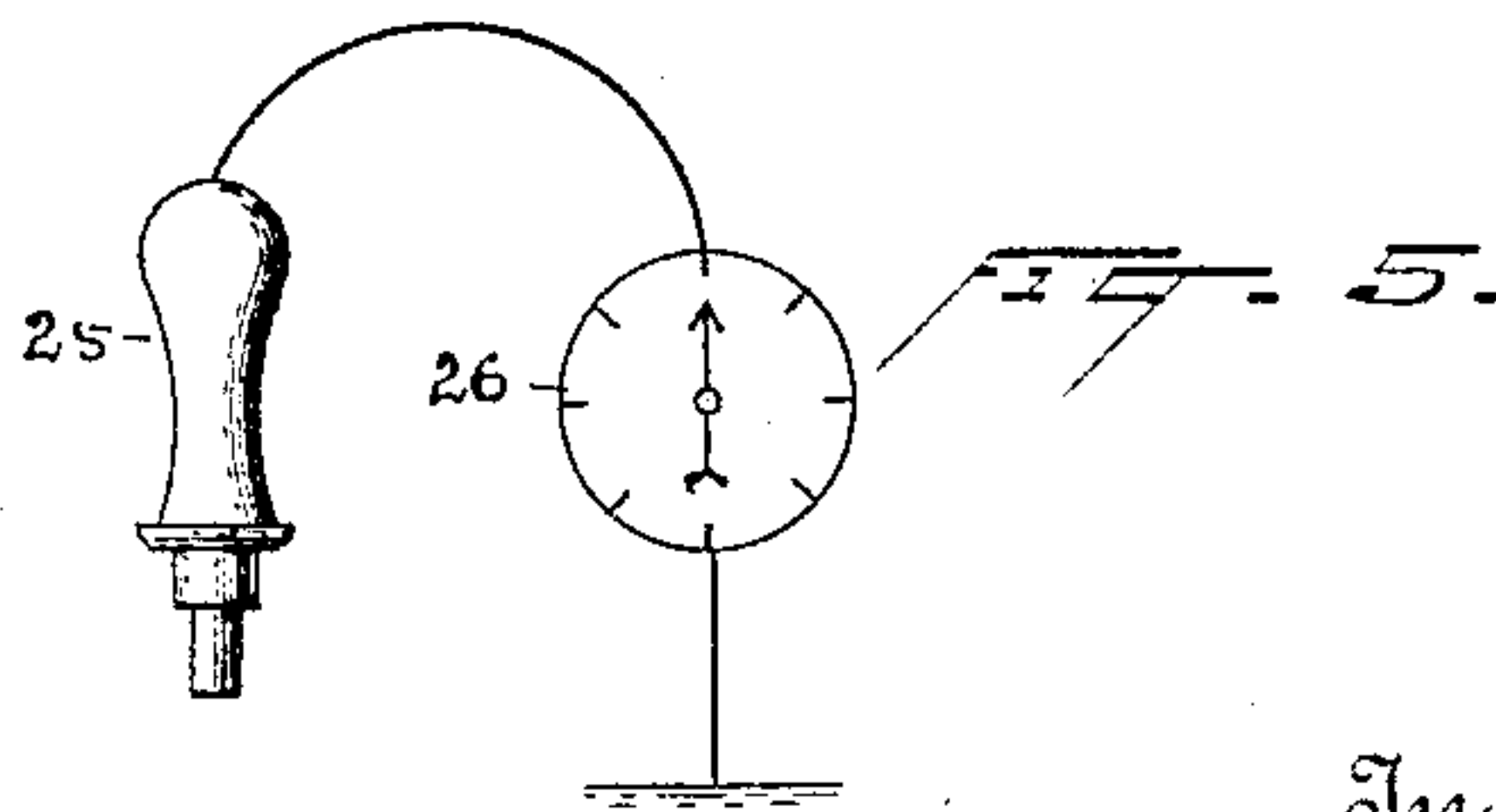
