

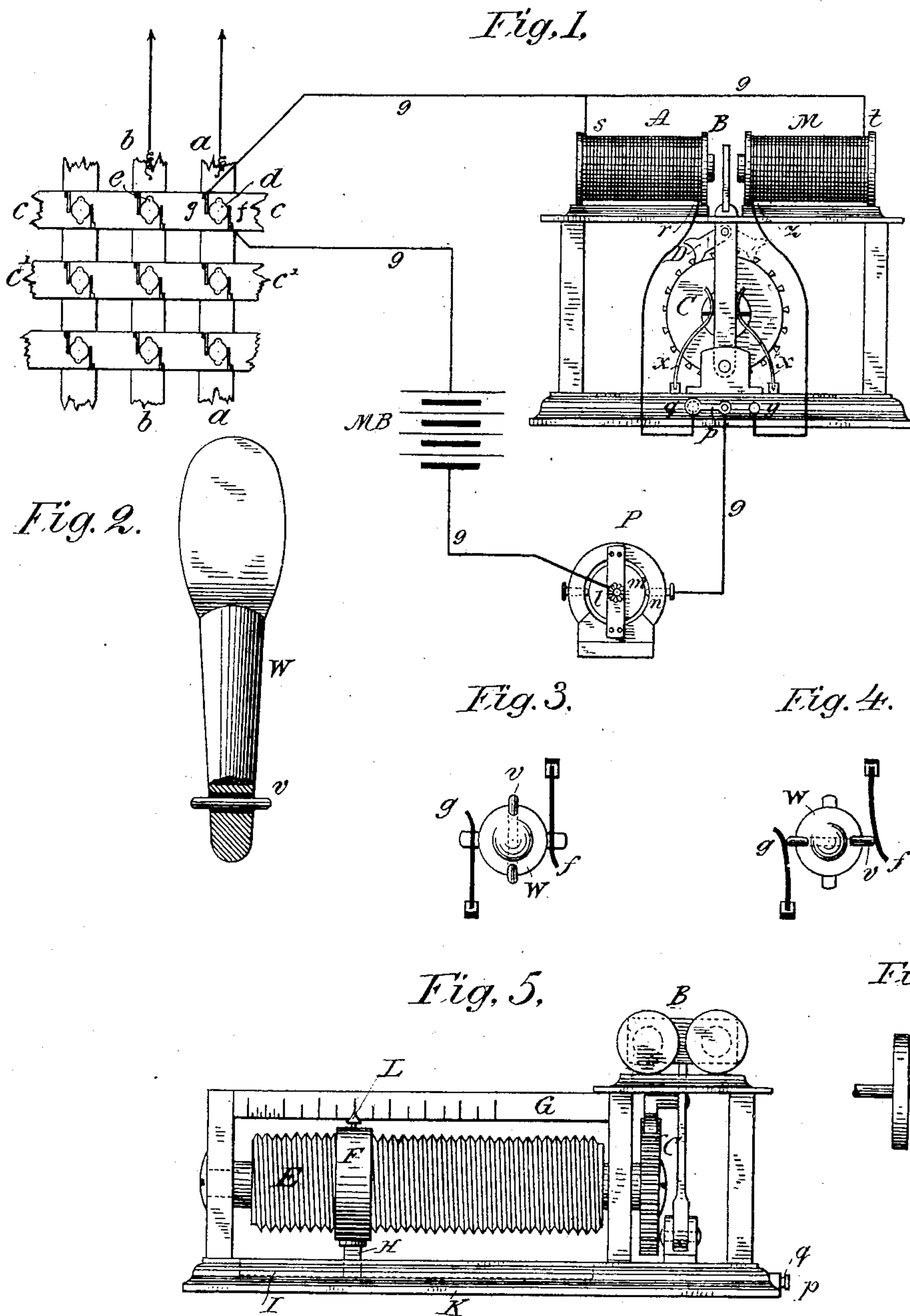
(No Model.)

F. E. KINSMAN.

ELECTRIC TIME REGISTER FOR TELEPHONE AND TELEGRAPH SWITCHES.

No. 276,184.

Patented Apr. 24, 1883.



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANK E. KINSMAN, OF NEW YORK, N. Y.

ELECTRIC TIME-REGISTER FOR TELEPHONE AND TELEGRAPH SWITCHES.

SPECIFICATION forming part of Letters Patent No. 276,184, dated April 24, 1883.

Application filed November 19, 1880. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. KINSMAN, a citizen of the United States, residing in the city, county, and State of New York, have invented a certain new and useful Electric Time-Register for Telephone and Telegraph Switches, of which the following is a specification.

The object of my invention is to provide a means whereby the time during which a telephone or telegraph circuit is in use may be recorded; and to this end my invention consists in the combination, with a telephone or telegraph central-office switch-board, of a rheotome or circuit-breaker, an electro-magnetic register or recorder, and a switch-plug or similar device for connecting any two lines of the system together, so constructed or combined with suitable circuit-closing devices that it may be made to close the register or recorder circuit.

My invention consists, also, in the combination, with the switch-board and a register or recorder circuit, of a switch-plug for connecting the telephone or telegraph lines, so constructed that it will close the register or recorder circuit upon being turned after insertion into its socket.

