

(No Model.)

W. W. DEAN.
TELEPHONE.

No. 535,615.

Patented Mar. 12, 1895.

FIG. 1.

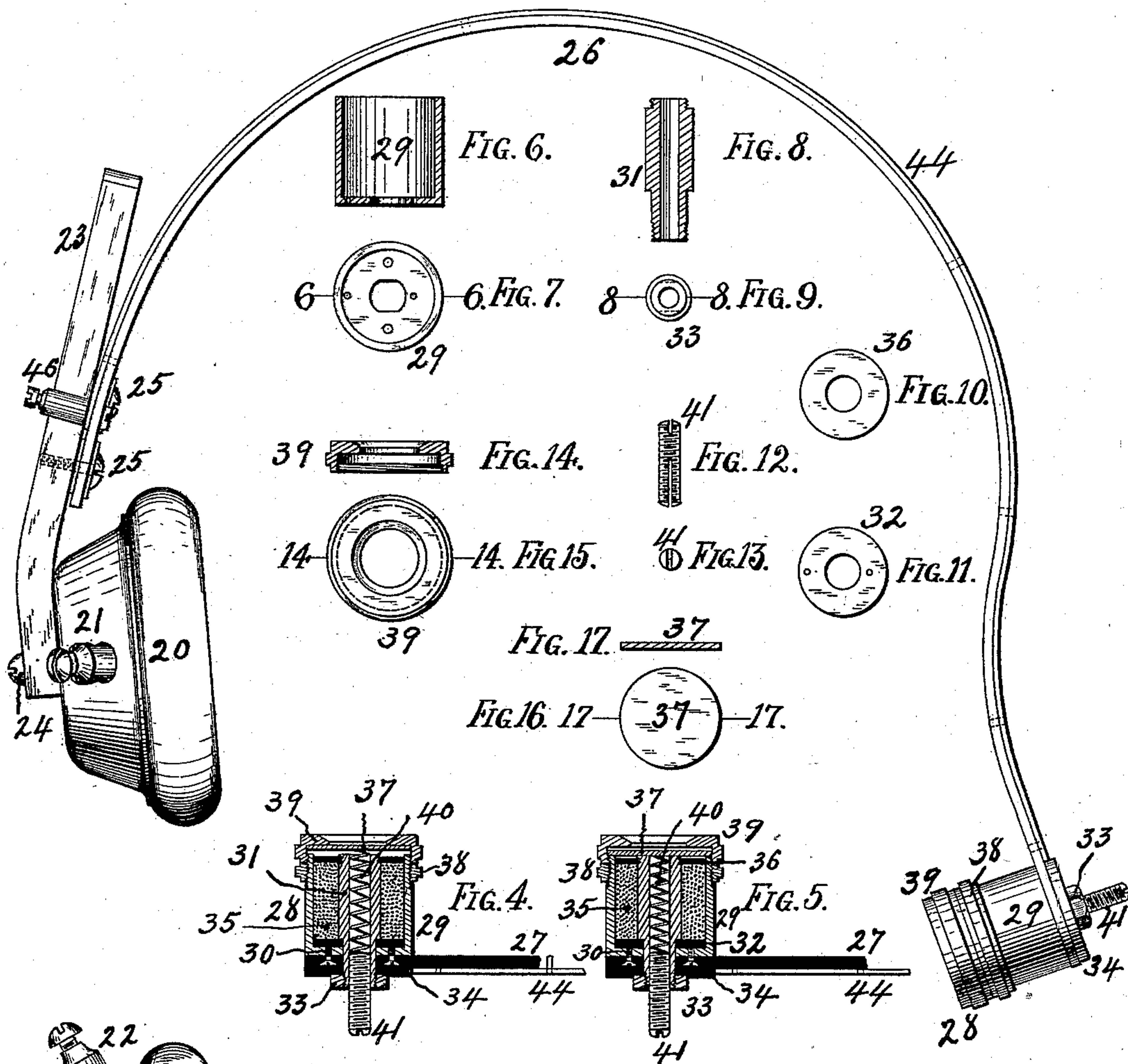


FIG. 2.

