

No. 847,750.

PATENTED MAR. 19, 1907.

G. F. ESPY.
SLIDING JACK SWITCH.
APPLICATION FILED NOV. 23, 1906.

Fig. 1.

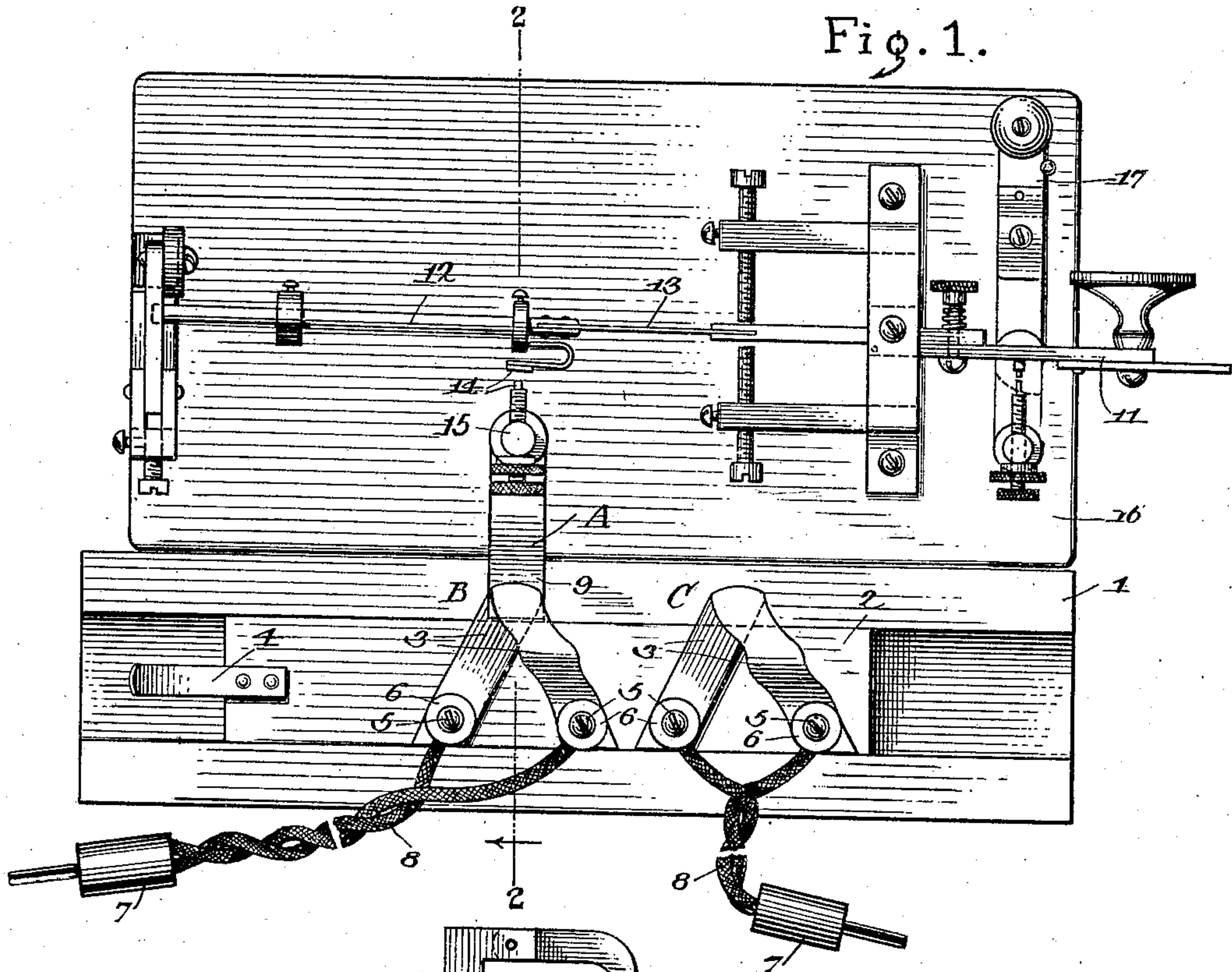


Fig. 2.

