

No. 785,405.

PATENTED MAR. 21, 1905.

R. G. CLARK.
ELECTRICAL SWITCH.
APPLICATION FILED APR. 16, 1904.

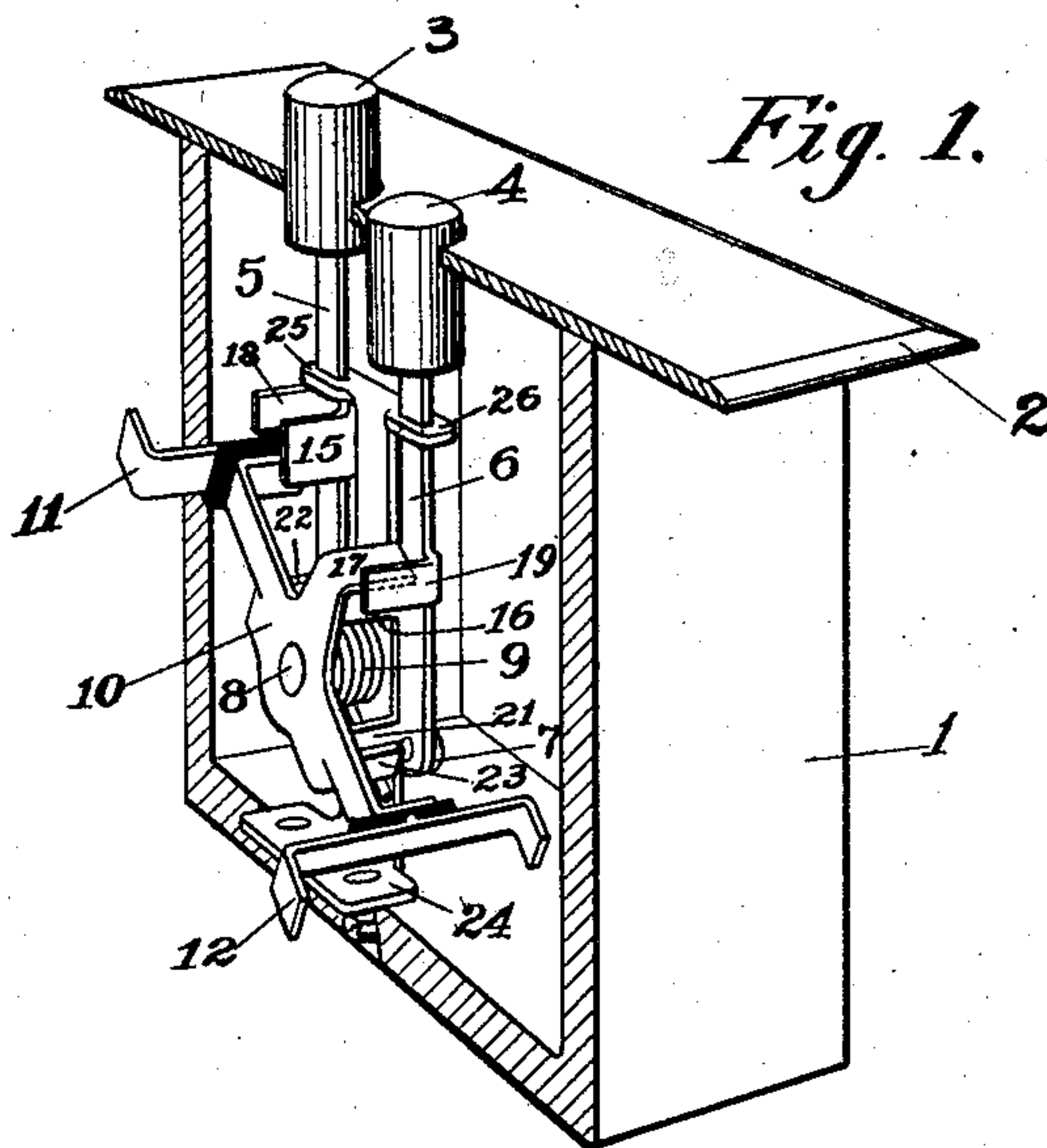


Fig. 2.

