

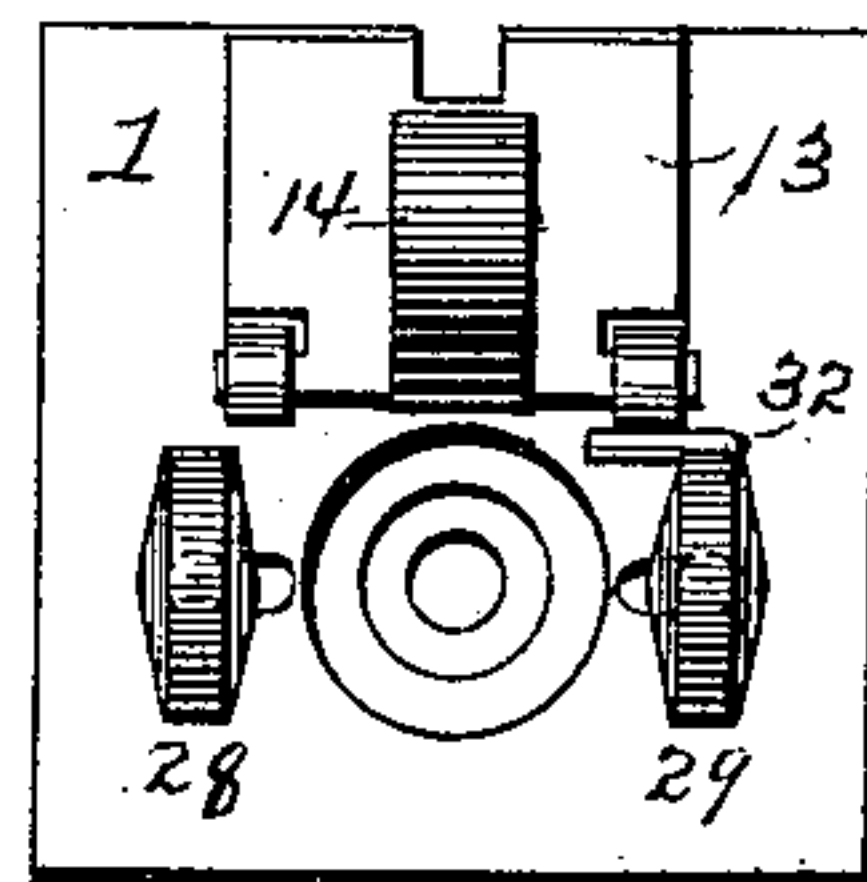
