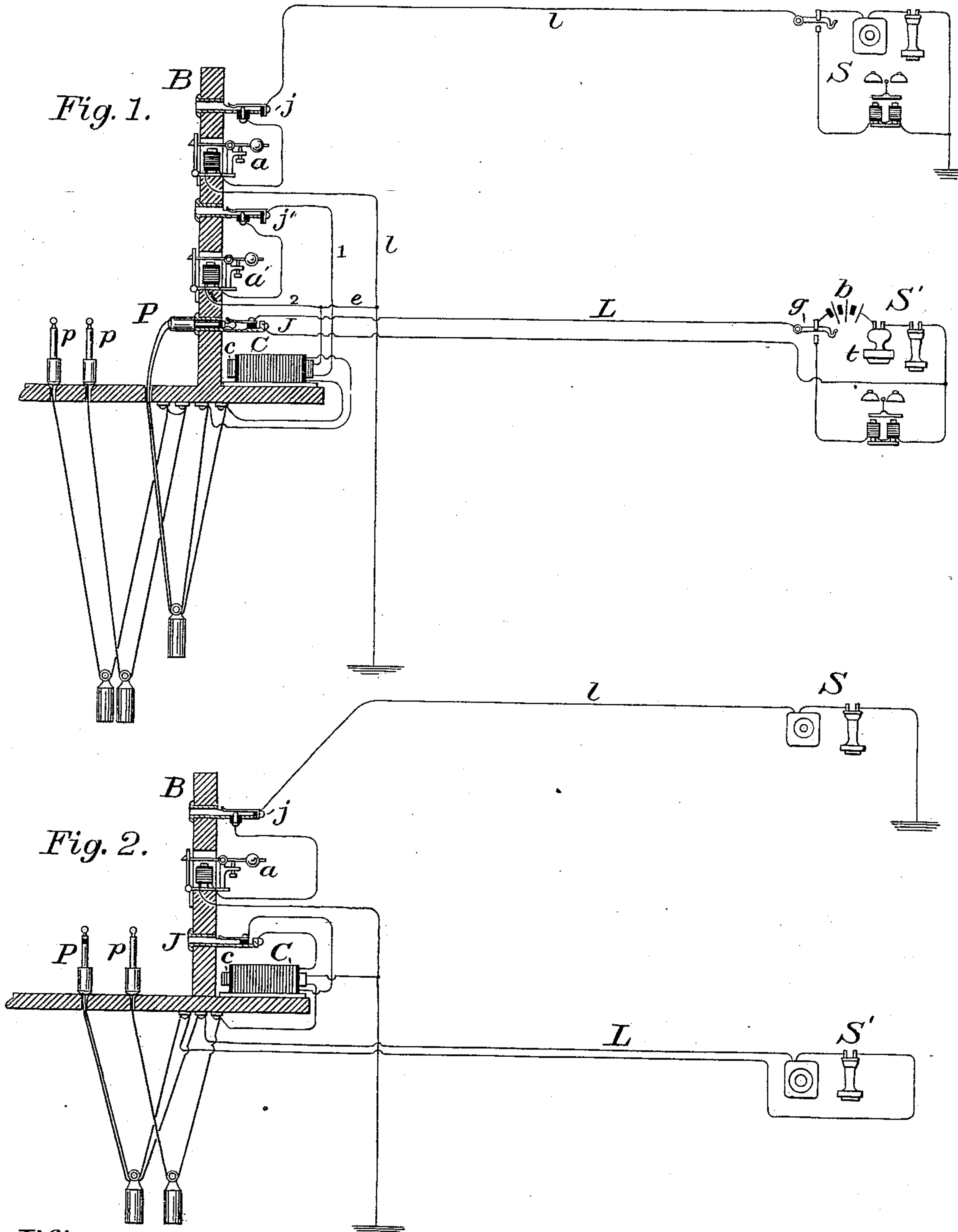


(No Model.)

T. B. DOOLITTLE.
TELEPHONE CIRCUIT.

No. 335,436.

Patented Feb. 2, 1886.



Witnesses,
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UNITED STATES PATENT OFFICE.

THOMAS B. DOOLITTLE, OF BRIDGEPORT, CONNECTICUT.

TELEPHONE-CIRCUIT.

SPECIFICATION forming part of Letters Patent No. 335,436, dated February 2, 1886.

