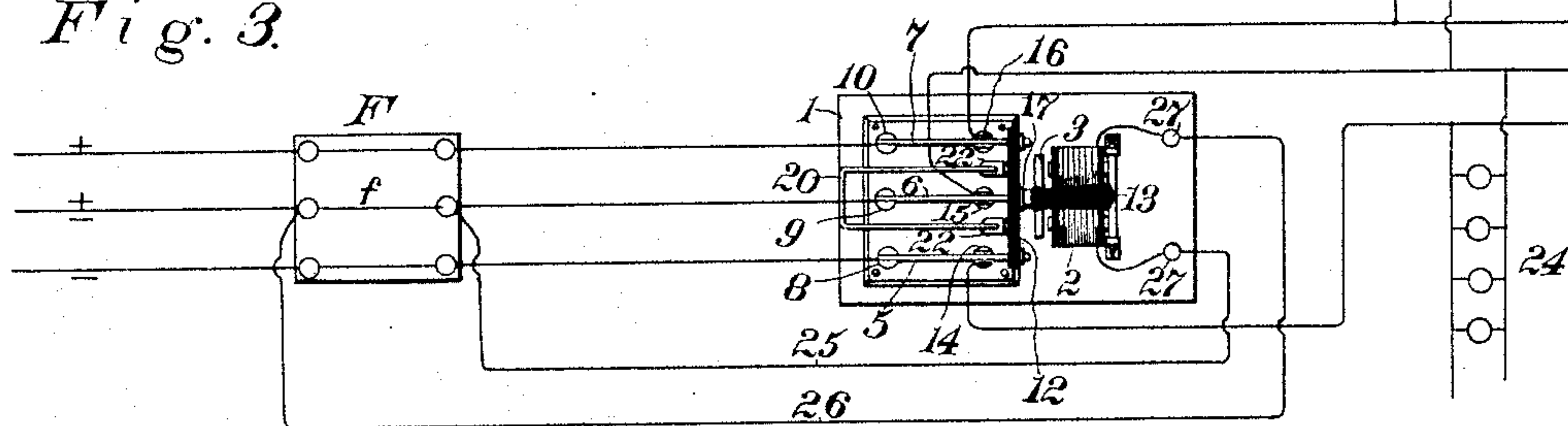


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 586,075, dated July 6, 1897.

Application filed April 23, 1897. Serial No. 633,553. (No model.)

To all whom it may concern:

Be it known that I, EUSTACE OXLEY, a subject of the Queen of Great Britain, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Electric Switches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

In systems of electrical distribution in which a balance must be preserved between two or more sides of the system the disturbance of the equilibrium, which should normally be preserved, has been found to have an extremely detrimental effect upon the translating devices. For example, if the translating devices are lamps a disturbance of the normal balance usually results in the bursting of part of the lamps, and even if they escape destruction they are strained so severely as to greatly abridge the period of use of which they should be capable. The liability to a frequent occurrence of such results is a serious objection to any system employing a balance-wire, which may be rendered useless by the blowing of its safety-fuse. The removal of this wire from the system by such a cause, unless it is followed by an immediate opening of both sides of the light or other circuit, is very apt to cause more or less of the lamps upon the strained side of the system to explode, and the startling effect produced upon persons present and the apparent destruction of apparatus work an injury to the commercial interests of the service by awakening a prejudice in the minds of persons present against the use of the electric current. It is the purpose of my invention to provide means of great simplicity and trifling cost whereby this objection may be fully obviated; and my said invention consists in the novel parts and combinations of parts hereinafter described, and then pointed out in the claims.

For the purposes of the following description reference will be had to the accompanying drawings, in which—

Figure 1 is a side elevation showing a suitable form of switch for my present invention. Fig. 2 is a plan view of the same; and Fig. 3 is a diagram of the several circuits, showing the switch interposed therein.