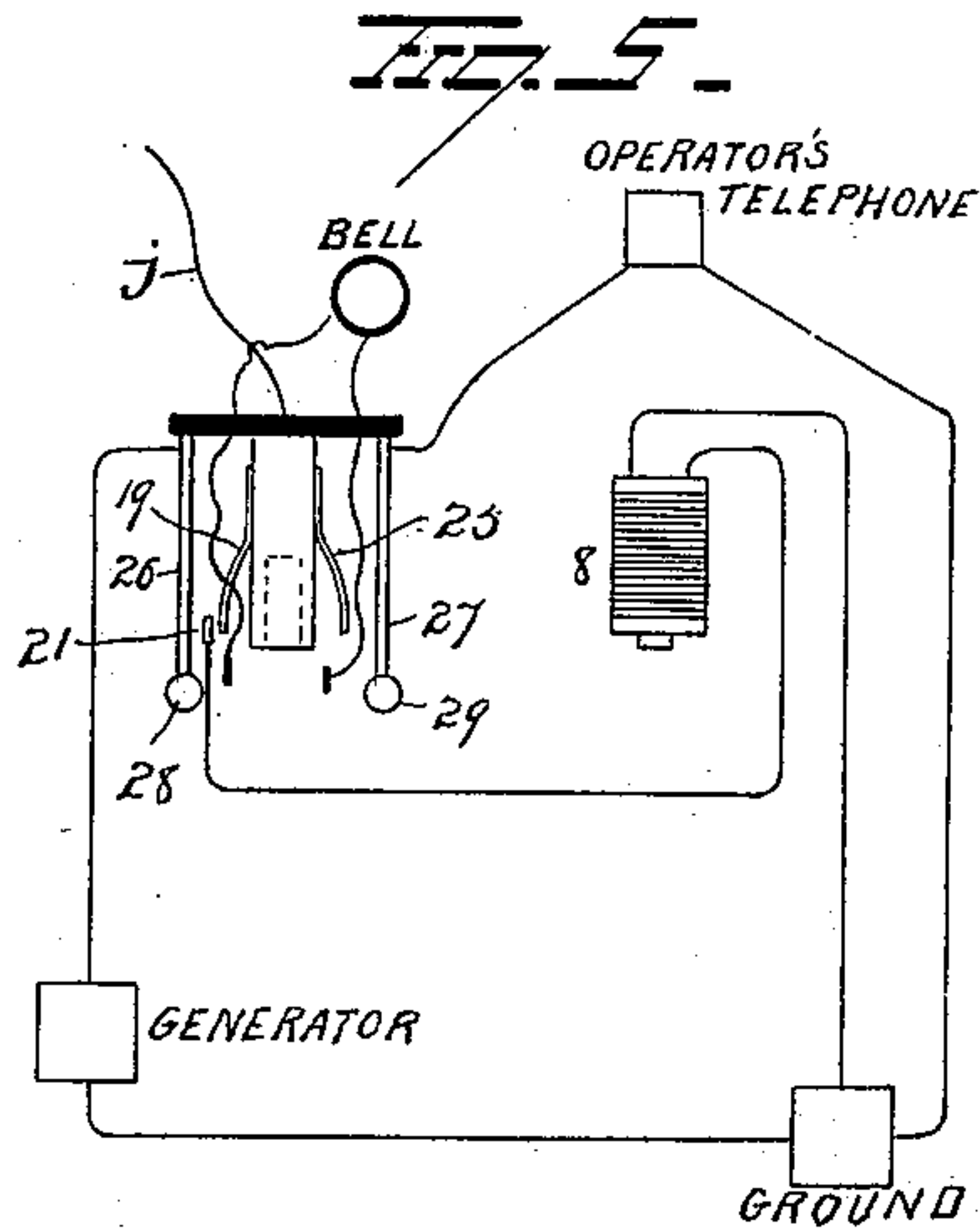