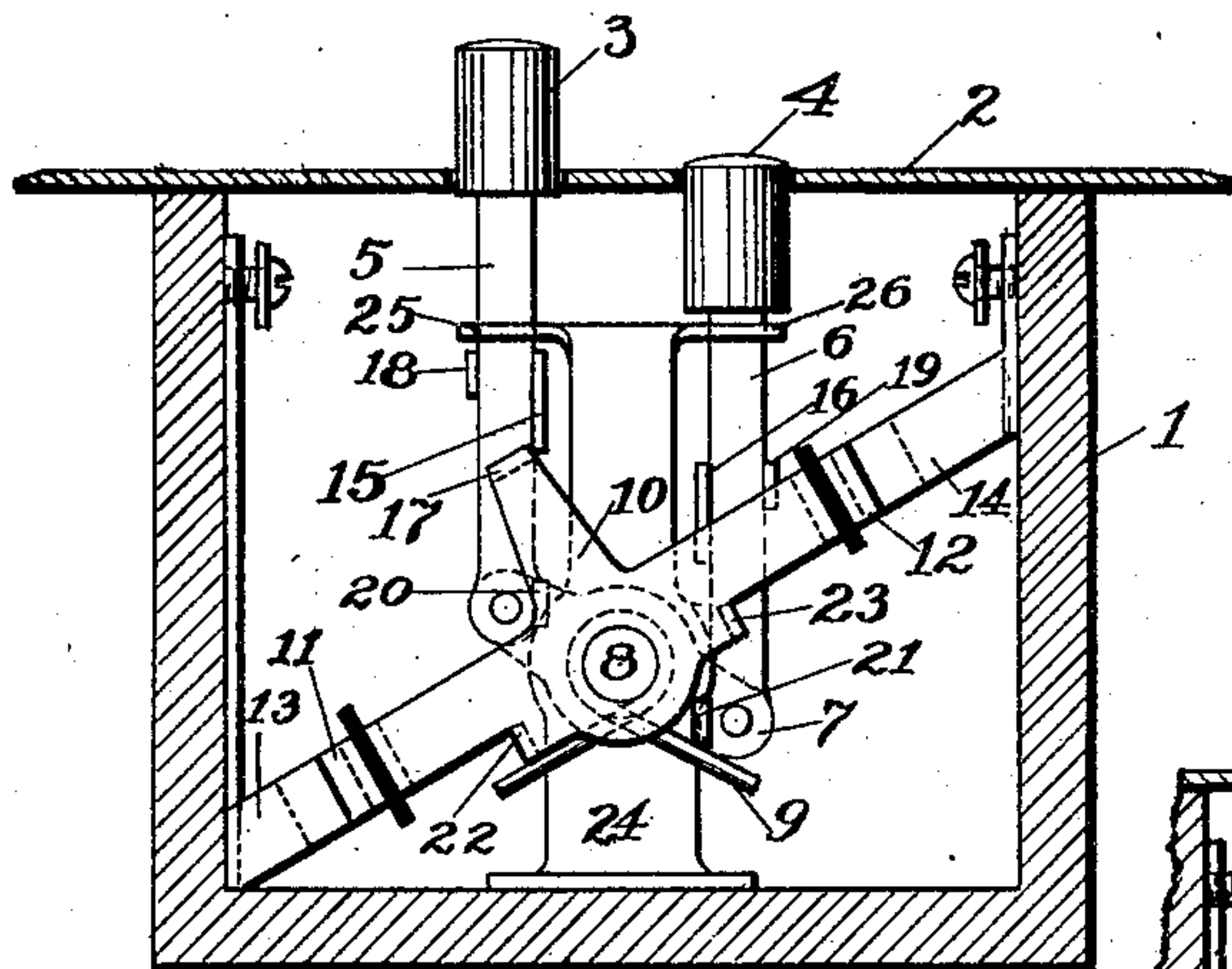
