

E. E. CLEMENT.
 SENDER FOR AUTOMATIC TELEPHONE SYSTEMS.
 APPLICATION FILED NOV. 11, 1905.

1,002,563.

Patented Sept. 5, 1911.

3 SHEETS—SHEET 1.

Fig. 2.

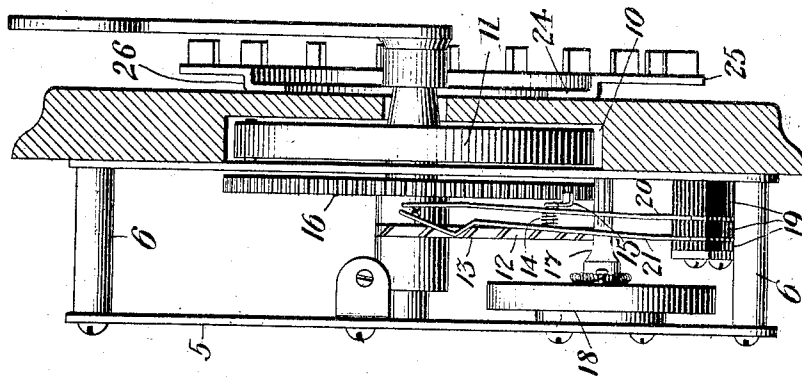
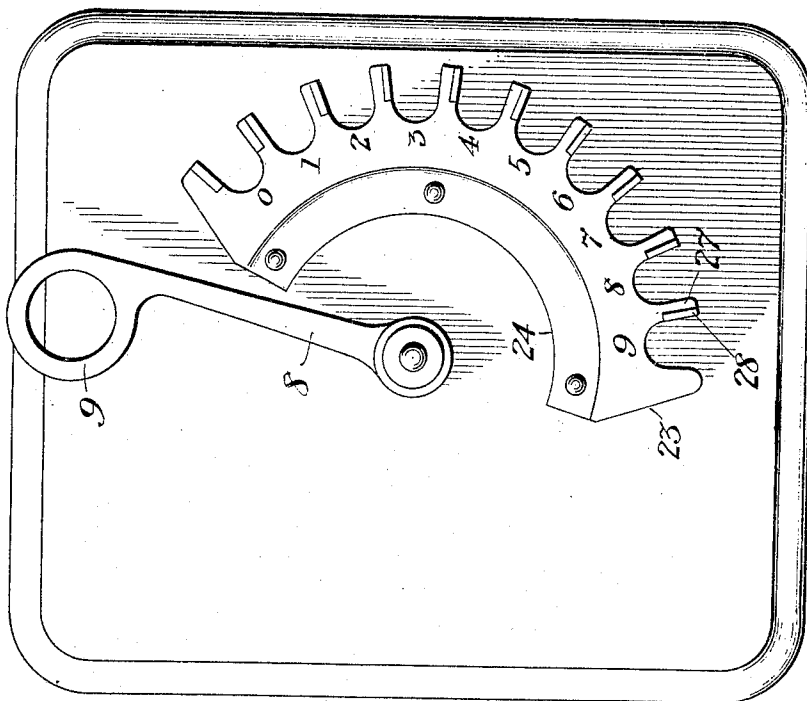


Fig. 1.



