

J. E. SCOVILL.

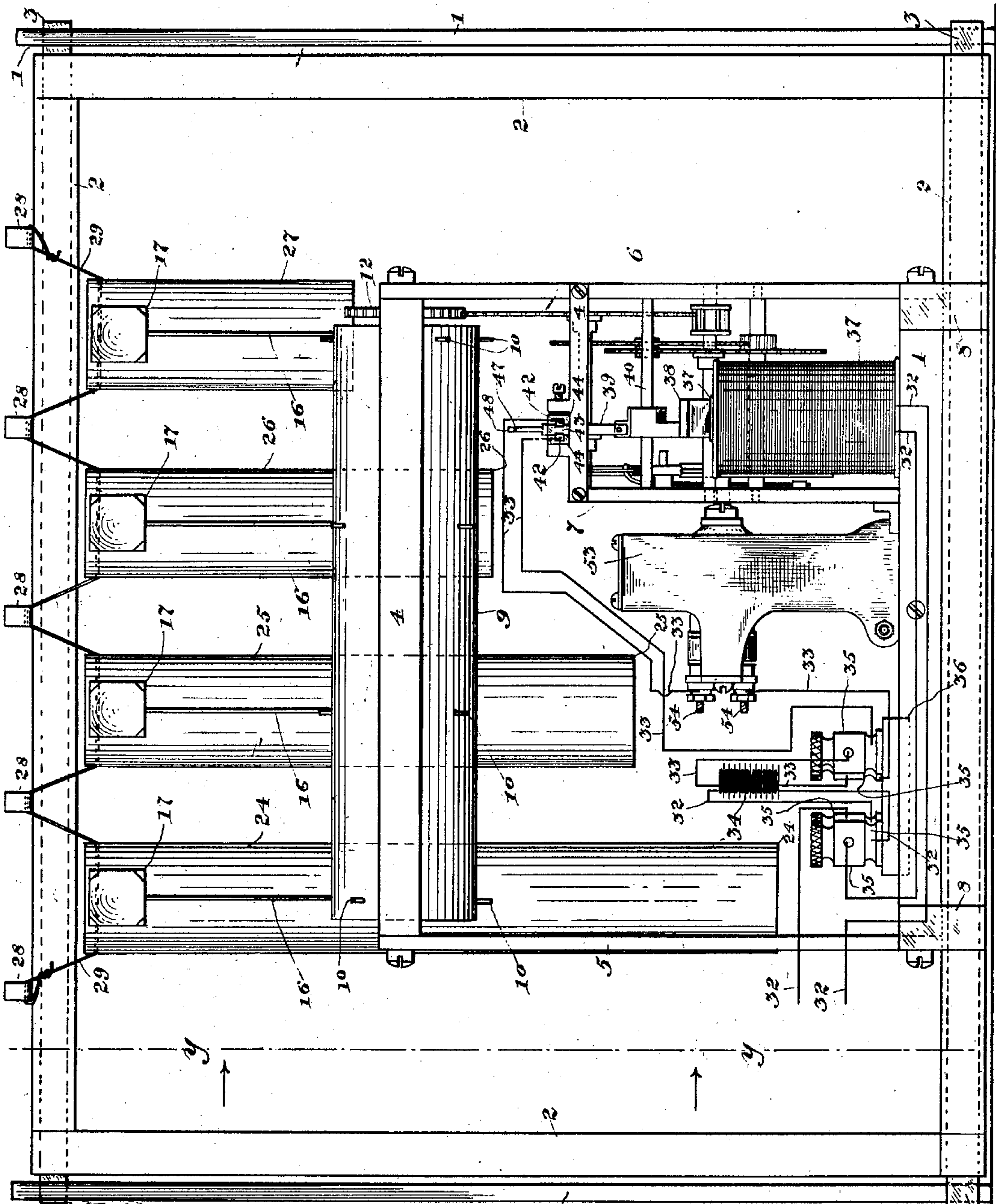
ELECTRIC CHIME.

APPLICATION FILED JAN. 8, 1909.

Patented Nov. 16, 1909

5 SHEETS—SHEET 1.

940,483.