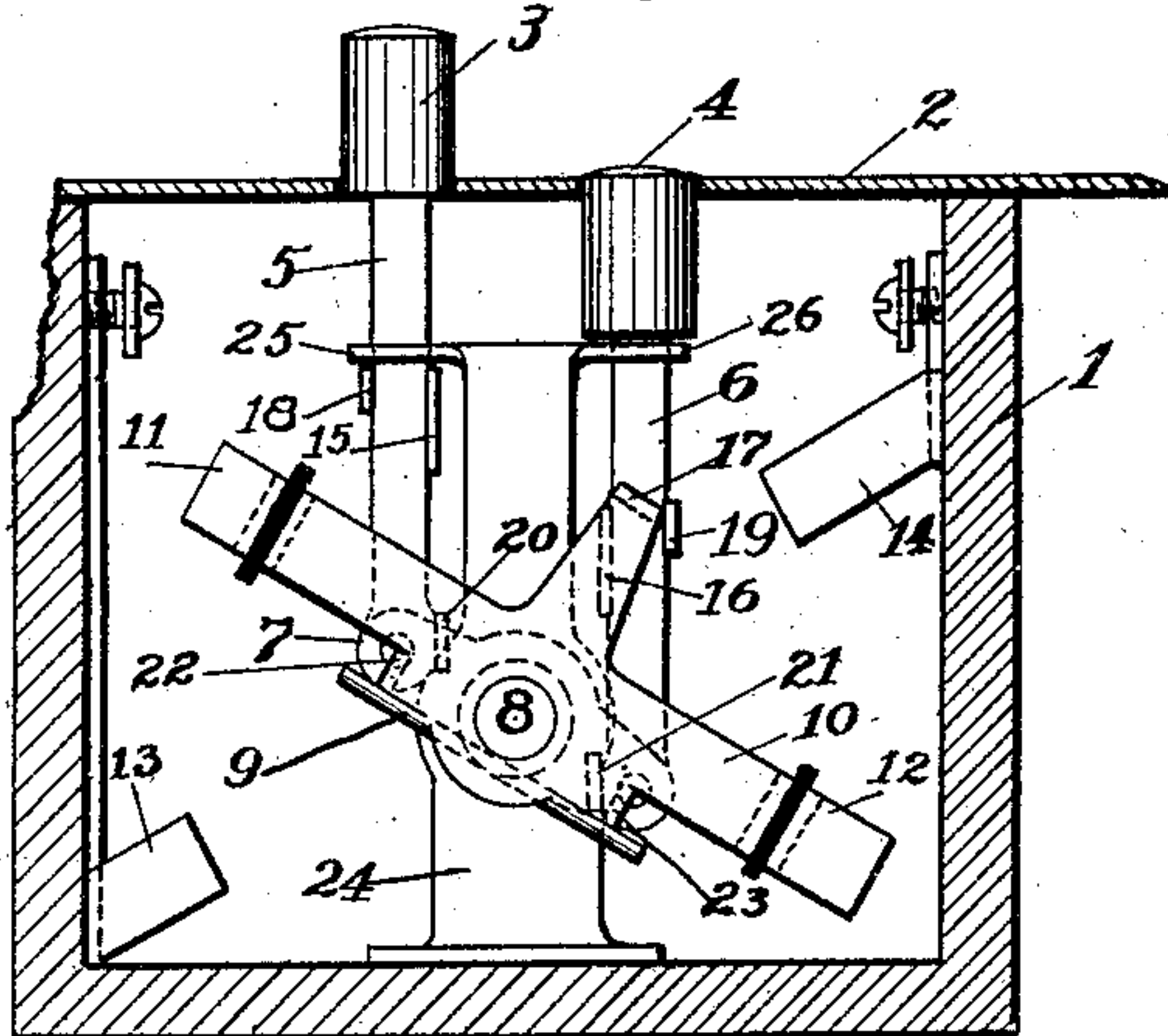


