(No Model.)

W. L. BRADSHAW.

TELEPHONY.

No. 577,231. Patented Feb. 16, 1897.

Fig. 1.

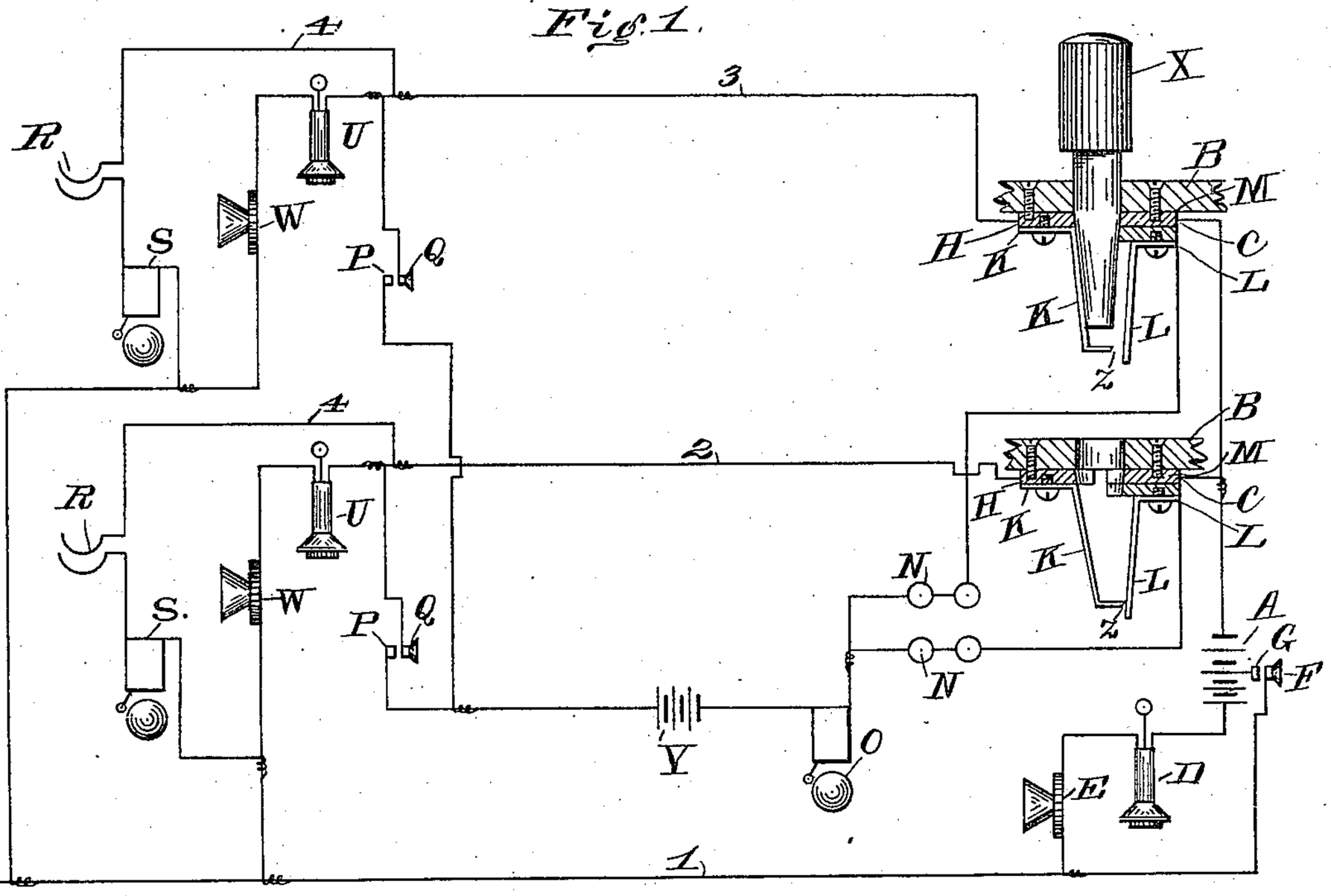


Fig. 2.

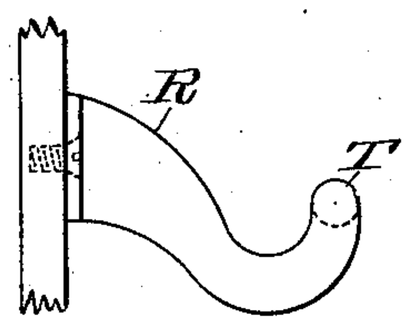


Fig. 3.

