

(No Model.)

2 Sheets—Sheet 1.

H. T. JOHNSON.  
TELEPHONE.

No. 547,265.

Patented Oct. 1, 1895.

Fig. 1.

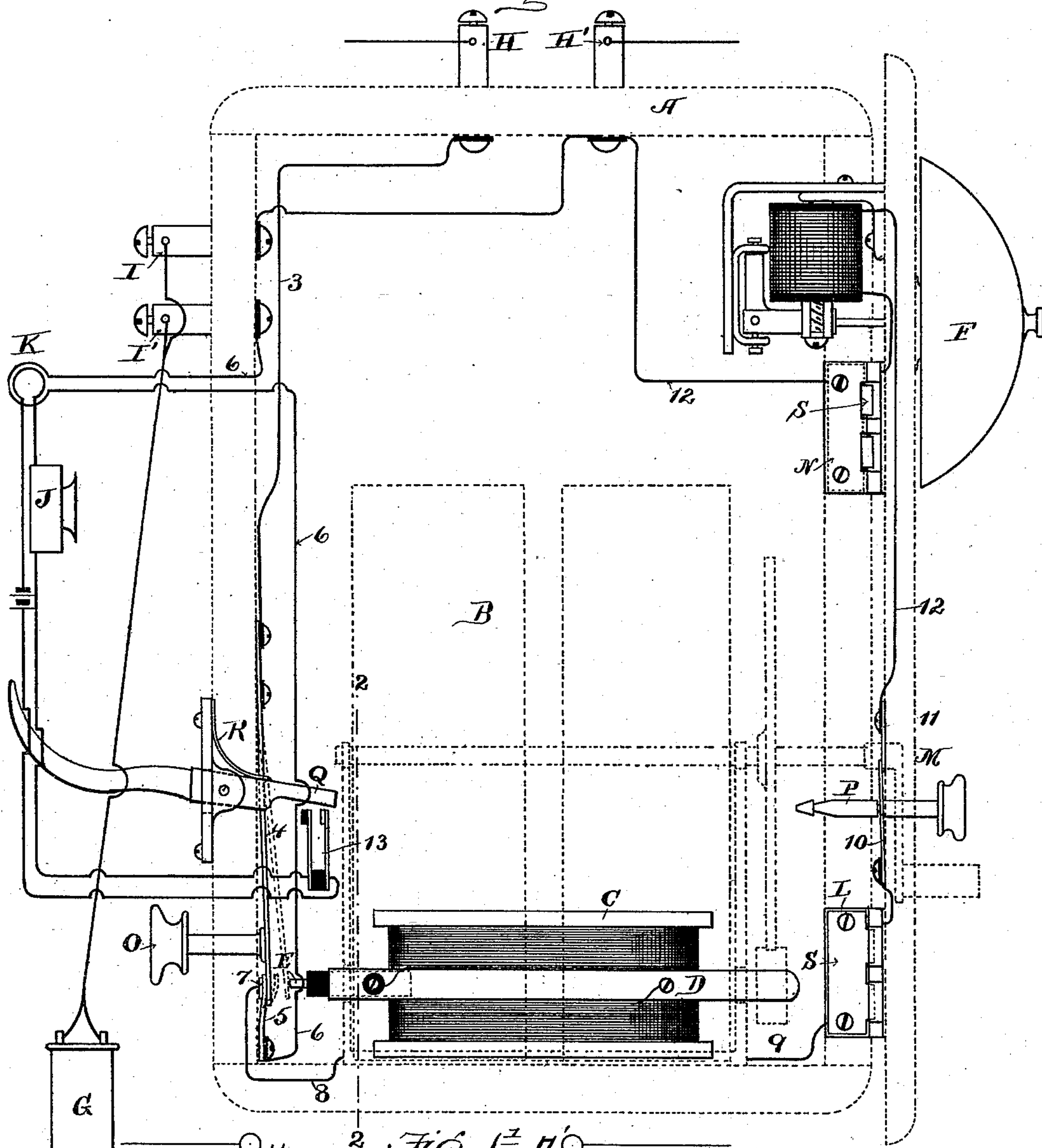


Fig. 1<sup>2</sup>

ATTEST:  
T. J. Conroy  
Wm. H. Connel

INVENTOR:  
Harry T. Johnson

By O. H. Townsend  
Attorney.

