

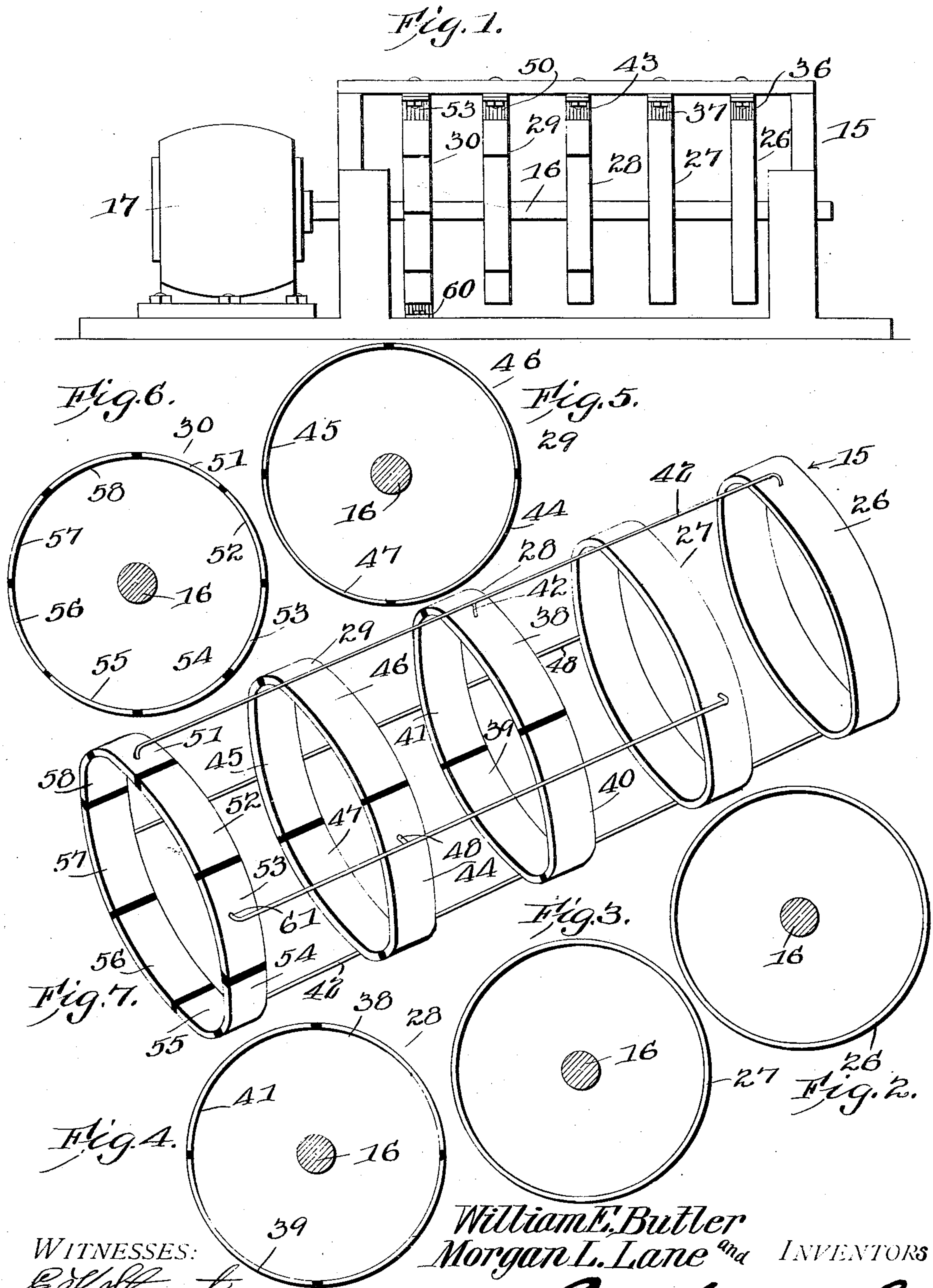
No. 834,869.

PATENTED OCT. 30, 1906.