Inventor

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Witnesses

R. W. Edlin
Joe. L. Wright

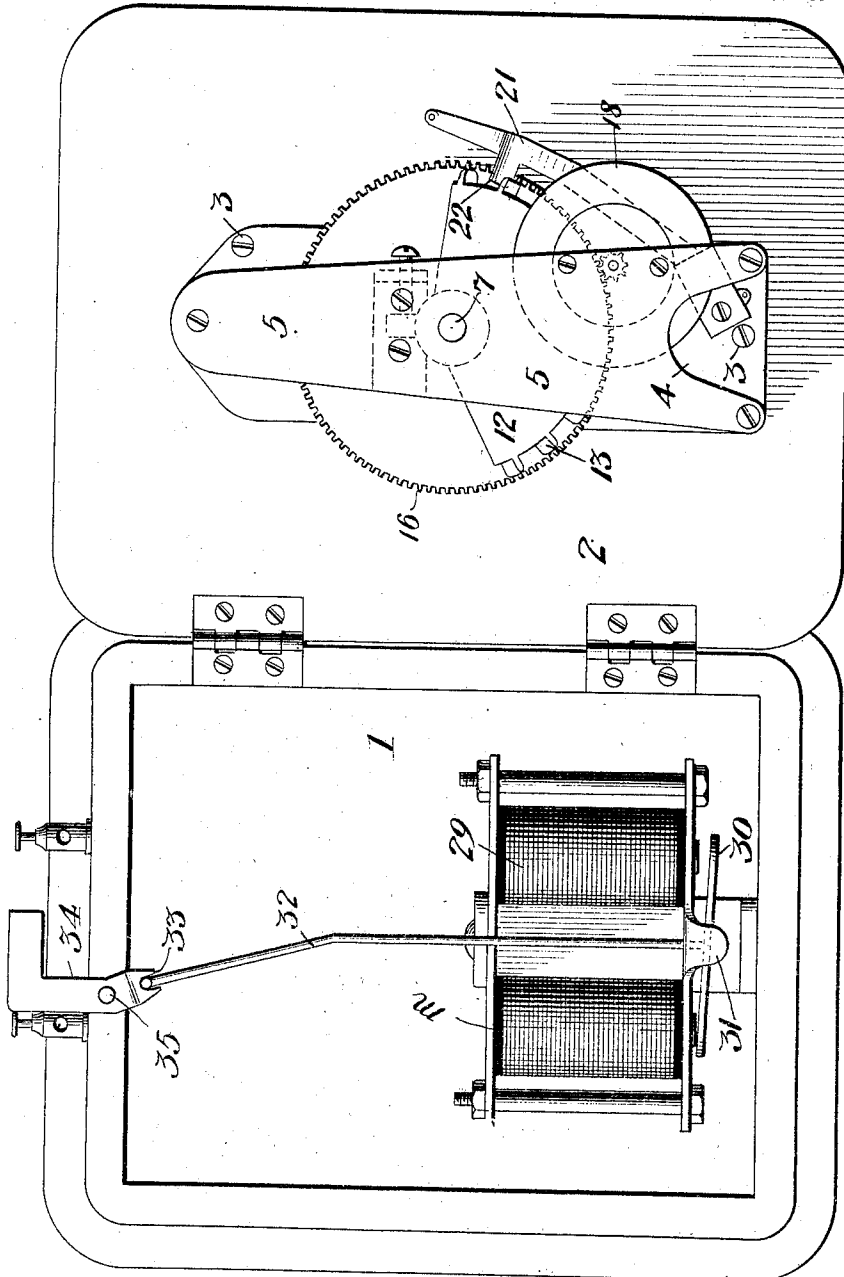
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3 SHEETS—SHEET 2.

Fig. 3.



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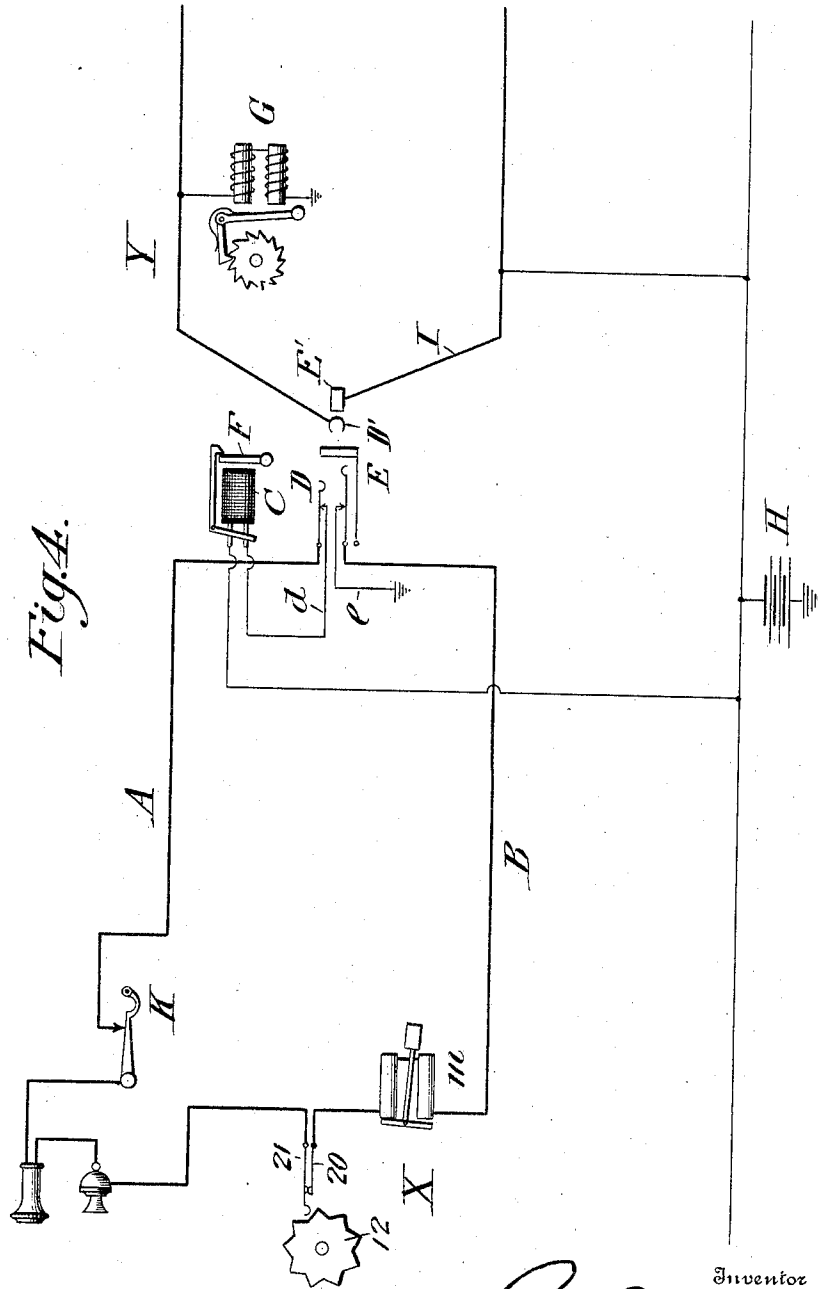