(No Model.)

2 Sheets—Sheet 2.

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TELEPHONE.

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Fig. 2.

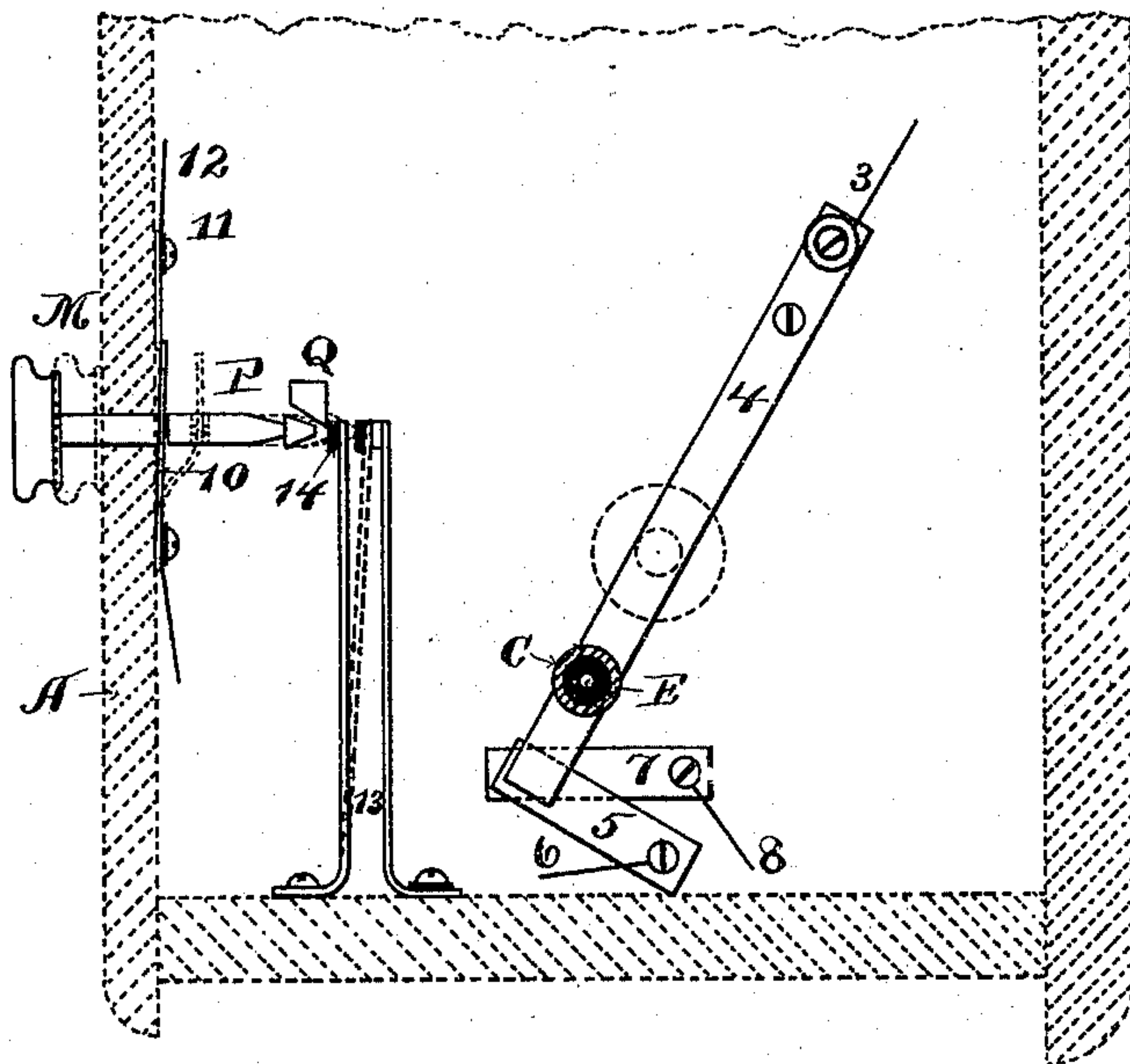
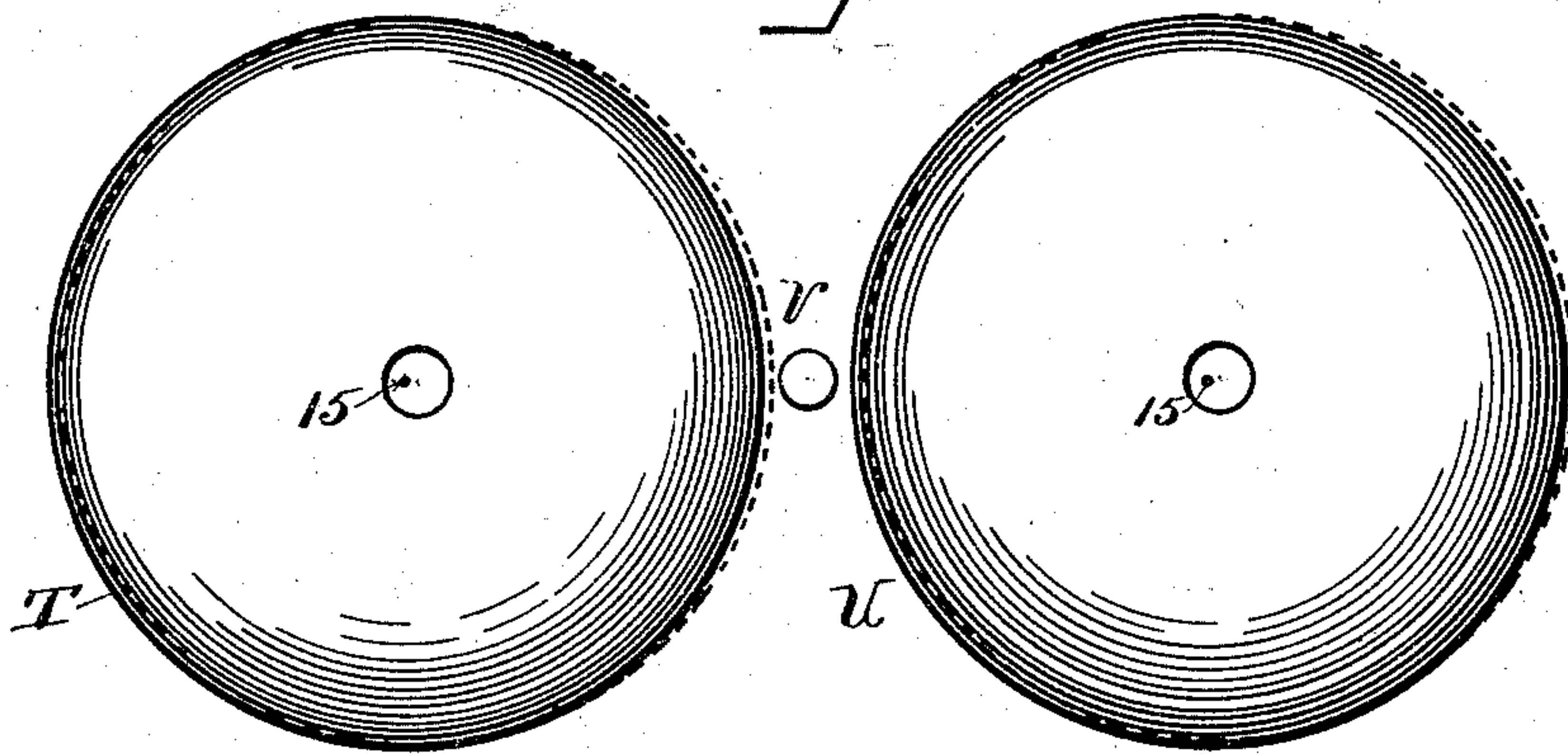