Fig. 3.



Witnesses;
Chas H. Hadley
Mabel C. Clark.

Robert G. Clark,
Inventor.
by
Lewis J. Doolittle,
Attorney.

UNITED STATES PATENT OFFICE.

ROBERT G. CLARK, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF
TO U. L. LAUGHLIN, OF SCHENECTADY, NEW YORK.

ELECTRICAL SWITCH.

SPECIFICATION forming part of Letters Patent No. 785,405, dated March 21, 1905.

Application filed April 16, 1904. Serial No. 203,498.

To all whom it may concern:

Be it known that I, ROBERT G. CLARK, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electrical Switches, of which the following is a specification.

This invention relates to electrical switches of the class known to the trade as "push-button" or "snap" switches. The object desired in these switches is to provide means for quickly and positively breaking the circuit by a simple device which is easily operated from the outside of the inclosing box or case, usually by means of projecting levers or buttons, which it is only necessary to push in order to operate the switch mechanism.

In my invention I have made use of the usual form of operating-buttons and have provided a mechanism in which the simple pushing in of the button serves first to set a spring in a position to quickly move the switch-blade and break the circuit when an interlocking mechanism, also operated by the push-button, releases the blade-carrier and allows the spring to operate as stated and as will be more fully described hereinafter.

One of the features of my device is that the blade is held in full contact with its clips by means of the interlocking device until the push-button has been depressed a predetermined amount and when released receives the full effect of the spring, which insures a very quick and positive break. Should the button be depressed only part way and the operator remove his hand, the spring operates to return the parts to their original position without affecting the position of the switch-blade. This feature prevents damage to the contacts by the arcing due to the switch being partly opened.

The mechanism of the switch as designed to illustrate a preferred form and embodiment of my invention presents a device of very few parts, which is capable of being easily and cheaply manufactured, and which, furthermore, has several new and valuable features, which are more fully shown and described in connection with the drawings accompanying this specification.

Like parts in all the views have the same reference-figures.

Figure 1 is a sectional perspective view showing the switch in the open position. Fig. 2 is an outline side elevation showing the position of the parts when the switch is closed and the push-button or handle has been depressed till the interlocking device is just on the point of releasing the contact member and allowing the spring to open the switch. Fig. 3 is an outline side elevation similar to Fig. 2, showing the position of the parts after the contact member has been released by the interlocking mechanism and opened by the spring.

At 1 is shown a case or box of insulating material and usual form, which is provided with a suitable cover 2. Operating-buttons, as 3 and 4, are mounted on suitable members or links, such as 5 and 6, which are connected to a lever, as 7, which is pivoted at 8 and operate to set a spring, such as 9, in operative position to move a contact member, such as 10, which may act as a carrier or support for one or more contact-blades, as shown in the drawings at 11 and 12. These blades may be insulated from the other parts of the mechanism by any suitable means, such as a block of insulating material placed between the blade and carrying-lever, as shown, the carrier and blades forming a contact member as distinguished from other parts of the mechanism. Contact-clips, as 13 and 14, provided with suitable terminals for the wires, cooperate with the contact-blades to close the circuit. It will be seen that any number of contact blades and clips may be used to meet the requirements of the circuit in which the switch is to be used. The spring 9 is preferably of coil form, with projecting arms to engage the operating-lever 7 on one side and the contact member 10 on the other, the body portion of the spring being located at the pivot 8, which forms a convenient support.

The operating-links 5 and 6 are preferably made of flat material to facilitate the forming of the projections 15 and 16, which are adapted to engage a cooperating projection 17 on an arm of the contact member 10 and prevent the movement of the latter till the operating mem-

ber has reached a predetermined point and forms an interlocking device. The projections 18 and 19 act as stops against which the projection 17 strikes when released by the interlocking stops 15 and 16, thereby limiting the movement of the contact member.

The projections 20 and 21 at the lower end of the operating members 5 and 6 engage the projecting ends of the spring 9, and similar projections 22 and 23 on the contact member 10 also engage the projecting ends of the spring.

The operation of the switch will be readily seen from the drawings, which show the parts in the several positions at different periods of the movement. Starting with the switch closed, as shown in Fig. 2, the button 4, with its connecting operating-link 6, is pushed in, thereby causing the projection 21 to engage the end of the spring 9 and move the same down to the position shown in Fig. 2, the opposite end of the spring being held from corresponding movement by the projection 22 on the contact member 10, which in turn is prevented from moving by means of the projection 17 engaging a coacting projection 15 on the operating-link 5, forming an interlocking device which holds the contact member in position till the spring has been set in operative position, as shown in Fig. 2, when a further movement of the operating member releases the contact member, which now receives the full effect of the spring and quickly opens, as shown in Fig. 3. The projection 19 acts as a stop to limit the movement, as shown.

