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WIRELESS APPARATUS FOR PRODUCING AND TRANSMITTING MUSICAL SOUNDS.

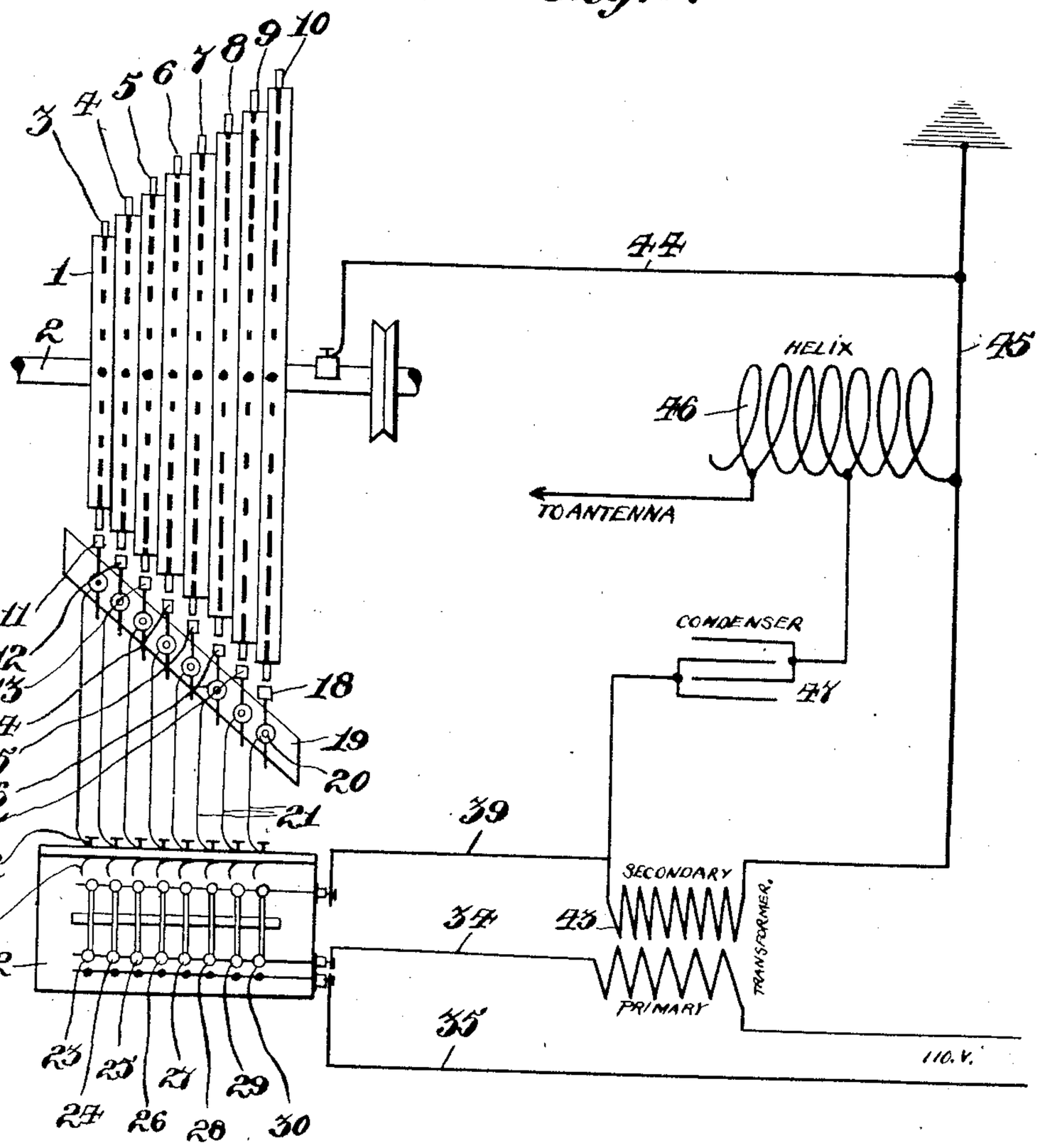
APPLICATION FILED JUNE 29, 1914.