Fig. 3.



ATTEST:  
T. J. Connelley  
Wm. H. Capel.

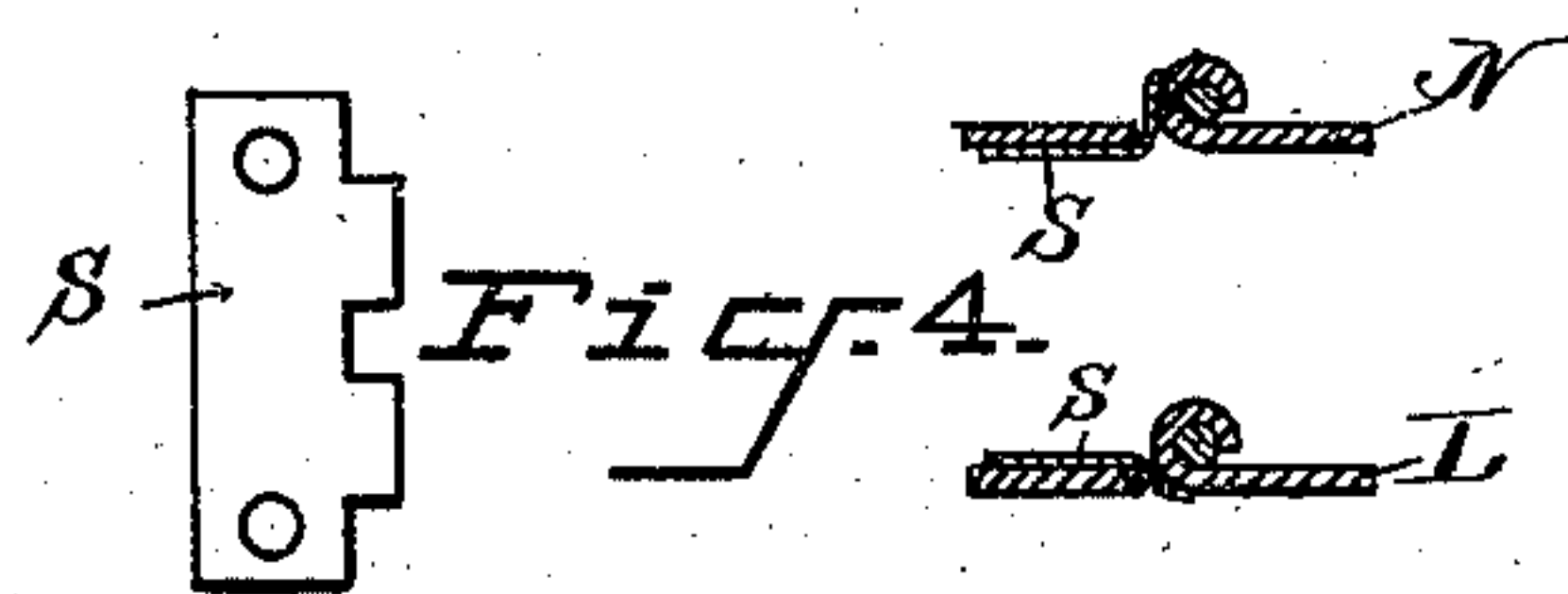


Fig. 4.

INVENTOR:  
Harry T. Johnson  
By O. H. Townsend  
Attorney.



# UNITED STATES PATENT OFFICE.

HARRY T. JOHNSON, OF ELIZABETH, NEW JERSEY.

## TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 547,265, dated October 1, 1895.

Application filed June 18, 1894. Serial No. 614,912. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY T. JOHNSON, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented a certain new and useful Telephone, of which the following is a specification.

My invention relates to improvements in telephony, and particularly to the circuits and apparatus of the subscriber's apparatus or instrument, my object being to produce a simple, practical instrument which can be supplied to the public at a reasonable cost.

My invention consists in a special arrangement of circuits wherein the telephone and call-bell are placed in parallel or multiple one with the other and each with its branch normally closed.

It further consists in a switch and contacts specially constructed and arranged to throw the generator into circuit with the bell and open-circuit the telephone.

It also consists in a switch for throwing the bell out of circuit, which switch may likewise operate to throw the transmitter into circuit, and a lock for holding said switch open till released, as by the operation of restoring the telephone to its support.

It also consists in the combination with a manual switch for changing the circuits as required for oral communications, of means for locking said switch in position, and means for automatically releasing said switch by the operation of restoring the telephone to its support.

In carrying out this invention I prefer to use a switch having a bias which tends to hold it in the normal position, or position which it should have when the apparatus is out of use, the lock then serving to retain the switch against such bias. When the switch is unlocked in the operation of restoring the telephone to its support the bias restores the switch to its normal position.