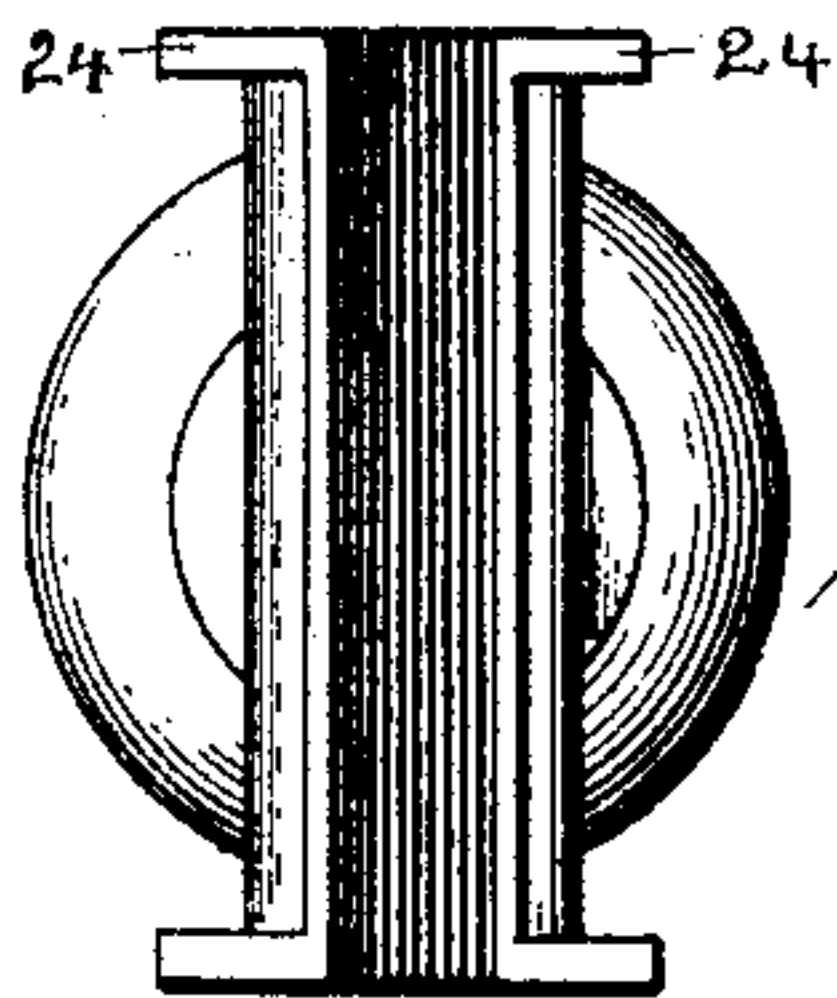
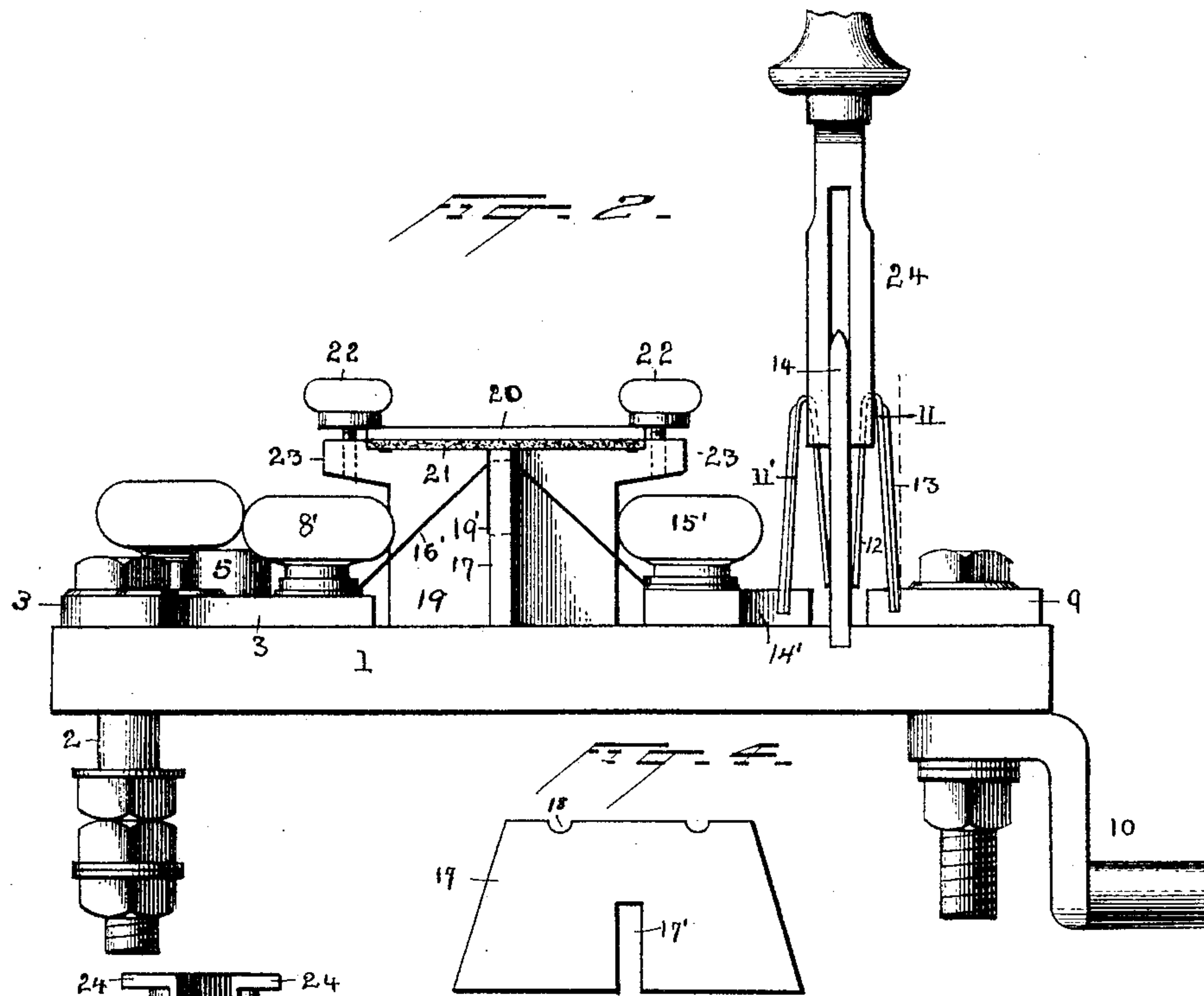