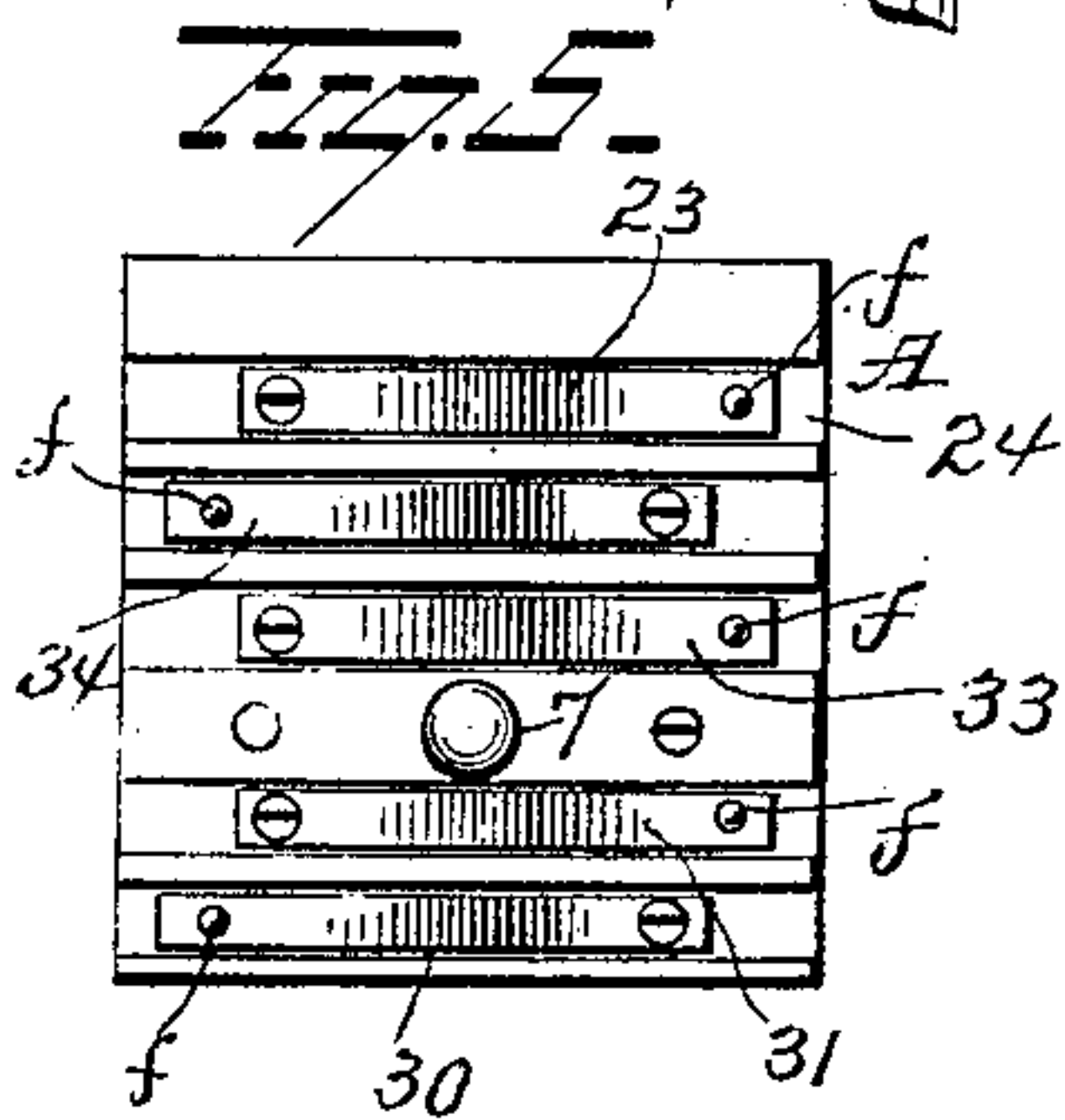
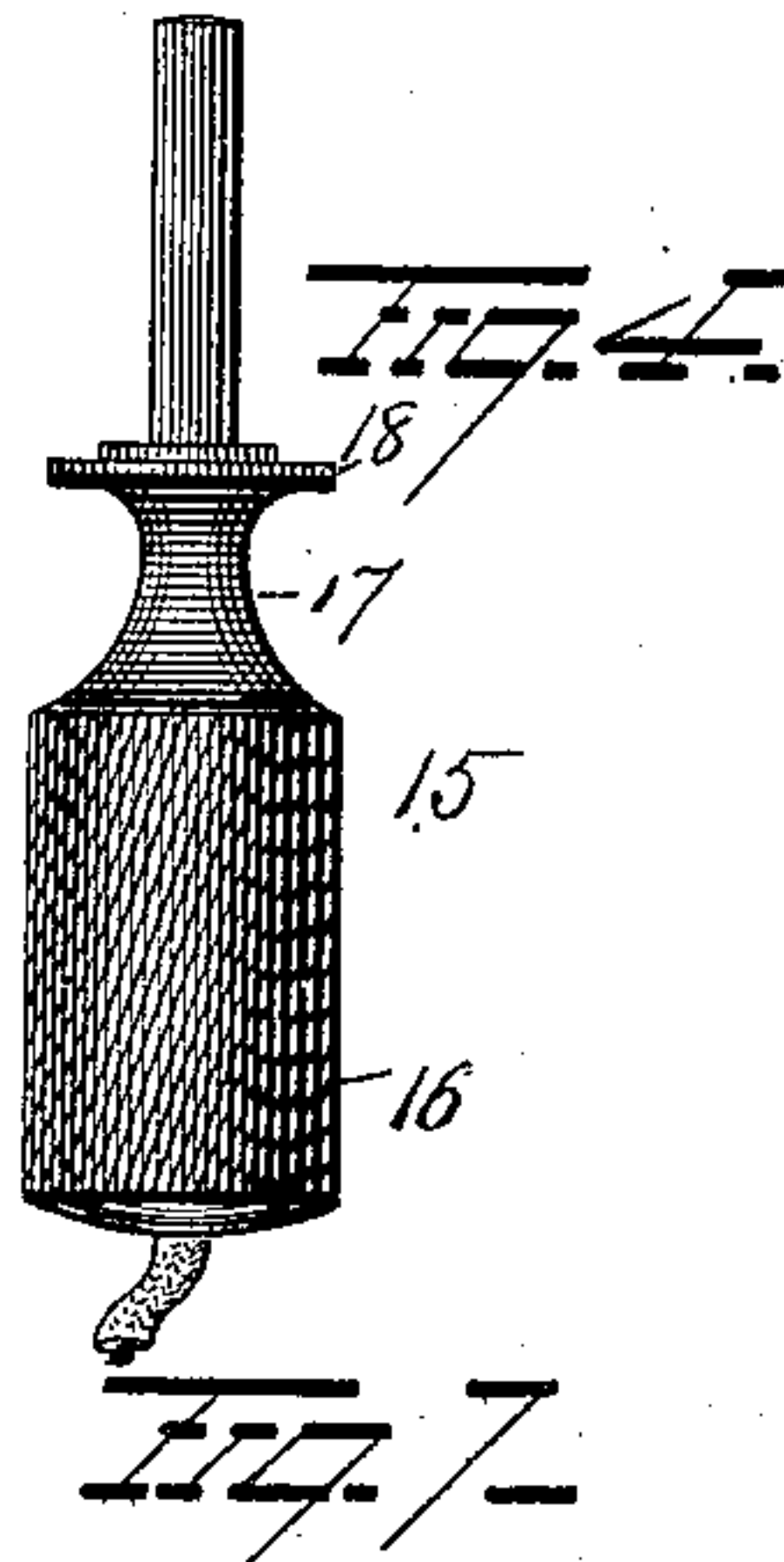
