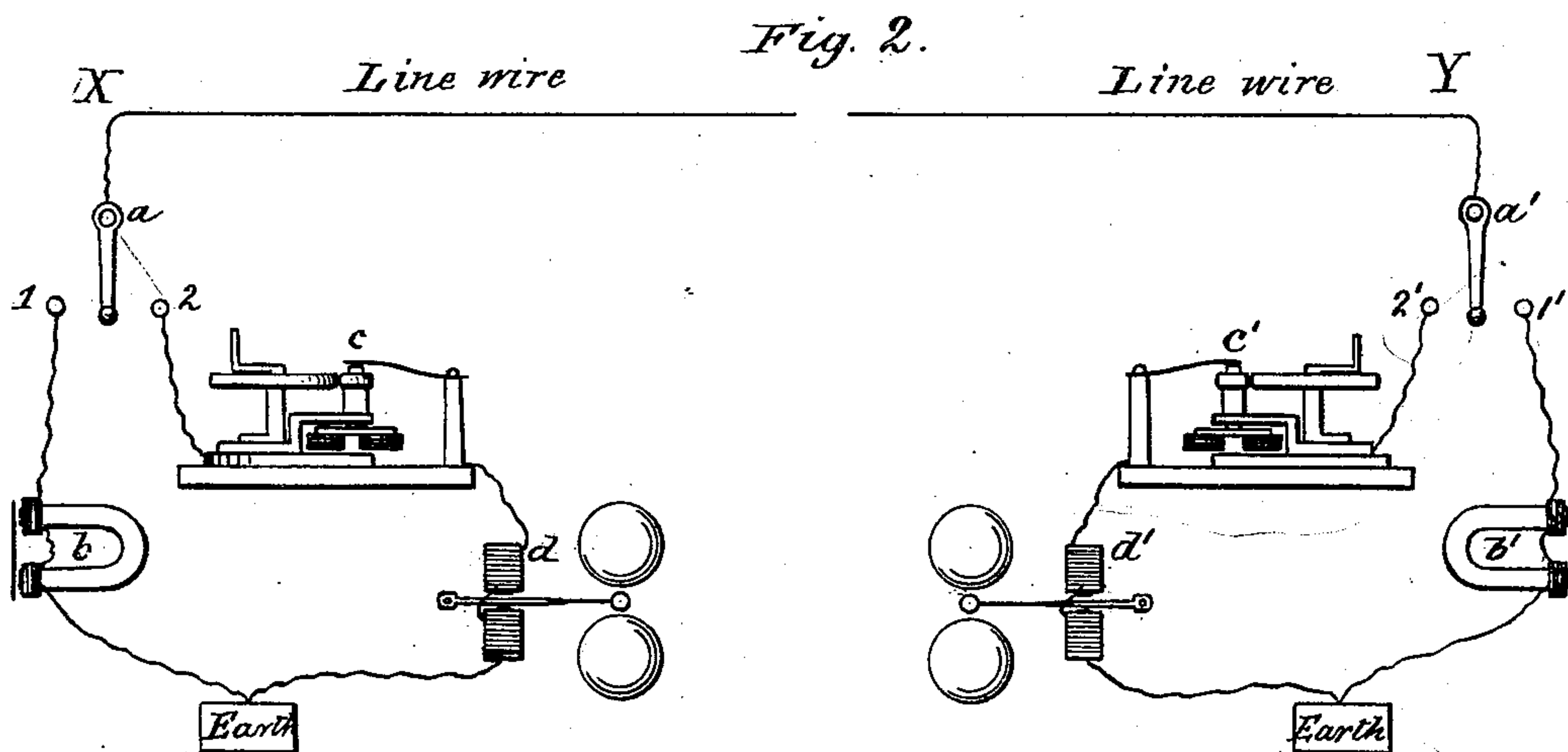
