No. 742,619. PATENTED OCT. 27, 1903.

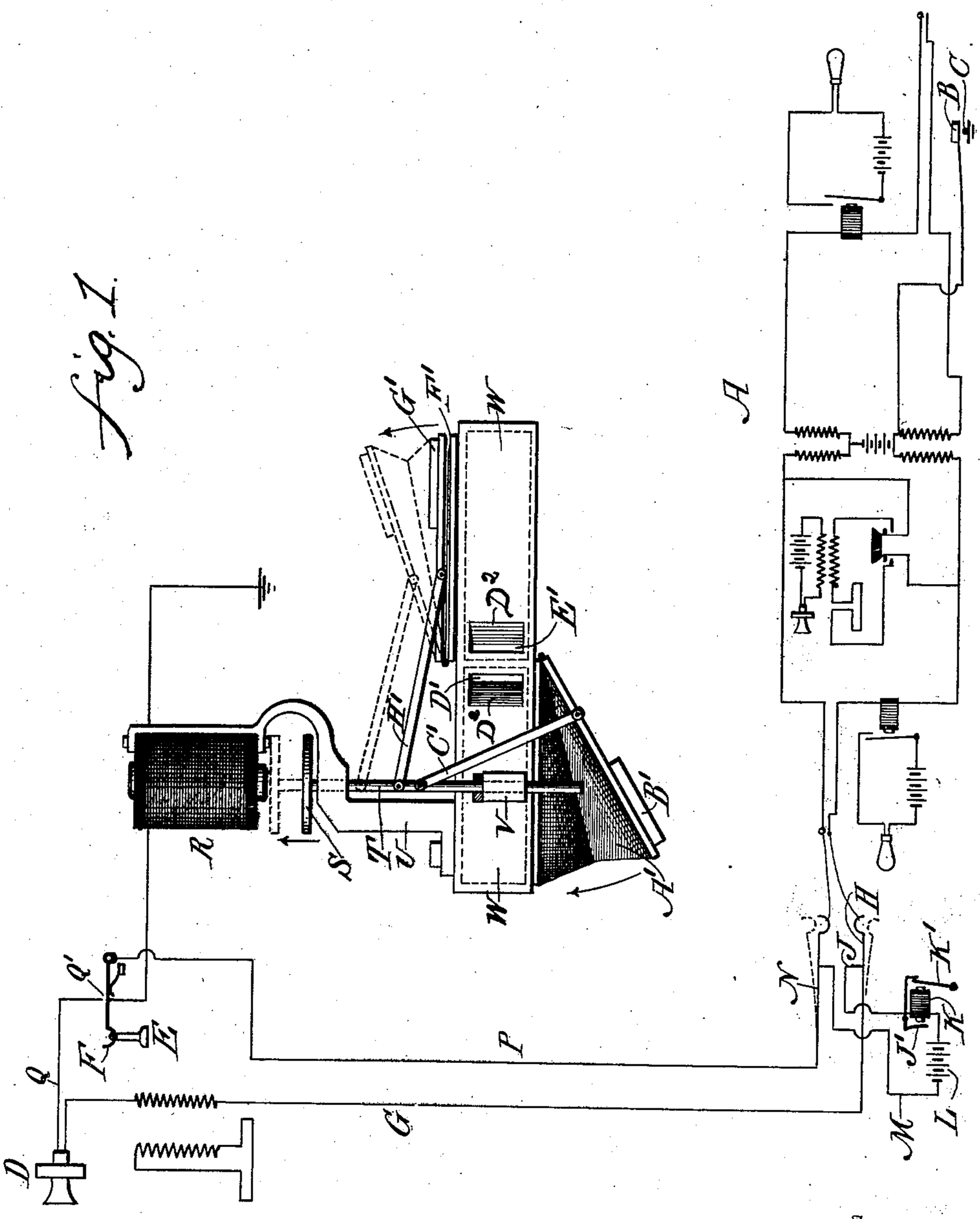
# R. H. FERGUSON.

## SIGNAL OR CALLING DEVICE.

APPLICATION FILED JULY 28, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

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NO MODEL. 2 SHEETS—SHEET 2.

fig. 2.