1,166,582.

Patented Jan. 4, 1916.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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3 SHEETS—SHEET 2.

Fig. 2.

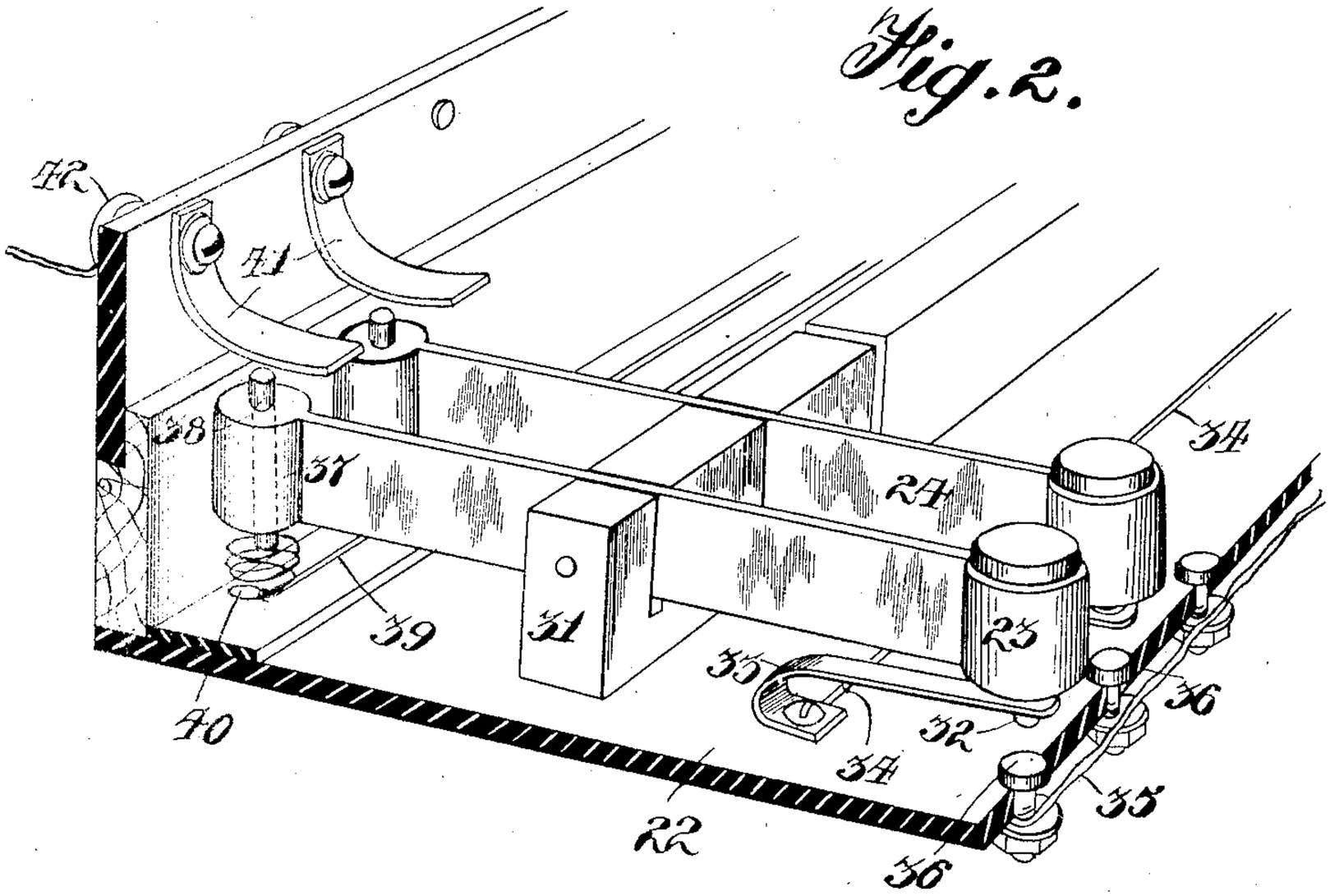
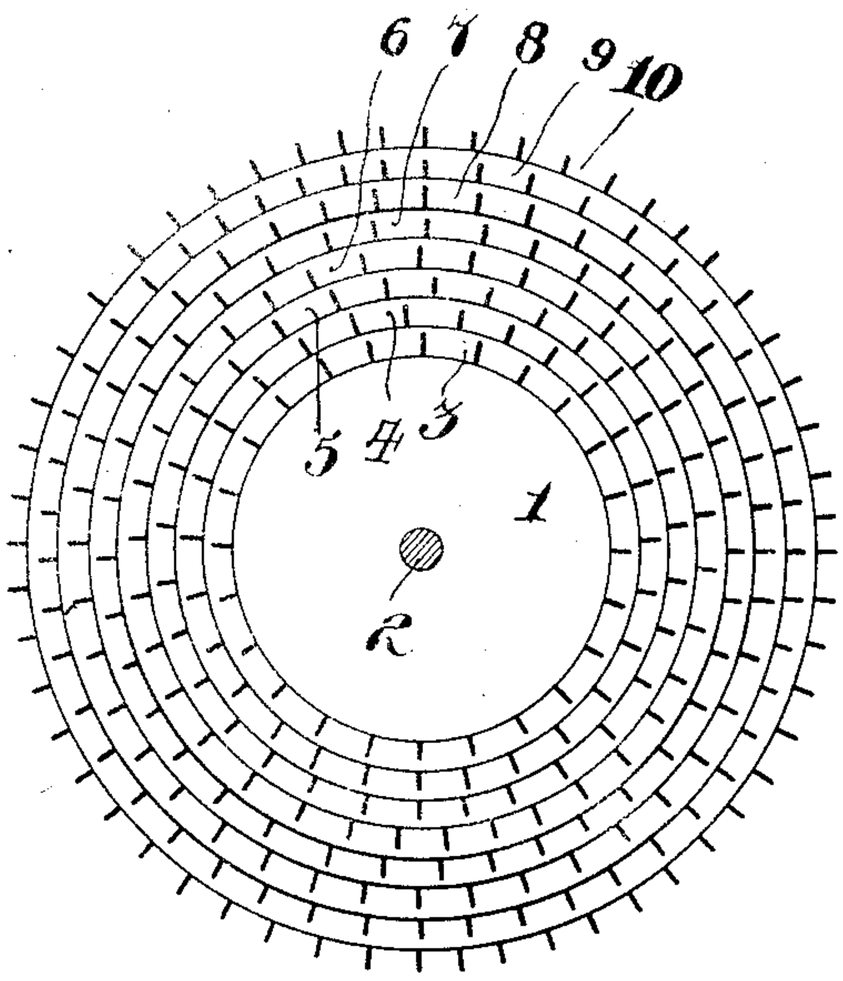


