N. FALLEK.

ELECTRICALLY OPERATED SINGLE OR VIBRATORY GONG RINGING DEVICE.

APPLICATION FILED JUNE 22, 1908.

916,688.

Patented Mar. 30, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

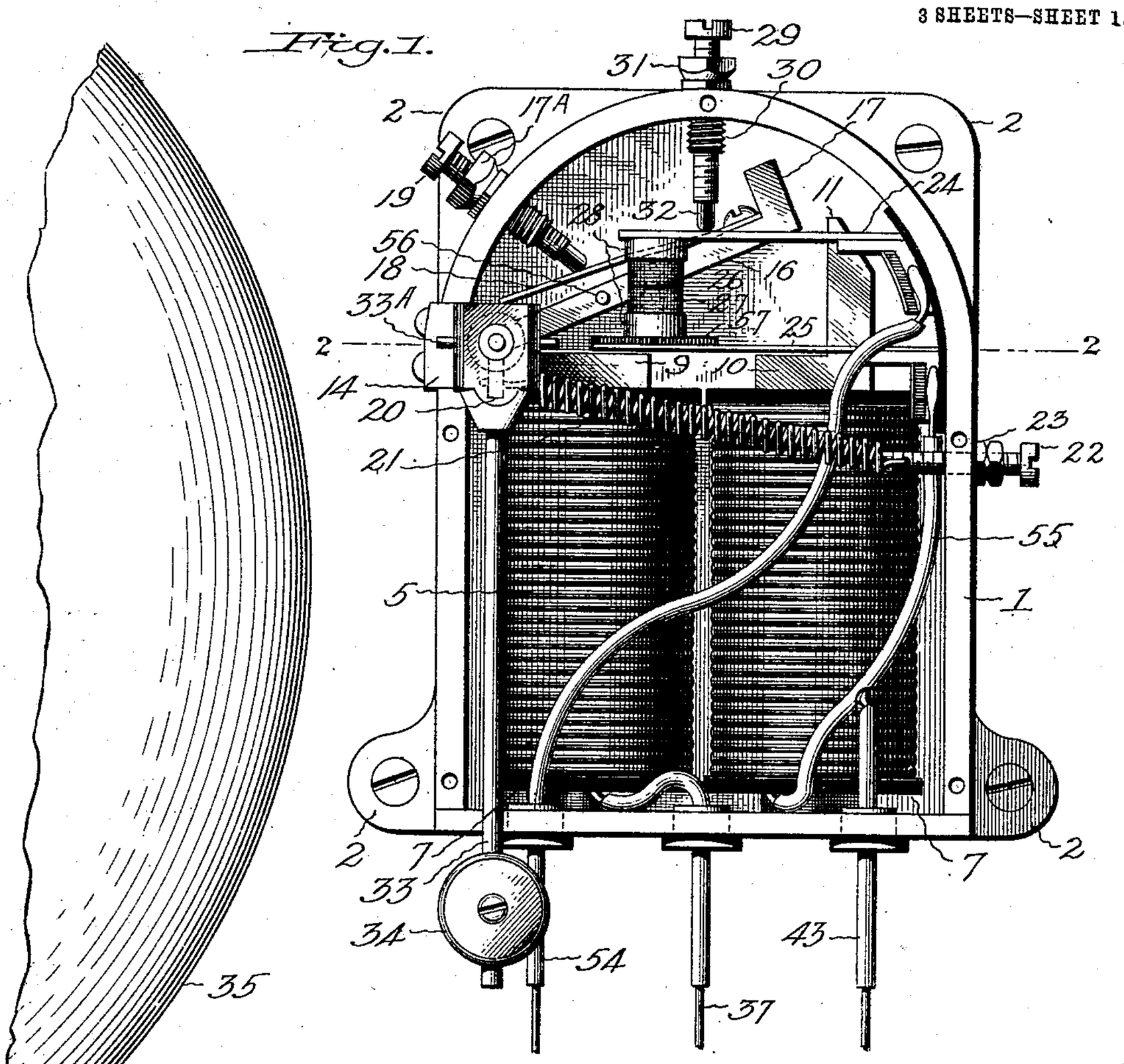
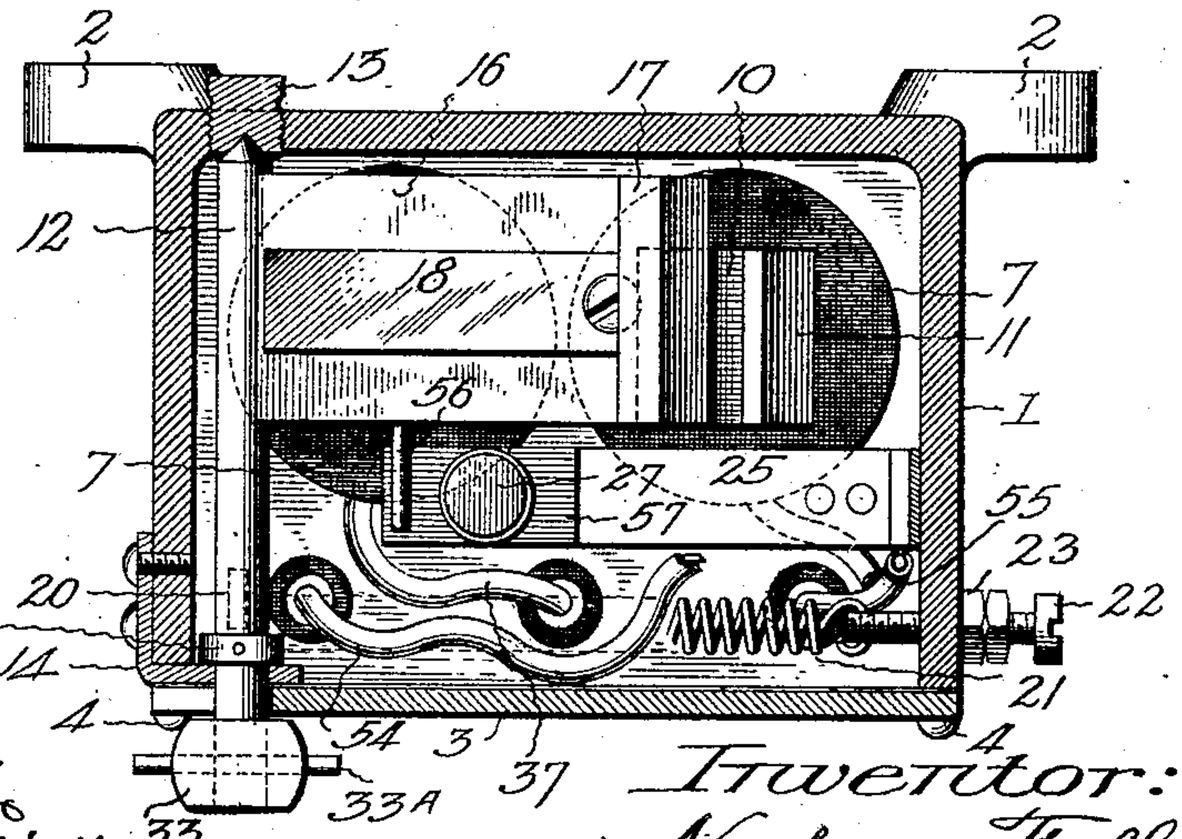