Witnesses:

*W. C. Smith*

*P. C. Bletcher*

*Fig. 1.*

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*By Joshua R. H. Pope*

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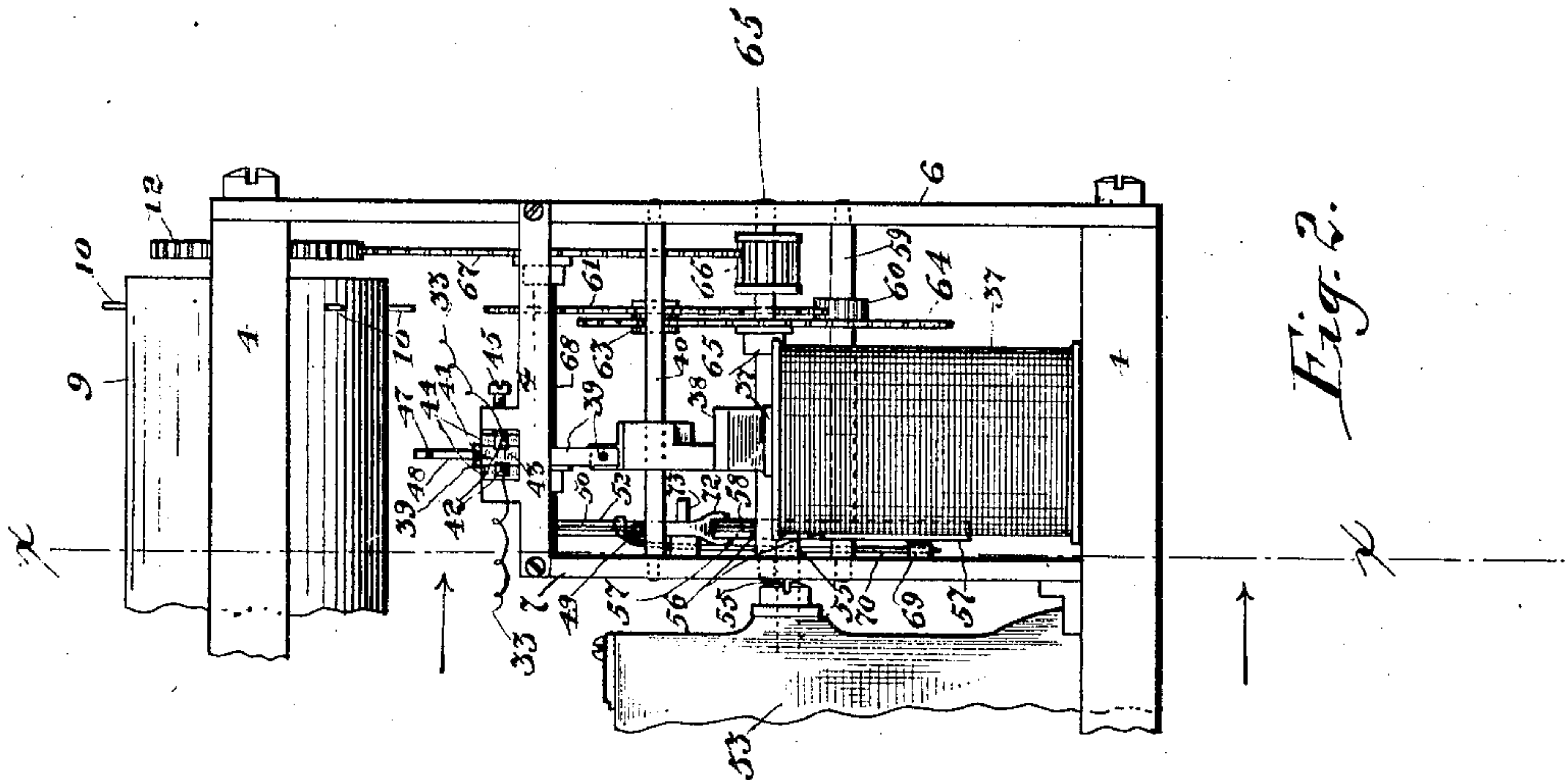


Fig. 2.