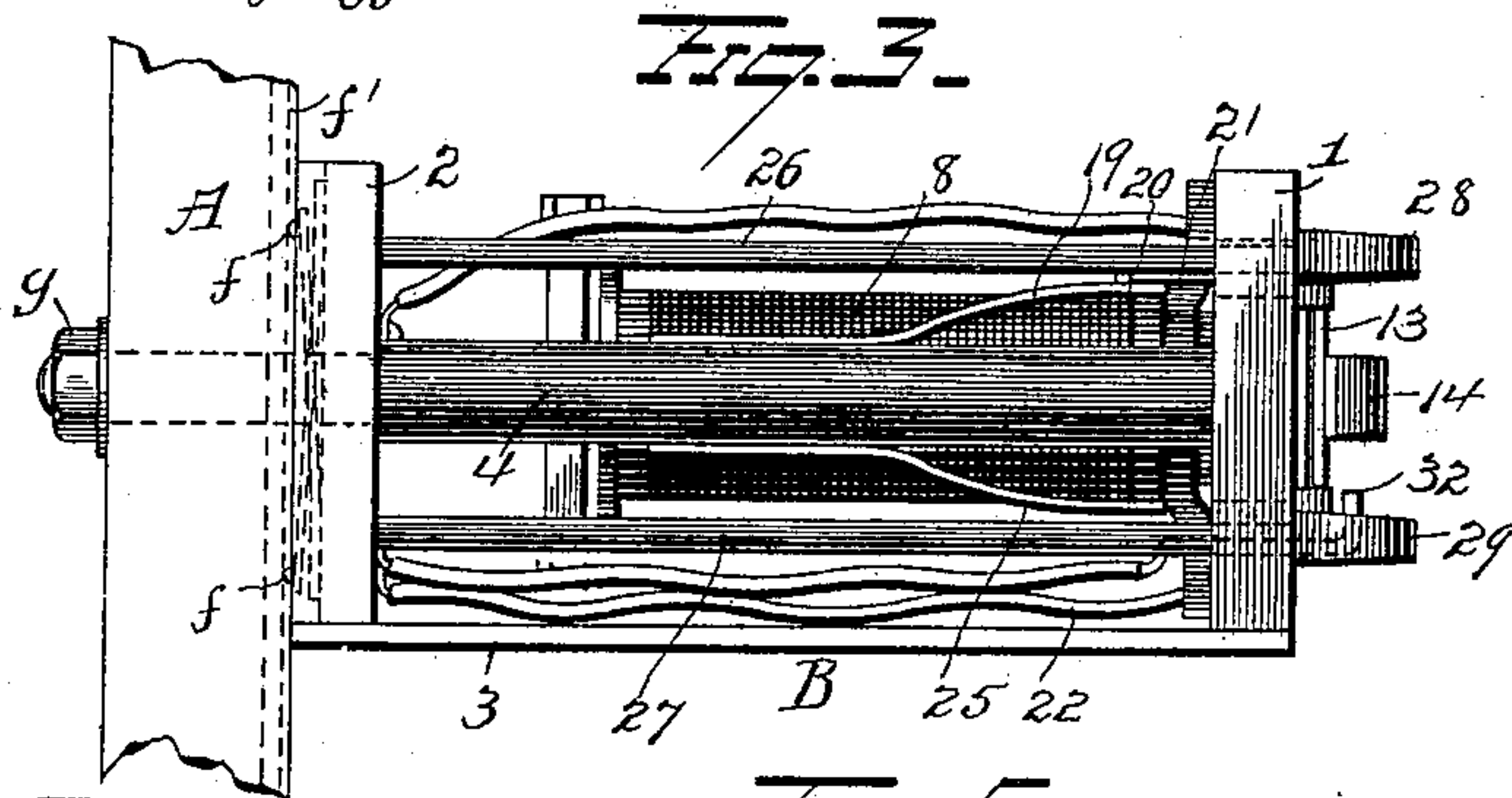