Fig. 2.



Witnesses:

G. Sargent Elliott

E. Hanson Fowle.

Inventor:

Nathan Fallek

By

H. J. Bailey. Attorney.

N. FALLEK.

ELECTRICALLY OPERATED SINGLE OR VIBRATORY GONG RINGING DEVICE.

APPLICATION FILED JUNE 22, 1908.

916,688. Patented Mar. 30, 1909.

3 SHEETS—SHEET 2.

Fig. 3.

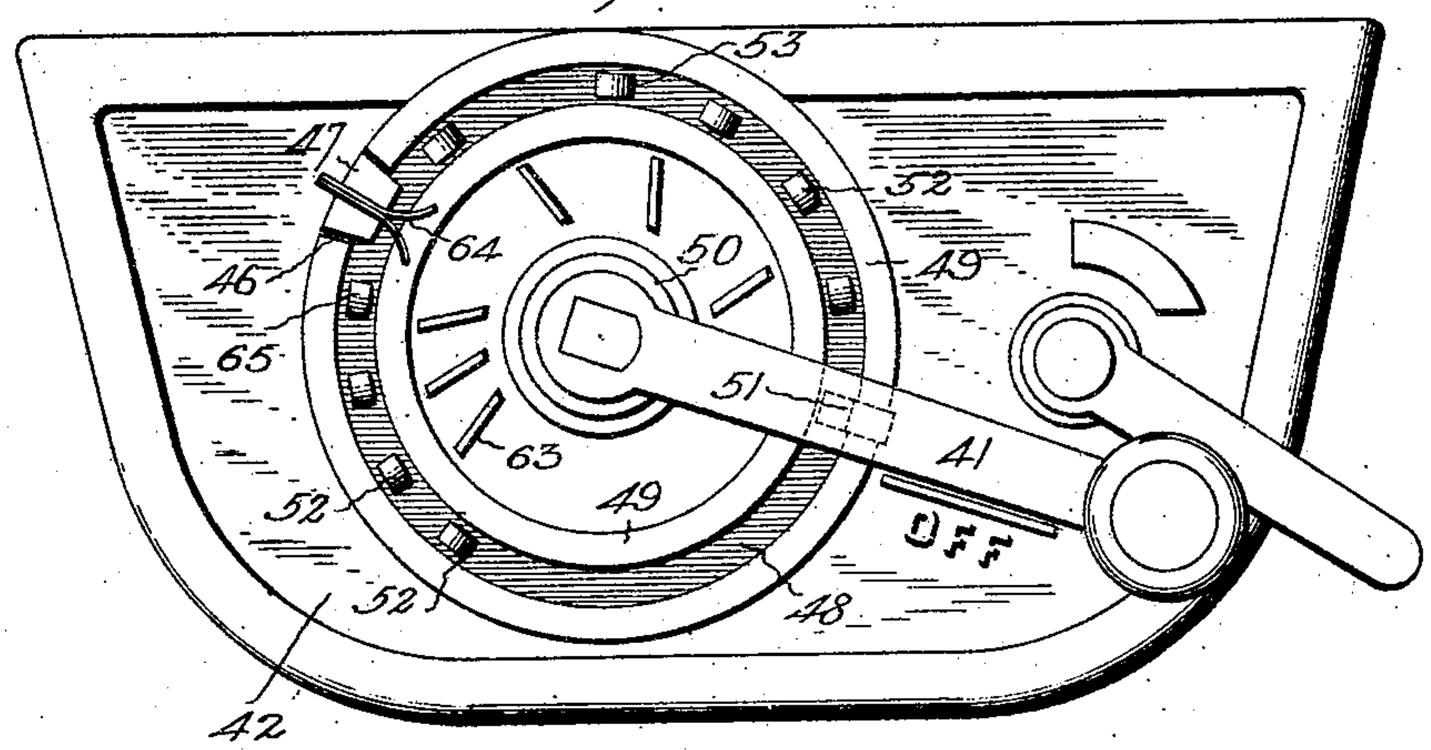


Fig. 4.