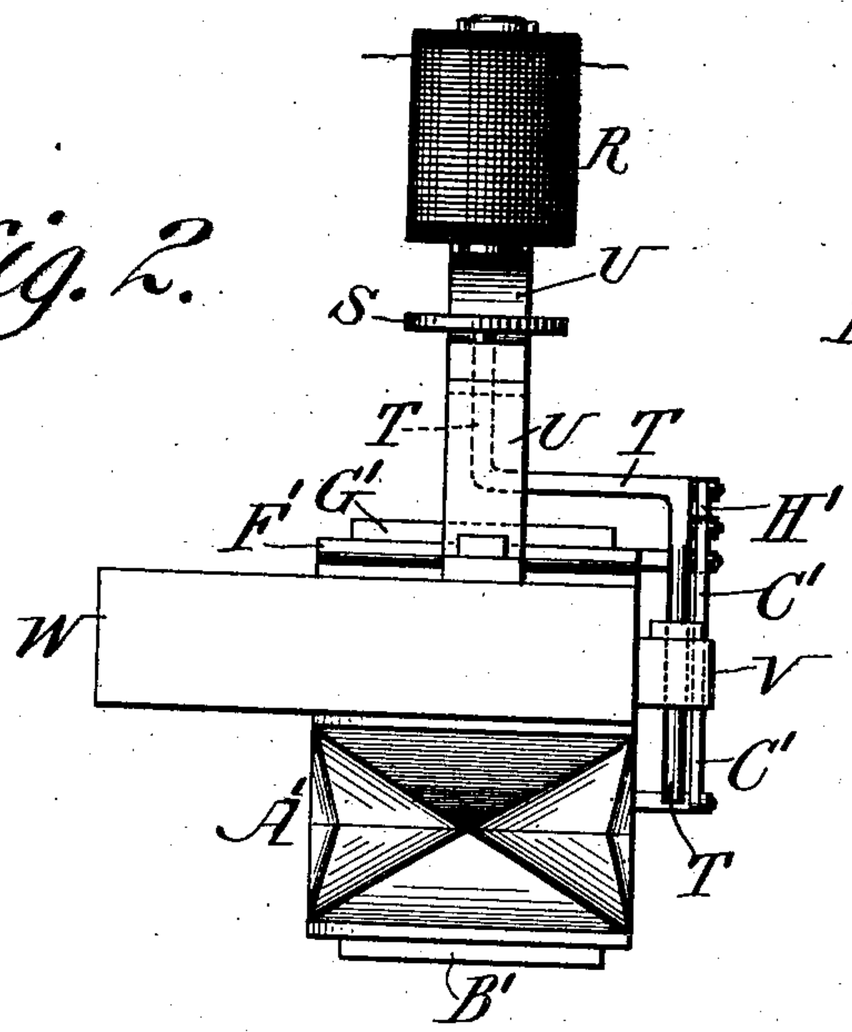
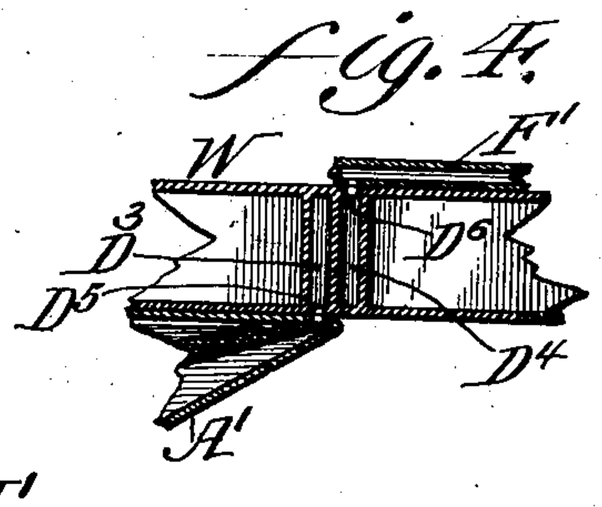



fig. 4.



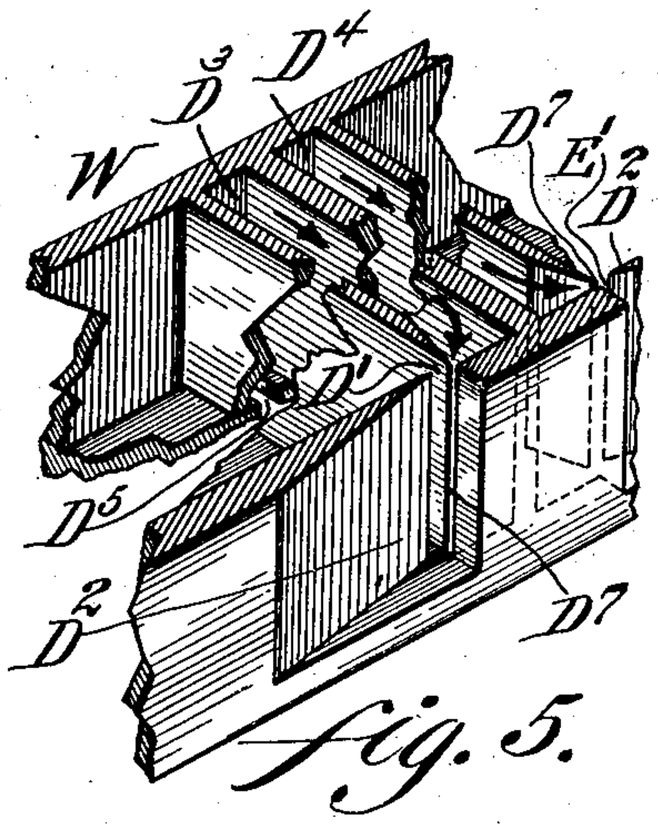




fig. 5.