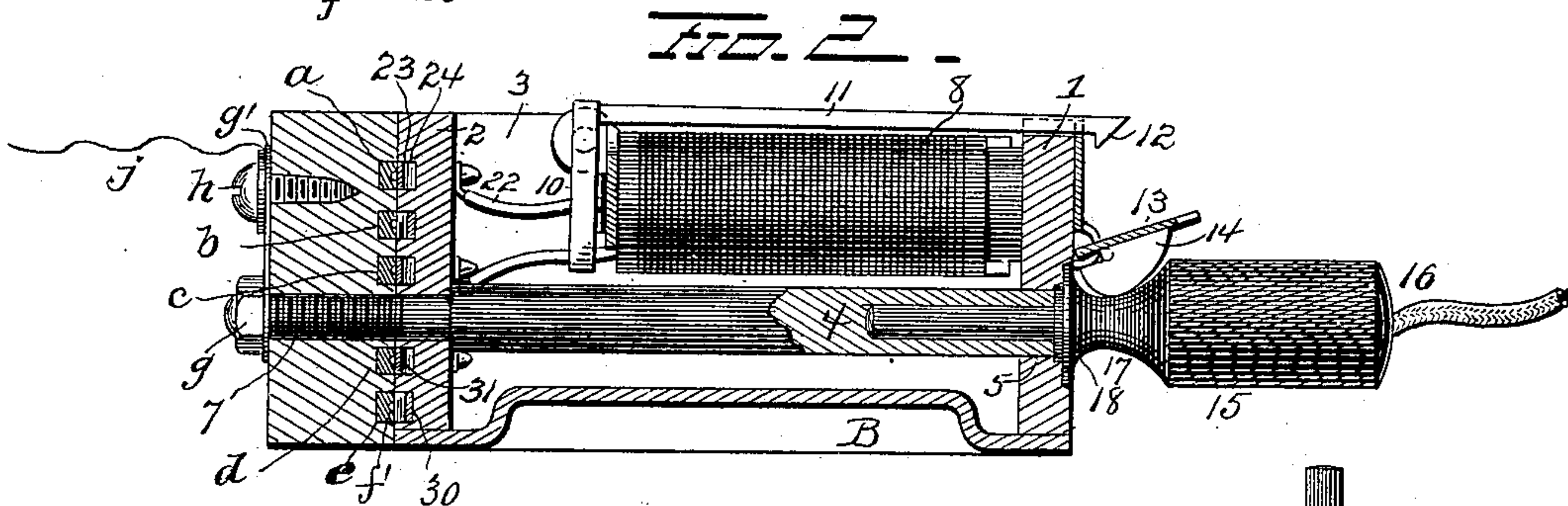