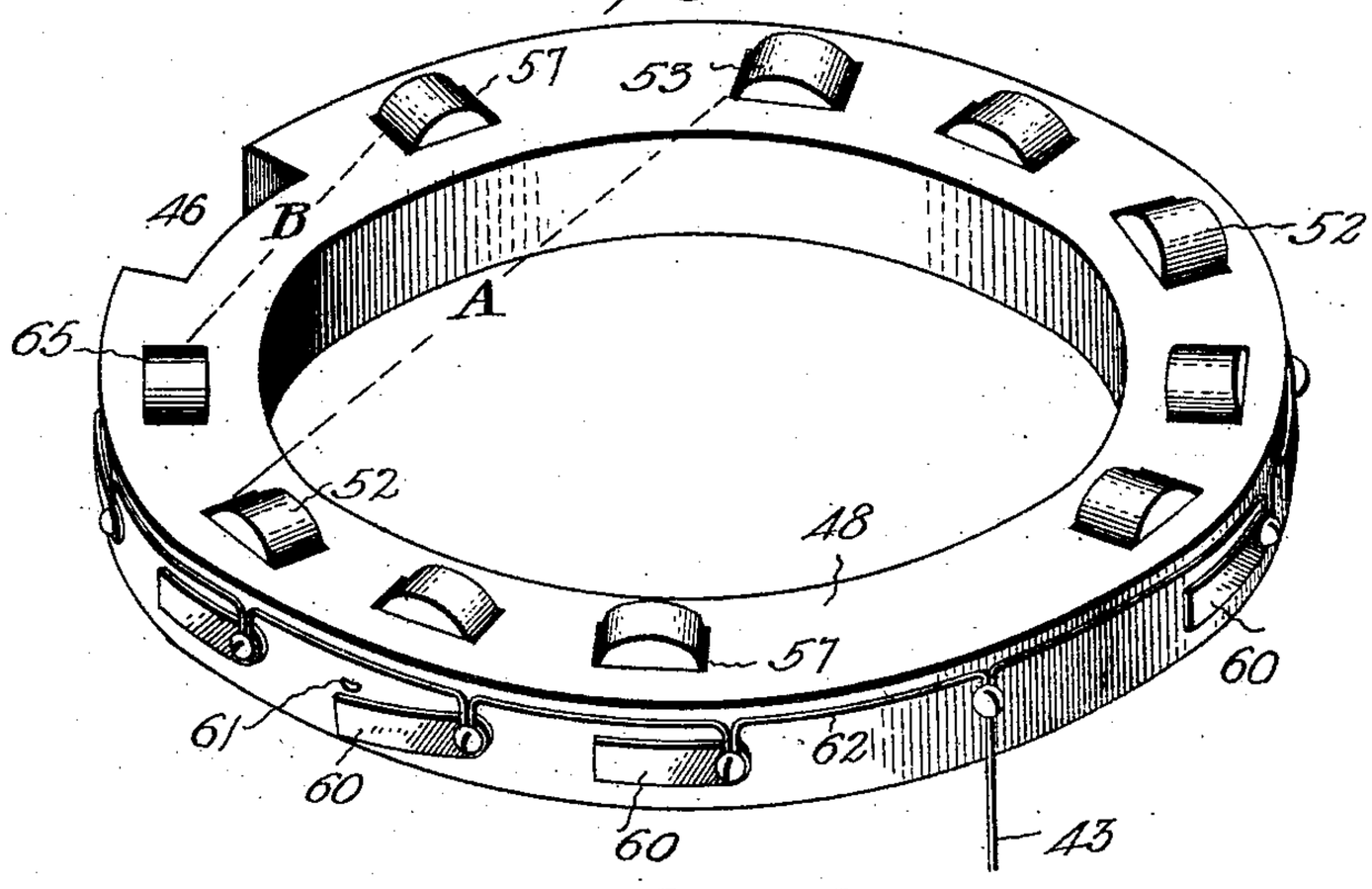


Fig. 5.

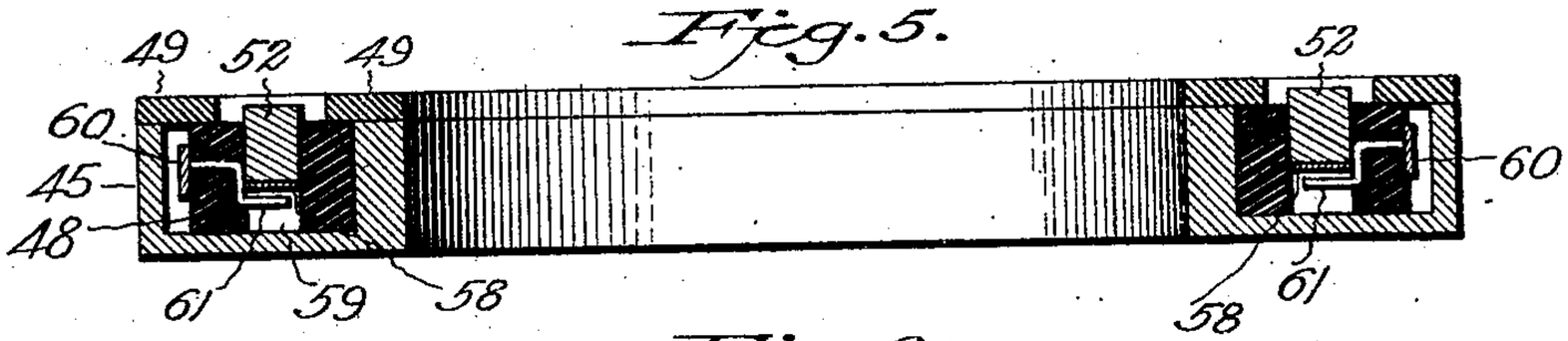
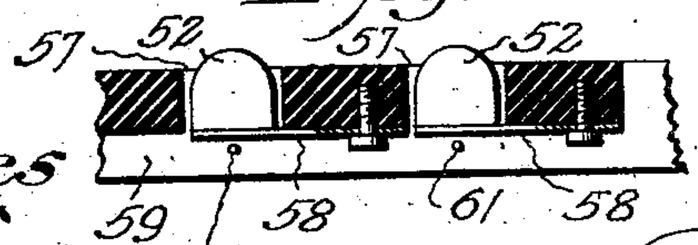


Fig. 6.



Witnesses

J. Sargent Elliott.

E. Mansur Towle.

Inventor:

Nathan Fallek

By

H. S. Bailey.

Attorney.

N. FALLEK.

ELECTRICALLY OPERATED SINGLE OR VIBRATORY GONG RINGING DEVICE.