Fig. 3.



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3 SHEETS—SHEET 3.

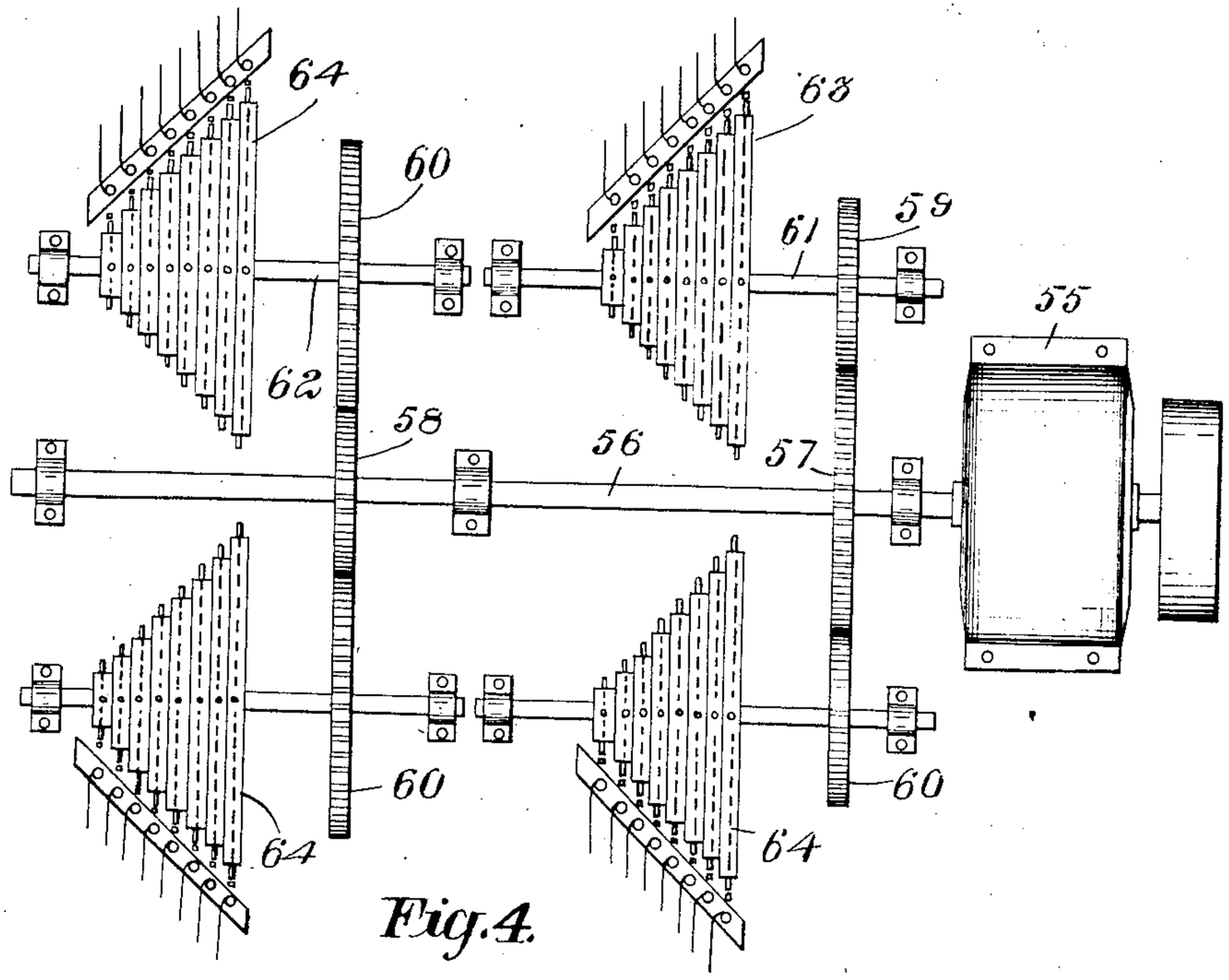

Fig. 4.

