A. WADE.

ELECTRIC CHIMES.

APPLICATION FILED AUG. 5, 1916.

1,322,379.

Patented Nov. 18, 1919.

3 SHEETS—SHEET 1.

Fig. 1.

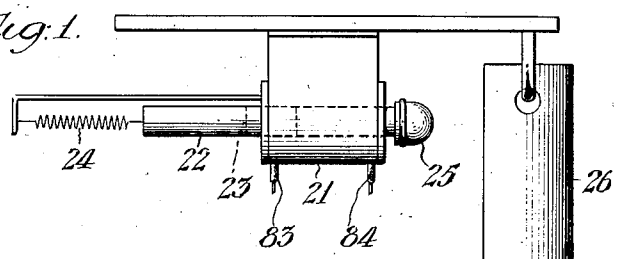


Fig. 2.

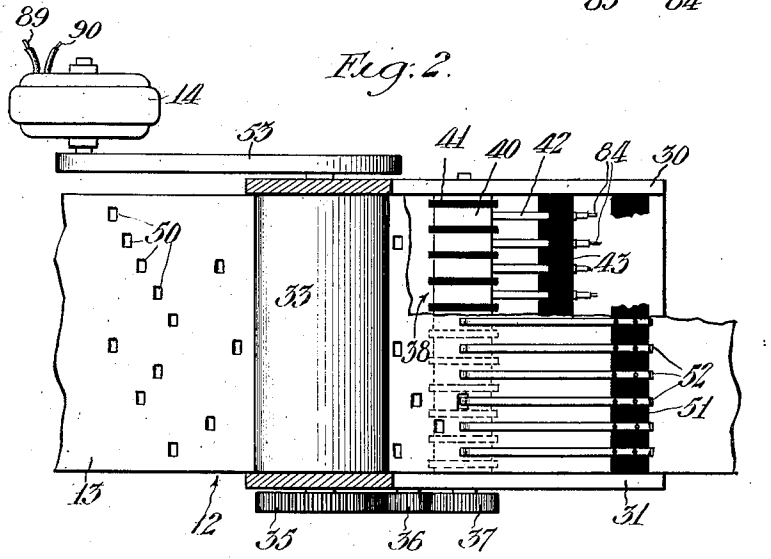
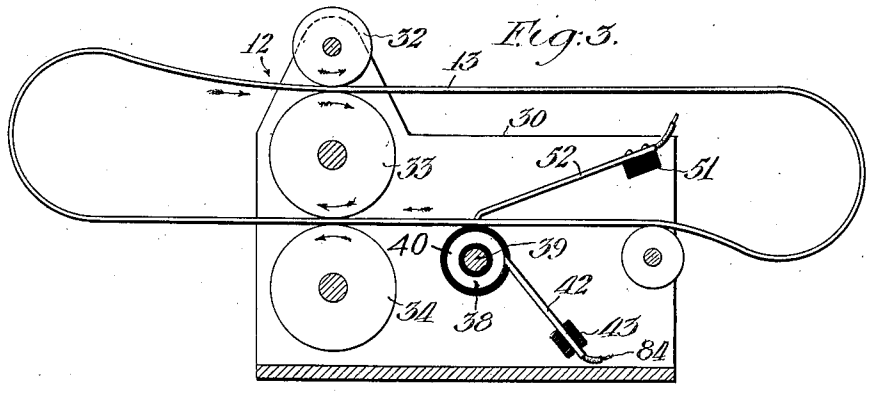


Fig. 3.