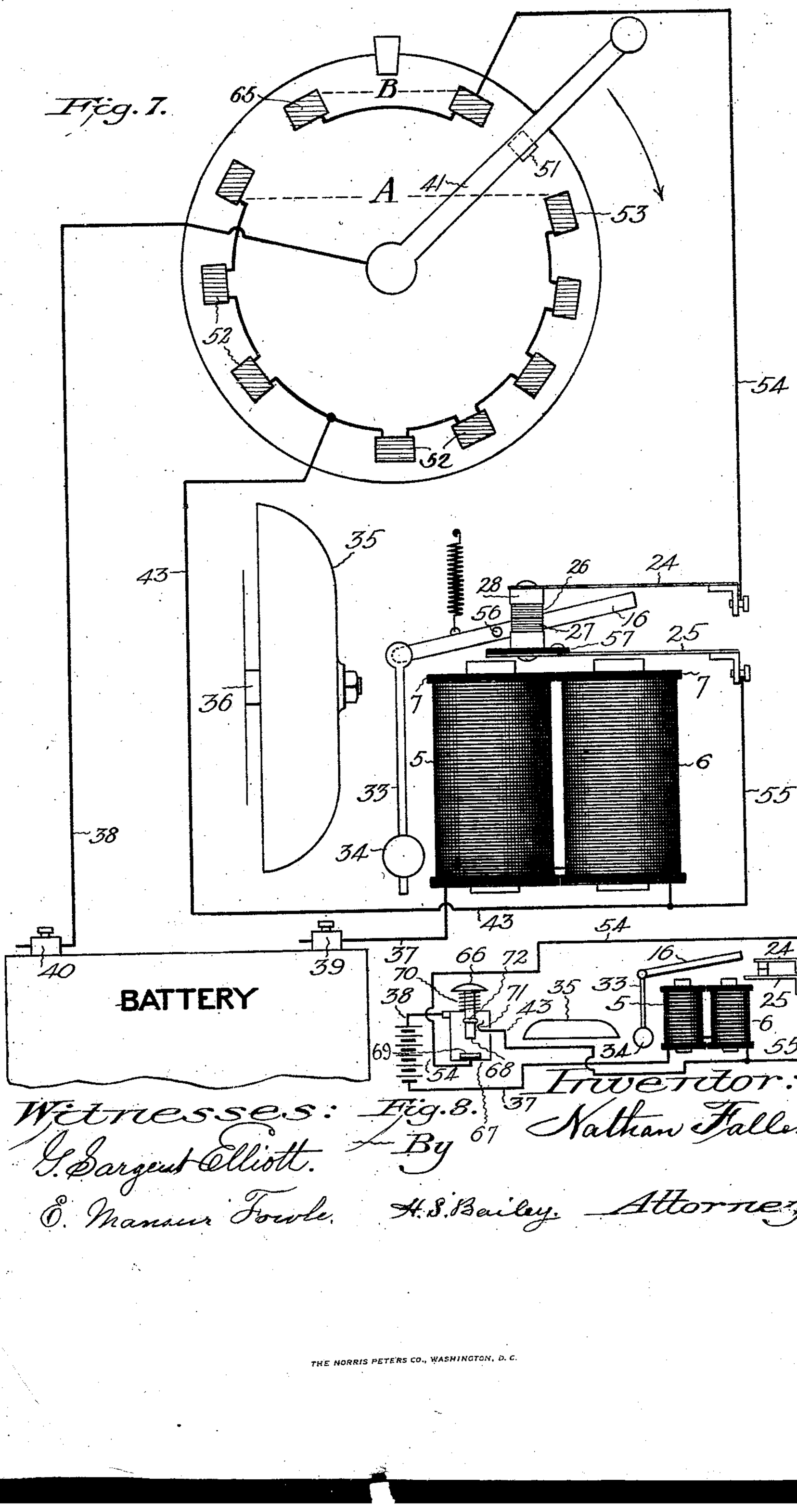
APPLICATION FILED JUNE 22, 1908.

916,688.

Patented Mar. 30, 1909.

3 SHEETS—SHEET 3.

Fig. 7.



Witnesses:
G. Sargent Elliott.
E. Manuer Fowle.

Fig. 8.

Inventor:
Nathan Fallek
By H. S. Bailey.
Attorney.

UNITED STATES PATENT OFFICE.

NATHAN FALLEK, OF DENVER, COLORADO.

ELECTRICALLY-OPERATED SINGLE OR VIBRATORY GONG-RINGING DEVICE.

No. 916,688. Specification of Letters Patent. Patented March 30, 1909.

Application filed January 22, 1908. Serial No. 412,122.

To all whom it may concern:

Be it known that I, NATHAN FALLEK, a citizen of the United States of America, residing in the city and county of Denver and State of Colorado, have invented a new and useful Electrically-Operated Single or Vibratory Gong-Ringing Device, of which the following is a specification.

My invention relates to improvements in automatic electrically operated single or vibratory clapper apparatus for alarm gongs; and the objects of my invention are: First, to provide an automatic electrically operating alarm bell or gong ringing and gong clapper apparatus for street railway cars, that will automatically and continuously ring the gong with a succession of vibratory rings when a car is standing still, unless the motorman holds the crank handle against the stop post of the controller, and which also will ring a single stroke ring of the alarm gong intermittently from the time the motorman starts to turn on the current until the car has started and attained a fair rate of speed. Second, to provide an electrically-controlled automatically operating alarm ringing and gong clapper apparatus, that will enable motormen to continuously sound either a vibratory or a single bell stroke alarm whenever desired. And third, to provide an automatically-operating electrically-controlled alarm gong device that will continuously ring an alarm whenever a motorman fails to hold the switch crank against the stop post of the controller or fails to remove the controller crank from the controller when he leaves the controller, and that will automatically ring a single stroke at a plurality of predetermined points of the circular movement of the controller crank when switching the current on or off the car. I attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Figure 1, is a front elevation of a box or housing which incloses the magnet, armature, and circuit make and break device, forming part of the operating mechanism of the improved electrically operated gong ringing apparatus, the cover for said box being removed. Fig. 2, is a sectional view through the box, on the line 2—2 of Fig. 1. Fig. 3, is a plan view of a controller box such as is commonly employed in connection with electric street cars, showing a non-conducting ring and casing therefor, which ring is provided with a plurality of contacts which connect with a battery and magnet, and which are in position to be engaged successively by a contact on the controller crank. Fig. 4, is an enlarged, perspective view of the non-conducting ring and its contacts, showing the manner of connecting the contacts with each other and with the magnet, and also showing switches for cutting out any one of the contacts. Fig. 5, is a vertical, sectional view through the contact supporting ring and its housing. Fig. 6, is a longitudinal vertical sectional view through a fragment of the ring, showing the manner of securing the contacts in slots within the ring. Fig. 7, is a view in diagram illustrating the manner in which the controller crank engages the contacts, and the manner of connecting the various contacts, in circuit with a battery, and with a magnet, which operates an armature provided with a gong striking hammer. And Fig. 8, is a similar view, showing an arrangement adapted for patrol wagons, ambulances, and the like.

Similar characters of reference refer to similar parts throughout the several views.

