

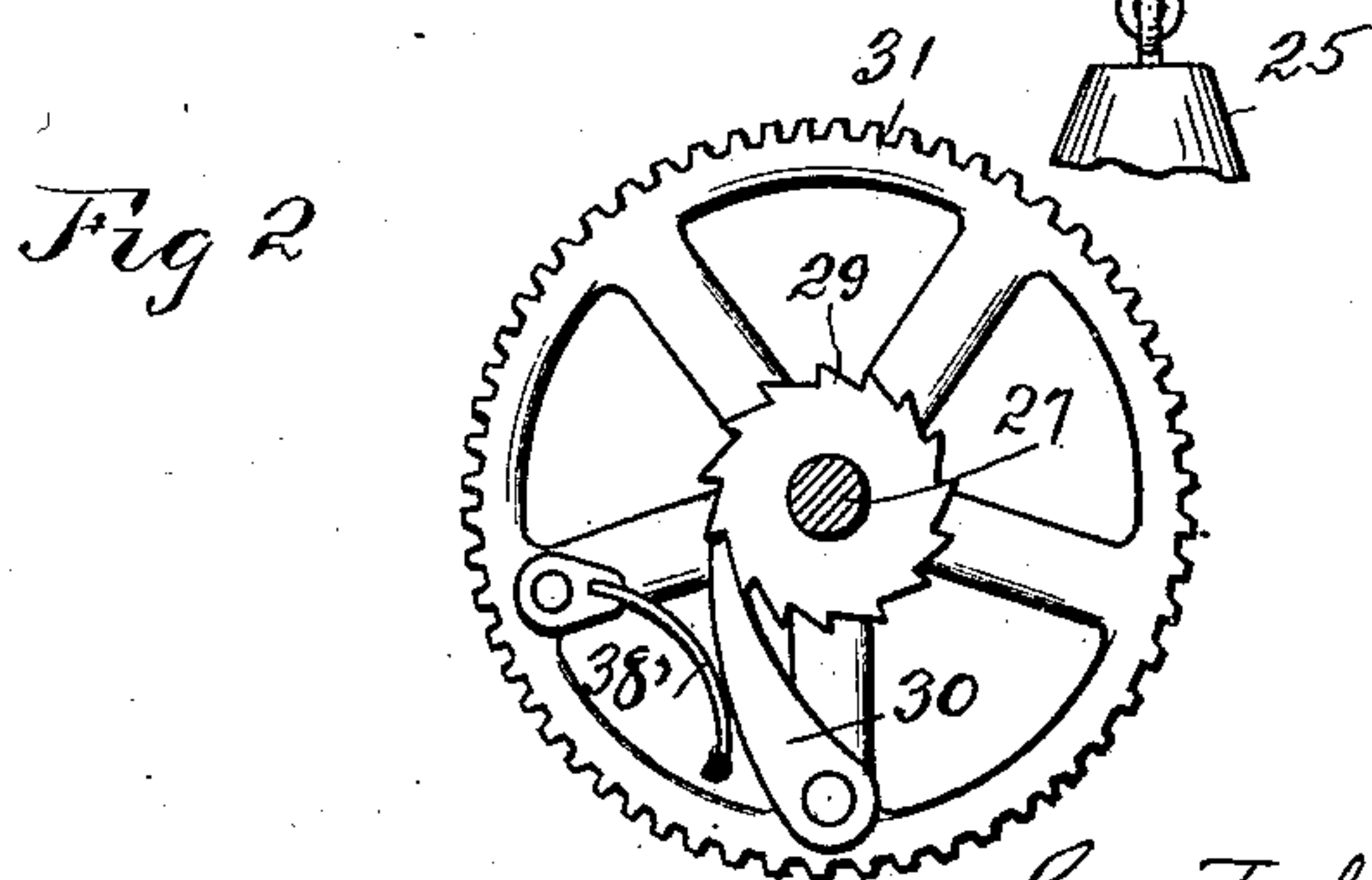
