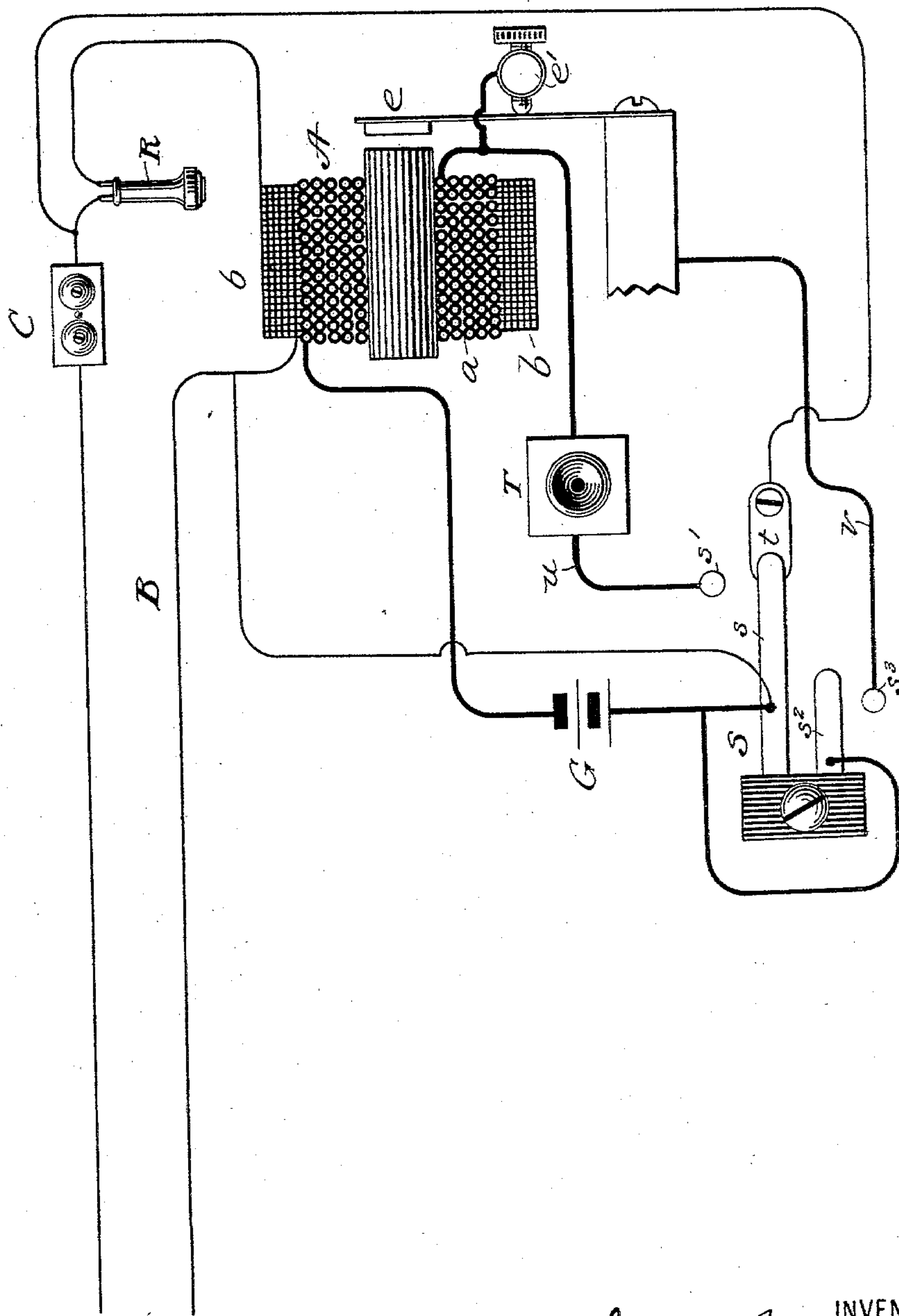


(No Model.)

J. T. WILLIAMS.
TELEPHONY.

No. 569,807.

Patented Oct. 20, 1896.



WITNESSES:

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TELEPHONY.

SPECIFICATION forming part of Letters Patent No. 569,807, dated October 20, 1896.

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To all whom it may concern:

Be it known that I, JOHN T. WILLIAMS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Telephony, of which the following is a full, clear, and exact description.

This invention relates to telephony, the object being to eliminate the necessity of the magneto-generating apparatus commonly used for calling purposes, and thus materially simplify and cheapen the system.

