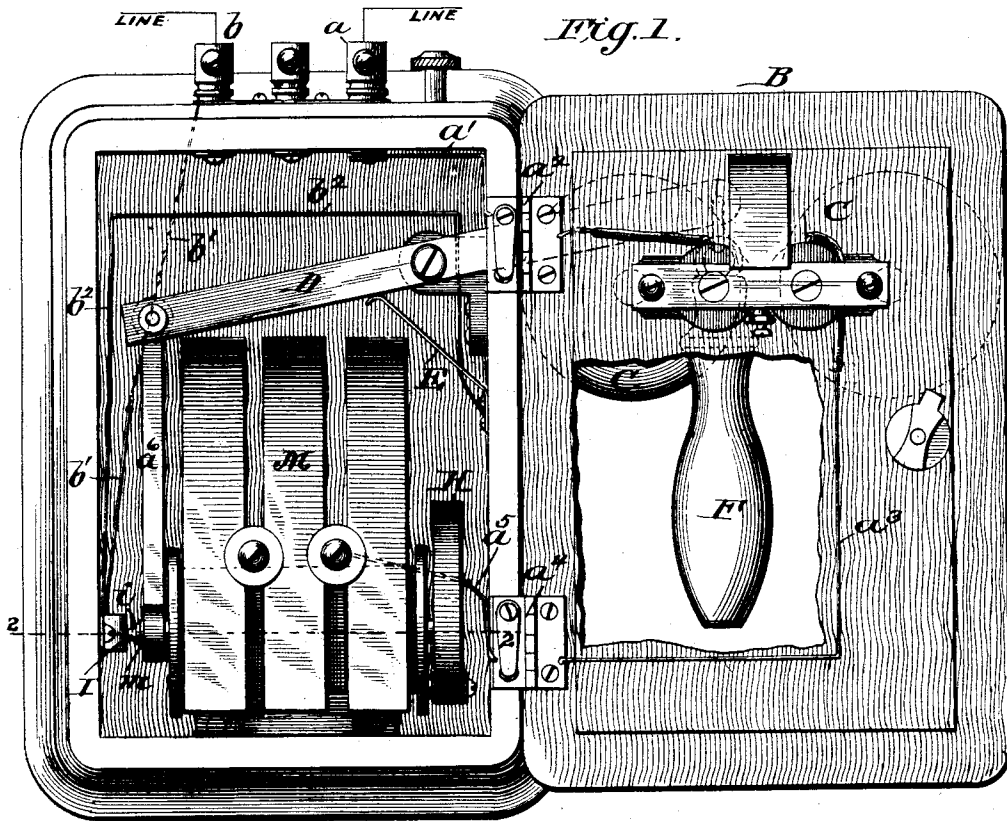


(No Model.)

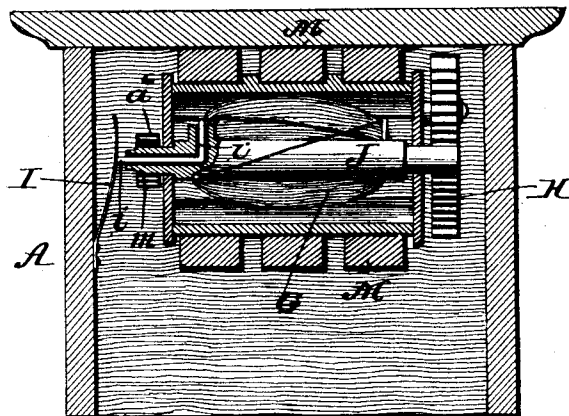
F. J. TROLL.  
TELEPHONE CALL.

No. 539,712.

Patented May 21, 1895.



*Fig. 2.*



WITNESSES:

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INVENTOR

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BY *Munn & Co.*

ATTORNEYS.

# UNITED STATES PATENT OFFICE,

FREDERICK J. TROLL, OF WASHINGTON, DISTRICT OF COLUMBIA.

## TELEPHONE-CALL.

SPECIFICATION forming part of Letters Patent No. 539,712, dated May 21, 1895.

Application filed September 22, 1894. Serial No. 523,833. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK J. TROLL, of Washington, District of Columbia, have invented a new and useful Improvement in Telephone-Calls, of which the following is a full, clear, and exact description.

My invention relates to that form of telephone call in which the revolving armature is rotated by a flexible metal tape on a drum, which tape when drawn out turns the armature in one direction, and is rewound again by the tension of a coil spring. My invention consists in the peculiar construction and arrangement of parts operating upon this general principle by which this motion may be conveniently transmitted to the armature direct, and the armature made to ring a call by both the forward and backward movement of its oscillation, and by which also the armature is cut out when the call is not in use, as will be hereinafter more fully described.