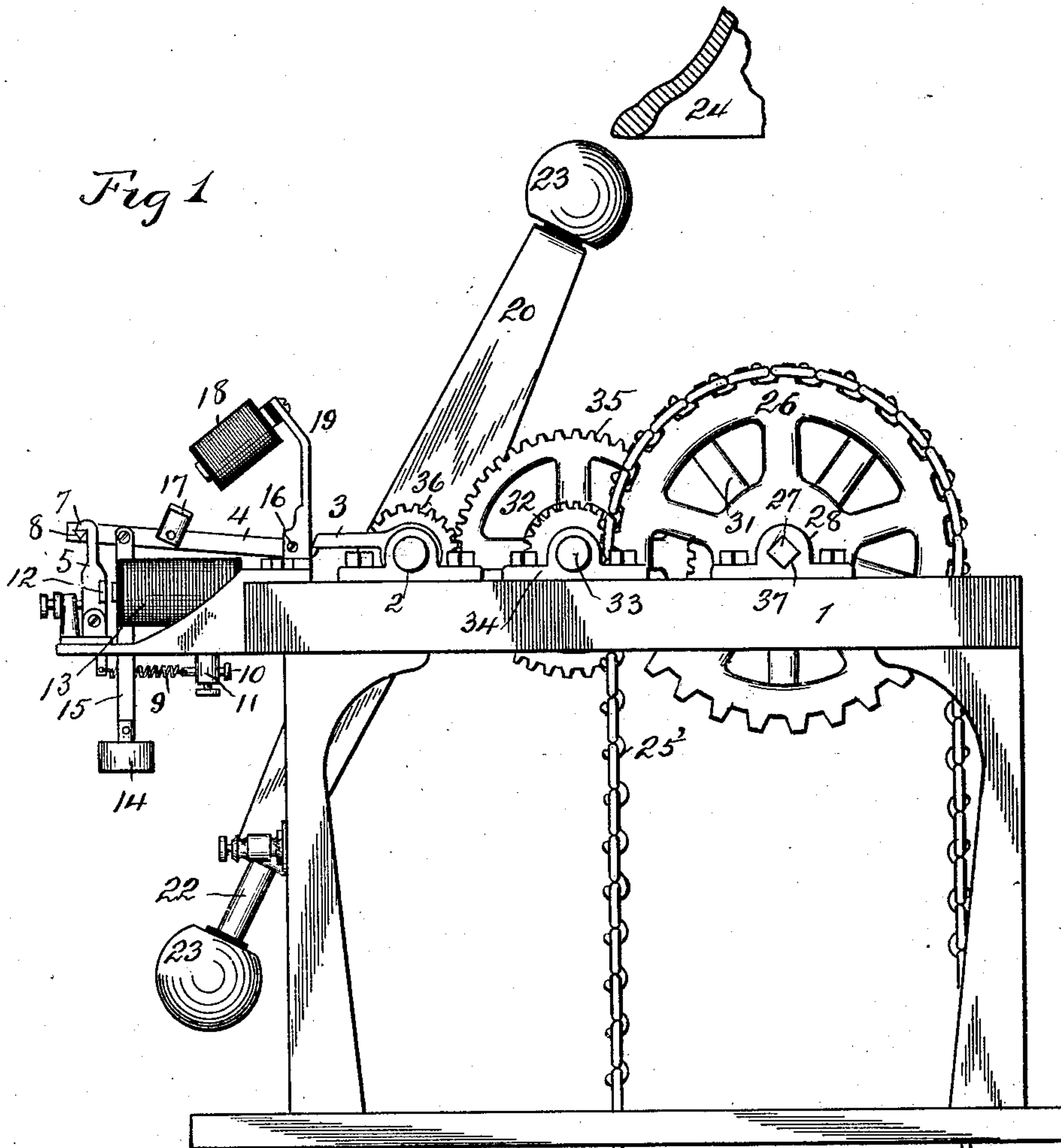
No. 843,058.