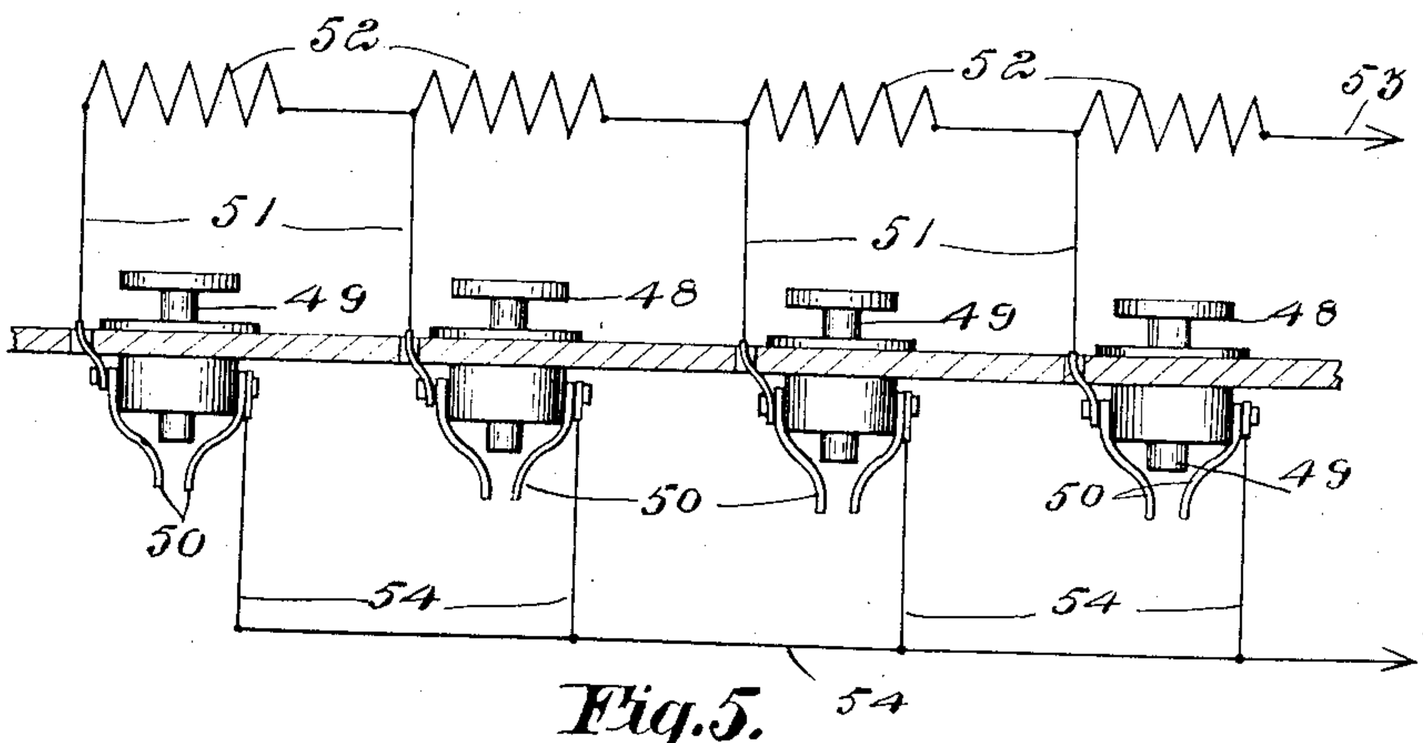

Fig. 5.

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WIRELESS APPARATUS FOR PRODUCING AND TRANSMITTING MUSICAL SOUNDS.

1,166,582. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed June 29, 1914. Serial No. 848,017.

To all whom it may concern:

Be it known that I, GEORGES DÉSILETS, a subject of the King of Great Britain, and residing at Nicolet, in the county of Nicolet, in the Dominion of Canada, have invented certain new and useful Improvements in Wireless Apparatus for Producing and Transmitting Musical Sounds; and I do hereby declare that the following is a full, clear, and exact description of the same.

The invention is an apparatus for producing and transmitting musical sounds by wireless as described in the present specification and illustrated in the accompanying drawings that form part of the same.

In the present invention the ordinary wireless sending and receiving apparatus is employed, except that in place of the ordinary sending key, a plurality of keys are employed, the operation of any one of which will cause a certain musical not to be transmitted, different notes being obtained according to which key is operated. The various musical notes are obtained through the medium of annular rows of rotating spark gaps, each row producing sparks of greater or less frequency than the adjacent rows. A most convenient way of obtaining this result is to provide the annular rows of spark gaps in the form of points or studs projecting radially from the surface of a conical or frusto-conical rotor, the points in one row being the same distance apart as the points in any other row. Thus, the points in the row of greatest diameter would be more in number and would travel at a greater speed than the points in the row of smallest diameter and produce sparks with greater rapidity. In order to produce a regular scale of musical sounds the number of points on each row is determinated by the following relation between the number of points in two adjacent rows well known in acoustics:—

1, 9/8, 5/4, 4/3, 3/2, 5/3, 15/8, 2.

The invention will be better understood with the aid of the accompanying drawings in which—

Figure 1 illustrates a diagrammatic view of the apparatus according to the invention. Fig. 2 a diagrammatic perspective view of one of the operating keys and Fig. 3 an end view of the rotor. Fig. 4 illustrates the diagrammatic view of a modification of the apparatus. Fig. 5 illustrates a diagrammatic view of the regulators for producing pianissimo, fortissimo etc.