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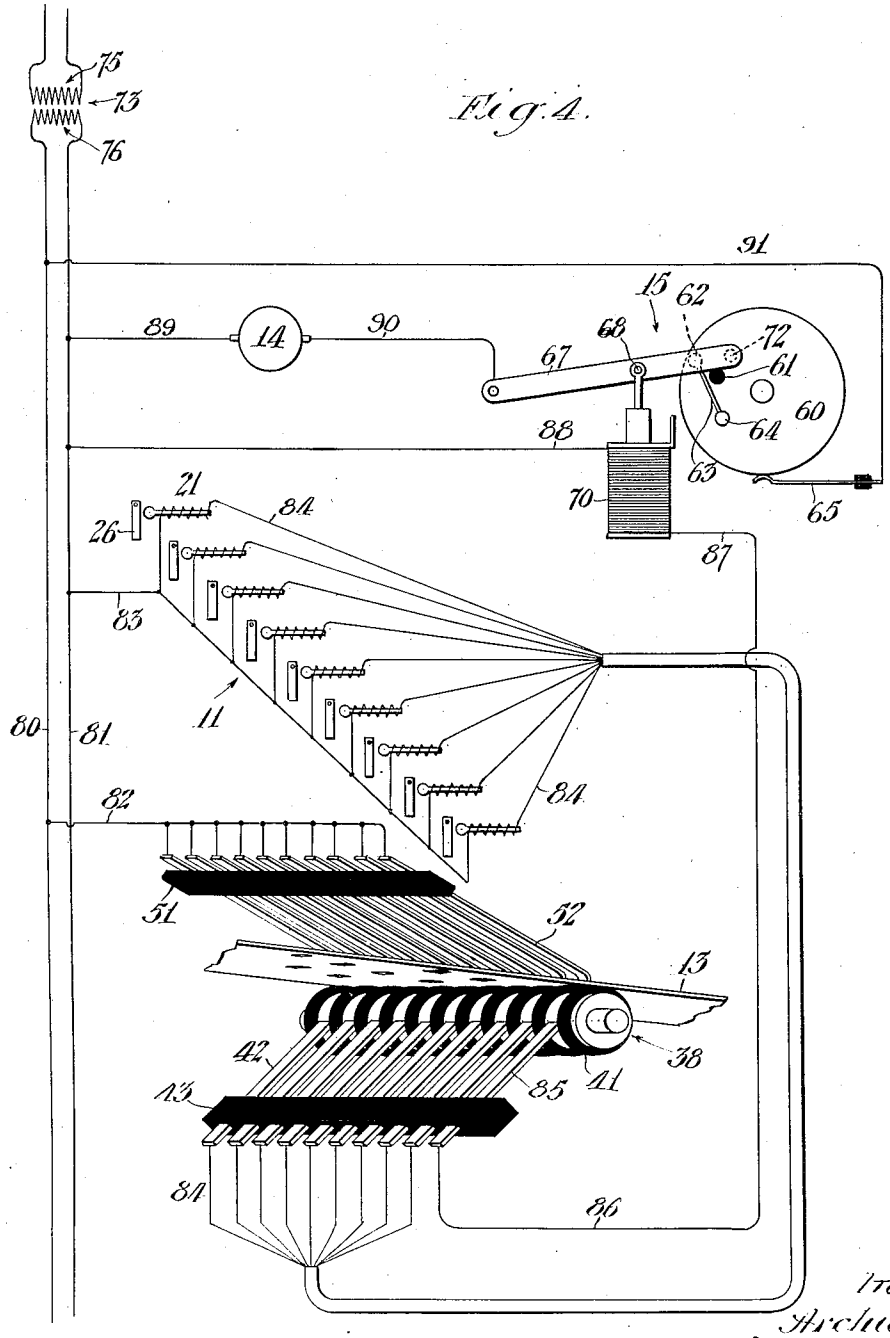
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3 SHEETS—SHEET 2.

Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 5.

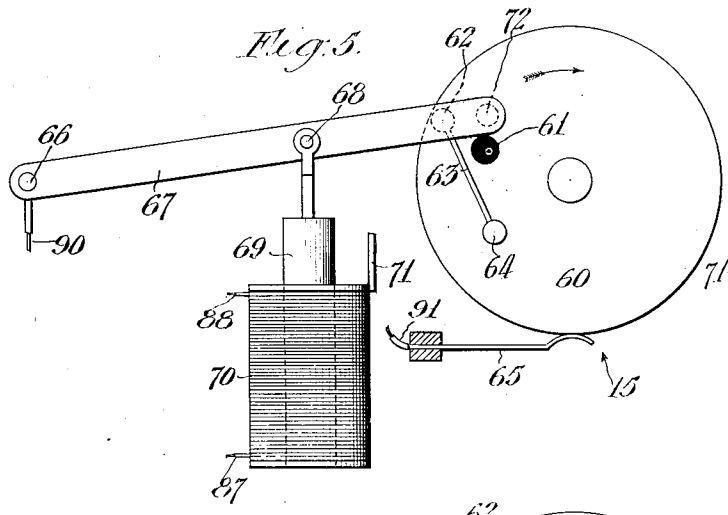


Fig. 6.