Referring to the drawings, the numeral 1, designates a box which incloses a magnet, an armature, and a current make and break device, which features form the principal element of my present invention. This box comprises a metal casing of preferably cast iron, brass, or steel, the back portion of which is provided with feet 2, which are provided with a screw receiving aperture, whereby the box may be secured by screws to any portion of the body of a car or other vehicle or to a building where it is desired to use an alarm gong. The top portion of the box is provided with a cover 3, which is removably secured to it, preferably by screws 4. Inside of the box I place a pair of powerful coil magnets 5 and 6, which I secure in the box in any suitable manner. These magnets comprise round or hollow spools 7, in the axial aperture of which large blocks of solid metal 9 and 10 are placed, which extend through the spools. On the end of the block 10, an upwardly projecting lug 11 is formed, which provides a large strong magnetic pole when magnetized. Adjacent to the core 9 of the oppo-

site coil and spool, I place in the box a stem or shaft 12, which is pivotally mounted at its inner end in an adjustable plug 13, which is screwed into a threaded aperture in the back of the box, and at its outer end in a bracket 14, which is secured to the outer portion of the adjacent side of the box. A collar 15 is secured to the stem 12, adjacent to its outer end, which bears against the inner face of the bracket 14, and the wear caused by the movement of the stem is taken up by adjusting the plug 13. Upon the stem 12 is formed a plate of metal, which constitutes the armature 16, and which extends in front of the magnet cores in position to be attracted by them when the coils are energized. The armature is thick and wide, and thus presents a large area to be acted upon by the magnets. The free end of the armature is provided with a lug of metal 17, which projects upward at right angles to the armature, and lies adjacent to and parallel with the upward projection 11, of the magnet core 10, when the armature is engaged by the magnets, the projections 17 and 11 forming additional metal, which increases the power and efficiency of the magnet. A blade spring 18, is secured at one end to the free end portion of the armature, and its opposite end is engaged by an adjustable screw 19, which is threaded through the adjacent side of the casing and is provided at its outer end with a slotted head to receive a screw driver, by which it may be adjusted, and with a check nut 17A. This spring acts as a buffer cushion to the rearward stroke of the armature.

Upon the pivotal stem 12, is formed a lug 20, to which one end of a coiled spring 21 is connected, the opposite end of which spring is secured in an aperture formed in the free end of an adjustable screw 22, which is threaded through the side of the casing, and is provided with a slotted head portion at its outer end, to receive a screw driver, by which it may be adjusted, and with check nuts 23 to lock it in adjusted position. The spring 21 is arranged to hold the armature under a resilient tension away from the cores of the magnets. Adjacent to the armature and magnets, I secure to the inside of the casing a circuit make and break device, which comprises a pair of spring blades 24 and 25, which are arranged opposite each other at short distance apart, and are provided on the inside of their outer ends with carbon buttons 26 and 27 respectively, which are suitably secured in sockets 28, on the ends of the springs. The carbon terminal 26 is held in an adjusted rigid position by an adjustable screw 29, which passes through a threaded sleeve 30, which is screwed through the shell of the casing, the screw being provided with a slotted head portion adapted to receive a screw driver by which it may be turned into or out of the casing against the spring blade 24, and with a check nut 31, by which it may be set in adjusted positions to hold the carbon terminal 26 in the desired position relatively to the carbon terminal 27. The end of this screw is provided with a non-conducting tip 32. The carbon terminal 27 is arranged to bear with a slight resilient tension of its spring blade against the carbon button 26, thus maintaining a resilient contact connection with the carbon contact point 26. The outer end of the pivotal stem projects beyond the cover 3, of the box 1, and one end of a gong striking clapper 33 is attached to it, preferably by a pin 33A, which passes through registering holes in clapper and in the stem. The opposite end of the clapper is provided with hammer block 34, which is slidably mounted on the clapper, and is provided with a set screw, by which it can be adjustably set at any desired point along the length of the clapper. A gong 35 is placed within the stroke of the clapper, and is mounted on a post 36, which is secured to the car by any suitable means.

A storage battery is preferably used to provide the electric current to operate the clapper apparatus, although if desired the current may be taken from the supply of motive current flowing through the trolley into the car. The storage battery or several of them are placed at any convenient place on the car, and the circuit wires 37 and 38 are connected to the positive and negative poles 39 and 40 respectively of the battery at one end, and are led to and connected at their opposite ends to the clapper apparatus, as follows: The circuit wire 37 connects with the magnet coil 5, and the wire 38 is connected to the negative pole of the battery and extends to and connects with the crank 41 of the electric current controller 42 of the car. A circuit wire 43 extends from the magnet 6 to a ring, which I term the controller ring, which is positioned on top of the controller casing. This controller 42, with its crank 41, are elements that are in common use on electric street railway cars, and they do not by themselves form a part of my invention, but are coöperatively used and connected with it. The controller ring 44, forms an element of Patent No. 864961 issued to me September 3d 1907. The coöperative arrangement of this ring, and the crank, and the circuit wires of the magnet and coil and gong ringing apparatus and the manner of ringing the gong, are entirely different in my present invention, and its construction and arrangement is as follows:

Concentrically around the controller shaft, I secure to the top surface of the controller a ring-shaped box 45. This box is provided with a recess 46, in its peripheral edge, which fits around a stop post 47, which

is formed on the top of the controller casing. This box is made of any suitable material, and incases and holds a non-conducting ring 48, such as fiber or other suitable material, which is laid in it, and is secured in it against movement by a pair of cover rings 49, which are secured to the edges of the box, and which are adapted to lap over the edges of the box onto the fiber ring 48, but are enough narrower than the width of the box to leave a circular space between them. The end of the controller shaft is provided with a suitable crank receiving end portion, and the hub end 50 of the crank handle is provided with an aperture adapted to fit loosely on it. The under side of the handle portion of the crank is provided with a depending lug 51, which I term a contact lug, and which is made to fit loosely into the slot formed between the cover rings 49. This contact lug is also made long enough to extend down into the slot in contact with or in close proximity to the fiber ring, so that as the crank handle is swung around on the controller box in throwing on and off the current, the lower end of its depending lug will be either in bearing contact with the surface of the fiber ring or close to it. This ring is provided with a plurality of circuit contact points 52, which may be arranged in any desired order and distance apart in its circumference, but which I preferably arrange in two groups A and B.