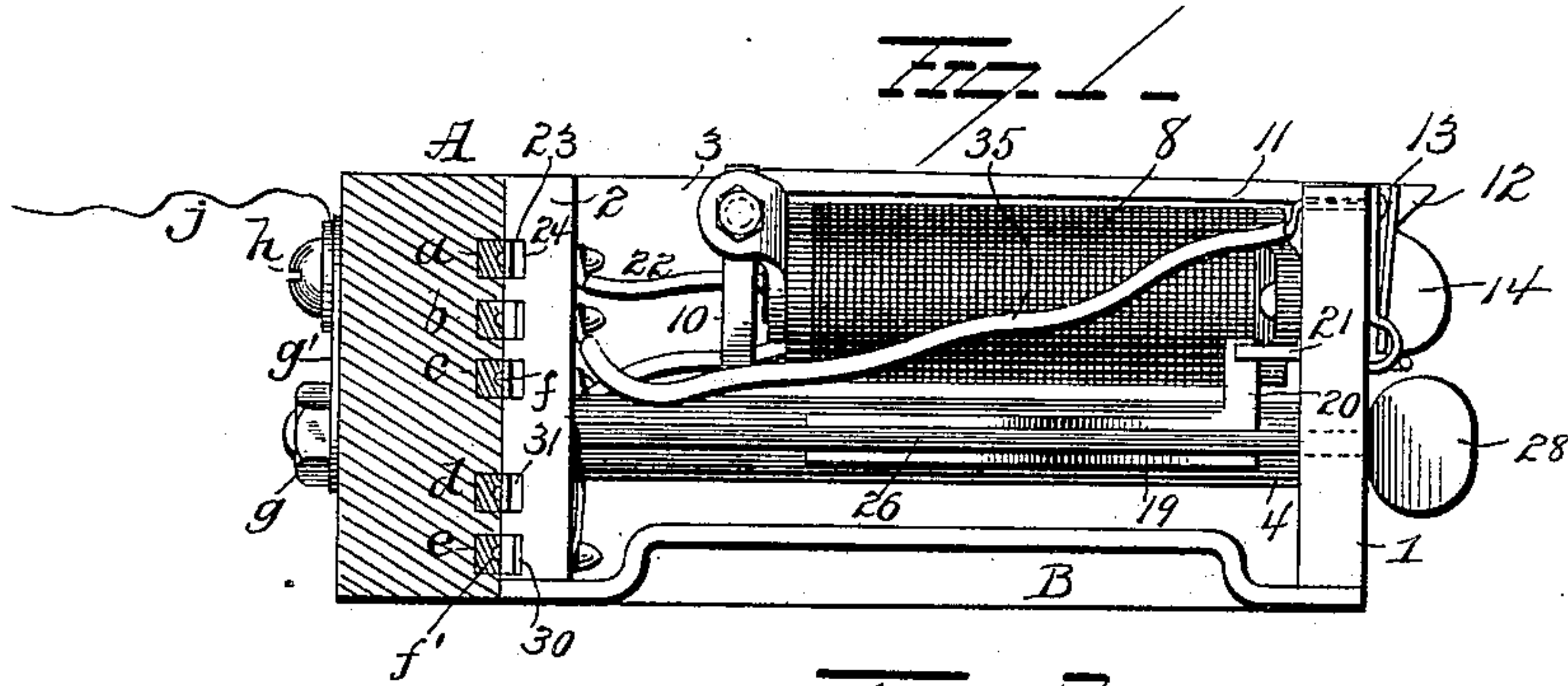
No. 620,491.