My invention further consists in mounting the bells eccentrically so that by rotating them they may be brought into proper adjustment with respect to the hammer.

It also consists in the construction and combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, which form

a part of the specification, Figure 1 represents, diagrammatically, the main features of my invention as located in their case or box. 55 Fig. 1' diagrammatically represents the arrangement of circuits. Fig. 2 is a side view, partially in section, of a portion of the apparatus in said box, the door of the box being closed. Fig. 3 represents the manner of eccentrically mounting the bells, and Fig. 4 illustrates in detail the construction and arrangement for insuring perfect contact between the members of the hinges of the box.

In the drawings the box or case A is represented in dotted lines. So also are all the parts of the magneto B, save the armature, which is represented in full lines at C. This armature has one end of its coil directly connected to the core thereof, as at D, while the other end of said coil is connected to a pin E, which is mounted in an insulated manner in the axis of the armature and projects therefrom as shown.

The call-bell F is of any approved form for operation with the magneto. The usual binding-posts for the line-wires and for the receiver G are shown, respectively, at H H' and I I', and a transmitter is indicated at J in the primary of the inductorium typified at K. 80

From the post H wire 3 leads to the spring-plate 4 of the calling-switch, which plate, as shown, is normally in contact with another spring-plate 5, from which wire 6 leads to the inductorium K, thence to post I', thence through the receiver G to post H'. This plate 5 is in turn normally in engagement with a contact 7, which is connected by wire 8 to the frame of the magneto. From the frame of the magneto wire 9 leads through hinge L to a plate-spring 10 of a push-switch M, which spring is biased to normally engage with a contact 11, from which wire 12 leads through the bell-magnets and hinge N to post H'. These two circuits, it will be noticed, are in multiple or parallel, the division occurring at the calling-switch. 95

The calling-switch may be operated in any convenient manner; but I prefer to operate it, substantially as shown, by means of a push-pin O, which passes through the wall of the box and bears against the spring 4. 100

The push or cut-out switch M is preferably operated by the means shown, though it may



be otherwise constructed and operated. The spring 10 thereof is slotted or otherwise formed so as to fit a notch in and be thereby movably connected to a pin P, which passes through the door of the box. The inner end of this pin is notched or of arrow-head form for the purpose of being locked in a position to hold the spring 10 out of engagement with contact 11. This locking is done by means of the shank or extension Q of the receiver-hook, which projects into the box, said hook being mounted on a pivot in the wall of the box.

When the receiver is removed from the hook the shank is depressed by means of the spring R, as shown in Fig. 1. It is only when in this position that said shank is able to lock the pin P in position to break connection between 10 and 11, and so hold open the bell-circuit. The pin P may also be utilized to close the transmitter-circuit. One way of doing this I have indicated in the drawings, the contact-springs 13 being for this purpose located in said circuit and so placed that when pin P is pushed inward its ends will press them together. The necessary insulation must of course be interposed between said pin and the spring engaged thereby, such insulation being indicated at 14.

When the parts are in their normal position—that is, when the box is closed and the receiver hung on its hook—the calling-switch and the push-switch M are closed, as shown in Fig. 1, while the transmitter-circuit is open at springs 13 and the magneto is out of circuit. The current from the main line now passes from H by wire 3, spring 4, spring 5, contact 7, wire 8, frame of the magneto, hinge L, spring 10, contact 11, and wire 12, through the bell and hinge N, to line at H'. While this path for the current is closed there will be practically no current flowing over the parallel course from the calling-switch contacts over spring 5, wire 6, through the inductorium and the receiver to line at H'. However, this latter circuit exists complete to receive the current upon the opening of the bell-circuit.

The instrument is operated as follows: To call up, press in the pin O till spring 4 engages with pin E in the end of the armature. Then the circuit to the receiver is broken between springs 4 and 5, and the only circuit through the instrument is from H, over 3, 4, E, armature-coil to D, from frame of B, over 9, hinge L, 10, 11, 12, N, to H'. The call having been given, the receiver is taken down, which allows the shank Q to fall into position to engage pin P. Then said pin is pushed in, which breaks the bell-circuit at 10 11 and closes the transmitter-circuit and is retained in that position by the lock Q. The circuit now is from H, over 3, 4, 5, 6, K, I', G, I, to H, the springs 4 and 5 having resumed their normal position after calling. At the close of communication the receiver is hung up, as usual, which elevates the shank Q and so unlocks or releases pin P and allows the bell-

circuit to close, leaving the parts all in their normal positions.