Figure 1 is a front elevation of the call-box with the door opened and parts broken away; and Fig. 2 is a detail in horizontal section, through line 2 2, of the armature of the magnet and its end contact-spring.

In the drawings A represents the box or outer casing, and B is the door which is hinged thereto at  $a^2$  and  $a^4$ . On the door is carried the bell and bell magnets, as shown at C, the bell being upon the outside of the door, and the bell magnets on the inside of the door.

M is the compound permanent horse shoe magnet secured to the back of the box, and having its armature G arranged upon a shaft J to revolve between the poles of the magnets. At one end of the shaft there is a coiled spring H, one end of which is fixed to the said shaft, and the other end to any stationary part of the frame work. At the opposite end of this shaft is a small pulley  $m$  which is in electrical connection with the magnet frame through the armature shaft and its bearings. Around this pulley is wound a flexible steel tape  $a^6$ , or a cord, chain, or band, one end being fast to the pulley, and the other carried up vertically and connected to the end of an operating lever D fulcrumed in the side of the case and projecting outside the same. To

this outer projecting end of the lever is connected a suitable pull handle F.

E is a cut-out spring, upon the upper end of which the lever D stops when at rest, or the pull F is in its elevated position. This spring is connected by a wire  $b^2$  to a horizontal spring I on the side of the box, which in turn is connected by wire  $b'$  with a binding post  $b$  on the top of the box. Beside the binding post  $b$  is another binding post  $a$  which connects with wire  $a'$ , and through hinge  $a^2$  with the bell magnets at C, and through wire  $a^3$ , hinge  $a^4$  and wire  $a^5$  connects with the frame work of the magnet M.

The armature G has its coil connected in the usual way, one end to the shaft and frame work of the magnet, and the other end to an insulated pin  $i$  in the end of the shaft, which pin always bears endwise against the flat spring I.

The operation of this call is as follows: When the parts are in a condition of rest as shown, the bell magnets at C are subject to the influence of any call coming over the line through the following circuit: The binding posts  $a$  and  $b$  being connected to the line, the current passes from  $a$  to  $a'$ ,  $a^2$ , bell magnets,  $a^3$ ,  $a^4$ ,  $a^5$ , frame of magnet M, pulley  $m$ , metal ribbon  $a^6$ , lever D, spring E, wire  $b^2$ , spring I, wire  $b'$  to binding post  $b$ , and to the line or ground, thus putting the bells in the range of the influence of any remote call.

In operating this call to signal any remote bell, the handle F is grasped and is quickly pulled down and up. This oscillates the armature shaft, and calls by both the forward and backward movement. The current generated in the armature now passes to line over the following circuit: From one end of the armature wire through insulated pin  $i$ , spring I and wire  $b'$  to binding post  $b$ , to line and back over the line to binding post  $a$ , wire  $a'$ , hinge  $a^2$ , bell magnets, wire  $a^3$ , hinge  $a^4$ , wire  $a^5$ , frame of magnet M, shaft J, and the other end of the armature wire.

When the instrument is at rest, it will be seen that the magnets are cut out by the shunt circuit which passes through steel tape  $a^6$ , spring E, and wire  $b^2$ .

The call box as thus described is very simple and practical, is free from the complication and noise of other forms, and is not liable to be damaged by inexperienced operators, as the most ignorant person knows that a pull handle is to be pulled, and by so doing he rings by both the forward and backward movement of the armature.

I do not claim broadly the reverse rotation of the armature shaft as effected by a coil spring and flexible band, as this is not broadly new, but

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

1. In a telephone call, the combination with the box, the permanent magnets, and the rotating armature arranged between the poles of the magnets; of a coil spring *H* fixed at one end of the armature shaft and directly connected to the same, a pulley *m* fixed to the opposite end of said armature shaft, a metal tape *a*<sup>6</sup> wound about said pulley and contained wholly within the box, a lever *D* connected at its inner end to the said tape and fulcrumed to the opposite side of the box and extending through a slot in the same, and a pull handle

attached to the end of the lever outside the box substantially as and for the purpose described.

2. In a telephone call, the combination with the box, the permanent magnets, and the rotating armature arranged between the poles of the magnets; of a coil spring *H* fixed at one end of the armature shaft and directly connected to the same, a pulley *m* fixed to the opposite end of the armature shaft, a metal tape *a*<sup>6</sup> wound about said pulley and contained wholly within the box, a lever *D* connected at its inner end to the said tape and fulcrumed to the opposite side of the box and extending through a slot in the same, a pull handle attached to the end of the lever outside the box, a stop spring *E* forming a support for the lever *D* when at rest, and circuit wire *b*<sup>2</sup> connected to the spring *E* and forming therewith a cut out for the armature through the lever, substantially as and for the purpose described.

FREDERICK J. TROLL.

Witnesses:

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EDWD. W. BYRN.