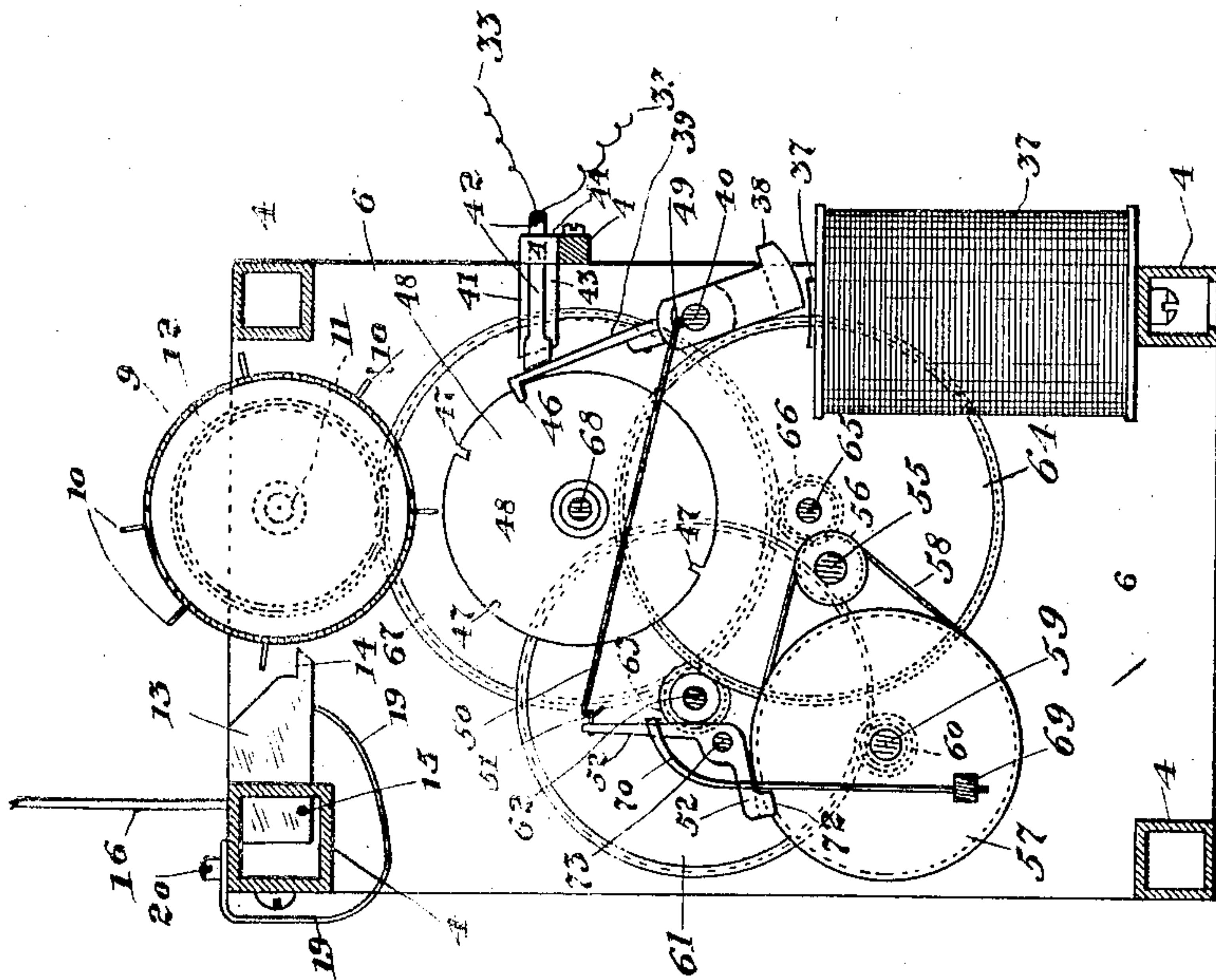


Fig. 3.