W. E. BUTLER & M. L. LANE.
TELEPHONE SIGNALING APPARATUS.

APPLICATION FILED JAN. 3, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

E. H. Stewart
John B. Carter

William E. Butler
Morgan L. Lane ^{and} INVENTORS

By *C. A. Snow & Co.*
ATTORNEYS

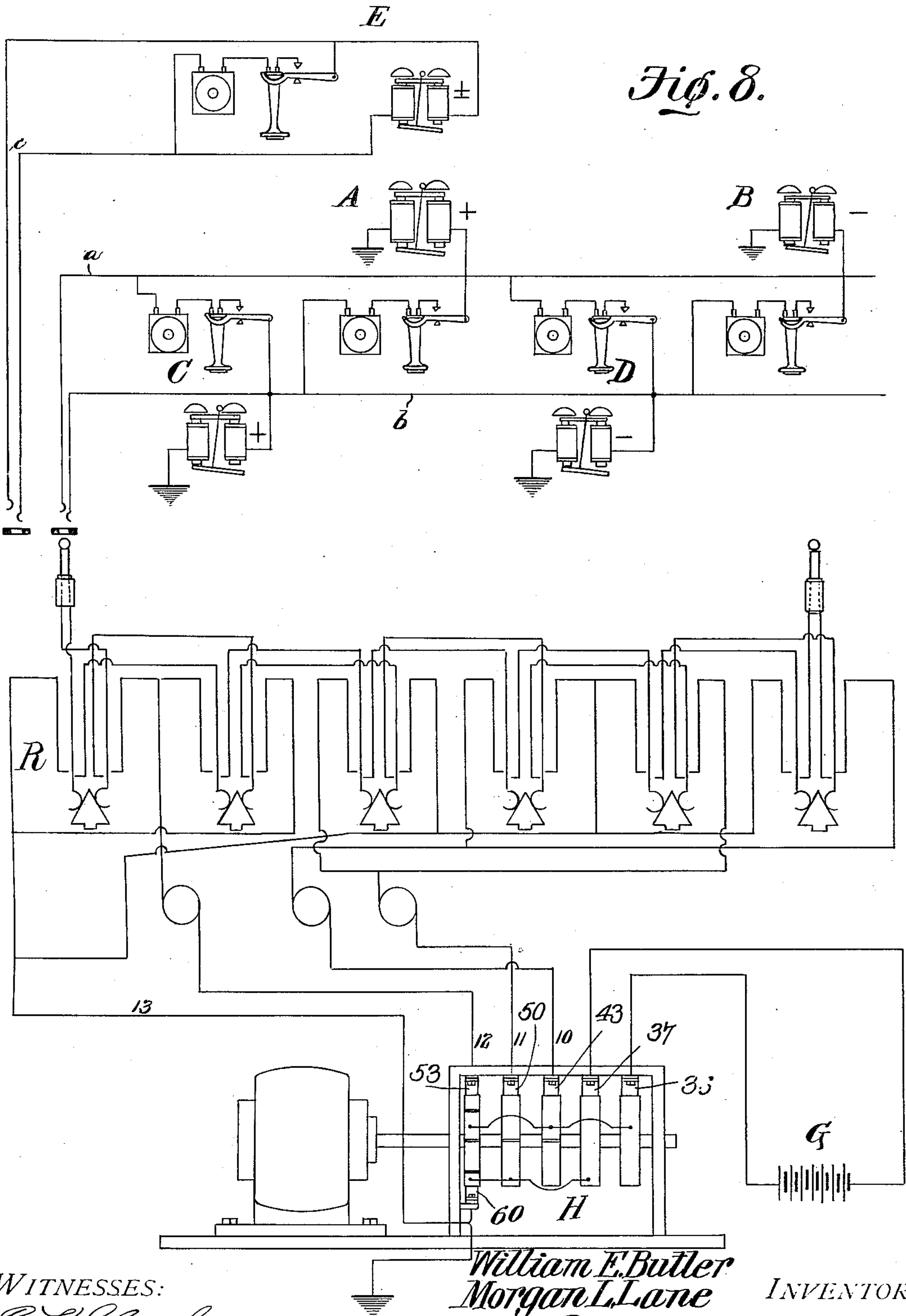
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UNITED STATES PATENT OFFICE.

WILLIAM E. BUTLER AND MORGAN L. LANE, OF DAVID CITY, NEBRASKA.

TELEPHONE SIGNALING APPARATUS.

No. 834,869.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed January 3, 1906. Serial No. 294,460.

To all whom it may concern:

Be it known that we, WILLIAM E. BUTLER and MORGAN L. LANE, citizens of the United States, residing at David City, in the county of Butler and State of Nebraska, have invented a new and useful Telephone Signaling Apparatus, of which the following is a specification.