Referring to the drawings, which of course do not show the receiving apparatus which is the same as any ordinary outfit, 1 indicates a rotor in frusto-conical shape supported on a shaft 2 rotated in any suitable manner for example, by an electric motor. The rotor is here shown as provided with eight annular rows of radially projecting points 3, 4, 5, 6, 7, 8, 9, and 10 corresponding in number to the natural notes in an octave, though it must be understood that the rotor could be of such length as to include more than one octave, but in order to keep down the size of the apparatus, it is preferred to provide the semitones and additional octaves in the manner hereinafter described.

The points belonging to each of the annular rows and the different rows before mentioned are electrically connected to each other and to the shaft 2. Further, the points of one row are the same distance apart as the points on the other rows and as an example, it may be mentioned for purposes of comparison that if the row 3 contains twenty-four points, the row 4 contains twenty-seven, the row 5 thirty, the row 6 thirty-two, the row 7 thirty-six, the row 8 forty, the row 9 forty-five and the row 10 forty-eight, according to the relation before mentioned.

The points before mentioned form poles and operate in conjunction with a plurality of fixed poles 11, 12, 13, 14, 15, 16, 17 and 18, one for each row of spark gaps and carried by a suitable insulator 19 provided with terminals 20 to which, and the fixed poles, are connected electric wires 21 leading from the key board 22.

The key board 22 comprises a set of keys 23, 24, 25, 26, 27, 28, 29 and 30, each of which is pivoted intermediately to a fixed wooden bar 31. The underside of the outer end of each key carries a contact 32 electrically connected by means such as the spring 3 to one of the wires 34 of the line circuit and the other wire 35 of the line circuit being provided with a contact 36 beneath each key adapted to coöperate with the contact 32 to close the line circuit. Both ends of a key are insulated from each other by the joining arm made of suitable insulating material.

The outer end 37 of each key is provided

with a contact 38 at its upper end which contact is also connected beneath the key to one of the high tension wires 39 by means of the spring 40. 41 are spring contacts insulated from each other, respectively extending from terminals 42 to which the wires 21 are connected. All the contacts 38 are normally away from the contacts 41 and in pressing a key, the said contacts are adapted to be closed just a little before the contact 32 at the other end of the key touches the contact 36. Thus, the high tension contacts are closed before the tension and opened after the opening of the low tension contacts, which prevents sparking at the high tension contacts.

The wire 34 is connected with the primary coil of a transformer 43, while the wire 39. supported by an insulator is connected to the secondary coil of the transformer. The shaft 2 is also connected by a wire 44 to the ground wire 45 of the ordinary wireless outfit while the usual helix 46 (an oscillation transformer may also be used) and condenser 47 are employed, the former being connected with an antenna in the usual manner.

It will thus be seen that a series of sparks can be obtained at any one of the fixed poles 18 by reason of the closure of the high tension circuit consequent upon the pressure of the key corresponding to that particular fixed pole and, as hereinbefore explained, musical notes will be produced by the difference in the frequency of formation of the various series of sparks.

Obviously, in order to produce chords, it is only necessary to supply a current of sufficient intensity to permit of a plurality of different sets of sparks at the same time consequent upon the pressure of the corresponding number of keys. Further, regulation in the volume of sound for producing pianissimo, fortissimo and similar effects can be provided for by the inclusion of a rheostat in the primary circuit which may be regulated by the foot illustrated in Fig. 5 in which 48 is a foot push-button having the stub 49 which comes in contact when the said push-button is pressed downwardly with the contacts 50 and 51 is a wire connected at one end to one of the contacts and at the other end to a rheostat 52 which is connected to a wire 53 leading from said rheostat and connected in series with the primary of a transformer.

54 is a wire connected to the other contact and at its other end in series with the primary of a transformer.

In order to produce an octave higher, the preferable form is to use an exactly similar rotor and revolve it at twice the speed of the rotor 1 and similarly an octave lower could be produced by rotating a similar rotor at half the speed of the rotor 1. The semitones are obtained in the preferred form by a set of rows exactly corresponding to the rows 27, 30, 36, 40 and 45 traveling at a rate of speed 1/20 less than the rotor 1. For example, if the rotor 1 is revolving at 500 r. p. m., the semitone rows must revolve at 475 r. p. m. The different speeds of rotation may be obtained by gearing and of course there will always be a fixed pole and key for each row and similar to those already described. This modification is illustrated in Fig. 4 showing a motor 55 rotating shaft 56, which is secured to the driving gears 57 and 58.