Fig. A.

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UNITED STATES PATENT OFFICE.

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SENDER FOR AUTOMATIC TELEPHONE SYSTEMS.

1,002,563.

Specification of Letters Patent.

Patented Sept. 5, 1911.

Application filed November 11, 1905. Serial No. 286,888.

To all whom it may concern:

Be it known that I, EDWARD E. CLEMENT, a citizen of the United States, residing at Washington, in the District of Columbia, have invented a certain new and useful Improvement in Senders for Automatic Telephone Systems, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to telephone systems and especially to the apparatus for signaling the central office.

The object of the invention is to provide a sending device by which an unskilled person may signal numbers.

This device may be employed in either semi-automatic or full automatic systems.

It consists essentially of circuit breaking mechanism for transmitting impulses, a movable operating member having a single finger hold and adapted to actuate the circuit breaking mechanism, and a fixed limiting member having a plurality of finger holds spaced apart from each other in the path of movement of the operating member, all the finger holds being within a single hand span.

In the drawings Figure 1 is a face view of the casing of the device. Fig. 2 is a longitudinal section thereof. Fig. 3 is an interior view of the casing. Fig. 4 shows a simple circuit to be used in connection with the sender.

Referring to the drawing, 1 represents a casing of suitable material and 2 the cover or door therefor, which forms a support for the mechanism of the sender. Secured to the inside of the door 2, by screws 3, is a frame comprising front and back plates 4 and 5 separated a suitable distance from each other by columns 6.

Journaled centrally on the door 2 in the front and back plates 4 and 5 is an operating shaft 7 which projects through the door 2, where it is provided with an operating lever 8, which has its end formed with a finger opening 9. Secured to the shaft 7 and to the front plate 4, seated in a depression 10 formed in the door 2, is a clock spring 11, which normally holds said lever in vertical position and which returns it to said position after it has been released.

Rigidly keyed to the shaft 7 is a toothed segment 12, provided with slanting teeth 13 around the outside edge thereof, and with a laterally projecting stud 14, on which is

mounted a spring pressed pawl 15 adapted to engage and operate in one direction of movement a gear wheel 16 sleeved on the shaft 7. This gear wheel meshes with the pinion on the shaft 17, which is journaled in the plates 4 and 5 and carries and operates a governor 18 of any preferred type.

Between blocks of insulating material 19 attached to the front plate 4 are secured contact springs 20 and 21, the former of which is bent near its free end at an obtuse angle and then bent back so as to normally contact with the spring 20. The spring 21 is provided with a tongue 22 which projects into the path of the teeth 13 of the segment 12.