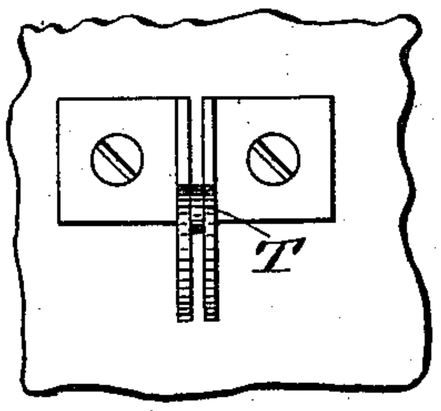
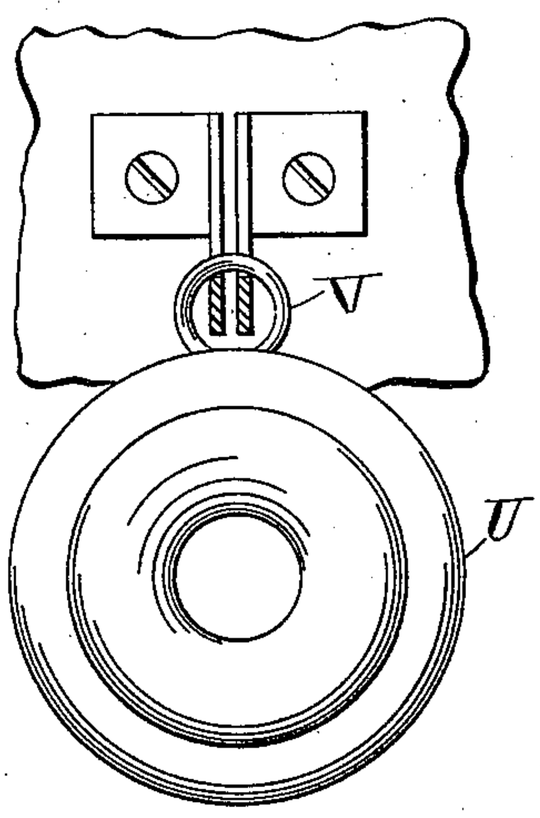


Fig. 4.



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TELEPHONY.

SPECIFICATION forming part of Letters Patent No. 577,231, dated February 16, 1897.

Application filed March 30, 1896. Serial No. 585,367. (No model.)

To all whom it may concern:

Be it known that I, WALTER L. BRADSHAW, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Telephony, of which the following is a specification.

My invention relates to short-distance telephone communication adapted to use between the rooms in a hotel and the office, or other structure where rapid communication between a single point and numerous other points is desirable, such as is in steamboats and factories, that may be readily attached to existing wires, the instruments being simple and diminutive, yet firm and strong, insuring comparative freedom from interruption of service, being worked from a central-station battery, and obviating any necessity of the employment of skilled attendance. I attain these results by the methods and mechanisms shown in the accompanying drawings, in which—

Figure 1 is a diagrammatic view of system, showing two stations and their connections and switching device at office or annunciator end; Fig. 2, a side elevation of hook; Fig. 3, an end elevation of hook; Fig. 4, a cross-section of hook, showing connections made by metallic supporting-ring of receiver.

Similar letters and numerals refer to similar parts throughout the several views.

Talking-battery A, Fig. 1, has one of its poles permanently connected to each spring-jack at point C and normally open. The other pole of said battery is permanently connected to operator's receiver D and transmitter E to general return-wire 1. A ringing-key F is also connected to wire 1 in such manner as to form a low-resistance shunt around operator's receiver D and transmitter E. Its anvil G may be connected to battery A, so as to include only sufficient number of cells to furnish ringing power for room-bells, or may include the entire battery, as desired. Line-wires 2 and 3 are connected to the metal plates H, which are in turn connected to line-springs K by machine-screws, as shown. Line-spring K is normally in contact with drop-springs L, which is mounted upon but insulated from metal strip M and is permanently connected to its respective annunciator-drop N. Each annunciator-drop has its other side connected to one binding-post of bell O. The other binding-post of bell is connected to one pole of ringing-battery Y, the other pole of said battery being extended to each of the stations, the ends normally open at contact of push-button P, as is usual in this class of wiring. The other contact of push-button Q is connected to its respective line-wire. At each station line-wires are permanently connected through receiver and transmitter to return-wire 1. Branched wires 4 are also connected to line-wires and terminate at one side of hook R. The other side of hook has wire leading through bell S to common return-wire 1. The metal hook R (shown in detail in Figs. 2, 3, and 4) is made in two sections, one section carrying small stud of insulating material T at its outermost point. Said sections are bent at such an angle as will cause their points to impinge when screwed to their support, the stud T preventing metallic contact and leaving a space between their sections.