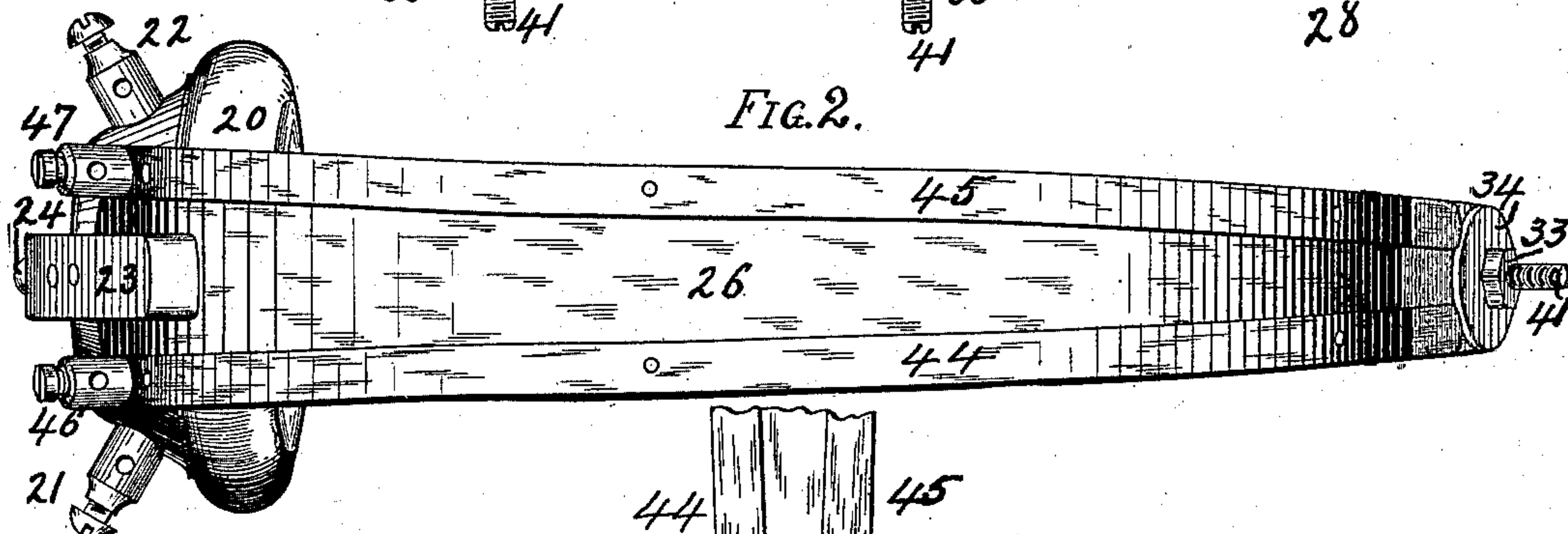
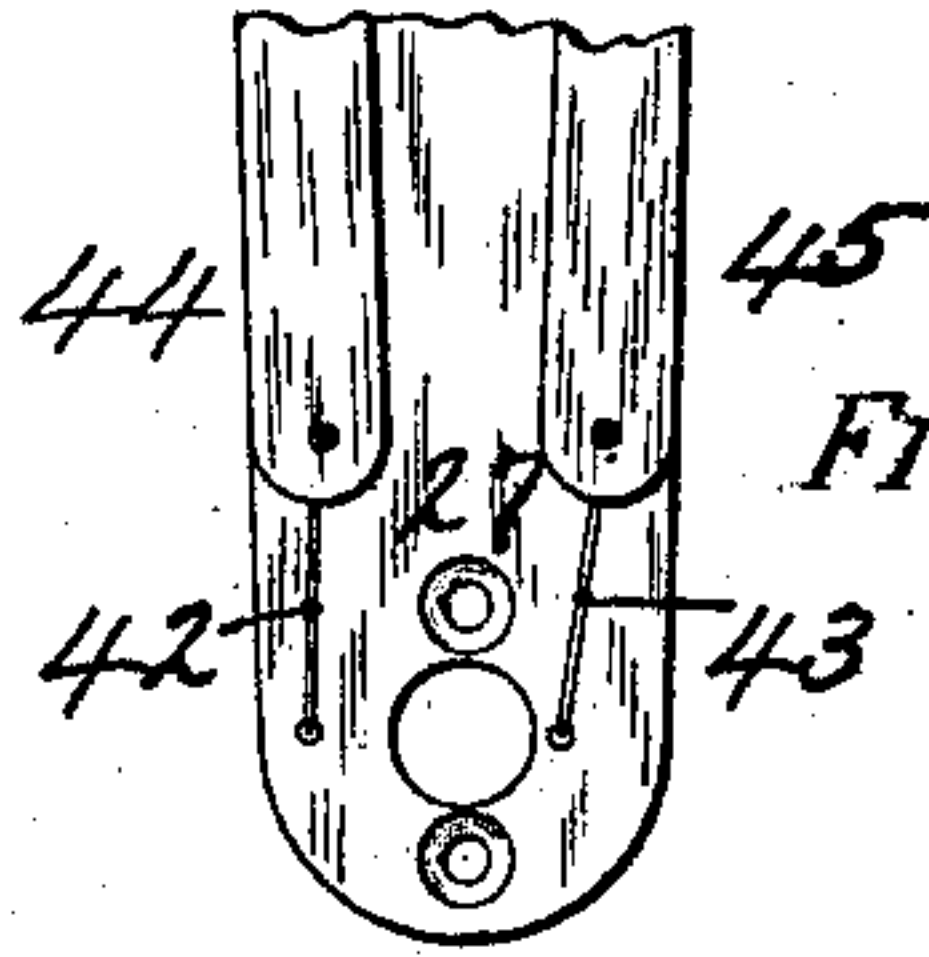


FIG. 3.