The group A of circuit contact points, commences on the starting side of the stop post 47, and I place the first contact point 53 at a short distance from the stop lug, and the crank handle will contact with it when the said handle is moved far enough to start the car. The contact points are then placed at short equal distances apart for a distance of about one-half of the diameter of the fiber ring.

I have illustrated five contact points in Figs. 3, 4, and 7, which include the point for starting the car, and the point where it is under nearly but not quite full speed and the current is about half on.

The remainder of the group A, comprises three contact points, which are positioned at short intervals, a long interval being left between the fifth and sixth points; consequently there is a portion of the non-conductive ring that is preferably left blank and free from contact points, and this portion represents that portion of the sweep of the crank handle where the current is almost or about wholly thrown in by the crank handle, and the car is under a high rate of speed but not at full speed; and from just before the time the current is first turned on, until the car has started up and attained fairly good speed, the gong only rings a single ring at each contact point of the group A as the crank handle is swung around from the first one 53 adjacent to the stop post, then it passes over the space between the fifth and sixth contacts throwing on more current, after which it contacts successively with the last three contacts, each of which as the crank handle engages it causes the gong to ring only once. The group B, comprises two of these contacts, one on each side of the stop post, and this group B of contact points is used exclusively to ring the gong with a continuous succession of rings known as a vibratory ring, and when the crank handle is in contact with either one of these two contacts, it rings the gong with a vibratory ring, and the crank handle is in constant engagement with them when the car is at rest or at full speed, whenever the motorman through carelessness, neglects to hold the controller crank against the stop post, as will be explained fully hereinafter.

The group of disk contacts B of the ring is connected by a wire 54 to the member 24, of the make and break device, and the member 25 of the make and break device connects by a branch wire 55, with the wire 43, connected with the magnet coil 6. Thus, when the crank handle is in contact with either one or the other of the two disks of the group C, the electric current passes from the negative pole of the battery to the crank handle, and from the crank handle to one or the other of contact disks of the said group B, and thence through the wire 54 to the make and break device, and thence through wire 55 to the magnet coils, and from the magnet coils through the wire 37 to the battery, thus forming a complete circuit, the wire 43, and the contact disks of the group A of disks being cut out of the circuit entirely, and when the crank handle is swung around onto the disks of the two groups A and B, the circuit is formed from the battery through the wire 38 to the crank handle, and from the crank handle to and through any one of these disks and wire 43 to the magnet coils, and from them through the wire 37 to the battery, and the wires 54 and 55, connecting the make and break device, and the two disks of the group B, with the magnet and battery, are out of circuit. The vibratory ringing action of the gong is given by a pin 56, that is secured to the armature in a position to engage the free end of the member 25, of the make and break device, as the armature contacts with the magnet poles, the end of the said member 25 being provided with a non-conducting strip 57, with which the pin 56 contacts. The resilient member 25, normally holds its carbon terminal 27, against the fixed carbon contact 26, but when the armature is attracted by the magnets, its pin 56 strikes the outer end of the member or spring blade 25, and springs it away from the fixed carbon con-

tact, and breaks the circuit for a fraction of a second as the spring 21 instantly draws the armature away from the magnets, and the instant its pin 56 leaves the flexible member 25, it springs against the fixed carbon contact and again closes the circuit, and the magnets again attract the armature, thus causing the clapper to strike the gong with a continuous vibratory action, causing the gong to ring continuously.

The contact points 52 of the non-conductive ring 48, preferably consist of semi-circular shaped disks of any suitable conductive material, which extend loosely up through apertures 57, formed through the ring, and which are secured to the ends of spring blades 58, the opposite ends of which are secured to the bottom of the ring within a groove 59, so that each disk is loosely supported in its respective aperture on a spring, that allows it a resilient movement up and down in its aperture, and each disk is positioned so that a segment of its peripheral surface will project above the top surface of the ring and lie in the path of the lug of the controller crank. These contact points 52 can be connected together in circuit by wires which are secured at the opposite ends from one to the other of these contact points around the ring, and at some convenient point a circuit wire is connected at one end to one of these connecting wires, and extends to and is connected at its opposite end to the magnet coils, as shown in Fig. 7. I preferably arrange these contact points, however, so that one or more of them can be cut out of circuit and from each other, so that the number of gong ringing contacts in the group A may be reduced if desired. In order to accomplish this, I provide each contact point with a switch, which consists of a swinging contact terminal spring blade 60. These spring blades are pivotally hinged at one end to the side of the ring 48, and wires 61 normally contact at one end with them, while the opposite ends of these wires extend through the ring and beneath the spring supported contact points 52, so that they will be engaged by the said points, when the points are pressed down by the contact lug of the controller crank, as shown in Figs. 5 and 6. The pivot screws of the spring blades 60, also connect with a circuit wire 62, which is fixed to the ring, and which extends entirely around the ring, each contact being connected to it through its switch terminal wire 61, and pivoted switch blade 60, and the wire 62 is connected by the wire 43 with the magnet coils, the wire 62 being preferably extended down through a fiber bushing—not shown—placed in the top of the controller.

With either arrangement of connecting the gong ringing contacts in the circuit, the circuit wire 43 is connected at one end to the circuit wire 62 of the gong ringing disks, and at its opposite end to the magnet coils, and the circuit wire 38 is connected at one end to the controller crank, and is extended to and connected at its opposite end to the negative pole of the battery, and from the magnet coils the wire 37 extends to the positive pole of the battery, thus completing the circuit between the single stroke gong ringing disks and the controller crank. These gong ringing disks extend far enough above the top of the non-conductive ring to be engaged by the controller crank in successive order as it is swung around through its operative current switching circle, and as the contact lug of the controller crank engages each contact disk, its curved periphery permits it to spring down as the lug engages and is drawn over it, the gong ringing just once. And if it is desired to cut out any of the disks, it is only necessary to remove the outer cap ring and swing the cut-out terminal spring blade on its pivotal center out of engagement with the wire 61. While I have illustrated this simple method of cutting out any of the disks, my invention contemplates the use of any means for operatively cutting out the disks.