Patented Feb. 28, 1899.

J. M. OVERSHINER.
TELEPHONE SWITCHBOARD.

(Application filed Jan. 24, 1898.)

(No Model.)



WITNESSES
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UNITED STATES PATENT OFFICE.

JAMES M. OVERSHINER, OF ELWOOD, INDIANA.

TELEPHONE-SWITCHBOARD.

SPECIFICATION forming part of Letters Patent No. 620,491, dated February 28, 1899.

Application filed January 24, 1898. Serial No. 667,769. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. OVERSHINER, of Elwood, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Telephone-Switchboards; and I do hereby 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.

My invention relates to an improvement in telephone-switchboards, and more particularly to the construction and arrangement of the switch and drop device, one object of the invention being to so associate the switch and drop devices that they can be quickly and easily operated by the attendant, so that all the switch and drop devices for each subscriber's line can be bodily attached to or removed from the back or support and at the same time make or break the several electrical connections between the switch and drop devices and the conductors on the back or support.

A further object is to provide simple and efficient means whereby the drop can be automatically restored to its normal position when the plug is inserted into the jack and so that the act of withdrawing the plug from the jack will result in returning the drop to its normal position after said drop shall have been made to fall when a subscriber "rings off."

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, with the back or support in section, showing my improvements. Fig. 2 is a longitudinal sectional view. Fig. 3 is a bottom plan view. Fig. 4 is a detail view of the plug. Fig. 5 is a diagrammatical view. Figs. 6 and 7 are detail views.

A represents the back of the board, which constitutes a support for the sets of switch and drop devices for the various subscribers' lines. Each set of subscribers' switchboard devices is mounted in and supported by a frame B, comprising end pieces 1 2 and connecting-pieces 3. A jack 4 is secured to the respective end pieces 1 2, and the end piece

1 is made with a hole 5 to communicate with said jack for the accommodation of the plug to be inserted into the latter. The forward end of the jack is made with a screw-threaded portion 7, which projects beyond the end piece 2 of the frame B and through the back or support A.

An electromagnet 8 is supported by the front piece 1 of the frame B and provided with an armature 10, from which a latch-arm 11 projects forwardly and terminates at its free end in a hook 12, adapted to engage an annunciator-drop 13 and to retain it normally in its elevated or closed position. The drop 13 is pivotally supported at its lower edge and is provided on its outer face with a block or projection 14, adapted when the drop falls to be disposed in proximity to the entrance of the jack. The plug 15, hereinbefore alluded to, is provided with a handle 16, which constitutes an engaging device to co-operate with the enlargement on the drop. The handle 16 is made with an annular recess 17, having an annular shoulder 18 at one end.

When the drop falls upon the calling by a subscriber, the insertion of plug into the jack will cause the shoulder 18 to engage the block or enlargement 14 and restore the drop to its latch device. When the subscribers finish with use of the line and ring off, the drop will again fall and the block or enlargement 14 will become disposed in the recess 17 in the plug-handle 16. As the plug is now withdrawn from the jack by the operator, the shoulder 18 will engage the block or enlargement and again restore the drop, so that when the plug shall have been fully withdrawn the drop will be in engagement with its latch devices.

A contact-spring 19 is secured at one end to one side of the jack and provided at its free end with a lip 20 to engage a pin 21, electrically connected with one terminal of the coil of magnet 8. The other terminal of the magnet-coil is connected by a conductor 22 with a spring-finger 23, secured at one end in a groove 24, made in the outer face of the end piece 2 of frame B. Another contact-spring 25 is secured at one end to the jack at the side thereof opposite the contact-spring 19. Spring-arms 26 and 27 are secured to the end piece 2 of the frame B and extending inwardly pass in proximity to the respective

contact-arms 19 and 25, the free ends of said spring-arms 26 27 projecting through slots in the front piece 1 of frame A and being provided with buttons or finger-pieces 28 and 29, respectively. The spring-arm 26 is electrically connected with a spring-finger 30, secured at one end in a groove in the end piece 2, and the spring-arm 27 is electrically connected with a spring-finger 31, similarly located in another groove in said end piece 2.

A pin 32 is secured to the front piece 1 of frame B, so as to receive the drop when it falls, and this pin is electrically connected with a spring-finger 33, attached to the end piece 2 in the same manner as above explained. Another spring-finger 34 is attached to the end piece 2 in the same manner and is connected with the drop through the medium of a conductor 35. A bell is included in the circuit of the drop, pin 32, and contact-fingers 33 34, so that when the drop falls the bell-circuit will be closed and the bell sounded.

The back or support A is provided with a series of conducting-strips *a b c d e*, each having a groove *f'* for the reception of small projections *f* on the respective contact-fingers, said conducting-strips being included in the various central-office circuits—viz., the circuits of the operator's phone, the generator, and the bell.

When the structure comprising the frame B, the jack, spring-contact, or switch devices is placed against the back or support A, the various contact-fingers will at once make contact with the respective conducting-strips, and thus connect the various devices in their proper circuits. A nut *g* will be screwed on the screw-threaded end of the jack, and as said nut is screwed home the spring contact-fingers will be depressed and made to bear firmly at their free ends against the conducting-strips on the back or support A, and will also serve to tightly secure the structure to said back or support. The screw-threaded extension of the jack also serves as a contact device for the subscriber's line-wire *j*, and said line-wire may be connected thereto by means of a small plate *g'* and a screw *h*.