To close the switch, the operation is similar to the one just described, using the corresponding button 3 instead of 4, which reverses the operation of the parts, using the corresponding stops, &c., on the opposite side of the mechanism.

A suitable support or post, such as 24, may be provided with slots or openings at the upper end thereof, forming guides, as at 25 and 26, for the operating-links 5 and 6. The parts of this mechanism may be very cheaply made from flat stock by means of suitable punchings, thus effecting a considerable saving in labor and material, and it will be noted that the parts are very few in number, the mechanism being designed so as to require a minimum number of pieces to operate the switch.

It will be understood that I do not confine myself to the exact details of construction as shown or described, as they are intended to represent a preferred form of a device and in which many changes in detail of construction and arrangement of parts may be made without departing from the scope of my invention.

What I claim is—

1. In a switch, the combination of a line-terminal, a sliding operating member, a contact member, an operating-spring, an interlocking device forming a part of said operating member to prevent the movement of said

contact member until the operating member has reached a predetermined point, a stop carried by said operating member to limit the movement of said contact member, and means for setting said spring in operative position to move the contact member and close the circuit through the line-terminal.

2. In a switch, the combination of a line-terminal, an operating member, a contact member, an operating-spring, an interlocking device carried by said operating member to control the movement of said contact member and allow the spring to return the parts to their original position when the operating force is removed unless the operating member be moved to a predetermined point, a stop forming a part of said operating member to limit the movement of said contact member, and means for setting said spring in operative position, substantially as described.

3. In a switch, the combination of a line-terminal, a sliding operating member, an operating-spring, a rocking contact member pivoted near the middle, having one or more arms acting as contact-blades and also having a third arm engaging a projecting portion of said operating member thereby preventing the movement thereof until the operating member has reached a predetermined point, a stop forming a part of said operating member to limit the movement of said contact member, a coiled spring having a projecting portion thereof engaging said contact member, and means for setting said spring in operative position to move the contact member and close the circuit through the line-terminal, substantially as described.

4. In a switch, the combination of a line-terminal, a pair of sliding operating members, a lever pivoted between and connecting said operating members, a rocking contact member pivoted concentrically with said lever, an operating-spring having the body portion loosely coiled around said pivot and having the ends thereof extending outwardly in opposite directions and adapted to alternately engage one of said operating members on one side and said contact member on the other side of the pivotal point, an interlocking projection forming a part of each of said operating members adapted to alternately engage a coacting projection on said contact member and prevent the movement thereof until one of said operating members has been depressed a predetermined amount, and a stop forming a part of each of said operating members to alternately engage said projection on the contact member and limit the movement thereof, substantially as described.

5. In a switch, the combination of a pair of line-terminals, a pair of sliding operating members, a pivoted contact member, a connecting-lever concentrically pivoted with said contact member and connecting said operating members on opposite sides of said pivot, an

operating-spring with the body portion there-
of loosely coiled around said pivot and the
ends extending outwardly in opposite direc-
tions, a projection at the lower end of each of
5 said operating members adapted to alternately
engage and rotate the projecting ends of said
spring, projections on opposite sides of the
pivot and forming a part of said contact mem-
ber adapted to alternately engage the project-
10 ing ends of said operating-spring, an inter-
locking device and a stop forming a part of
each of said operating members, an arm form-
ing a part of said contact member having a
projection coacting with said interlocking de-

vice and stop to prevent the movement of the 15
contact member until the operating-spring
has been set in operative position by the
movement of one of said operating members
and with said stop to limit the movement of
said contact member when released by the in- 20
terlocking device, substantially as described.

Signed at New York, in the county of New
York and State of New York, this 11th day
of April, A. D. 1904.

ROBERT G. CLARK.

Witnesses:

LEWIS J. DOOLITTLE,
LAWRENCE H. DOORLY.