On some street car systems, a checking device is used on the controller, and this device can be used in connection with my invention. It comprises an automatic ratchet and pawl device that limits the movement of the controller crank to a series of short movements, at the end of each of which the controller crank is stopped and has to be moved back slightly before it can be moved ahead again; thus compelling the motorman to turn his current into the resistance of the controller in step-by-step movements of the controller crank, and the resilient contact disks are arranged in positions to be engaged by the contact lug of the controller crank at the point where the controller crank is stopped by this motorneer device. The controller device is arranged to automatically stop the controller crank directly over a circumferential row of radial lugs 63, that are formed on the controller, to indicate the proper step-by-step movement of the controller crank to turn the current into the resistance elements of the controller, and as a guide for the short stop movements of controller crank in turning the current into the resistance elements of the controller. The contact disks may be placed at any desired distance apart, and arranged in any desired manner, and the radial lugs are suitably positioned relatively to the said disks. At a suitable point in the travel of the crank, in the present instance in line with the fifth contact point of the group A the controller is provided with the word "Off", to indicate the current is flowing to the motors of the car independently of the controller's resistance. I thus provide means

by which the motorman may know when he is running his car on a resistance current, as the gong will always ring once when the controller crank is over any of the resistance guide lugs. Motormen are apt to run their cars on the resistance current, and by so doing soon burn out the resistance coils or elements of the controller, and one of the essential elements of my invention is to arrange the group A of contact disks so that the gong always rings as the crank handle contacts with each of the first five contact points when the car is running on the resistance current, and also when it engages each of the remaining contacts when the controller is off from the resistance and the motors are in series.

My automatic gong ringing device is also adapted to compel the motorman to either remove the controller crank from the controller's switch shaft when his car is standing still, or hold it continuously against the stop post or submit to a continuous ringing of the alarm gong, and also to either hold the controller crank against the stop post when his car is running at full speed or submit to a continuous ringing of the gong; consequently, one of its objects is to compel motormen to attend strictly to the proper operation of the controller crank. There are several ways in which this feature of my invention can be accomplished, but I preferably carry out this feature of my invention in the manner described in my former patent above referred to, which is as follows:

To the center of the stop post I secure the lower ends of a pair of blade springs 64, the free ends of which are arranged to be engaged by the controller crank when it is within a short distance of the stop post so that the springs will hold the controller crank far enough away from either side of the stop post to bring its contact lug in engagement with the adjacent contact disk on either side of the stop post, and thus cause the gong to ring. So when the car is standing he must either hold the controller crank continuously against the stop post and against the resilient pressure of the springs 64, where it would be out of contact with the contact disk, or submit to a continuous ringing of the gong, and in case he leaves the controller he must remove the controller crank from the controller shaft or submit to a continuous ringing of the gong, and when the car is running at full speed he must either hold the switch crank up against the stop post continuously against the pressure of the springs 64 or submit to a continuous ringing of the gong. The springs 64 curve out laterally at their free ends, so as to engage the controller crank before it abuts against the stop post, as clearly shown in Fig. 3.

The operation of my invention as applied to street railway car service, is as follows: The motorman on taking charge of the controller puts the controller crank on the controller shaft, and to prevent the vibratory ringing of the gong holds the crank against the stop post, and off of the adjacent contact disk. Upon receiving the signal to go ahead he moves the crank to the contact disk 53, where the gong rings once, and then continues to move it by a succession of short sharp movements to the cut-off indicating point, the gong ringing once at each disk of the group A until the crank handle has reached the cut-off point. The car which was started and got under headway by current flowing through the resistance elements of the controller is when the crank reaches the cut-off running by current flowing directly from the trolley to the motors which at this point are connected in series. The motorman then throws the crank around to the stop post, and this portion of the crank's movement actuates the controller to throw the motors in parallel running relation, and the gong rings once as the crank passes over each contact disk until it reaches the disk 65, of the group B, when it will ring a vibratory ring if stopped on the disk, and will continue to ring until the crank handle is moved off from this disk against the post and is pressed against the stop post, and he must hold the crank against the post by applying a slight but firm constant pressure against it in order to prevent its engaging this disk and ringing constantly, as the instant he releases the pressure on the crank the spring 64 will move it back in contact with the disk and the gong will commence to ring. Consequently, when running and when occasion arises to ring the gong with a vibratory ring, he relaxes the pressure on the crank enough to allow the spring to move it away from the post in contact with the adjacent disk, and then presses it against the stop post when he wants it to stop, and when he wants to stop the car he makes a quick backward sweeping stroke with the crank, until he strikes the opposite side of the stop post again, at which point he must again hold the crank against the stop post or remove the crank, if he wishes to prevent the gong from ringing, or he can keep the gong ringing until he is ready to start by relaxing his pressure on the crank.

My gong ringing clapper apparatus is adapted also for fire-alarm trucks and wagons, and when used for that service a foot button 66 can be inserted in a sleeve 67, which is adapted to be placed in the platform floor of the seat within easy reach of the feet of the driver. The stem 68 of the button and the button are reciprocally mounted in the sleeve. A terminal contact block 69 is placed in the bottom of the sleeve, and a spring 70 is placed on the stem

and arranged to normally hold the lower end of the stem out of engagement with the contact block 69, and the vibrator wire 54 is connected to this contact block, while the battery wire 38 is connected to the sleeve; consequently when the driver wants to ring a vibrating ring of the bell, he places his foot on the button and presses it down until the stem strikes against and rests on the contact block 69, which closes the circuit through the carbon vibrating contact points and the coils and battery, the single bell ringing stroke wire being entirely out of the circuit. This single bell ringing wire 43 is also extended to the inside of the bore of the sleeve, and is provided with a contact terminal portion 71, and the stem of the foot push button is provided with a projecting contact lug 72, that is positioned on it to engage the terminal contact portion of the single gong stroke wire when the foot button and its stem are pressed downward, but a portion of the movement of their full downward stroke. Then if the driver desires to strike a single stroke of the gong he presses his foot on the button and presses it down until the gong rings, which will be when the contact lug 72 on the stem engages the terminal contact 71 of the wire 43. The electric circuit is then through the battery to the sleeve and foot push button and stem to and through the single stroke wire 43 to the magnet coils back of the battery, which attract the magnet, causing the clapper to strike the gong, the vibratory bell striking wire and the carbon vibrators being entirely cut out of this circuit. The driver must raise his foot after each stroke of the gong and again push down every time he wants to strike a single stroke of the gong, but when he wants to ring a continuous vibratory bell he pushes the foot button down and holds it down and the gong will ring continuously as long as he holds the foot push button down.