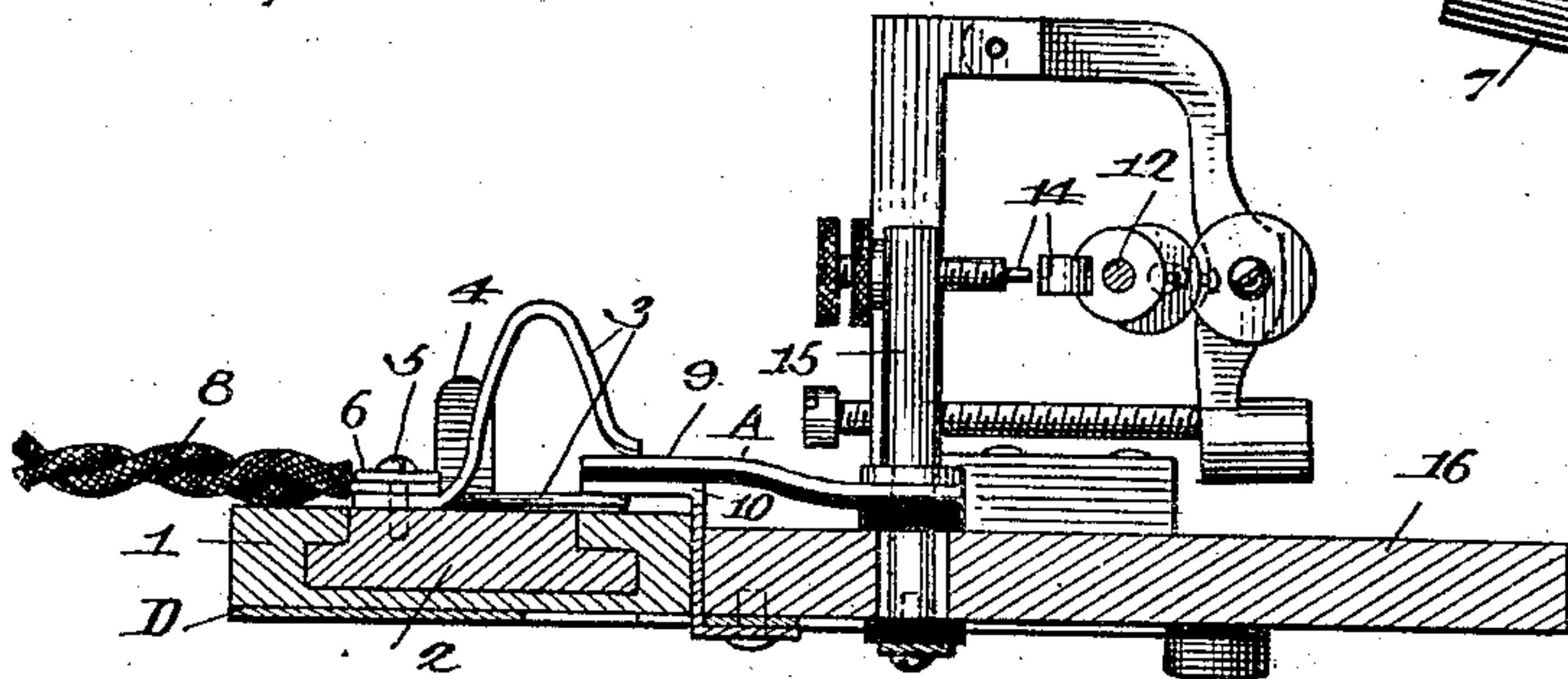
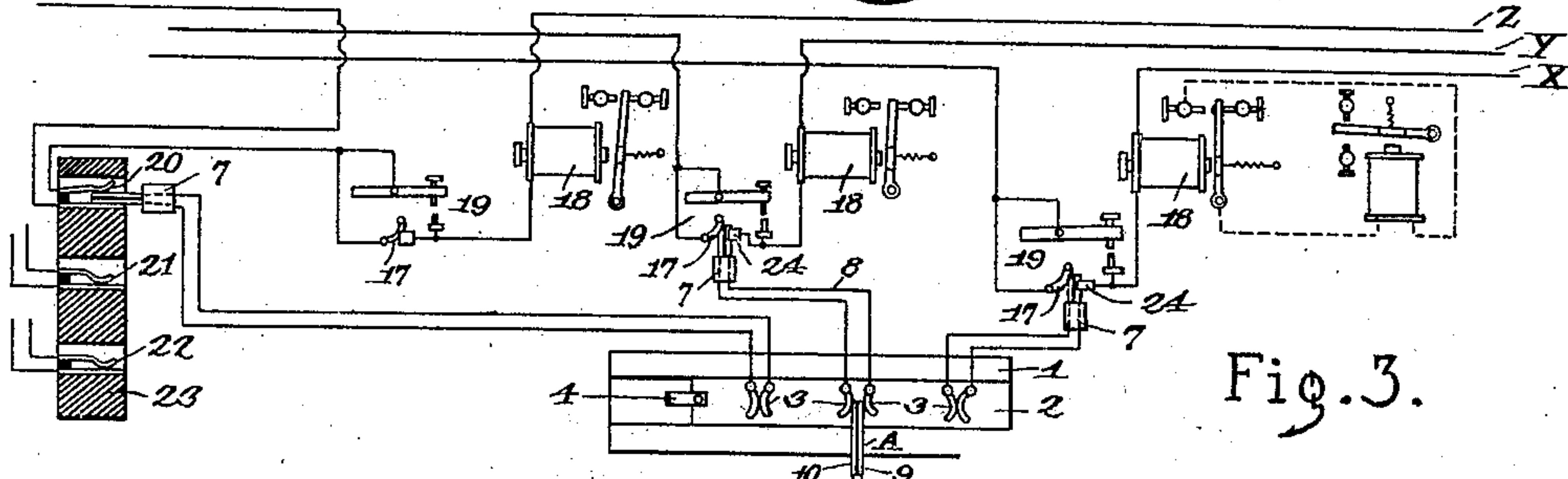