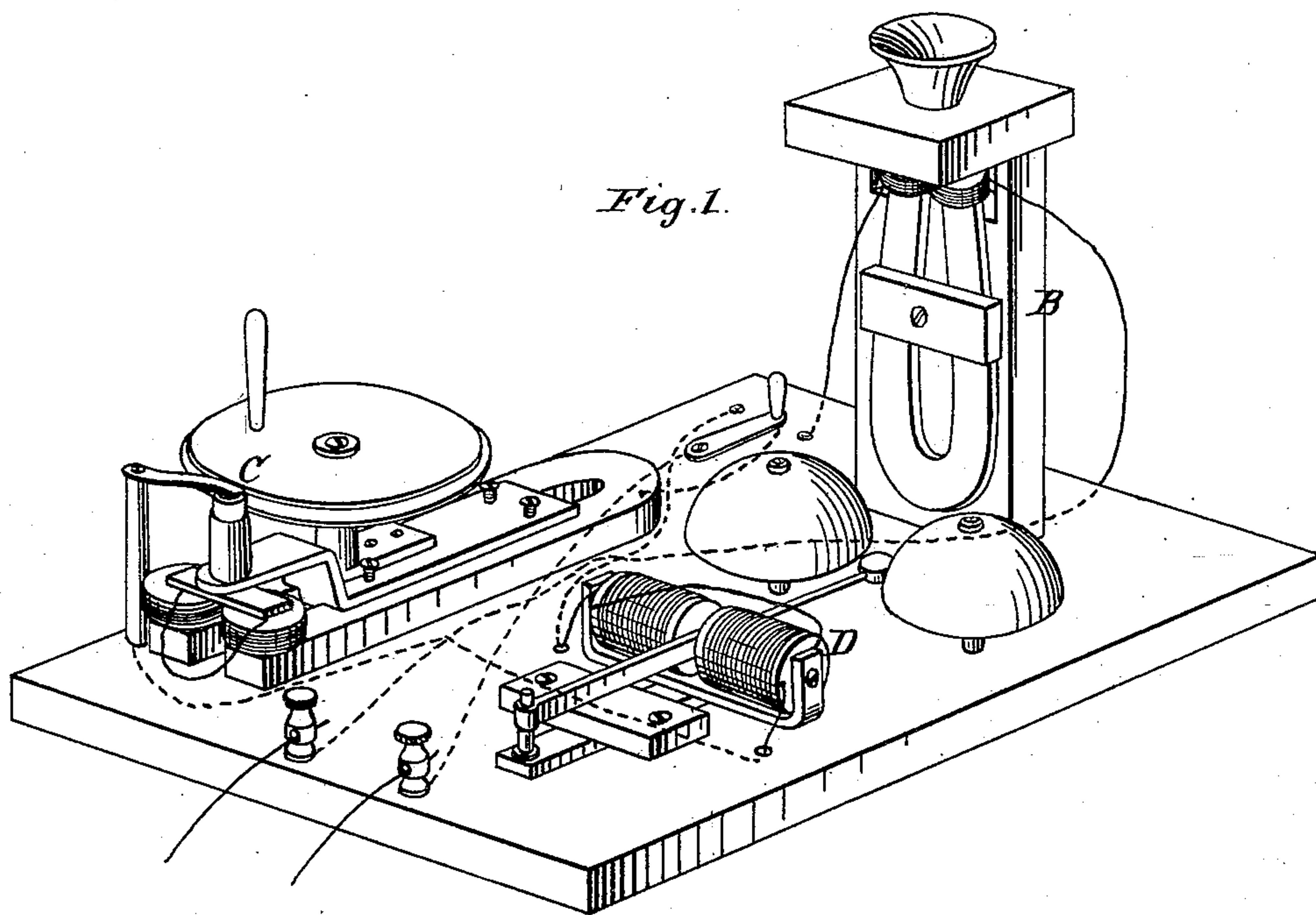