My invention is also adapted to be used for any alarm bell system where either a single or vibratory alarm is required, and while I have shown it adapted to be operated by a swinging lever switch system for street railway car service, and by a push button switch system for fire alarm service, my invention contemplates the use of it with any type of switch, and for all purposes where a strong reliable loud gong striking apparatus is required.

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

1. An automatic vibratory or single stroke electrical gong ringing device, comprising a controller provided with a stop post and an operating crank, a make-and-break ring on said controller adjacent to said stop post, and in circuit with said operating crank, said ring being provided with groups of terminal contacts, one of which surrounds said stop post, magnet coils connected to one set of contact terminals of said controller, an armature in operative make-and-break relation to said magnet coils, carbon terminal contacts in operative relation to said magnet coils, a circuit wire connecting said carbon terminal points to said stop post's group of contacts of said ring, a battery in circuit with said magnet coils and said carbon contact terminals, and a circuit wire connecting said battery with said operating crank.

2. An automatic vibratory or single stroke gong ringing apparatus, comprising a controller crank and casing, a gong, a battery, and a controller switch in operative relation to said controller crank, said controller switch being provided with two sets of contacts, a gong striking clapper apparatus arranged in operative relation to said gong and battery, and electrically connected to said controller crank and battery, and an electric current circuit wire connected to said clapper apparatus at one end, and with one set of contacts of said controller switch at its opposite end and arranged to cause said clapper mechanism to strike one stroke of the gong at each contact of said controller crank with each of the contacts of one of the groups of contacts of said controller switch, and an electric current wire connected to said clapper apparatus at one end, and at its opposite end to the other group of contacts arranged to cause said clapper apparatus to sound a vibratory bell when said controller crank engages its contacts.

3. In an automatic, electrical gong ringing device for street railway cars, the combination with the current controller having a stop post, and the controller crank, of a non-conducting ring concentric with the sweep of the crank, having a circumferential recess through which the stop post passes; a contact terminal in the ring on each side of and adjacent to the post, connected by a wire, and a plurality of connected terminals arranged around upon the ring in predetermined order from the terminal on one side of the post to the terminal on the opposite side thereof; a gong and battery in circuit with the ring; a clapper for the gong and a clapper operating armature and magnet in circuit with the battery; circuit wires connecting the magnet with the terminals of the ring and with one pole of the battery; a make and break device operated by the armature; circuit wires connecting the make and break device with the terminals on each side of the stop post and with the magnet; and a circuit wire connecting the crank with the opposite battery pole.

4. In an automatic electrical gong ringing device for street electric railway cars, the

combination with the current controller, a stop post on the controller, and the controller crank, of a non-conducting ring secured to the controller concentric with the sweep of the crank; a plurality of connected, resilient contact terminals arranged at suitable intervals on the ring; a terminal on the ring adjacent to the post, connected with a similar terminal on the ring adjacent to the opposite side of the post; a gong and a clapper therefor; a magnet in circuit with a battery and with the plurality of connected terminals; an armature in operative relation to the magnet, and connected with the clapper; a make and break device in position to be operated by the armature, and wires connecting said device with the magnet, and with the two terminals on opposite sides of the post; a contact on the crank for engaging the terminals on the ring; a wire connecting the plurality of connected terminals on the ring with the magnet, and a wire connecting the crank and battery.

5. In an automatic gong ringing device for electric street railway cars, the combination of the current controller, having a stop post, the controller shaft, and a crank removably attached to said shaft, having a depending contact lug; of a non-conducting ring secured to the controller concentric with the shaft; a series of resilient contact terminals positioned in the body portion of the ring; a pair of terminals in the ring adjacent to the post and on opposite sides thereof; a spring secured to the stop post and projecting into the path of the crank to normally hold said crank away from either side of the post so that its contact will rest on one or the other of the adjacent terminals; a magnet in circuit with a battery and with the larger group of terminals on the ring; a circuit wire connecting the battery and crank handle; a make and break device in circuit with the two contacts adjacent to the post and with the magnet; an armature for the magnet in position to engage and operate one member of the make and break device; a gong and a clapper therefor connected with the armature, the contact of the crank with the larger group of terminals causing the gong to ring once for each contact, while a vibratory ring is given when the said crank engages the terminals of the smaller group.

6. In a gong ringing device as specified, the combination with a controller and an operating crank therefor, having a depending contact lug, of a plurality of contacts on said controller, concentric with the sweep of the crank lug and adapted to be engaged by it, said contacts being arranged in independent groups, the contacts of each group being connected; a magnet, an armature in position to be operated by the magnet, having a gong-striking hammer; a circuit make-and-break device, in position to be operated by the armature; circuit wires connecting said make-and-break device with one group of contacts and with the magnet; a circuit wire connecting the other group of contacts and the magnet; and wires connecting the magnet and crank with a source of electric power.

7. In a gong ringing device as specified, the combination with a controller, and an operating crank therefor, having a depending contact lug, of a non-conducting element on said controller; a series of contacts on said non-conducting element arranged in groups concentric with the sweep of the crank lug, the contacts of each independent group being connected; a magnet; an armature in position to be operated by the magnet, having a gong-ringing hammer; a make-and-break device comprising a pair of spring-operated contacts which normally engage, and which are separated by the action of the armature; wires connecting said crank and said magnet with a source of electric power; a wire connecting one group of contacts with one member of the make-and-break device, a wire connecting the magnet with the other member of the make-and-break device and a wire connecting the remaining group of terminals with the magnet.

8. In a gong-ringing device as specified, the combination with a controller and an operating crank therefor, having a depending contact lug, of a series of contacts supported concentric with the sweep of the crank lug, and arranged in groups, the contacts of each group being connected; a magnet, an armature in operative relation to the magnet, having a gong-striking hammer thereon; a pin projecting from the armature; a make-and-break device comprising a pair of contacts, which are supported and held normally in contact by spring arms, one of which is engaged by the armature pin, to break the contact between the said contacts; circuit wires connecting the magnet and the crank with a source of electric power, and circuit wires connecting one of the groups of contacts with one of the arms of the make-and-break device, a wire connecting the other arm of the make-and-break device with the magnet, and a wire connecting the remaining group of terminals and magnet.

In testimony whereof I affix my signature in presence of two witnesses.

NATHAN FALLEK.

Witnesses:

G. SARGENT ELLIOTT,

ADELLA M. FOWLE.