Fig. 3.



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GEORGE FREDRICK ESPY, OF UNION FURNACE, PENNSYLVANIA.

SLIDING JACK-SWITCH.

No. 847,750.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed November 23, 1906. Serial No. 344,802.

To all whom it may concern:

Be it known that I, GEORGE FREDRICK ESPY, a citizen of the United States, residing at Union Furnace, in the county of Huntingdon and State of Pennsylvania, have invented certain new and useful Improvements in Sliding Jack-Switches, of which the following is a specification, reference being had to the drawings accompanying and forming a part
10 of the same.

My invention relates to sliding jack-switches which are designed especially to be used in connection with telegraphic transmitters, but which will also be useful in connection with other electrical apparatus
15 where it is needful to make circuit changes with rapidity.

Briefly stated, the object of the invention is to enable telegraphic operators to connect
20 their sending keys or transmitters successively with different transmitting-lines, making the change from one line to the other instantly and without breaking the circuit of any one of said lines.

The way-stations along all railroads are usually in telegraphic communication with a number of trunk-lines, each line being connected in the station through a set of instruments comprising a relay or sounder and a
30 transmitter. It is necessary for the station operator to send signals through first one trunk-line and then through the other. These changes must be made with great rapidity, especially when reporting the whereabouts of trains for use in block-signaling
35 systems. Instead of changing from one transmitting-key to another when it is desired to signal over different lines it has been proposed to provide a single transmitter
40 with an attaching-plug connected to the usual binding-posts and by means of said plug to connect the instruments first with one line and then with the other. While this was an improvement over the old
45 method, yet it required the operator to first withdraw the plug connection from one trunk-line and then step over to another line and connect the plug thereto. To obviate these difficulties, applicant has invented the
50 movable jack-switch constituting the subject-matter of the present case, which enables the operator to instantly change the

connection of his transmitter from one trunk-line to another.

Referring to the accompanying drawings, 55 Figure 1 is a top plan view of my sliding jack-switch connected to a transmitter. Fig. 2 is a sectional elevation along the line 2 2 of Fig. 1 looking toward the left; and Fig. 3 is a diagrammatic illustration showing how my
60 sliding switch may be connected to a number of trunk-lines in a station.

The switch consists of a base 1, provided with a movable tongue 2, slidingly mounted in the base 1 and carrying the spring contact-
65 arms 3 of the jacks. The tongue piece 2 may be slid from one position to another by means of a pull or handle 4. The spring-contacts 3 are secured to the sliding member 2 by means of screws 5, passing through binding-
70 posts 6, which may be in the form of washers or other connectors. Each pair of springs 3, constituting a jack, is connected with a double contact-plug 7 by means of the usual
75 insulated two-part flexible cable 8. Projecting from one side of the base 1 is a double connector A, composed of two plates 9 and 10, separated by insulating material, this connector constituting the means by which
80 the switch is electrically connected with a transmitter.

For purposes of illustration I have shown my sliding jack-switch connected to a transmitter of a type now largely used and known as a "vibroplex," a detailed description of
85 which will be unnecessary, as this constitutes no part of my invention. It may be well, however, to state that the essential features of this transmitter are a key 11, which is used to send the long impulses on the Morse signals,
90 while the short impulses or dots are produced by the vibrations of the arm 12, connected with the key through the spring 13 and by its movements controlling the contacts 14. It is evident that my switch may be used
95 with any of the transmitters commonly employed and that it may be used in connection with any instrument whose terminals it is desired to change from one set of contacts to another.

In the particular arrangement disclosed it will be seen by reference to Fig. 2 that the plate 9 of the connector is connected to the binding-post 15, while the lower plate is in
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contact with the base 16 of the transmitter, the key 11 and circuit-switch 17 being in electrical connection with the base-plate, as is usual in transmitting-keys.