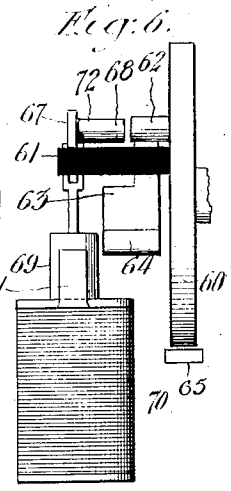


Fig. 7.

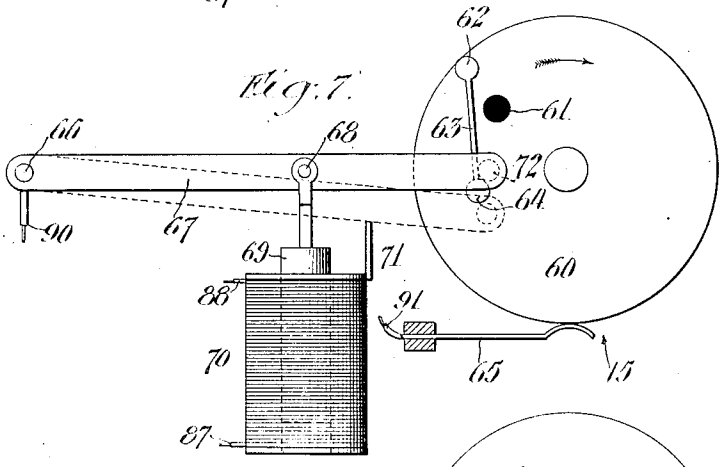
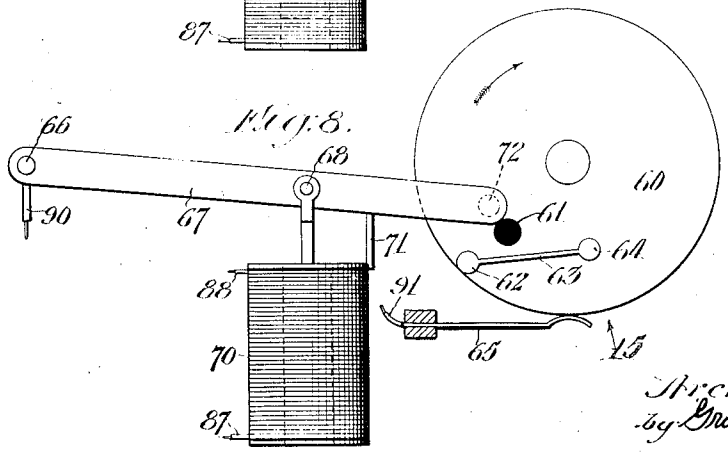


Fig. 8.



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UNITED STATES PATENT OFFICE.

ARCHIE WADE, OF LOS ANGELES, CALIFORNIA.

ELECTRIC CHIMES.

1,322,379. Specification of Letters Patent. Patented Nov. 18, 1919.

Application filed August 5, 1916. Serial No. 113,400.

To all whom it may concern:

Be it known that I, ARCHIE WADE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Electric Chimes, of which the following is a specification.

My invention relates to improvements in electrically operated chimes which are automatically started by clock work to play a certain musical theme at a certain time.

The principal object of the invention is to provide a selector for use in this and other connections.

In the drawings, which are for illustrative purposes only:

Figure 1 is a side view of one of the chimes and its striking mechanism.

Fig. 2 is a plan view of a sheet and its operating mechanism, a portion thereof being omitted and a further portion being broken away to better illustrate the internal structure.

Fig. 3 is an end elevation, partly in section, of the apparatus shown in Fig. 2.

Fig. 4 is a diagram of connections.

Fig. 5 is a view on an enlarged scale as regards the previous figures of the contact device at the instant it is released to make contact.

Fig. 6 is a side view of the mechanism shown in Fig. 5.

Fig. 7 is a view similar to Fig. 5, but with the mechanism shown in the position it assumes during the playing of the theme.

Fig. 8 is a view of the same mechanism in the position it assumes at the instant the contact device is first picked up by the clock mechanism.