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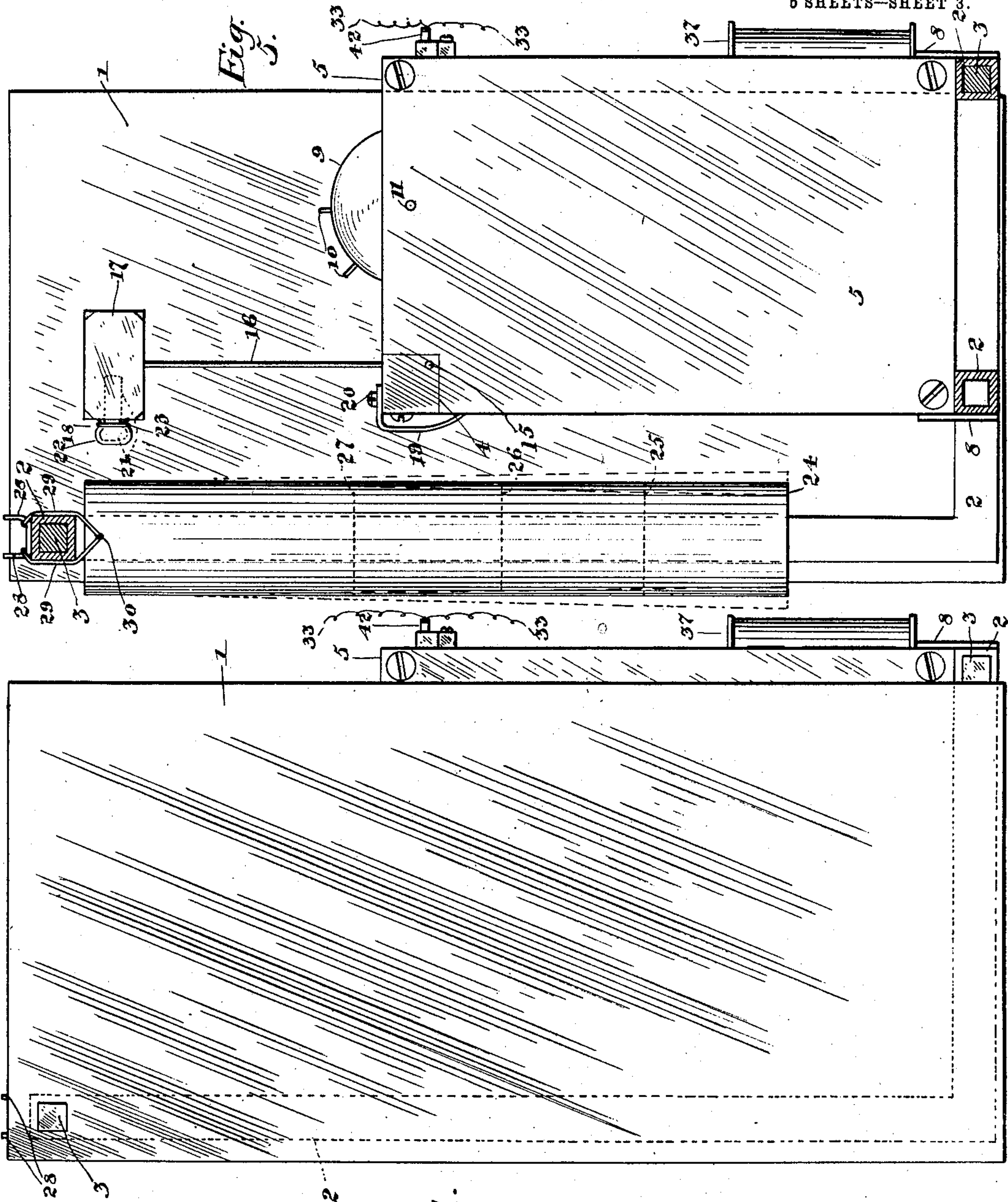
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5 SHEETS—SHEET 3.



Witnesses:

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Fig. 4.

Inventor:

