

(No Model.)

J. SACK.
TELEPHONE SWITCH.

No. 416,754.

Patented Dec. 10, 1889.

Fig. 1

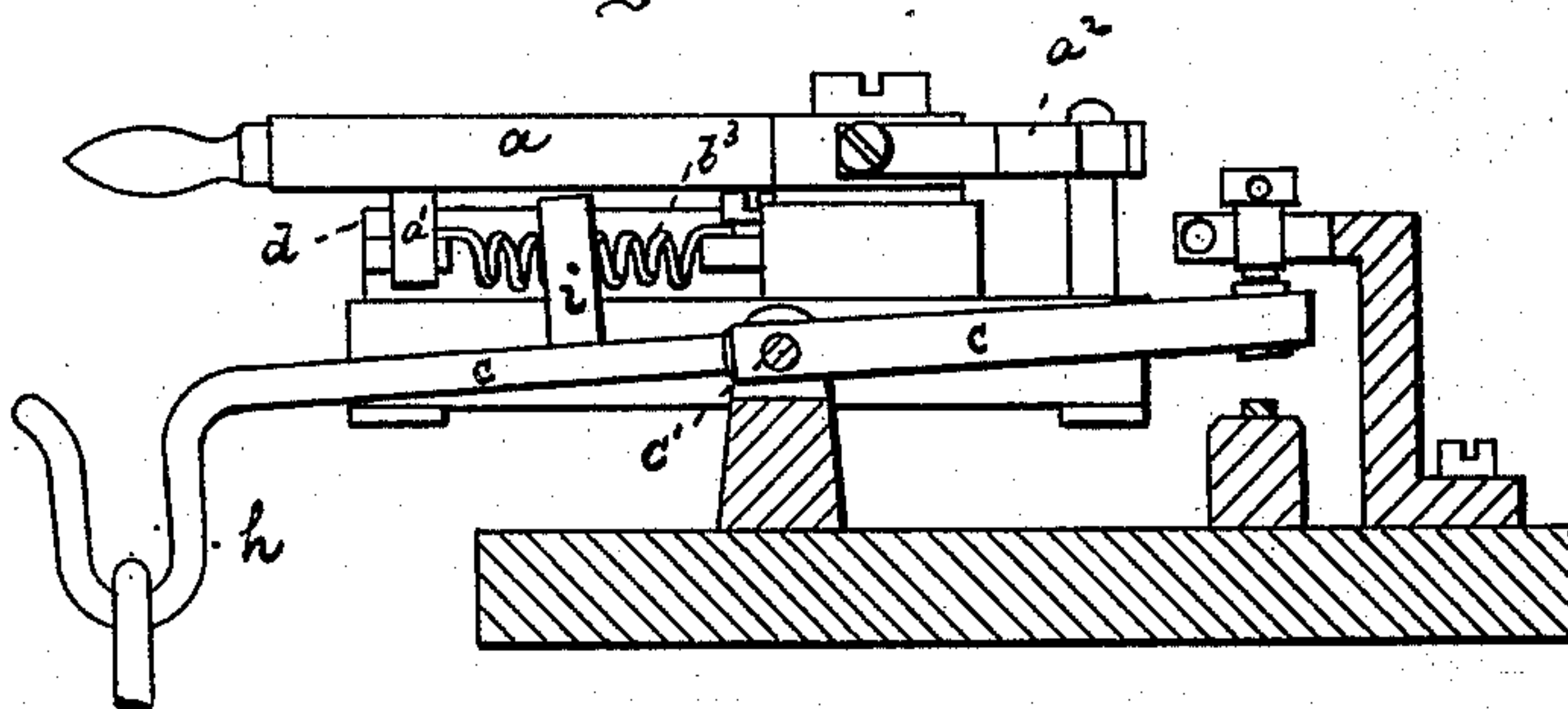


Fig. 3