With my improvements when a subscriber calls central office the annunciator-drop will fall. The operator will then insert a plug into the proper jack, (restoring the drop,) and her thumb or finger will simultaneously engage the button 29, and the same will be pressed toward the plug, whereby to press the arm 27 into contact with the spring 25, and thus cause the listening-circuit to be closed through the subscriber's line and operator's phone. This will enable the operator to ascertain what subscriber is wanted. The operator will then release the button 29 and permit the listening-circuit to be again opened. She will then insert the plug at the other end of the conducting-cord into the jack of the subscriber's line wanted and at the same time press the button 28 toward the plug, so as to press the arm 26 into contact with the spring

19, and thus close the circuit through the line of the subscriber being called and the generator in the central office. When the operator presses the button 28, the circuit of the drop-magnet will be opened, so as not to allow the latch of the drop to vibrate or drop to fall while the subscriber is being called. As soon as the subscriber shall have been called the operator will release the button 28, and thus permit the signal-circuit to be again opened and the magnet-circuit closed. When the subscribers ring off, the drops will again fall and the blocks or enlargements become disposed in the recesses 17 of the plug-handles. The operator will now withdraw the plugs, and in the act of so doing will restore the drops, as hereinbefore explained.

It will be seen that by means of my improvements the operator is enabled to ascertain the number of the subscriber wanted, call such subscriber, and connect the two lines by two movements, thus facilitating the work at the central office, it being usually necessary for the operator to make at least four movements.

With the devices herein set forth the operator inserts a plug and simultaneously manipulates the listening-circuit, and then inserts the other plug and simultaneously manipulates the signal-circuit, thus making but two movements.

Slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details herein set forth.

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

1. The combination with a jack and a drop, of a plug to enter the jack and an engaging device on the plug adapted to coöperate with the drop to restore it as the plug is inserted into the jack and also while it is being withdrawn therefrom, substantially as set forth.

2. The combination with a jack and a drop in proximity thereto, of a projection on said drop and a plug having an engaging device thereon adapted to restore the drop by engagement with the projection thereon when the plug is inserted into the jack, and also when the plug is being withdrawn from the jack.

3. The combination with a jack and a drop having a projection thereon, of a plug to enter the jack, said plug having an engaging device to coöperate with the projection on the drop whereby to restore the latter, said plug having a recess in rear of said engaging device to receive the projection on the drop when the drop is down and the plug is in the jack, substantially as set forth.

4. The combination with a support and a series of conductors thereon, of a structure comprising a frame and the switch and drop devices of a subscriber's line, a series of spring-fingers secured to said frame and elec-

trically connected with said switch and drop devices, and a fastening device engaging said support and said structure whereby to support said structure and cause the spring-fingers to be pressed against said conducting-strips said fastening device also forming a contact device for a subscriber's line, substantially as set forth.

5. The combination with a support and a series of conductors thereon, of a structure comprising a frame and switch and drop devices of a subscriber's line, said frame having grooves in one end, a series of spring-fingers secured in said grooves and electrically connected with said switch and drop devices, and a fastening device engaging the frame and back and electrically connected with the jack of the switch devices, said fastening device constructed to hold the frame close against the support and cause the spring-fingers to press against the conducting-strips on the support, substantially as set forth.

6. The combination with a support and conducting-strips thereon having grooves or depressions therein, of a structure comprising a frame and switch and drop devices of a subscriber's line, a series of spring-fingers, each secured at one end to said frame, electrical connections between said spring-fingers and said switch and drop devices, projections on

said spring-fingers and adapted to enter the grooves or depressions in said conductors, and a fastening device for securing the structure to the support and causing the spring-fingers to bear forcibly against said conducting-strips, substantially as set forth.

7. The combination with a jack, a drop, a latch for the drop and an electromagnet for controlling said latch, of contact-arms secured to the respective sides of the jacks, one of said contact-arms being included in circuit with the coils of said electromagnet, a spring-arm disposed near each side of the jack and having buttons on their free ends, whereby to permit them to be forced against the contact-arms, one of said spring-arms being included in a listening-circuit and the other spring-arm being included in a signal-circuit, said last-mentioned spring-arm being adapted to move the cooperating contact-arm so as to open-circuit the magnet-coil when the signal-circuit is closed.

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

JAMES M. OVERSHINER.

Witnesses:

A. V. OVERSHINER,
MINNIE SMITH.