59 and 60 are spur gears mounted on the shafts 61 and 62 and 63 and 64 are the rotors mounted on said shaft, said rotors being similar in construction as the rotor 1 illustrated in Fig. 1.

It will be noticed that the gear 60 is of larger diameter than the gear 59 and that the gear 58 is of smaller diameter than the gear 57. It will therefore be readily understood that the rotor 63 will be driven at a higher speed than the rotor 64, the result being that the rotor 64 will be of an octave lower than the rotor 63.

It is thought that the operation of the invention will be well understood from the foregoing description, but it will be obvious that the key board in this invention may be of any compass, that is to say, that any number of different musical notes may be obtained by extending the rotor 1 or providing additional rotors as before described.

What I claim is:

1. In a means for producing and transmitting musical sound by a wireless apparatus, the combination with an antenna and current supplying means, of a plurality of keys controlling both primary and secondary current of a transformer and means whereby the operation of any one of said keys produces sparks at a predetermined frequency different than that of the adjacent keys.

2. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a plurality of rotary spark gaps, a circuit for said gaps directly associated with said antenna, controlling keys, and means for producing sparks in said spark gaps consequent upon the operation of said keys.

3. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a plurality of rows of rotating spark gaps, a circuit for said gaps directly associated with said antenna, a controlling key for each of said rows, means for producing sparks in each row separately consequent upon the operation of its particular controlling key and means

whereby the operation of any one key controls sparks of different frequency to those created by the operation of the other keys.

4. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a plurality of annular rows of spark gaps, a circuit for said gaps directly associated with said antenna, a fixed pole for each of said rows, a key controlling the supply of current to each of said fixed poles individually and means whereby said rows of spark gaps produce each a series of sparks of different frequency to the other rows.

5. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a plurality of annular rows of rotating spark gaps, a circuit for said gaps directly associated with said antenna, each row being of different diameter to the others and means for producing sparks in said gaps.

6. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a plurality of annular rows of rotating spark gaps, each row being of different diameter to the others, a fixed pole for each of said rows, means for controlling a supply of current to each of said poles individually and means for rotating said spark gap rows collectively.

7. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a plurality of different diameter annular rows of spark gaps, means for rotating said rows collectively, a fixed pole for each of said rows, a controlling key for each of said fixed poles and means for closing a circuit supplying a high tension current to each of said fixed poles consequent upon the pressure of its particular key.

8. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a plurality of groups of rotating spark gaps, means for rotating said groups simultaneously and each group at a different speed to the others, each of said groups comprising annular rows of spark gaps, a controlling key for each of said rows and means for producing sparks in any one row consequent upon the operation of its particular key.

9. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a plurality of controlling keys, means for producing a series of sparks on the operation of each individual key, means whereby each series comprises sparks of different frequency to the others and a rheostat in said current supplying means for the purpose of producing shades of tone.

10. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a rotor, a plurality of equi-distant points projecting from the circumference of said rotor and forming spark gaps, said points being arranged in annular rows and the points of each row being electrically connected together and included in the circuit of the aforesaid current supplying means, means for revolving said rotor, a key for controlling the sparks in each of said rows and means whereby each row produces sparks of different frequency to the other rows.

11. In a means for producing and transmitting musical sounds by a wireless apparatus, the combination with an antenna and current supplying means, of a rotor tapering in an axial direction, a plurality of annular rows of equi-distant points projecting from the surface of said rotor and forming spark gaps, the points of each row being electrically connected to each other and included in the circuit of the aforesaid current supplying means, a key for each of said rows, means whereby the pressure of any one key causes sparks in its particular row, whereby the sparks of each row occur at different frequency to the other rows.

Signed at Nicolet, Quebec, Canada, this 29th day of May 1914.

GEORGES DÉSILETS.

Witnesses:
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RITHA HONDE.