In the accompanying drawings, Figure 1 is a diagram illustrating the manner in which the various devices are electrically connected, and showing also the construction of the devices. Fig. 2 is a side view of the switch-plug. Fig. 3 is an end view thereof, looking toward the lower or smaller end. Fig. 4 is a similar view, showing the plug turned so as to complete the register or recorder circuit. Fig. 5 is a side view of the electro-magnetic register or recorder. Fig. 6 is an edge view of the rheotome circuit-closing disk.

Referring to Fig. 1, *a b* indicate two line-strips of a telephone or telegraph switch-board, and *c c'* two of the "line-connecting" strips. The telephone or telegraph lines are connected separately to the strips *a b*, &c., and any two of said lines may be connected by inserting switch-plugs into the line-strips of the lines to be connected over the same horizontal line-connecting strip, in the obvious and well-known manner. At or near each intersection of a line-strip, *a* or *b*, and a line-connecting strip is placed a pair of insulated springs or contacts, *f g*, forming terminals of

the register or recorder circuit and situated in suitable proximity to the perforation in the strips, so that they may be electrically connected by the plug, as will be presently described. W, Fig. 2, indicates the switch-plug, which is of the ordinary construction, excepting that it is provided with two lateral conducting projections, made by inserting a pin, *v*, transversely through the plug, or in any other suitable manner. Said pin is by preference insulated in the plug, as indicated. The perforations in the strips *a b c c'*, &c., are of a shape, as shown, to correspond with the shape of the plug at the point where the projections are formed, so as to make it necessary to insert the plug in a certain position, in order to allow the projections to pass the strips, and the springs *f g* are so situated that when the plug is first inserted they will not be connected; but upon turning the plug one-fourth (more or less) of a revolution the pin *v* will come into contact with both springs, and thus complete the register or recorder circuit. The relative position of the parts when the plug is first inserted to connect two lines is indicated in Fig. 3. Springs *f g* are here disconnected from one another. When the plug is turned in its socket the springs are connected, as indicated in Fig. 4. The springs *f g* form the terminals of a circuit, 9 9 9, which includes a battery or source of electricity, M B, a rheotome, P, and the electro-magnet A or M of an electro-magnetic register or recorder. The rheotome P is of any suitable or ordinary construction, made to run by clock-work or other means at a definite rate of speed, so as to close the electric circuit at intervals of a minute or half-minute or some other definite subdivision of time. The parts only of this device which serve to close the circuit are shown, for the sake of simplicity, as the device is well known in the art. A laterally-projecting stud, *m*, is attached to the revolving disk or wheel *l*, and at each revolution comes into contact with a spring or point, *n*, thus completing the circuit 9 9 through the shaft of disk *l*, the disk, and the spring. Other contact-springs *n* are arranged around the wheel *l* for the other line-circuits connected to the switch-board. The circuit 9 passes through a button-switch, *p g*, thence through electro-magnet A. The armature B is mounted on a lever held in upright position by springs

X X, and the lever carries the pawl D of the register or recorder. C is the toothed wheel, with which the pawl engages so as to move the same one step at each movement of the armature-lever by a closing and breaking of circuit 9 9. The shaft of C carries a screw, E, having a traveling nut, F, which is provided with a pointer, L, moving over a scale, G, graduated to indicate time. A stud, H, on the nut is guided in a slot, I, in the base K and prevents said nut from turning with the screw E. By turning switch *p* so as to rest on button *y* the electro-magnet M may be placed in the circuit 9 9, so that if the pawl D be swung over to engage with the toothed wheel C, as indicated in the dotted lines, the nut and pointer F may be made to retrace their path after having progressed to one end of the scale-plate G. The operation of the device will be obvious from what has been already said. If telephone-subscriber on line *a* ask to be connected with line *b*, for instance, the two lines are connected, as usual, by the switch-plugs inserted at *d* and *e*, and the plug for line *a* is then turned so as to complete the register-circuit for that line in the manner already described, so as to cause the register or recorder for that line to make a registry or record of the time during which the two lines are connected.

I do not limit myself to any particular construction of rheotome or electric register.

My invention is obviously applicable to any form of switch-board. Other constructions of switch-plug or connecting device may be used for completing the register-circuit when the lines are connected.

What I claim as my invention is—

1. The combination, substantially as described, of a telephone or telegraph central-office switch for connecting any two subscribers' lines, a connecting-plug or similar device for said switch, whereby the lines are connected, and a register or recorder apparatus whose circuit is completed by said plug or similar device.

2. The combination of a central-office connecting-switch for connecting any two telephone or telegraph lines, a switch-plug therefor, an electric register or recorder, and means for completing an electric circuit for said register or recorder when the plug is turned in its socket.

3. The combination, substantially as described, of an electro-magnetic register or recorder, a rheotome or circuit-breaker in circuit with the electro-magnet for said register and with a battery or source of electricity, and a central-office switch provided with a switch-plug or similar connecting device for completing the register-circuit when two lines are connected.

4. The combination, with two crossing strips, *a* and *c*, of a switch-plug provided with projections, as described, springs *f g*, and an electric register or recorder apparatus connected to said springs.

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