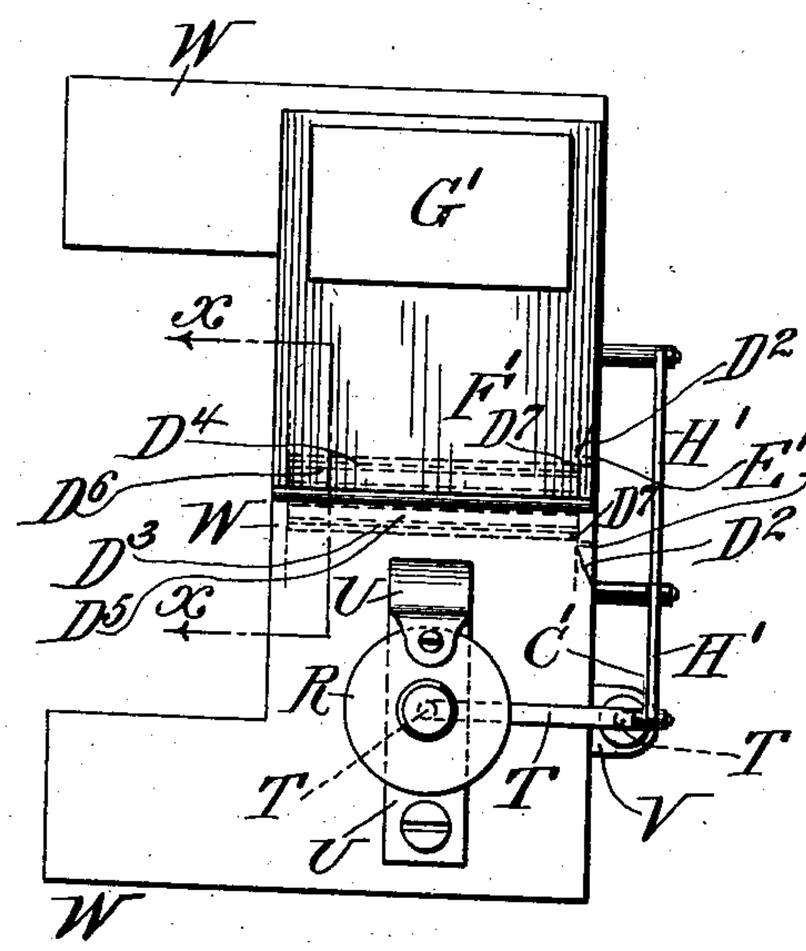



fig. 3.

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# UNITED STATES PATENT OFFICE.

RICHARD H. FERGUSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO GEORGE W. RUCH, OF PHILADELPHIA, PENNSYLVANIA.

## SIGNAL OR CALLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 742,619, dated October 27, 1903.

Application filed July 28, 1902. Serial No. 117,294. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD H. FERGUSON, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Signal or Calling Devices, of which the following is a specification.

My invention consists of an improvement in a signal or calling device wherein means are provided for simulating the human voice.

It further consists in novel details of construction, all as will be hereinafter set forth.

Figure 1 represents a side elevation of the means employed embodying my invention and a diagrammatical view showing the circuits. Fig. 2 represents an end elevation of the device. Fig. 3 represents a plan view of certain of the parts seen in Fig. 2. Fig. 4 represents a vertical section of a portion of the device on line $x\,x$, Fig. 3. Fig. 5 represents a perspective view, partly in section, of certain of the parts seen in Fig. 4 and partly broken away and on an enlarged scale.

Referring to the drawings, my invention is adapted for use when a signal or call is required, and for purposes of example I have shown and described the same as applied to a telephone.

A designates a cord-circuit for the operator, which is constructed with the usual battery, magnets, and push-button and also with a contact device B, which is normally out of contact with its point C and which is operated by central in order to give the call. A number of batteries are shown here differently for convenience; but in a telephone-exchange system one battery or at most two would serve for all purposes.