To insure the proper electrical contact between the members of the hinges, I construct for each hinge a piece of spring metal substantially of the shape shown at S in Fig. 4. This piece may be located under one of the flaps of the hinge and the prongs thereon extended upwardly against the roll of the other flap, as shown in connection with hinge N in Figs. 1 and 4, or it may be located on top of one of the flaps and the prongs thereon extended downwardly to bear against the roll on the other flap, as shown in connection with the hinge L. These plates are preferably held in place by the hinge-screws, but they may be soldered or otherwise connected to the flaps of the hinge. With a hinge thus supplemented, a positive and sure electrical contact is made between its parts, for not only does the spring-plate S make a complete metallic connection from one leaf to the other, but the spring-prongs thereof force both leaves to firmly engage with the pintle which connects them. I have also devised a very satisfactory and exceedingly simple means of adjustment for the gongs of the bells, which consists in mounting them eccentrically, so that by turning them in one direction or the other their rims will approach or recede from the hammer. Each gong may be eccentrically mounted in various ways, as by passing the screw which secures to the case the post or support therefor eccentrically into said support, or by mounting said support rigidly and securing the gong thereupon by a thumb-screw which passes through a hole in the gong located a little to one side of the center thereof. The latter construction is the simpler and is illustrated in Fig. 3, wherein the gongs are indicated by circles T and U and the hammer by V, the true centers of the gongs being represented by the dots 15, while the dotted circles represent the positions of their rims when they have been rotated through an angle of one hundred and eighty degrees. From this it will be seen that the eccentric manner of mounting the gongs provides therefor a very fine and easy adjustment.

The principal feature of my invention is a push or manual switch that serves to throw the bell out of circuit or throw in a transmitter or otherwise change the circuits, as may be required for oral communication, and any lock that will automatically engage the switch when it is manually operated and hold it in position, and any means for automatically releasing that lock in the act of restoring the telephone to its support. This principal feature may be embodied in many different constructions, and I do not, therefore, limit myself to the construction shown, which is presented as simply illustrating one way of carrying out the idea.

I claim as my invention—

1. In a telephone instrument, the combination with a call-bell and the telephone in nor-



5 mally closed parallel circuits, of a magneto in a branch of the bell circuit, and a switch for breaking the telephone circuit and at the same time closing circuit through the bell and magneto.

10 2. In a telephone apparatus, the combination with the call-bell and telephone in normally closed parallel circuits, of a calling switch operating to break the telephone circuit and by the same movement throw the magneto into the bell circuit, and a separate and independent switch in the bell circuit to break the same when the telephone is in use.

15 3. In a telephone apparatus, the combination with a spring switch located in the bell circuit and having a bias normally holding it closed, a push pin for opening said switch, a lock operated by the receiver hook for holding said pin in open-switch position, and a  
20 spring switch in the local circuit of the transmitter having a bias normally holding it open which bias is overcome and the switch closed on depressing said push pin in opening the switch in the bell circuit.

25 4. In a telephone apparatus, a call-bell the gong of which is provided with an aperture located eccentrically with respect to the center of the gong, and means passing through

said aperture for securing the gong to its support.

30 5. In an electric hinge connection, a spring secured to one flap of the hinge and rubbing at its free end upon the roll of the other flap, as and for the purpose set forth.

35 6. The combination with a hinge located in an electric circuit, of a plate of spring metal secured against the face of one flap of the hinge and adapted to rub against the roll of the other flap, substantially as shown and described.

40 7. In a telephone apparatus, the combination with the call-bell and the telephone in parallel circuit, of the magneto in a branch of the bell circuit, a switch for breaking the telephone circuit and at the same time closing the magneto branch, the transmitter and  
45 its circuit, a switch for breaking the call circuit and at the same time closing the transmitter circuit.

Signed at New York, in the county of New York and State of New York, this 12th day  
50 of June, A. D. 1894.

HARRY T. JOHNSON.

Witnesses:

WM. H. CAPEL,  
T. F. CONREY.