Secured to the outside of the door 2 adjacent the lever 8 is an arc-shaped number plate 23. The foot 24 of the plate is secured to the door and the head 25 is raised therefrom by the web 26. The edges are punched to form arms 27 having lateral tongues 28, which are bent to stand vertically and form thumb or finger holds.

Mounted within the casing, at the back thereof, is a signaling device *m* comprising a polarized magnet 29, having its armature 30 pivoted in the yoke 31, a signal operating rod 32 and a target 34 pivoted at 35 to the edge of the casing 1.

In Fig. 4 I have shown a diagram of a circuit adapted to this apparatus, but I do not wish to be limited thereto, as this circuit and the signal device *m* form no part of the present invention and will not be claimed herein. The circuit shown comprises two conductors A and B, which are connected with the subscriber's station X and the central station Y. An operator's cord circuit is represented by I and has the usual plug with tip D' and sleeve E', adapted to contact respectively with the springs D and E of the jack. The cord circuit also has a suitable indicator G connected to the tip side, and a battery H connected to the sleeve side.

A branch circuit normally connected to the spring and sleeve sides of the line by wires *d-e*, contains the annunciator coil C, and is connected to battery H there-through.

To call, the subscriber removes his receiver from the hook K, which closes the circuit A—B: Current travels from battery H, through annunciator coil C and conductor *d* to spring D of the jack D—E,

through conductor A, switch-hook K, through the telephone to the contact springs 21—20, to the signal device *m* and over conductor B, terminal E to conductor *e* and ground, to battery. The operator, noticing the signal, inserts the answering plug of her cord in the jack D—E, which disconnects conductors *d—e*, cuts off electromagnet C and places battery H on the sleeve side of line, consequently reversing current through the magnet 29 and throwing the signal target 34 so that it may be seen by the calling subscriber, to indicate to him that connection has been made at the central office. The subscriber operates the lever 8 by placing a finger in the finger hold 9 and his thumb against one of the ears or tongues 28, drawing the finger down until it contacts with the thumb. This action is repeated any desired number of times, each time releasing the lever and permitting it to return to zero position. By depressing the lever 8 the teeth of the segment 12 are caused to engage the contact springs and move them both to one side. When the lever 8 is released the clock spring 11 throws the segment back to its original position, and the member 15 engages the gear wheel 16 to rotate it, thus operating the governor 18 through the toothed shaft 17. As the segment makes its retrograde movement each tooth 13 engages the tongue 22 on the spring 21 and breaks the circuit by moving it out of contact with the spring 20. Each time the circuit is closed the indicator G is operated.

When the plug is removed battery is restored to the tip side of the line through wire *d*, and when the subscriber again calls the magnet 29 restores the target 34 to normal.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a calling device the combination of circuit breaking mechanism for transmitting a series of impulses, a movable operating member having a finger hold, for actuating said circuit breaking mechanism, and a fixed limiting member having a plurality of finger holds spaced apart from each other in the path of movement of the operating member, said finger hold in the movable

member and all the finger holds on the fixed limiting member being within the span and range of movement of one hand of the operator.

2. In a calling device, the combination of circuit breaking mechanism for transmitting a series of impulses, a centrally pivoted operating member connected thereto having a finger hold at a point some distance from its pivotal center, and a series of fixed finger holds arranged in the arc of a circle around said pivotal center, said movable member being normally held in idle or inactive position at a predetermined point with respect to said arc, but adapted to sweep over all the finger holds when actuated through a path limited to a single hand span.

3. In a calling device, the combination of circuit breaking mechanism for transmitting a series of impulses, an inclosing casing therefor, an actuating lever for the mechanism pivoted on said casing and having an opening for a finger hold at some distance from its pivotal center, and a series of fixed finger holds secured on the casing in a curved figure around said pivotal center, together with means for maintaining the actuating lever when idle in a definite and invariable position with respect to the fixed finger holds.

4. In a calling device, the combination of circuit breaking mechanism for transmitting a series of impulses, a casing containing the same, an operating spindle for the mechanism extending through a wall of the casing, an actuating lever secured to said spindle and provided with a finger opening at some distance therefrom, and a series of fixed abutments spaced apart on the casing in a curved figure around said spindle, together with a retracting spring adapted when put under tension by the actuating lever to return the same to its normal inactive position, and to actuate the circuit breaking mechanism in so doing.

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

EDWARD E. CLEMENT.

Witnesses:

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E. EDMONSTON, Jr.