WITNESSES.

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INVENTOR.

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UNITED STATES PATENT OFFICE.

WILLIAM W. DEAN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE BELL
TELEPHONE COMPANY OF MISSOURI, OF SAME PLACE.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 535,615, dated March 12, 1895.

Application filed September 24, 1894. Serial No. 523,968. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. DEAN, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have
5 invented certain new and useful Improvements in Telephones, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates more particularly to improvements in so-called head telephones which are designed to be worn upon the head
15 of the central-station operator to receive calls and attend to the wants of subscribers.

The invention is more particularly designed for that central-office telephone system known as the Law system.

20 The invention will be best understood by referring to the accompanying drawings forming part of this specification.

Figure 1 is a front elevation of a head telephone constructed in accordance with my
25 invention. Fig. 2 is a top plan view of the same. Figs. 3 to 17 inclusive, are detail views of the buzzer or signal-giving part of the apparatus.

In the drawings in which the same marks
30 of reference indicate the same parts throughout the different views, 20 is an ordinary telephone having binding posts 21 and 22, leading into it, and by which the calls of subscribers are made audible to the operator.

35 This telephonic receiver 20 is attached to a permanent magnet 23 by means of a screw 24, the permanent magnet in turn being fastened by screws 25 to a curved or bowed piece 26 of insulating material, which passes over the
40 head of the operator. This curved piece 26 is extended downwardly at the other end forming an extension 27 upon the lower end of which the buzzer or signal-giving device 28 is located.

45 In the Law telephone system, a buzzer or instrument is used to indicate to the operator whether or not the line wire of a subscriber wanted is busy. When such line wire is in use, this fact is indicated to the operator by
50 a single click emitted by the buzzer, and serves as a warning to the operator not to make the

connection. When, however, the line wire wanted is not in use, a buzzing sound will be given by the buzzer, and the operator will proceed to make the desired connection. 55
The central-office operator touches the terminals of the wires of the subscriber wanted with a battery plug previous to making the desired connection to ascertain whether the line is busy. If the telephone of the sub- 60
scriber wanted is off its hook and his line wire is busy, the circuit of the bell-magnet of such subscriber is broken by his telephone hook and his bell is therefore out of circuit. If
65 now, the central-office operator throws her battery to line, it will cause her buzzer to be actuated and to click but once, the direct and return circuits of the buzzer being completed over the line wires by the telephone hook of the subscriber wanted. If, however, the tel- 70
ephone of the subscriber wanted is on its hook and his line is not being used, the circuit of his bell-magnet will be intact, so that when the central-office operator puts her battery to line to ascertain whether the line is busy, not 75
only will the subscriber's bell be rung, but the bell-magnet circuit will be made and broken by the vibration of the bell-magnet's armature, which is arranged to make and break the circuit as it vibrates, after the 80
fashion of a rheotome. This will make and break the circuit of the central-office operator's buzzer, and will cause it to buzz, indicating that the line of the subscriber wanted is not in use. 85

Heretofore the buzzer has been located upon a post upon the switch-board and adjacent to the operator, upon whose head is strapped or otherwise secured a telephonic-receiving
90 appliance for the reception of calls of subscribers. This plan has many objections which are obviated by the present invention, wherein the signal-giving device and telephonic-calling appliance are both placed upon the head of the operator by a compact and 95
convenient arrangement.

The construction of the buzzer in the present instance is novel, and I shall now proceed to set forth the same. It consists in the first place of a metallic cylinder 29 open at its top 100
but having at the lower end thereof a centrally perforated head, which is secured in

place upon the downward extension 27 of the curved piece or bow 26 by screws 30. Within the interior of this cylindrical part or casing 29, is arranged an electro-magnet. The electro-magnet consists of a longitudinally perforated core 31, the ends of which are reduced and screw-threaded. Upon the screw-threads at each end are placed flat rings 32 and 36 respectively, between which and around the core is wound the coils 35 of the magnet. The ring 32 has two small holes therein for the leading-in wires to the coil of the magnet to pass through. The core and coil are then inserted in the cylindrical casing 29 and a nut 33 is placed upon the screw-threaded lower end of the core, which nut firmly holds the core and coil in place. Before placing the nut upon the lower end of the core, a disk of insulating material 34, perforated for the reception of the core, is placed in position upon the core and interposed between the nut and the extension 27 and screws 30.