In the operation of the invention, certain elements are employed, these elements being broadly the chimes 11 formed of a plurality of resonant bodies, each with its striking mechanism, as shown in Fig. 1, a sheet operating mechanism 12, shown in Figs. 2 and 3, a sheet 13, a motor 14, and a contact device 15. The chimes 11 may be made in a variety of forms, that shown comprising a solenoid 21 having a central slidable brass tube 22 in which is secured a magnetic core 23, this tube 22 and the core 23 being held in the position shown in Fig. 1 by a tension spring 24. A striking hammer 25 is secured in the end of the tube 22 and is so formed that it strikes against a suspended, resonant chime member 26 at the end of its stroke and causes this member to give out a musical note, the chime members 26 being so placed that the hammer 25 will rebound slightly after the blow under the influence of the spring 24, thereby preventing any damping of the sound of the chimes by continued contact between a hammer 25 and a member 26.

The sheet operating mechanism 12 consists of side plates 30 and 31 between which are supported three rollers 32, 33 and 34, these rollers being so placed that they frictionally contact with the music sheet 13 and drive it in the direction of the arrows shown in Fig. 3. The rollers 32, 33 and 34 are connected by gears 35 to move in the direction of the arrows shown in Fig. 3, and are connected through gears 36 and 37 with a shaft carrying a contact roller 38 which is carried on a shaft 39 passing through the side plates 30 and 31. The contact roller 38 is formed of contact rings 40 and insulating washers 41, the insulating washers 41 being of somewhat larger diameter than the rings 40, for the purpose of holding the metallic chime sheet out of contact with the rings 40. The rings 40 are insulated from each other and from the shaft on which they are carried. Each of the rings 40 has a brush 42 permanently in contact therewith, the brushes 42 being carried on an insulating brush bar 43 which extends across between the plates 30 and 31 and insulates the brushes 42 from each other and from the remainder of the mechanism. The sheet 13 is preferably formed of flexible metal, but may be formed of paper, celluloid, or other material and is provided with a plurality of perforations 50, these perforations being placed in such positions, and in such order, that they will cause a harmonious action of the chime members 26 and thus produce the desired musical theme. The sheet 13 is made endless, by joining the ends together, and passes between the rollers 33 and 34 and backwardly between the rollers 32 and 33, so that it may be continuously actuated in the direction shown by the arrows in Fig. 3.

Secured in the side plates 30 and 31 is a finger bar 51 to which are secured a plurality of fingers 52, these fingers being so placed that they may drop through the openings 50 and contact with the rings 40 at proper intervals. The rollers 32, 33 and 34 and their connected mechanism are driven by means of a belt 53 from the motor 14 which

may be either driven by direct or alternating current, preferably alternating current which is ordinarily used for lighting dwelling houses.

For the purpose of controlling the operation of the chimes, the contact device illustrated in Figs. 5, 6, 7 and 8 is employed. In the form of my invention illustrated in these figures, 60 is a disk which is secured to a clock mechanism and which is ordinarily driven at the same rate of speed as the minute hand of an ordinary clock, making one revolution each hour. If desired, it can be run at a faster or slower speed.

Secured on the disk 60 is an insulating pick-up pin 61 and a contact support pin 62. The contact support pin 62 carries a flat spring 63 on which is secured a contact 64. Contact with the disk 60 is made through a finger 65. Pivoted at 66 is a contact lever 67, this contact lever 67 having pivoted to it at 68 a core 69 of a solenoid 70, the solenoid 70 being provided with a stop 71. In the outer end of the lever 67 is a contact lever pin 72. A transformer 73 having a primary winding 75 and a secondary winding 76 is also provided.

The apparatus is connected as follows; as best shown by the diagram in Fig. 4.

Wires 80 and 81 are run from the terminals of the secondary winding 76 of the transformer 73, the wire 80 being connected through a wire 82 with all of the fingers 52. The solenoids 21 are each provided with terminal wires 83 and 84, the wires 83 being permanently connected to the wire 81 and each of the wires 84 being permanently connected to one of the brushes 42 which are insulated from each other by the insulating brush bar 43. One of the brushes 42, numbered 85 in Fig. 4, is connected through a wire 86 with one terminal 87 of the winding of the solenoid 70, the other terminal wire 88 of that solenoid winding being permanently connected to the wire 81. One terminal wire 89 of the motor 14 is permanently connected to the wire 81, the other terminal 90 being connected to the lever 67. The finger 65 is permanently connected through a wire 91 with the wire 80.