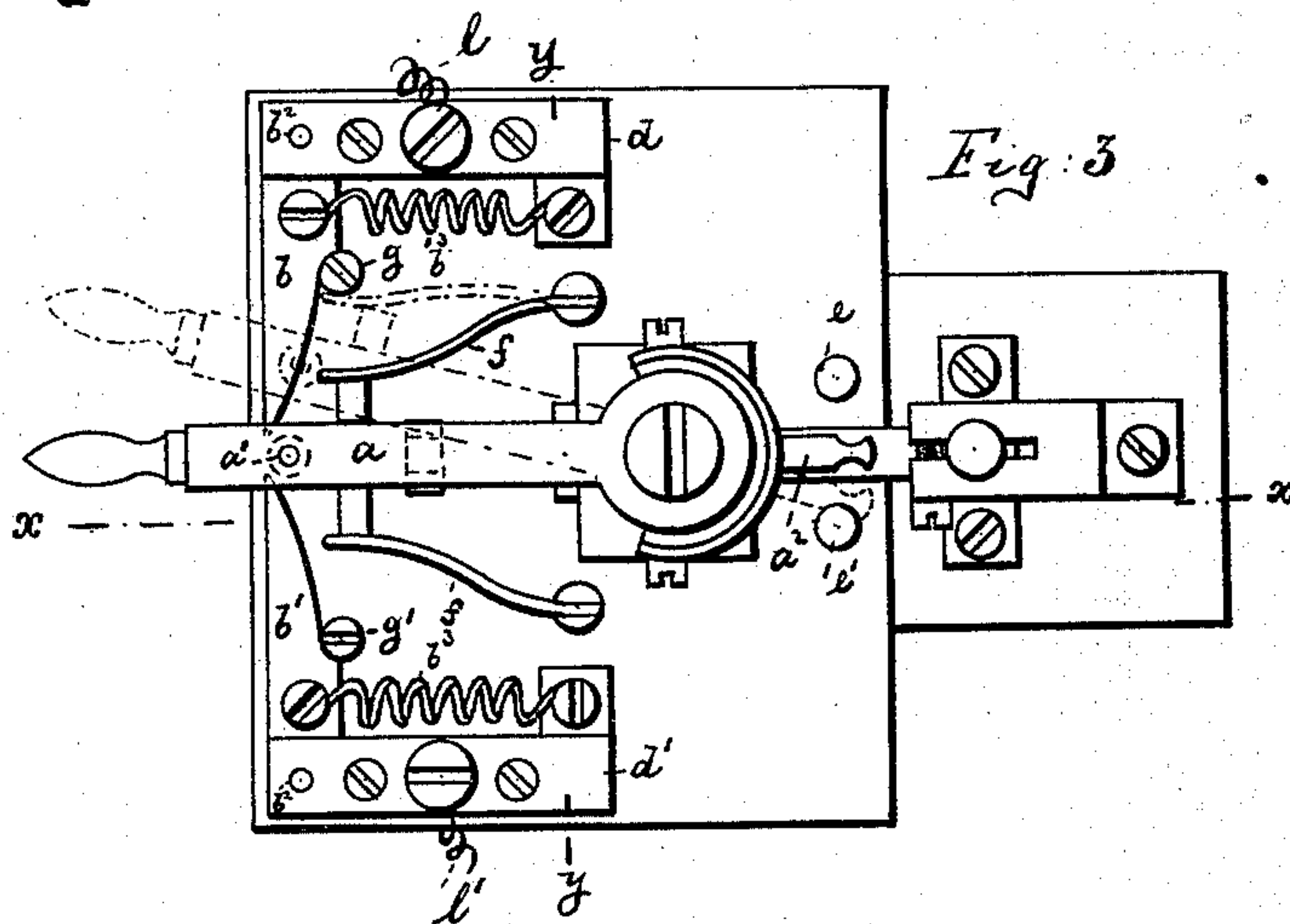


Fig. 2