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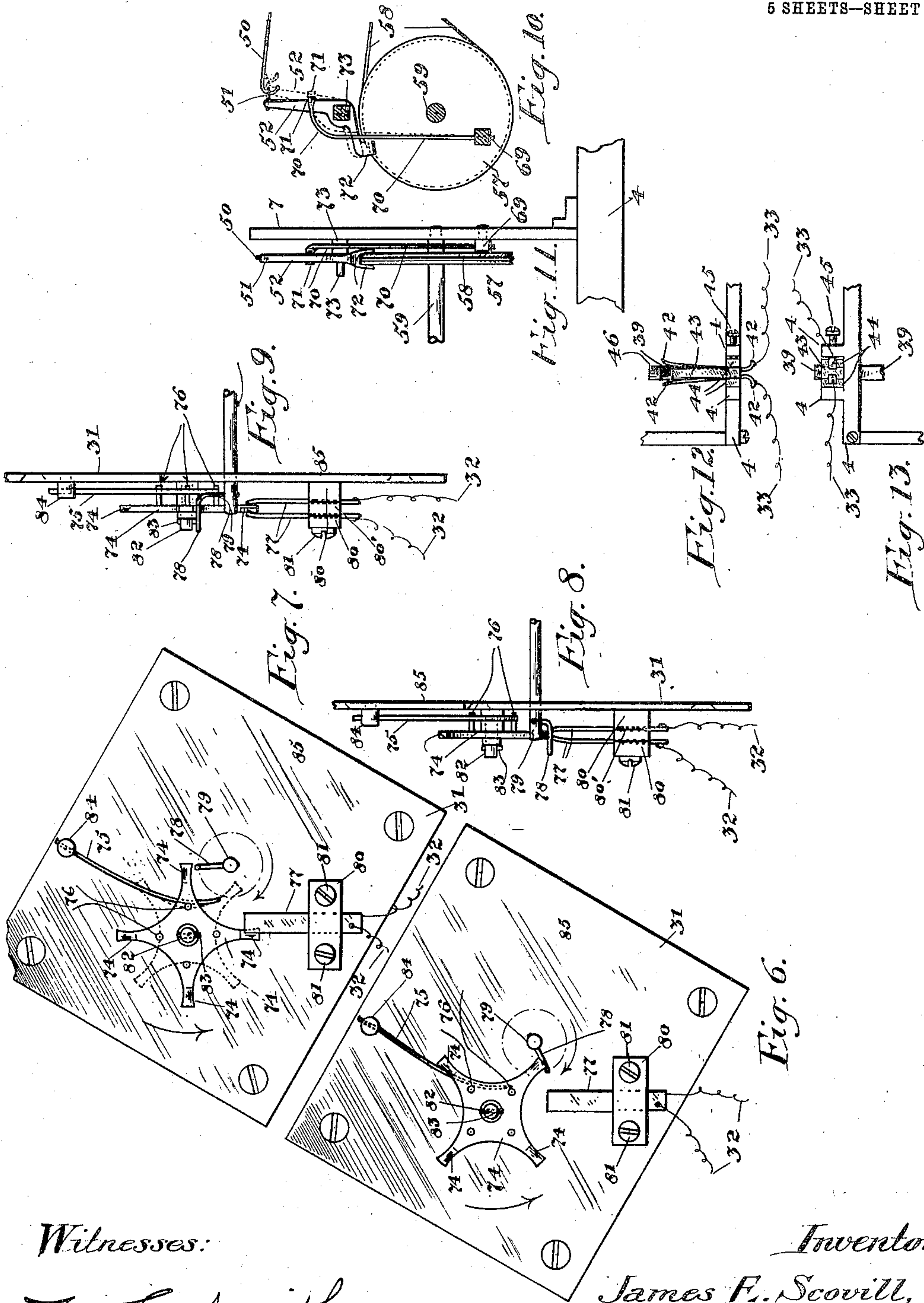
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5 SHEETS—SHEET 4.



Witnesses:

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5 SHEETS—SHEET 5.