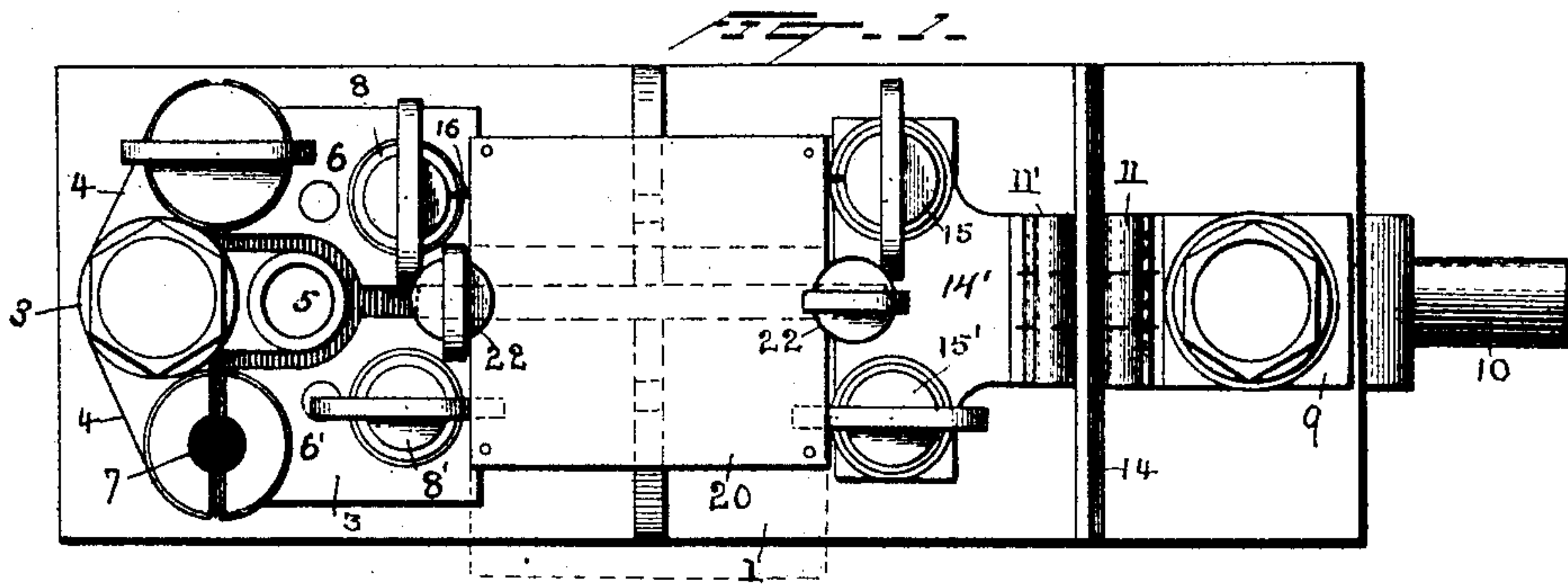