This invention relates to signaling devices, and has for its principal object to provide a novel means for sending different forms of currents over the line-wire of a signaling or telephone system, the device being of especial value for use in connection with party-lines where the bell of one subscriber is arranged to respond to a current sent over the line in one direction, the bell of a second subscriber to respond to a current sent over the line in an opposite direction, and the bell of a third subscriber to respond to an alternating current.

A further object of the invention is to provide mechanism of simple and efficient construction whereby a direct current from a single source of energy may be sent over any line as a direct current in either direction or as an alternating current.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation of a calling apparatus constructed in accordance with the invention. Figs. 2, 3, 4, 5, and 6 are elevations of the different circuit-closing means. Fig. 7 is a detail perspective view, partly in the nature of a diagram, showing the rings and their connections. Fig. 8 is a general diagram showing the manner in which the calling device is connected.

Similar characters of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

Referring first to the diagram, A, B, C, and D represent subscribers' stations connected to the limbs *a b* of the line, the call-bells of

the stations A and B being connected between the wire *a* and the ground, while the call-bells of the stations C and D are connected between the line *b* and the ground. The bells of stations A and C are responsive to a direct current sent in one direction, while the call-bells of stations B and D respond to a direct current sent in the opposite direction. In addition to these there is shown a line *c*, in which is connected a subscriber's station E, having a call-bell that responds to an alternating current.

At the central station is a source of energy which in the present instance takes the form of a battery G, and between this battery and the switchboard is arranged a calling device H, which forms the subject of the present invention. From this calling device extend three wires 10, 11, and 12 and a fourth wire 13, which is also connected to the ground. The several wires are connected to ringing-keys R of a well-known construction and so arranged that by operating any one of them the wire 10, the wire 11, or the wire 12 may be connected to the line.

The calling device comprises a frame 15, carrying a shaft 16, and said shaft supports a series of disks on which are mounted a number of rings 26, 27, 28, 29, and 30, the ring-supporting disks being preferably formed of insulating material in order to keep the rings separate. The ring 26 is continuous and is connected by a brush 36 to the positive pole of battery G. Ring 27 is also continuous and is connected by a brush 37 to the negative pole of the battery G. The ring 28 is divided into four segments 38, 39, 40, and 41, all of which are insulated from each other. The segments 38 and 39 are connected to the ring 26 by a wire 42, while the segments 40 and 41 are disconnected. The wire 10 is connected to a brush 43, that bears against ring 28, and as the drum is revolved a positive impulse may be sent out over the line from the segments 38 39, owing to their connection with the positive ring 26 of the drum. The drum 29 is divided into four segments 44, 45, 46, and 47, of which the segments 44 and 45 are connected to the negative ring 27 by wires 48, while the segments 46 and 47 are disconnected. The wire 11 is connected to a brush 50, that bears against the ring 29, and negative impulses may be sent out over the line, owing to the connection of ring 29 with the negative ring 27.

The ring 30 is divided into eight segments 51, 52, 53, 54, 55, 56, 57, and 58, of which the segments 51 and 55 are connected by the wires 42 to the positive ring 26, while segments 53 and 57 are connected by the wires 48 to the negative ring 27. The intermediate segments 52, 54, 56, and 58 are disconnected. The wire 12 is connected to a brush 63, that bears against the ring 30, and as the drum revolves an alternating current may be sent out over the line 12, owing to the connection of the segments of ring 30 with the positive and negative rings 26 and 27.

The wire 13 is also connected to the ring 30 by a brush 60 in order to complete the circuits of the calling apparatus.

We claim—

In a device of the class described, a revoluble member having a pair of continuous annular contacts, brushes engaging said contacts and connected one to the positive and the other to the negative pole of a source of

electrical energy, a second pair of sets of contacts carried by the revoluble member, each set comprising a pair of spaced and insulated segments of which less than the whole of one set of segments is connected to the positive contact, and less than the whole of the other set of segments is connected to the negative, an additional set of contacts formed of insulated segments, of which alternate segments only are active, these alternate segments being divided into two groups, one connected to the positive contact and the other to the negative contact, and brushes engaging all of said segmental contacts.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

WILLIAM E. BUTLER.
MORGAN L. LANE.

Witnesses:

C. H. HARRIS,
C. O. CROSTHWAITE.