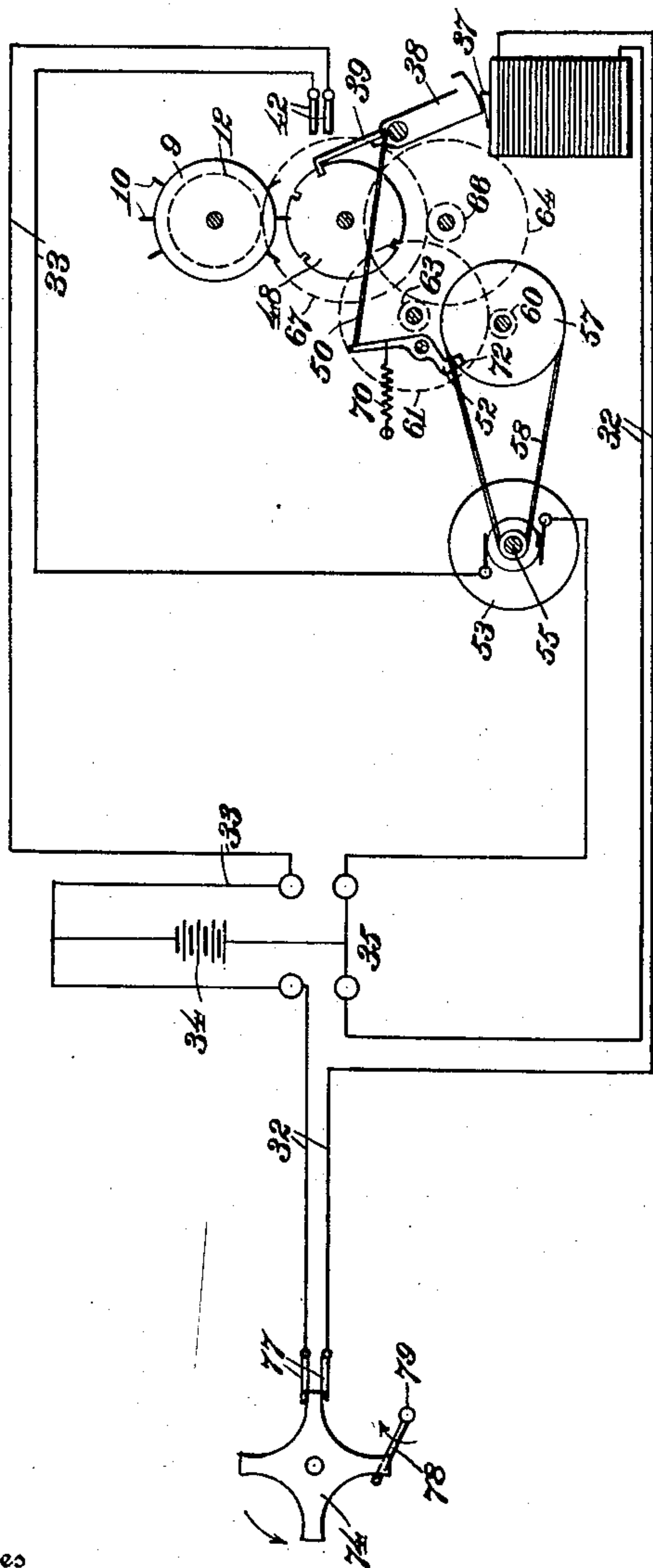


Fig. 14.

Witnesses

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334

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# UNITED STATES PATENT OFFICE.

JAMES E. SCOVILL, OF CHICAGO, ILLINOIS.

## ELECTRIC CHIME.

940,483.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed January 8, 1909. Serial No. 471,280.

*To all whom it may concern:*

Be it known that I, JAMES E. SCOVILL, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Electric Chimes, of which the following is a specification.

My invention relates to improvements in electric chimes, and has for its object to provide a device of this character which shall be inexpensive in construction and thoroughly efficient and reliable in use.

A further object of my invention is to provide a motor adapted to furnish power for actuating the chime mechanism and a suitable energizing means therefor.

A further object is to provide a knife-switch in the motor circuit adapted to be actuated by a relay provided in the circuit from the clock when the current make-and-break device provided in the latter closes the circuit. And a further object is to provide a friction clutch in the gearing of the chime mechanism adapted to stop the movement of the same instantly when the motor circuit is opened by means of the knife-switch.

Other objects will appear hereinafter.

With these objects in view my invention consists in such a novel construction and arrangement of parts all as will be hereinafter fully set forth and more particularly pointed out in the appended claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a side elevation of an electric chime embodying my invention in its preferred form. Fig. 2 is a detail elevation showing the relay actuated knife-switch and wheel-work or gearing. Fig. 3 is a transverse section taken on the line  $x-x$  of Fig. 2. Fig. 4 is an end elevation. Fig. 5 is a section taken on the line  $y-y$  of Fig. 1 showing the hammers and tubular bell suspension. Figs. 6, 7, 8 and 9 are detail elevations showing the action of the clock current make-and-break device. Figs. 10 and 11 are detail elevations showing the friction clutch. Figs. 12 and 13 are also detail elevations showing the relay actuated knife-switch, and, Fig. 14 is a diagram of the circuits.

Referring now to the drawings 1 indicates preferably wood rectangular standards which are adapted to support the main

frame 2, the former resting on a suitable shelf or secured between two walls in any suitable manner. The frame 2 preferably consists of square tubular members, the top and front horizontal members of which are reinforced by square rods 3 which project as shown in Fig. 1, the top rod being rigidly secured in the standards 1, and the rod in the front member resting thereagainst as shown in Fig. 4.

The hammer actuating cylinder frame 4 is provided with rectangular ends 5 and 6, the latter carrying one end of the arbors of the wheel-work or gearing, the rectangular plate 7 being provided and suitably secured to carry the other ends of said arbors. In order to hold the frame 4 in position, four plates 8 are secured to the main frame 2, and the frame 4 is placed between the upwardly extending portions of said plates and held in such position by frictional contact therewith.