When receiver U, Fig. 4, is hung upon the hook by its metal supporting-ring V, connection is made between the sections of the hook, thus forming a low-resistance shunt around receivers U U and transmitters W W, Fig. 1, from lines through bell to return-wire 1, so that when plug X is inserted in spring-jack of any line (here shown in spring-jack of line 3) and key F depressed current from battery will flow by way of wire 1 through bell S and short-circuited hook R and branch wire 4, line-wire 3, to plate H and plug X and plate M and connecting-wire back to battery. The removal of receiver from hook at station signaled and the release of key F permits current from battery A to flow through receiver D and transmitter E, line 1, transmitter W, receiver U, through line 3, to plate H, to plug X, to plate M, and connecting-wire back to battery, thus establishing telephonic circuit.

When signaling from any station, it is desirable that receiver should first be removed from the hook. Then a pressure upon push-button Q will cause current to flow from ringing-battery Y through its respective line to plate H and line-spring K and drop-spring L to drop N and back to battery Y by way of bell O. This method of shunting receiver and transmitter makes it possible to use cen-

tralized battery for both talking and receiving and reduces the number of wires for this class of work to the minimum—viz., three wires—and all stations may be signaled from the central station with one and the same key. When the operator touches the button, he has audible evidence as to whether or not he is sounding signal at desired point. This is accomplished whether ringing to or from the office. This result is due to the fact that at the time of depression of ringing-key the receiver is not cut out of circuit, but is shunted, and though the ringing-circuit draws the major portion of the electric energy any fluctuation of current in the circuit will create a proportional amount of fluctuation in said shunted circuit of sufficient strength to agitate diaphragm of receiver included in such shunted circuit, and any such agitation is distinctly audible. The absence of the agitation defined is conclusive that there is trouble in the circuit.

The spring-jack B H K L M employed in this system has a tapering hole downward through its base of insulating material B and the metal plates H and M, conforming to the taper of the plug X. The springs K and L are formed at such an angle to their base that when attached at their base, preferably by machine-screws, they impinge at Z. They are of unequal strength and temper, K being the stronger and of a higher temper than L.

The plug X is brought in contact with the spring K when placed in the tapering hole, but does not come in contact with L. The spring K is forced back by the insertion of the plug. When said plug is removed, the spring K, moving in a circle around its base, comes in contact with the weaker spring L, forcing its movable end backward and downward in a circle around its base, the edge Z of spring K, scraping upon spring L near its lower end, producing a perfect contact of clean freshly-scraped metal, which insures an even and certain union of conductors, the effect being that rust and foreign substances that otherwise accumulate and obstruct the current are scraped away continually by use, and a slight portion of the surface of the softer metal of which spring L is composed is scraped away by the edge Z, thus by use perpetuating a freshly-scraped metallic connection.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. A telephonic system having a talking-battery, A, with one of its poles permanently connected to each spring-jack at point C and normally open; the other pole of said battery permanently connected to operator's receiver, D, and transmitter, E, and general return-wire, 1; and having a ringing-key, F, also connected to wire, 1, adapted to form low-resistance shunt around operator's receiver, D, and transmitter E, its anvil, G, susceptible to connection to battery A so as to include only sufficient number of cells to furnish ringing power for station-bells, and also susceptible of including the entire battery; and having line-wires 2 and 3 connected to metallic plates H, in turn connected to line-springs K, which are normally in contact with drop-springs, L, which are mounted upon and insulated from metal strip, M, and permanently connected to its respective annunciator-drop, N, N, and each annunciator-drop having its other side connected to one binding-post of bell, O, the other binding-post of bell connected to one pole of ringing-battery, Y, the other pole of said battery being extended to each of the stations, the ends normally open at contact of push-button, P, the other contact of push-button, Q, connected to its respective line-wire at each station; the line-wires permanently connected through receiver and transmitter to return-wire, 1, and having branched wires 4 also connected to line-wires, and terminating at one side of hook, R, the other side of hook having a wire leading through bell, S, to common return-wire, 1, as described and shown and for the uses and purposes set forth.

2. In a telephone system of the class described, the push-button Q, in combination with the receiver U, the hook R, ringing-battery Y, line 2, plate H, line-spring K, drop-spring L, and drop N, as described and shown, and for the uses and purposes set forth.

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