The method of operation of the invention is as follows:

The contact device 15 being in the position shown in Fig. 8, the insulating pin 61, moving in a right handed direction, as shown by the arrow in that figure, engages the lever 67 and lifts it from the position shown in Fig. 8 into the position shown in Fig. 5. Soon after the pin 61 passes the position shown in Fig. 5, the lever 67 is released and the weight of the lever 67 and the core 69 is such that the lever 67 falls into the position shown in Fig. 7, the pin 72 striking upon and being held in position by the contact 64. This completes a circuit between the wires 80 and 81, through the wire 91, the finger 65, the contact 64, the pin 72, the lever 67, the wire 90, the motor 14, and the wire 89, setting the motor in operation and turning the rollers 32, 33 and 34, thereby advancing the sheet 13. As this sheet advances, the fingers 52 successively drop through their proper perforations 50, each contacting with one of the rings 40 and closing the circuit through the wire 82, one of the fingers 52, one of the rings 40, one of the contact brushes 42, one of the wires 84, the winding of one of the solenoids 21, and the wire 83. This causes the winding of the solenoid energized to pull its core 23 over and strike a blow on one of the chime members 26, the core 23 being pulled back immediately after the blow is struck by the spring 24 into an intermediate position, and the core 23 being wholly released as soon as the music sheet 13 has traveled sufficiently far to lift the finger 52 from contact with the ring 40. There results a succession of musical notes which, if the perforations 50 are properly arranged, may be blended into a harmonious musical theme. This continues until the finger 52 corresponding to the brush 85 drops through its proper release opening and completes a circuit from the wire 80 to the wire 81, through the wire 82, the finger 52, the ring 40, the brush 85, the wire 86 and terminal 87, the solenoid 70 and the wire 88, thereby causing the solenoid 70 to be energized and pulling the lever 67 from the position shown in Fig. 7 into the position shown in Fig. 8, where it strikes against the stop 71. This opens the circuit between the pin 72 and the contact 64, thereby shutting off current from the motor 14 and stopping the mechanism. The natural momentum of the parts is, however, sufficient to lift the finger 52 corresponding to the brush 85, thereby opening the circuit to the solenoid 70 and restoring the parts to their original condition.

I claim as my invention:—

1. A device for sending electrical impulses of predetermined duration and sequence comprising a source of electric power; a sheet having perforations whose size and location determine the duration and sequence of the desired impulses; a finger adapted to pass through said perforations, but normally resting on said sheet; a conducting member so placed that said finger will make electrical contact through said perforations, and means for insulating said conducting member from said sheet.

2. A device for sending electrical impulses of predetermined duration and sequence comprising a source of electric power; a sheet having perforations whose size and location determine the duration and sequence of the desired impulses; a finger adapted to

pass through said perforations but normally resting on said sheet; a conducting member so placed that said finger will make electrical contact therewith whenever it passes through said perforations, said member comprising a metal roller; means for turning said roller; means for making a sliding contact with said roller and means for insulating said conducting member from said sheet.

3. A device for sending electrical impulses of predetermined duration and sequence comprising a source of electric power; a metal sheet having perforations whose size and location determine the duration and sequence of the desired impulses; a finger adapted to pass through said perforations but normally resting on said sheet; a conducting member so placed that said finger will make electrical contact therewith whenever it passes through said perforations and means for insulating said conducting member from said sheet.

4. A device for sending electrical impulses of predetermined duration and sequence comprising a source of electric power; a metal sheet having perforations whose size and location determine the duration and sequence of the desired impulses; a finger adapted to pass through said perforations but normally resting on said sheet; a conducting member so placed that said finger will make electrical contact therewith whenever it passes through said perforations, said member comprising a metal roller; means for turning said roller; means for making a sliding contact with said roller and means for insulating said conducting member from said sheet.

5. A device for sending electrical impulses of predetermined duration and sequence comprising a source of electric power; a sheet having perforations whose size and location determine the duration and sequence of the desired impulses; a finger adapted to pass through said perforations, but normally resting on said sheet; a conducting member so placed that said finger will make electrical contact therewith whenever it passes through said perforations, and an insulating ring turning with said roller and holding said sheet out of contact with said roller.

6. A device for sending electrical impulses of predetermined duration and sequence comprising a source of electric power; a metal sheet having perforations whose size and location determine the duration and sequence of the desired impulses; a finger adapted to pass through said perforations but normally resting on said sheet; a conducting member so placed that said finger will make electrical contact therewith whenever it passes through said perforations and an insulating ring turning with said roller and holding said sheet out of contact with said roller.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 28th day of July, 1916.

ARCHIE WADE.