T. A. WATSON.  
Telephone Call-Signal Apparatus.

No. 202,495.

Patented April 16, 1878.



Witnesses:

*E. A. Dick*  
E. E. Masson

Inventor.

*Thomas A. Watson*  
by *A. Pollok* his  
attorney.



# UNITED STATES PATENT OFFICE.

THOMAS A. WATSON, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN TELEPHONE CALL-SIGNAL APPARATUS.

Specification forming part of Letters Patent No. **202,495**, dated April 16, 1878; application filed October 11, 1877.

*To all whom it may concern:*

Be it known that I, THOMAS A. WATSON, of Boston, Massachusetts, have invented certain new and useful Improvements in Electric Telephony, of which the following is a specification:

In Letters Patent granted to Alexander G. Bell on the 30th day of January, 1877, No. 186,787, has been described a method of transmitting articulate speech along a telegraphic circuit.

In operating magneto-electric telephones such as are described in the said Letters Patent, difficulty has been experienced in calling the attention of the operator at a distant station, and it has been found advisable and necessary to combine with such telephones instruments specially adapted for the purpose of signaling.

The object of the present invention is to produce an audible signal at a distant station of sufficient loudness to attract the attention of the operator at a considerable distance from the instrument. To this end I combine with a telephonic circuit a magneto-electric inductor of ordinary or suitable construction. Electrical currents of high tension may thus be induced upon the line by the rotation of an armature, and these currents, on being passed through the coils of a distant telephone, produce a sound of considerable loudness. I prefer, however, to combine with the telephones at the receiving end of a circuit a bell or other contrivance specially adapted for calling attention.

The manner in which my invention is or may be carried into effect is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of one form of magneto-electric signaling apparatus illustrating my said invention; but it will be understood that any other form of magneto-electric inductor may be employed as a means of producing a sound. Fig. 2 is a diagram showing one mode of combining a call arrangement with telephones upon a single circuit.

In said drawings, B is the telephone hereinbefore referred to, consisting, essentially, of a plate of iron or steel, which is thrown into vibration by sounds made in its neighborhood. This plate being an armature of an electro-

magnet, the vibrations are transmitted to distant but similar telephones, acting as receiving-instruments upon the same line. The electro-magnet here shown consists of a horseshoe having coils of insulated copper wire placed around its extremities.

C is a magneto-electric inductor, which, as here shown, consists of a horseshoe-magnet, over the extremities of which are suspended, at proper distance, two bobbins or bars surrounded by insulated wire, which bars are united by a cross-bar fast to a spindle, to which rotary movement is imparted by means of friction-gear.

Through proper insulating devices, which it is not necessary here to particularize or describe, such being well known to electricians, circuit is established, so that by the revolution of the bobbins an electric current is excited and induced.

D is the bell or alarm proper, consisting of two stationary bars of iron surrounded by insulated wire. Between the ends of the bars is arranged a vibratory armature, the movement of which is transmitted to a hammer or clapper arranged between two hemispherical call-bells or caps. The arrangement upon circuit whereby those instrumentalities are caused to operate is shown in Fig. 2, X and Y representing two distant telephone-stations; *a a'*, two ordinary button-switches; *b b'*, telephones; *c c'*, magneto-electric inductors, as before described; *d d'*, electric bells with polarized armatures, such as before referred to.

The operation is as follows: When switches *a a'* are resting upon the buttons 2 2', the circuit is made through the inductor and bell *c* and *d* at station X, and *c'* and *d'* at station Y. When the operator at X wishes to attract the attention of the one at Y, he turns the crank of the inductor, producing currents of electricity, which traverse the line-wire and cause the bell *d'* at station Y to ring. The operator at Y answers by turning the crank on the inductor *c'*, which rings the bell *d* at station X; then the switches *a a'* are both turned to the telephones 1 and 1', making the circuit through the telephones *b* and *b'*. Conversation can then be carried on.

Instead of the inductor and bell represented, any of the well-known forms can be used.

I do not claim ringing a bell by the use of a magneto-electric current, as that has been done before; but

What I do claim, and desire to secure by Letters Patent, is—

1. The combination, with a system of electric telephones, and upon the telephonic circuit, of signaling apparatus and a supplemental electric generator in a branch circuit independent of that containing the telephone, the whole being arranged and adapted to call the attention of distant operators, substantially as shown and described.

2. The combination, with a system of electric telephones, of a supplemental magneto-

electric inductor in an independent branch circuit, substantially as shown and described.

3. The combination, with a system of electric telephones, of magneto-electric inductors and call-bells with polarized armatures, the whole being operated substantially as shown and described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THOMAS AUGUSTUS WATSON.

Witnesses:

EDWD. A. McLAUGHLIN,  
WARREN KYLE.