My invention comprehends, broadly, the use of the induction-coil generally required in telephonic service for transmitting electrical undulations, and to also produce and transmit electrical currents for giving a signal or alarm to a connecting station. In my system the circuit from the line through each station is always intact, the secondary of the induction-coil, the receiver, and the usual call-bell being permanently joined in series. In order to produce signaling-currents in the secondary of the induction-coil and the line when necessary to call up another station, I use an ordinary circuit-closer, such as a push-button, to establish a circuit through the primary of the induction-coil, which acts through a vibrating armature such as commonly used to interrupt the current, and thus produce a current of sufficient potential in the line to ring the bells at each station. When the signals are exchanged, the primary of the induction-coil is by suitable means joined in series with a microphone or other transmitter, and thus speaking connection established between the stations. In practice the primary circuit is normally open and the secondary and receiver are short-circuited.

The details of the invention will now be described with reference to the accompanying drawing, in which the figure represents in diagram the apparatus and circuits constituting my invention.

A is an induction-coil such as is used in telephony. The primary circuit is represented by *a*, and the secondary circuit by *b*. The latter is directly connected with the main line B. In the secondary circuit or that portion of the main line at the subscriber's station is permanently connected a call-bell C or other signaling apparatus.

In connection with the induction-coil I provide an armature *e*, having a back-stop *e'*. T is the transmitter, and G the battery, located in the primary circuit of the induction-coil. S is a switch with two arms, one, *s*, adapted to connect with a point *s'*, and the other, *s*², with the point *s*³. Both are connected with one pole of the battery. *t* is a stationary strip normally in contact with arm *s* and always insulated from arm *s*². The strip *t* and the arm *s* are the terminals of wires connecting with the line at such points as to bridge or shunt the secondary coil and the receiver R. Point *s'* is the terminal of a wire *u*, leading through the transmitter, thence through the primary coil to battery G. Point *s*³ is the terminal of a wire *v*, leading to armature *e*, and a wire connects the back-stop of the armature with the same end of the primary coil to which conductor *u* is connected. The armature and back-stop constituting a circuit-interrupter and the transmitter are therefore connected in parallel with each other, but either may be put into series in a closed circuit with the primary of the induction-coil.

When it is desired to use the telephone, the switch S is thrown first to bring arm *s*² into contact with the point *s*³. Immediately the circuit of generator G is closed through the armature *e*, back-stop *e'*, and the primary of the induction-coil. The armature is attracted and breaks contact with its back-stop, thus interrupting the circuit and permitting the spring upon which the armature is mounted to carry it back to its normal position and again closing the circuit. The armature continues to vibrate in this manner as long as the switch remains on the point *s*³. The interruptions of the primary circuit thus created induce an intermittent current in the secondary coil and line-wire which acts upon the signals at both the home and the distance stations. The call-bell therefore vibrates and gives the calling-signal. After a short ringing the switch S is thrown to bring arm *s* into contact with *s'*, thus cutting the circuit-interrupter out and putting the transmitter into series in a closed circuit with the primary of the induction-coil. Conversation may then be carried on in the usual way, the delicate impulses induced in the secondary

circuit and main line passing through the signal-magnets without affecting them; or devices may be arranged to short-circuit the bell while talking. This method of calling
5 dispenses with the complicated magneto instruments and the necessary switching apparatus and connections which must accompany it. The amount of manual operation
10 necessary to send in a call is very little with my apparatus, consisting merely in throwing the switch to the point s^3 .

It will be observed that when the switch is in its normal position, as shown, the secondary of the induction-coil and the receiver are
15 bridged or short-circuited, thus relieving the line of their resistance. When the switch is thrown to the points s' , the connection between arm s and strip t is broken, thus forcing the current to travel through the receiver and
20 the secondary coil.

Having thus described my invention, I claim—

1. In telephony, the combination of an induction-coil, a signaling instrument, the latter being in the secondary circuit of the induction-coil, a circuit shunting the secondary
25 of the induction-coil, another circuit having

two branches, one of which includes a circuit-interrupter and the primary of the induction-coil, and the other including the transmitter
30 and the primary of the induction-coil and a switch arranged to close either of said branch circuits or said shunt-circuit while leaving the others open, substantially as described.

2. In telephony, the combination of an induction-coil, a signaling instrument, the latter being in the secondary circuit of the induction-coil, a receiving instrument also in the secondary circuit of the induction-coil, a circuit shunting the secondary coil and the
40 receiver, another circuit having two branches one of which includes a circuit-interrupter and the primary of the induction-coil, while the other includes the transmitter and the primary of the induction-coil and a switch
45 arranged to close either of said branch circuits or said shunt-circuit, while leaving the others open, substantially as described.

In testimony whereof I subscribe my signature in presence of two witnesses.

JOHN T. WILLIAMS.

Witnesses:

FRANK S. OBER,

JOHN KRAEGER.