The hammer actuating cylinder 9 is provided with radial pins 10 and is mounted on the arbor 11, the gear 12 being secured to said arbor. The arms 13 having portions 14 adapted to contact with and be actuated by the pins 10 are pivoted to the rod 15 secured in the frame 4. Extending vertically from and integral with the arms 13 are rods 16 carrying the hammers 17 which are substantially rectangular metallic blocks having belt contacting pieces 18 inserted therein. The springs 19 secured by the screws 20 are adapted to maintain the rods 16 in a substantially vertical normal position. The contact pieces 18 preferably consist of wooden headed pins 21 covered with leather 22 which is secured thereto by means of wires 23, or these pieces may be simply wood or any other suitable material.

The tubular chime bells 24, 25, 26 and 27 are suspended to U-shaped hooks 28 secured to the frame 2 by means of the cord 29 adapted to pass through perforations 30 in said bells in the manner shown in Figs. 1 and 5.

The chime operating mechanism is electrically connected to a current make-and-break device 31 in a clock, not shown, which is adapted to close the clock circuit 32 every quarter of an hour, a spacing wheel to be described hereinafter being adapted to govern the number of strokes of the chime hammers which are different for every quarter



of the hour in order that the time may be read audibly.

Current is furnished the clock circuit 32 and the motor circuit 33 by the battery 34, said circuits being necessarily arranged in parallel, but it is understood that an independent battery for each circuit may be used if desired. The four binding posts 35 arranged on the base 36 are provided merely for convenience in connecting and disconnecting the hours in the circuits 32 and 33. A relay 37 in the clock circuit 32 is adapted to actuate the oscillating armature 38 when said circuit is closed by the clock make-and-break device 31. The lever 39 is riveted to the armature 38, the latter being rigidly secured to the rotatable arbor 40, and the former serving as the blade of the knife-switch 41. The terminals 42 of the knife-switch 41 in the motor circuit 33 are properly insulated by vulcanite blocks 43 and 44 so that current cannot pass except when the circuit is closed by the lever 39. A set screw 45 is provided to hold the parts of the knife-switch 41 securely in position. A dog 46 is provided on the lever 39 to engage the notches 47 in the spacing wheel 48, the spacing of said notches determining the number of strokes of the chime hammers at each operation of the chime.

A hook 49 is provided on the arbor 40, the connecting rod 50 being provided with an eye to engage said hook and a hook to engage an eye 51 in the friction clutch bell crank lever 52.

The motor 53 is provided with the usual terminals 54, the motor armature shaft 55 being provided with the driving pulley 56 which is connected to the pulley 57 by means of the belt 58. The pulley 57 is secured to the arbor 59 as is also the pinion 60, and the gear 61 mounted on the arbor 62 meshes with said pinion. Mounted on the arbor 62 is a pinion 63 meshing with the gear 64 mounted on the arbor 65, on which is also mounted the pinion 66 which meshes with the gear 67 secured to the arbor 68, and the last named gear driving the cylinder gear 12.

Secured to the member 7 is a block 69 in which a spring 70 is secured which is provided with the hook 71 for normally holding the jaws 72 of the clutch lever 52 in frictional engagement with the periphery of the pulley 57. Also secured to the member 7 is a stud 73 on which the bell crank clutch lever 52 is pivoted, the jaws 72 of said lever being adapted to lock the pulley 57 and the entire mechanism except when released by the magnetic force of the relay 37 acting on the oscillated armature 38. The function of the clutch is to relieve the dog 46 which controls the spacing wheel 48 of undue strain, it being obvious that when said dog is in engagement with a notch 47 that the jaws

72 clutch and lock the pulley 57, and that when the dog releases the spacing wheel 48 the jaws 72 release said pulley instantaneously.

The motor circuit will obviously be closed by the lever 39 when the armature 38 is drawn toward the relay 37, and the motor will drive the mechanism until stopped by the dog 46 engaging the next notch 47 in the spacing wheel 48.