A metallic diaphragm disk 37 is placed over the upper end of the core 31 and the upper circular edge of the casing 29. The exterior of the upper part of the cylindrical casing 29 is provided with a screw-thread, and upon this is screwed a ring 38 having a milled exterior. After this ring is screwed well down upon the screw-threads of the cylindrical casing 29, a cap piece 39 is screwed over the diaphragm and upon the upper part of the said cylindrical casing 29. This cap piece has an orifice in it so as to readily emit the sounds coming from the diaphragm 37. The cap piece 39 is not screwed down fully upon the edge of the cylindrical casing, but a slight play is left between the cylindrical casing and cap piece to permit vibration of the diaphragm 37. After the cap 39 has been screwed or set to the required position, the ring 38 is screwed against it so as to fix the cap piece in place, and prevent it being turned except when the set-ring 38 is manipulated for this express purpose.

Within the longitudinal perforation of the core 31 is arranged a helical spring 40, the upper end of which bears against the underside of the diaphragm and the lower end of which bears against a screw 41 inserted in the lower end of the said core. By means of this screw, the tension of the spring 40 may be adjusted and it may be made to bear with more or less force upon the diaphragm 37 so as to regulate the vibration of the diaphragm.

The coil 35 polarizes the core 31 as well as the cylindrical casing 29, which acts as part of the magnet as well as a casing, the upper end of the core serving as one pole of the magnet, and the upper circular edge of the cylindrical casing 29 serving as the other pole of the magnet, the point where the core and cylindrical casing meet being the neutral point of the magnet. It will be seen that this arrangement furnishes an exceedingly compact device thoroughly cased at all points and of small compass. At the same time the

device is effective in its operation, and adjustable so that the functions of the parts may be adjusted at will.

42 and 43 are the leading-in wires which pass to the coil of the magnet of the buzzer. These leading-in wires are attached respectively to metallic strips 44 and 45 which pass over the upper part of the curved or bowed insulating piece 26 being arranged along the edge of such curved piece. Upon the other ends of said metallic strips 44 and 45, are arranged binding posts 46 and 47 respectively, to which wires are attached leading to the circuit in which the buzzer is placed by the operator previous to the operator making the connection desired. These binding posts 46 and 47 are arranged upon that side of the head of the operator from which the wires leading to the telephonic receiver emanate, leaving the head of the operator at the other side thereof all the necessary freedom of motion, and allowing the operator's right hand and arm freedom to make connections without the liability of becoming entangled in the wires passing to the buzzer, which might occur where the wires led directly from the buzzer and emanated from the right side of the head of the operator. The metallic strips 44 and 45 also serve to impart elasticity and resiliency to the curved piece or bow 26, and thereby make it easy to spring this part over the head of the operator and have it, by reason of its own resiliency, hold itself in place.

Having fully set forth my invention, what I desire to claim and secure by Letters Patent of the United States is—

1. A central-office telephonic apparatus consisting of a bowed piece of insulating material adapted to be sprung over the head of the operator, a telephonic-calling appliance secured to one end of said bowed piece and constructed to be applied over one ear of the operator, and an independently-operated signal-giving device at the other end of the said bowed piece, adapted to be placed near by but free from the other ear of the operator.

2. A central-office telephonic apparatus consisting of a bowed piece of insulating material, adapted to be sprung over the head of the operator, a telephonic-calling appliance secured to one end of said bowed piece, a signal-giving device at the other end of the said bowed piece, metallic strips electrically connected to and leading from the signal-giving device to that end of the bowed piece upon which the telephonic-calling appliance is located, and suitable electrical connections for the telephonic-calling appliance and the signal-giving device at that end of the bowed piece.

3. A telephonic-signaling device consisting of a suitable diaphragm, a magnet for vibrating said diaphragm, a spring for holding said diaphragm in its normal position, and an adjustable screw for regulating the tension of the spring.

4. A telephonic-signaling device consist-

ing of a suitable metallic casing, a core there-
for in electrical communication with said cas-
ing, a coil between said core and casing, an
adjustable cap piece for said casing, a dia-
5 phragm arranged between said cap piece and
the core and casing, and a set-ring for hold-
ing in place the adjustable cap piece.

10 5. A telephonic-signaling device consist-
ing of a suitable magnet, an adjustable cap
piece for said magnet, a diaphragm arranged
between said cap piece and the magnet, a

spring for holding said diaphragm in its nor-
mal position, and an adjustable screw for
regulating the tension of the spring.

In testimony whereof I have hereunto set 15
my hand and affixed my seal, this 3d day of
September, 1894, in the presence of the two
subscribing witnesses.

WM. W. DEAN. [L. S.]

Witnesses:

A. C. FOWLER,
STANLEY STONER.