D designates a mouthpiece at the subscriber's end, which is provided with a receiver E and a spring-actuated hook F, as usual, said mouthpiece having a wire or conductor G leading therefrom and having the spring-hook H at one one thereof, which when in one position contacts with the conductor J, which is in communication with the magnet K and the battery L, which latter has leading therefrom the conductor M, the other end of which contacts at certain times with the hook N, which has leading therefrom the conductor P, which is in contact with the receiver-hook F.

Q designates a conductor also leading from the mouthpiece D, being broken, as at Q′, and is connected with the ground, and in circuit with which is the magnet R.

S designates the armature of the magnet, which is provided with a rod T, which is guided in the standard U, which supports the magnet, and also in the ear V, which is carried by the box W or other suitable support, which also carries the standard U.

A′ designates a bellows having the weight B′ thereon and having a link C′ connected thereto and to the rod T. Said bellows communicates in the present instance with the interior of the box W, which is provided with openings D′ and E′, each of which has situated therein a suitable reed or sounding device $D^2$, it being noted that the box W is provided with the chambers $D^3$ and $D^4$ and that said chamber $D^3$ is in communication with the bellows A′ by reason of the port $D^5$ and the chamber $D^4$ is in communication with the bellows F′ by reason of the port $D^6$, so that when either of said bellows A′ or F′ are closed the air within the same is forced through their respective ports $D^5$ and $D^6$ into either the chamber $D^3$ or $D^4$, from which the air escapes through the openings $D^7$ and strikes the reeds $D^2$, thereby producing a sound. The arrows in Fig. 5 indicate the direction in which the air travels when forced through the chambers $D^3$ and $D^4$.

F′ designates a second bellows, which in the present instance is situated upon the top of the box W and is provided with the weight G′ and has a link H′ connected therewith and also with the rod T. The magnet K is provided with an armature J′, which in its normal position supports a drop K′, which is of the usual construction.

The operation is as follows: When the central or operator receives a call for the subscriber having the mouthpiece D and receiver E, by suitable insertion of plugs in proper places the circuit is made therewith and by operating the contact-piece B the current is formed from the central or operator through the hook N and the conductor P to the receiver-hook F, which is in contact with the portion of the conductor Q which is in communication with the magnet R. This becoming en-

ergized raises the armature S from its position (seen in full lines) and carries with it the rod T, which is likewise raised. This closes the bellows A′, which being filled with air causes the same to be forced through the opening D′ and causes the reed to be operated, which is so constructed as to give therewith a sound of a predetermined character. The link H′ meanwhile has raised the bellows F′, which was closed heretofore, and the same is filled with air, so that when the circuit is broken again the weight G′ forces down the bellows F′, which causes the air to be forced through the opening E′ and operates the reed in the opening E′, which gives, therefore, a sound of a predetermined character, it being seen that the weight B′ has returned the bellows A′ to its former open position, ready for the next call and the subscriber that will thus be informed of the call, and by removing the receiver E from the hook F will be in circuit and ready to talk.

It will be evident that various changes may be made by those skilled in the art, and I do not, therefore, desire to be limited in every instance to the exact construction herein shown and described.

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

1. In a signal or calling device, a magnet, means for electrically energizing the same, a reciprocal armature for said magnet, a sound-producing bellows, and a rigid member connected with said armature and with the bellows and disposed at an angle to the line of movement of said armature and bellows whereby the latter may be operated by the reciprocation of said armature to produce the signal or calling sound of said bellows.

2. In a signal or calling device, an electric circuit, a magnet therein, a reciprocal armature therefor, a plurality of sound-producing bellows, and rigid members pivotally connected with said armature and with said bellows whereby reciprocation of the armature operates said bellows in succession in opposite directions upon the energizing of the magnet.

3. In a signal or calling device for telephones, a circuit, a receiver therein, a magnet in circuit with the central office, a reciprocal armature for said magnet, a pair of sound-producing bellows, rigid members connected therewith and with said armature, said bellows being adapted to operate in succession by the central office through the energizing of the magnet and the movement of said members for actuating a suitable call or signal.

4. In a signal or calling device for telephone systems, a circuit, a magnet therein, a reciprocatory armature for said magnet, a sounding device, bellows disposed upon opposite sides of said sounding device, and an independent connection between said armature and each of the bellows whereby the reciprocation of the armature simultaneously actuates said bellows in opposite directions.

5. In a signal or calling device for telephones, a circuit, a receiver therein, a magnet in circuit with said receiver, a sounding device, a reciprocatory armature for said magnet guided in a fixed path on said sounding device, bellows supported upon opposite sides of the sounding device and pivotal connections between the armature and each of the bellows whereby the latter are simultaneously moved in opposite directions as the armature reciprocates.

RICHARD H. FERGUSON.

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