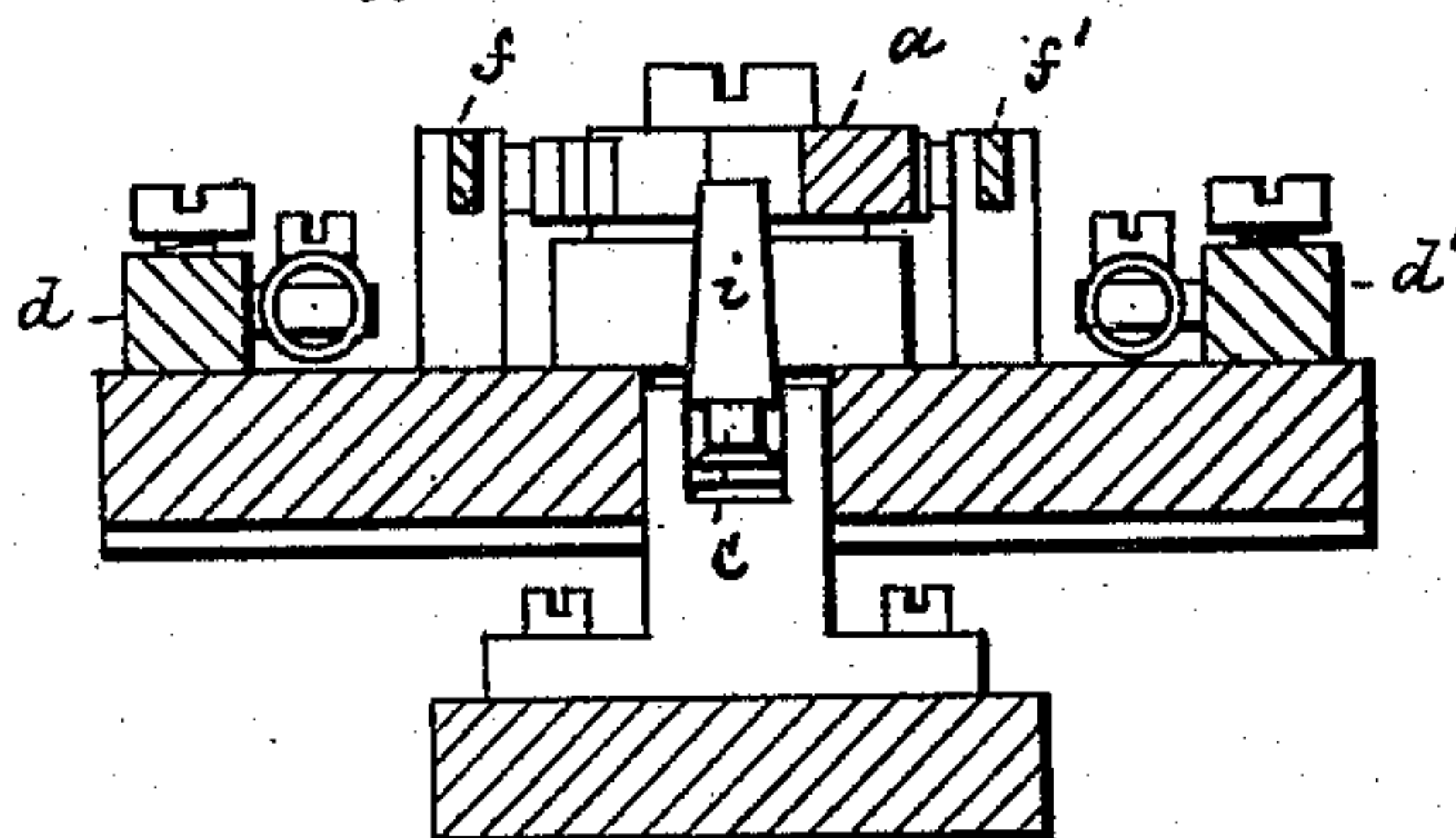
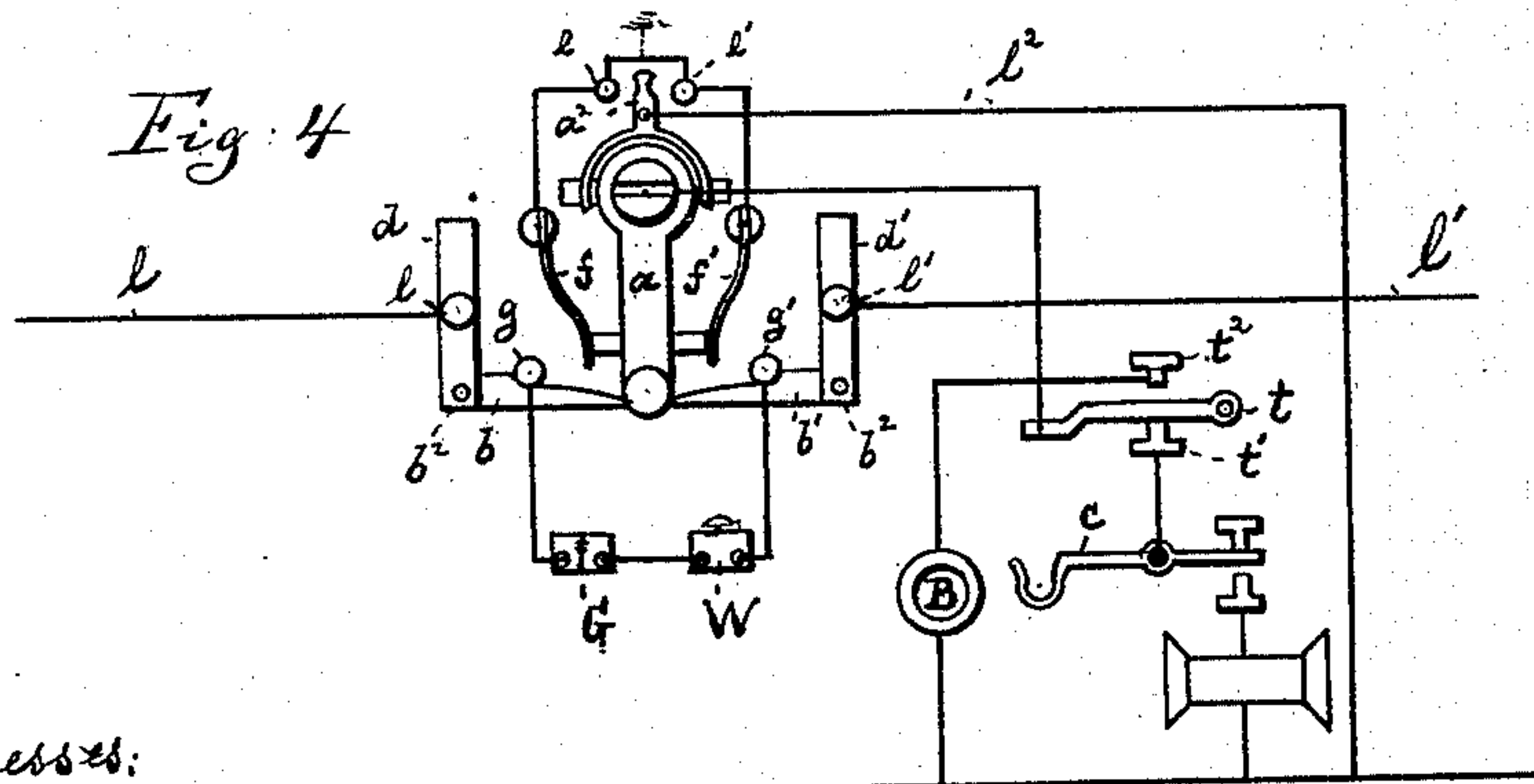