5 I have shown the switch supported by a plate D, which is fastened in any suitable manner to the base-plate 16 of the transmitter; but any other convenient means of supporting the switch may be employed.

10 When the sliding member 2 is moved into such a position that the connector A slides between the members of a spring-jack, as shown at B in Fig. 1, the upper and lower springs 3 will make electrical connection, respectively, with plates 9 and 10 of the connector, thus throwing the transmitter into circuit with any line into which the plug 7 has been inserted. When the slide has been moved into a position where the jacks are 20 disengaged from the connector A, the springs 3 of each jack will be in contact, as shown at C. Bearing in mind that there is always a short circuit through the transmitter when the circuit-switch 17 is closed, it will be evident that the line-circuits to which the plugs 25 7 are connected will not be opened by any movement of the sliding jack-switch provided the circuit-switch of the transmitter is closed.

30 In Fig. 3 I have shown how my switch may be employed in any station in which a number of trunk-lines are connected through the ordinary Morse sounders 18 and keys 19 in the trunk-lines X and Y and by means of a 35 spring-jack 20 in a switch-board 23 with the trunk-lines Z. In the position shown the sliding member of the switch has been moved into the central position, so that the connector A is in electrical connection with the 40 springs 3 of the switch-jack, which is connected, through flexible cable 8 and plug 7, with the trunk-line Y. It will be observed that this connection is made by inserting the plug 7 under the usual spring-contact 24 of the Morse key, the plug and transmitter connected thereto, thus bridging between the 45 said spring 24 and switch-arm 17. At the right of the figure another plug 7 is similarly inserted under the contact-spring 24 of the key in the line X, and it will be evident that the electrical circuit is preserved through the 50 springs 3 of the switch-jack. At the left of the figure I have shown how a plug connected to my jack-switch may be inserted in the trunk-line Z by means of a spring-jack 20 in the switch-board 23. Spring-jacks 21 and 55 22 may be similarly inserted in circuit with trunk-lines Y and X, whereby the connections may be made with my sliding jack-switch without utilizing the Morse keys in 60 said lines.

The operation of my device will be apparent from the above description. When the

operator desires to "cut-in" or connect with any trunk-line, he has merely to move the 65 sliding member 2 until the connector A engages the springs 3 of the corresponding jack. If the switch 17 of the transmitter is in closed position, this movement will not open or affect the circuit of the trunk-line, and he may 70 listen to see whether the sounder connected with this line indicates that the line is in use before opening the circuit by means of his transmitter-switch 17. It is evident that a single sounder could be connected perma- 75 nently with the transmitter and used to receive messages from any of the trunk-lines successively.

While I have illustrated the movable part of my switch as a sliding member, it will be 80 apparent that I may employ a rotary member to carry the spring-jacks. It will also be evident to those skilled in the art that I may secure the spring-jacks to the stationary base 1 of my switch and carry the con- 85 nector A on the movable portion, in which case the connector would be electrically connected with the transmitter by means of flexible conductors.

I claim as my invention, and desire to secure by Letters Patent— 90

1. A switch having a base comprising stationary and movable portions, a connector provided with separated contact members and carried by one of said base portions, 95 pairs of coöperating contacts carried by the other base portion, and means for bringing said connector into engagement with any pair of contacts by actuating the movable base portion, substantially as set forth. 100

2. A switch having a base comprising stationary and movable portions, a connector having separated contact-plates carried by said stationary portion, a plurality of pairs of normally - closed spring-contacts carried by 105 the movable portion, said movable portion being arranged to slide in the path of said connector whereby said plates are brought successively into contact with and simultaneously separate said pairs of spring-con- 110 tacts, substantially as set forth.

3. A switch adapted to connect a transmitter successively into circuit with different telegraphic circuits, comprising a base having stationary and movable portions, a connector mounted upon one of said base portions, having insulated contact-plates for connection with said transmitter, sets of contact-plates adapted to be connected respectively 115 in said telegraphic circuits, mounted upon the other base portion, and means for moving one base portion longitudinally to cause the plates of said connector to contact with one or another set of contacts; substantially 120 as described.

4. A switch adapted to connect a trans- 125

mitter successively into circuit with different telegraphic circuits, comprising a base having a stationary member and a sliding member, a plurality of pairs of normally closed
5 contacts carried by the sliding member provided with means for connecting any pair of contacts with any one of said circuits, and a connector mounted upon said stationary member, having contact-plates arranged to

be connected with the transmitter and located in the path of said sliding member; substantially as set forth.

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

GEORGE FREDRICK ESPY.

Witnesses:

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JAMES C. MILLER.