(No Model.)

H. P. BALL.
SWITCH AND CUT-OUT DEVICE.

No. 462,463.

Patented Nov. 3, 1891.



Witnesses
Norris A. Clark
W. F. Oberly

Inventor
Henry Price Ball.
By his Attorneys
Syer & Seely.

UNITED STATES PATENT OFFICE.

HENRY PRICE BALL, OF BROOKLYN, ASSIGNOR TO THE EDISON GENERAL ELECTRIC COMPANY, OF NEW YORK, N. Y.

SWITCH AND CUT-OUT DEVICE.

SPECIFICATION forming part of Letters Patent No. 462,463, dated November 3, 1891.

Application filed March 23, 1891. Serial No. 386,039. (No model.)

To all whom it may concern:

Be it known that I, HENRY PRICE BALL, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented a certain new and useful Improvement in Switch and Cut-Out Devices, of which the following is a specification.

The present invention relates to an improvement in circuit-terminals, cut-outs, and switches on a switch-board, and especially on boards adapted for heavy currents—such, for example, as used in electric-railway systems.

The object of the invention is to provide a safer and better arrangement of the cut-outs and switch apparatus than has heretofore been used.

In the accompanying drawings, Figure 1 is a plan view of one section of the switch-board. Fig. 2 is a side view thereof. Fig. 3 is an end view of a switch-plug. Fig. 4 is a side view of an insulating-screen used in connection with the cut-outs, and Fig. 5 shows an ammeter or other current-measuring device connected with the test-plug.

The several parts of the switch and cut-out are mounted on a base 1 of slate or other insulating material. The circuit-conductor is connected on one side to the terminal 2, which on the upper side of the base is connected with a plate 3, having two arms 4, and being provided with a socket 5. Adjacent to the arms 4 are two metal plates 6 6'.

In the base 1 between the arms 4 and the plates 6 6' are holes 7 for the reception of screws having enlarged heads adapted to connect 4 with 6 or 6'. In Fig. 1 one such screw is shown in place connecting 4 and 6, but no screw is shown connecting 4 and 6'. At the opposite end of these two plates are binding-screws 8 8'. Adjacent to the opposite end of the base 1 is a plate 9, having a binding device 10 for the circuit-wire. To this plate 9 is connected a circuit-closing spring 11, the base of the spring being rigidly connected to the plate. At a distance from the plate the spring is bent inward, forming an end 12. I prefer to so form and mount this spring that the angle between the body of the spring and the end 12 shall be twice as great as the an-

gle between the main part of the spring and a vertical line drawn through its base, for a purpose which will hereinafter be described.

13 is a re-enforcing spring at the back of spring 11.

14 is a plate of insulating material, such as vulcanized fiber, placed near to the end 12 of the spring, and on the opposite side of the plate is a second spring 11', shaped and mounted in the same manner as spring 11. 11' is supported on a plate 14', which has two binding-posts 15 15'.