Fig. 4



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH SACK, OF DUSSELDORF, GERMANY.

TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 416,754, dated December 10, 1889.

Application filed January 4, 1889. Serial No. 295,418. (No model.) Patented in Germany June 10, 1887, No. 42,899.

To all whom it may concern:

Be it known that I, JOSEPH SACK, a subject of the German Emperor, residing at Dusseldorf, Germany, have invented certain new and useful Improvements in Telephone-Switches, (for which I have obtained a patent in Germany, No 42,899, dated June 10, 1887,) of which the following is a specification.

This invention relates to a switch by which the connection between intermediate stations that had been interrupted for the transmission of a message may be re-established, so that the intermediate stations may be separately called up.

The invention consists in the various features of improvement more fully pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of my improved switch on line $x x$, Fig. 3. Fig. 2 is a vertical transverse section on line $y y$, Fig. 3, with lever a swung aside. Fig. 3 is a top view of the switch. Fig. 4 is a plan of the circuit.

$d d'$ are a pair of metal plates provided with the conducting-wires $l l'$. In contact with these plates there are a pair of levers $b b'$, turning on pivots b^2 and drawn by springs b^3 against posts $g g'$. The posts $g g'$ are connected with a circuit containing an alarm. If the levers $b b'$ are in contact with the posts $g g'$, the circuit through the wires $l l'$ is established; but the circuit can be interrupted by a lever a , that is free to be oscillated laterally around its pivot. The lever b or lever b' may, by pin a' on lever a , be pressed away from the post g or g' . This pin is not in contact with the levers while lever a is in its central position. If the lever a is swung to the left, the pin a' slides on lever b until spring f forms metallic contact with pin g . By this motion the lever a^2 is placed against the stop e' and the lever b is separated from the contact g . Metallic contact is thus established between lever b and arm a and between pin g , spring f , pins $e e'$, and lever a^2 . The intermediate call-room is placed into the end position. The wire l is connected with the telephone-circuit by plate d , lever b , lever a , key t , and lever c . The wire l' is connected with the alarm-circuit by plate d' , lever b' , pin g' , call-bell W , galvanoscope G , contact-pin g ,

spring f , pins $e e'$, lever a^2 , wire l^2 , and the earth.

The lever a is held in its normal position by a pair of springs $f f'$. To lock the lever when swung aside in its lateral position until the completion of the message, I make use of the following arrangement:

c is the lever carrying the telephone. This lever is pivoted at c' , and is hook-shaped at its front end h , for holding the instrument. The instrument when upon the hook draws the lever c down at its forward end. As soon, however, as the telephone is taken off, the rear end of the lever descends. This will cause a conical stop i on the front half of lever c to be thrown upward and against the side of lever a . In this way the lever a will be locked in place. After the telephone has been replaced upon the hook the lever c will swing on its pivot and the stop i will be drawn down beneath the lower face of lever a , thus liberating the same. The spring f or f' will now be free to swing lever a back into its central position. The lever a is of course turned to that side at which the conversation is to be carried on. If desired, a galvanoscope may be applied to indicate from which side the call is received. If the conversation is carried on at one side, the other conducting branch is connected with an alarm, to indicate a call received during the conversation from the other side. If, for example, the lever a is turned to the left, the spring f will come into contact with the post g , to connect the right side with the alarm. Both posts $g g'$ are connected by a wire, to which the alarm is connected. By the contact of spring f with the post g the current goes to the earth, as both springs $f f'$ are connected to a wire that leads to the earth. If a current is sent from the right side it will run through post g' , alarm, post g , spring f , to the earth. If spring f were not in contact with post g , the connection with the earth would be broken, and no call could be transmitted.

The lever a can, if desired, be provided with a small rearward extension or auxiliary lever a^2 , Fig. 4, moving between a pair of stops $e e'$. These stops are electrically connected with the springs $f f'$ and with one another, while the lever a^2 is connected with the

earth. If the lever a is turned to the left, the lever a^2 will make contact with stop e' , and the alarm-current will travel (instead of going from the spring directly to the earth) through stop e' to e and through lever a^2 to the earth. The lever a^2 is of course insulated from lever a .

The stop i on lever c is made tapering, so that the springs ff' and the lever a^2 may lay close against their posts or stops.

The circuit is shown in Fig. 4. The posts $g g'$ connect with galvanoscope G and with the call-bell W . The lever a connects with the key t , the contact t' of which connects with lever c and the contact t^2 with battery B . The springs ff' are connected with the stops $e e'$, the latter with each other. The extension a^2 leads by wire l^2 to the earth.

What I claim is—

1. The combination of lever a , adapted to come into electric contact with the circuit, with the lever c , stop i , and springs ff' , substantially as specified.

2. The combination of lever a with plates $d d'$, levers $b b'$, posts $g g'$, springs b^3 , and with the levers $a c$, stop i , and springs ff' , substantially as specified.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH SACK.

Witnesses:

HERMANN CATHREIN,
WILHELM CAMMRATH.