The switch I employ may or may not have novelty, but it constitutes no part of my present invention. It consists of a base-plate 1, upon which is mounted an electromagnet 2 and a spring-supported armature 3, which lies directly opposite the poles of the magnets. The armature is supported upon a spring-finger 4, having in its upper end a small opening. Behind the armature is arranged a switch, already referred to, which consists of three switch-arms 5, 6, and 7, each pivoted upon a separately-insulated terminal 8, 9, and 10, respectively. The movable ends of the arms are connected by a cross-brace 12, having a handle 13, and when the arms 5, 6, and 7 are thrown down they enter clips 14, 15, and 16, respectively. Upon the cross-bar is mounted a hanging finger 17, having a pin 18, which enters the aperture in the upper part of the spring 4, thereby mechanically locking the switch-arms in their clips and holding them against the pressure of the springs 19, which tend to throw them out of said clips. These springs are coiled upon a curved arm or yoke 20, which follows the arc of the circle in which the switch-arms turn when released. The yoke passes through openings 21 in brackets 22 upon the transverse bar connecting the switch-arms. The operating position of the switch is shown in Fig. 1 in full lines, and it will be seen that as long as no current flows through the winding of the electromagnet there will be no force tending to release the pin 18 from the aperture in the spring supporting the armature. When the switch is opened, it assumes the position shown in dotted lines in Fig. 1.

I have shown this switch connected up in a three-wire system, but it may be used equally well upon any system in which a balance is required between the different sides of the system. This is a matter too familiar to electricians to require any elaboration.

In Fig. 3 I have shown the switch connected in a three-wire system, in which the letter F indicates the main fuse-block. The numerals 23 and 24 denote branches from op-

posite sides of said system, the wires of the system being connected to the clips 14, 15, and 16, respectively. The balancing-wire is connected to the clip 15, as shown in Fig. 3.

5 The electromagnet 2 is of comparatively high resistance, so that the current, instead of flowing from the opposite sides of the fuse *f* through wires 25 and 26 to binding-post 27 on the base-plate of the switch, and thence
10 around the cores of the magnet 2, normally flows over its usual path. If, however, the fuse *f* should melt from any cause, thereby disestablishing the circuit of the balance-wire of the system, the sudden rise of voltage be-
15 tween the two points of connection of the wires 25 and 26 will drive current through the winding of magnet 2, energizing the cores, attracting the armature 3, and drawing the spring-support 4 off the pin 18. The switch-arms
20 being thus set free, the tension of the springs upon the arms of the yoke instantly throws said arms out of the clips 14, 15, and 16 and breaks both sides of the circuit, thus completely cutting off from all connection with
25 the mains that portion of the system controlled by said switch.

With this simple and inexpensive means of protection I am thus enabled to wholly prevent all liability to the occurrence of such
30 disasters and avoid the injury to the service and to the lamps and other appliances upon the circuit.

What I claim is—

35 1. In a balanced system of electrical distribution the combination with the balancing-wire, of a switch normally closed against spring-pressure, and completing the circuit upon all sides of the system, an electromag-

net having a winding of comparatively high resistance, connected to the opposite sides of 40 the fuse of the balancing-wire, and an armature for said magnet connected to a device which mechanically locks the switch in its closed or "on" position, substantially as set forth.

45 2. In a balanced system of electrical distribution, the combination with the balancing-wire of a normally-closed switch, which completes the circuit on all sides of the system, a spring normally tending to open said 50 switch, an electromagnet having a winding of comparatively high resistance connected to opposite sides of the safety-fuse of the balancing-wire, a spring-supported armature, and a mechanical lock to hold the switch 55 closed, which is released by the movement of the armature, when attracted, substantially as set forth.

3. In a balanced system of electrical distribution, the combination with the balancing-wire, of a switch normally closing the circuit on all sides of the system, a spring to throw said switch open, a finger on the switch- 60 bar having a pin to enter an opening in a spring on the switch-base, an electromagnet 65 having a winding of high resistance connected to opposite sides of the fuse of the balancing-wire, and an armature mounted on the spring, which locks the switch in closed position, substantially as set forth. 70

In testimony whereof I affix my signature in presence of two witnesses.

EUSTACE ONLEY.

Witnesses:

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