The clock circuit make-and-break device consists of a four armed star wheel 74 and the spring 75 adapted to hold said wheel in the normal position shown in Fig. 6. This position is maintained by means of the curved portion of the spring 75 bearing on two of the four pins 76 spaced at regular intervals on the star wheel 74. In this position of the star wheel 74 no contact is made with the terminals 77 of the clock circuit 32 and therefore the circuit is open. To close the circuit and to actuate the chime at a distance from the clock, a bent pin 78 is provided on a clock arbor 79, which pin is adapted to contact with and to rotate the star wheel 74 approximately one-eighth of a revolution and into the position shown in Fig. 7. In the meantime the spring 75 has been moved to such a position as to be able to complete the necessary quarter revolution of the star wheel by pressure on one of the pins 76. During this quarter revolution of the star wheel 74 one of the arms of the same passes between the terminals 77, thus closing the circuit. Each arm of the star wheel is preferably wedge shaped at its extremity in order that the same may readily pass between and form a positive contact with the terminals 77. The terminals 77 are secured in position by means of the superimposed insulation blocks 80 and 80' and the screws 81. 82 is the star wheel arbor and 83 a pin adapted to retain the star wheel in position. The spring 75 is rigidly mounted on the stud 84 which is securely positioned on the main plate 85.

While I have shown what I deem to be the preferable form of my improved electric chime, I do not wish to be limited thereto, as there might be many changes made in the details of construction and arrangement of parts without departing from the spirit of my invention.

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

1. In an electric chime, a main frame and chime bells attached thereto, a motor circuit and a motor, means actuated by said motor for vibrating said bells, a clock arbor, a clock circuit, a current make-and-break device actuated by said arbor, a relay in said clock circuit, an oscillating armature actuated by said relay and adapted to close



the motor circuit when said relay is energized, and a spacing wheel driven by said motor and provided with peripheral notches to control the time of maintaining the motor circuit closed at each operation of the chime, substantially as described.

2. In an electric chime, the combination of a frame and chime bells mounted therein, with a chime ringing device, a motor, and a train of gearing for actuating said chime ringing device, a motor circuit, a switch in the same, a relay provided with an armature adapted when energized to close said switch, and clock controlled relay energizing means, substantially as described.

3. In an electric chime, a frame, chime bells mounted therein and a plurality of hammers, a hammer actuating cylinder, a motor and a train of gearing connecting said hammer actuating cylinder and said motor, a battery and a motor circuit, a clock circuit, a relay in said clock circuit, an oscillating armature for said relay adapted to close said motor circuit when said relay is energized, a spacing wheel actuated by said motor and having peripheral notches, an extension on the relay armature adapted to engage said notches when the motor circuit is open, substantially as described.

4. In an electric chime, a frame, chime bells mounted therein, and a plurality of hammers, a hammer actuating cylinder, a motor and a train of gearing connecting said hammer actuating cylinder and said motor, a battery and a motor circuit, a clock circuit, a relay in said clock circuit, an oscillating armature for said relay adapted to close said motor circuit when said relay is energized, a spacing wheel actuated by said motor and having peripheral notches, an extension on the relay armature adapted to engage said notches when the motor circuit is open, and a friction brake, actuated by said armature and controlled by said spacing wheel, said brake being adapted to con-

trol said motor and gear, substantially as described.

5. In an electric chime, two standards and a frame supported thereby comprising square tubular members and square reinforcing rods adapted to engage said standards, a hammer actuating cylinder frame mounted in said frame, chime bells, hammers for striking said chime bells, a cylinder for actuating said hammers, a motor and motor circuit and a relay and relay circuit, a relay armature and a blade secured thereto for closing the motor circuit when said relay is energized, a clock and a current make-and-break device in said relay circuit controlled by said clock, substantially as described.

6. In an electric chime, in combination with a frame, a plurality of chime bells, and a like number of hammers, a cylinder for actuating said hammers, a cylinder driving mechanism comprising a motor, a motor circuit, a pulley on the motor armature shaft, a driven pulley belted thereto, a train of gears connecting said driven pulley to said chime hammer actuating cylinder, a clutch lever normally adapted to have frictional engagement with the periphery of said driven pulley and a spring for holding said lever in normal position, a clock circuit and clock actuated means for controlling said circuit, a relay in said clock circuit, an armature actuated by said relay for closing said motor circuit, a connecting rod interposed between said clutch lever and said relay armature, for releasing said clutch simultaneously with the closing of the motor circuit, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES E. SCOVILL.

Witnesses:

HELEN F. LILLIS,  
JANET E. HOGAN.