Application filed July 9, 1885. Serial No. 171,094. (No model.)

To all whom it may concern:

Be it known that I, THOMAS B. DOOLITTLE, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain Improvements in Telephone-Circuits, of which the following is a specification.

My invention consists of an arrangement of apparatus for telephone-exchanges, whereby single-line or ground-return circuits may be readily connected with metallic circuits for the purpose of electrical communication. A switch-board containing the terminals of circuits of both classes, equipped with annunciators and switching devices, is provided with an inductorium composed of two coils, preferably of nearly equal resistance. The terminals of each coil are connected to spring-jacks or equivalent switching devices. One coil is connected to a switch of such form that a ground-return circuit may readily be connected thereto, and the other coil is connected to a switching device of such form that a double-line or metallic circuit may be connected thereto. If but comparatively few metallic circuits are in use, as in cases where they are confined to trunk-lines, instead of placing an annunciator in each metallic circuit, I place the annunciator in the local circuit, embracing one coil of the inductorium, with a switching device—as a spring-jack—and connect the metallic circuit to the second coil of the inductorium. Calls originating upon the metallic circuit will drop the annunciator by an induced current or impulse through the medium of the coil, and a station on a single conductor-line may then be placed in communication with a station upon a metallic circuit.

A further improvement consists in the arrangement of a direct-working transmitter with a battery and switch-arm at the sub-station, whereby a calling-impulse is transmitted by one movement, which also connects in the transmitter-battery.

I will now describe my invention by reference to the accompanying drawings.

Figure 1 shows a section of a switch-board to which my improvements are applied; Fig. 2, a modification.

B, Fig. 1, is a section of a switch-board located at a telephone central station. The single line *l* extends from sub-station S to board

B, where it passes through jack *j* and annunciator *a* to ground. The metallic circuit L extends from sub-station S' to board B, and is connected to jack J. On board B there is an inductorium, the terminals of one coil of which, C, are connected to plug P, inserted in jack J. The terminals of the coil *c* are connected to a local circuit, 1 2, in which is located jack *j'* and annunciator *a'*. When station S' throws a current, as from battery *b* onto line L, the annunciator *a'* is dropped by the induced impulse and the called for signal-line is connected in circuit with coil *c* by the conducting-cords *p p* and jack *j'*, the same as in connecting together two single lines. An earth-connection, *e*, is made to local-circuit 1 2 for this purpose. The circuit is thus composed of line *l*, jack *j*, cord *p p*, jack *j'*, wire 1, coil *c*, wire *e* to ground. The connections of line L remain unchanged. Thus any one of a series of metallic circuits and any one of a series of single lines may be connected for communication.

At sub-station S' there is a direct-working battery-transmitter, *t*, with receiving telephone and battery *b* in one branch and a call-bell in a second branch, the gravity-switch *g* controlling the circuit. When the receiving-telephone is lifted from the hook of arm *g* a calling-impulse is transmitted from *b*, and the necessary battery for operating the transmitter placed in circuit.

Fig. 2 shows a modification of connections. One coil of inductorium, C, is connected to a jack, J, and the other coil, *c*, is in a normally open grounded branch, terminating in the conducting-cord at pin *p*. The metallic circuit L is connected to the double cord-tip, which is for insertion in a jack, as J, while pin *p* may be placed in a jack, *j*, of any single line. A single-line and metallic circuit may thus be connected for communication.

What I claim is—

1. The combination, in a telephone-exchange, of a switch-board containing the terminals of one or more single lines and one or more metallic circuits with an inductorium having the opposite terminals of both coils respectively connected to switching devices, whereby any one of the said single lines and any one of the metallic circuits may be made to include one coil of the inductorium each.

2. In a telephone-exchange, the combination of a main-line metallic circuit containing the first coil of an inductorium located at the central station, a spring-jack or switching device connected to the opposite terminals of the second coil, and one or more ground-return main lines having their terminals in switch-connections at the central station.

3. The combination of a main-line metallic circuit containing one coil of an inductorium located at the central station with a spring-

jack and annunciator-magnet located at the central station and connected with a local-circuit with the second coil of the said inductorium.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 3d day of July, 1885.

THOMAS B. DOOLITTLE.

Witnesses:

WM. B. VANSIZE,

GEO. WILLIS PIERCE.