The plates 6 6' and 14' are connected by means of fusible conductors 16 16', which extend from the binding-posts 8 8' to the top of the insulating-partition 17 and through notches 18 in the top of said partition to binding-posts 15 15'.

19 is a second insulating-screen at right angles to plate 17 and lying between the two fusible conductors. In practice I prefer to form the plates 17 and 19 with notches, as indicated at 17', Fig. 4, and 19', Fig. 2, and to fit the two plates together.

In use only one of the fusible conductors is in circuit at the same time. Should the fuse 16 burn out the screw would be removed from the position shown in Fig. 1 and would be so placed as to connect 4 and 6', thereby closing the circuit through the second fuse.

Accidents sometimes occur to an operator who is replacing a burned-out fuse by the sudden burning of the second fuse. To obviate this danger I provide a cover 20 of vulcanized fiber and having a layer of asbestos 21 on its lower face. This cover may be made wholly of asbestos. Said cover 20 is at right angles to the plates 17 19 and is held in place by the screws 22 on the extensions 23 of the plate 19. When it is desired to replace the fuse 16, the screws 22 are loosened and the plate 20 slid along to the position indicated in dotted lines in Fig. 1, thereby giving access to the terminals of fuse 16 and allowing the fuse to be passed over the notch in plate 17, but maintaining the fuse 16' covered and cut off from the workman on the side where he is working.

When it is desired to close the circuit be-

tween springs 11 and 11', it is done by means of a switch-plug of the form shown in Figs. 1 and 3. Said plug has two prongs 24 of channel form, as shown. This plug is adapted to straddle the insulating-plate 14, one prong making contact with the end 12 of spring 11, and the other prong making contact with the opposite spring. When the plug is inserted, it strikes the ends 12 when it has been inserted less than half-way. As it is pushed in still farther it bends said ends back and they rest flatly against the sides of the plug and parallel thereto. The main part of the springs, however, still exert a spring-pressure toward the plug at its upper end, and the spring ends 12 exert a spring-pressure on the plug for their whole length.

The conducting-plug 25 is connected by means of a conductor to the current-measuring device 26 and to ground. When it is desired to measure the current, the plug 25 may be inserted in the socket 5, when a branch circuit will be obtained of known resistance and the current indicated.

Having thus described the invention, what I claim is—

1. The combination of an insulating-base, several metal terminals thereon, means for connecting either of said terminals to an external circuit, another terminal separated from the first-mentioned terminal by an insulating-screen, a fusible conductor connecting each of the terminals on one side of the screen to the terminal on the opposite side, and a screen over said fusible conductors and movable in such manner as to uncover some of said fusible conductors without uncovering the rest, substantially as described.

2. The combination, with fusible conductors connecting circuit-terminals, of a screen over the fusible conductors which is movable to expose one or another of said conductors,

meanwhile maintaining the other or others covered, substantially as described.

3. The combination of an insulating-screen, fusible conductors on each side thereof, a screen over the same movable to the right and to the left to expose either fusible conductor, and means for securing it in place, substantially as described.

4. The combination, with circuit-terminals and connecting-fuses, of insulating-screens separating the terminals and fuses, said screens being arranged in three planes, one of the screens being over the fuses and being movable to the right and to the left, substantially as described.

5. A circuit making and breaking device consisting of contact-springs separated by an insulating-plate, and a switch-plug having two prongs adapted to straddle the insulating-plate and make a contact with the springs, substantially as described.

6. A circuit making and breaking device consisting of contact-springs with their ends bent back, as described, separated by an insulating-plate, and a switch-plug having two prongs adapted to straddle the insulating-plate and make contact with the springs, substantially as set forth.

7. The combination, in a circuit making and breaking switch, of a circuit-terminal, an insulating plate or screen, a second circuit-terminal, the two terminals being on opposite sides of said screen, and a switch-plug for connecting the two terminals, substantially as described.

This specification signed and witnessed this 5th day of March, 1891.

HENRY PRICE BALL.

Witnesses:

W. S. ANDREWS,
J. HUTCHINSON.