PATENTED FEB. 5, 1907.

G. A. ANDERSON & H. O. HARPSTER.  
FIRE ALARM.

APPLICATION FILED JAN. 30, 1906.

2 SHEETS—SHEET 1.



Witnesses

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Inventors

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Their Attorney

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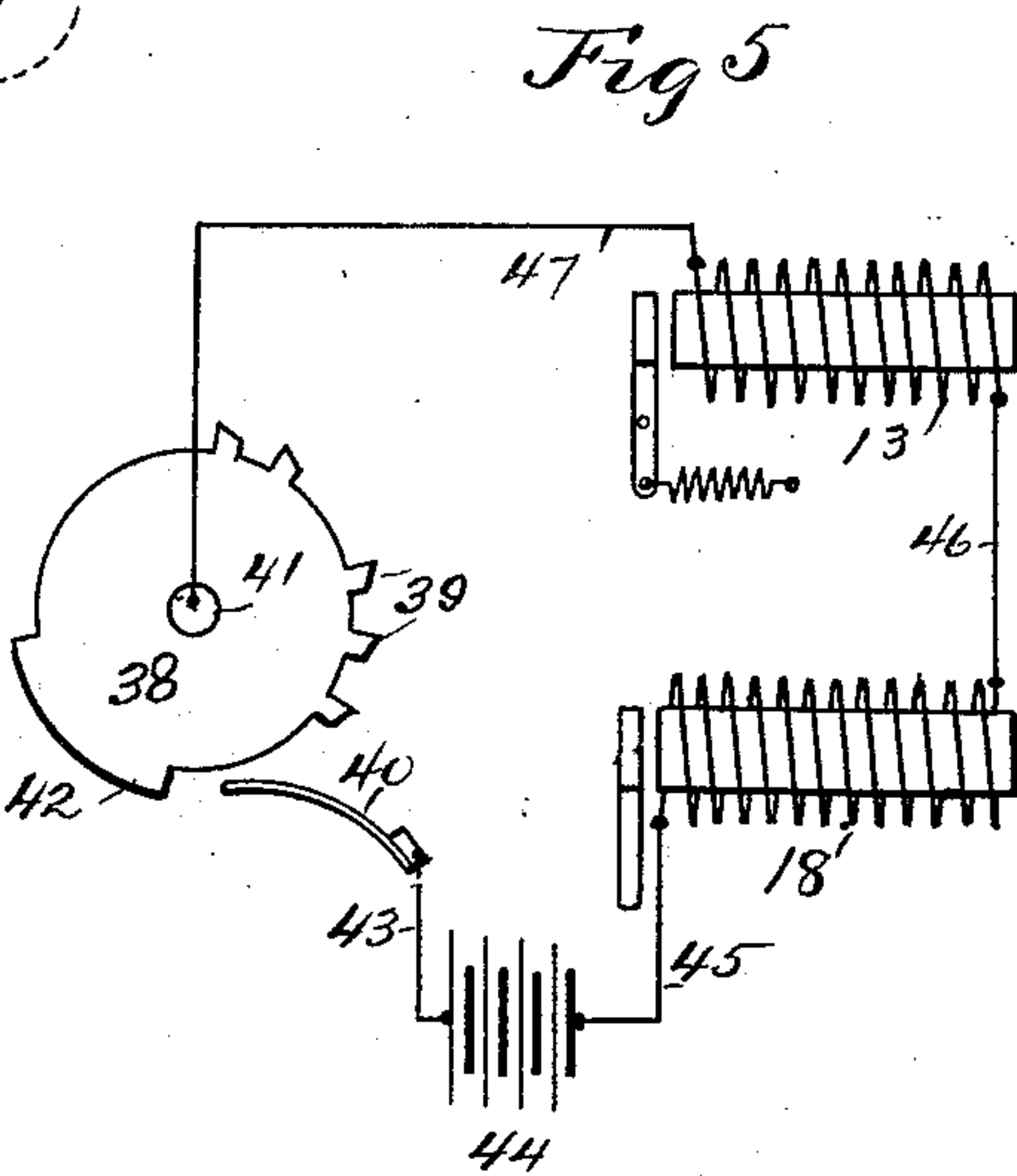
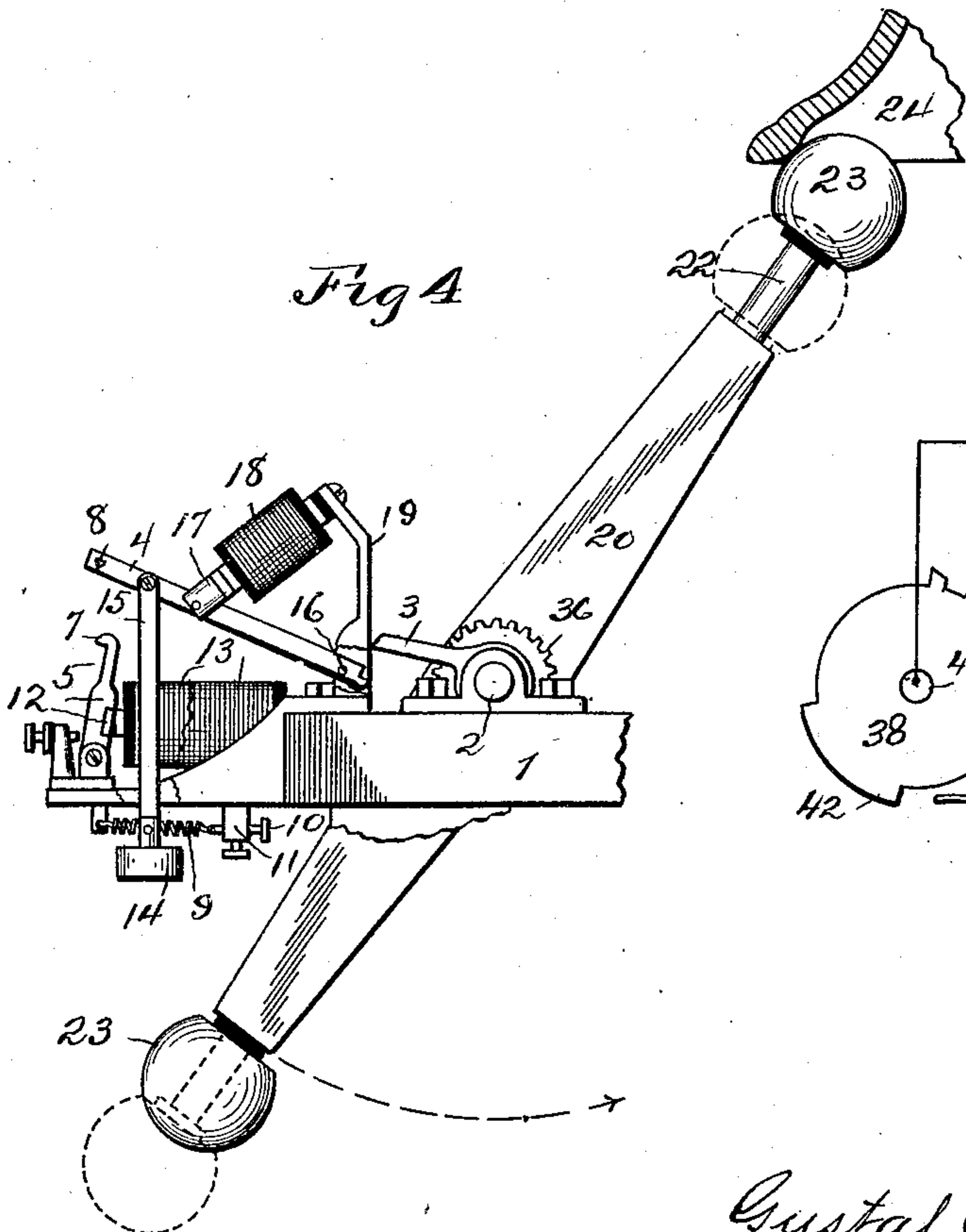
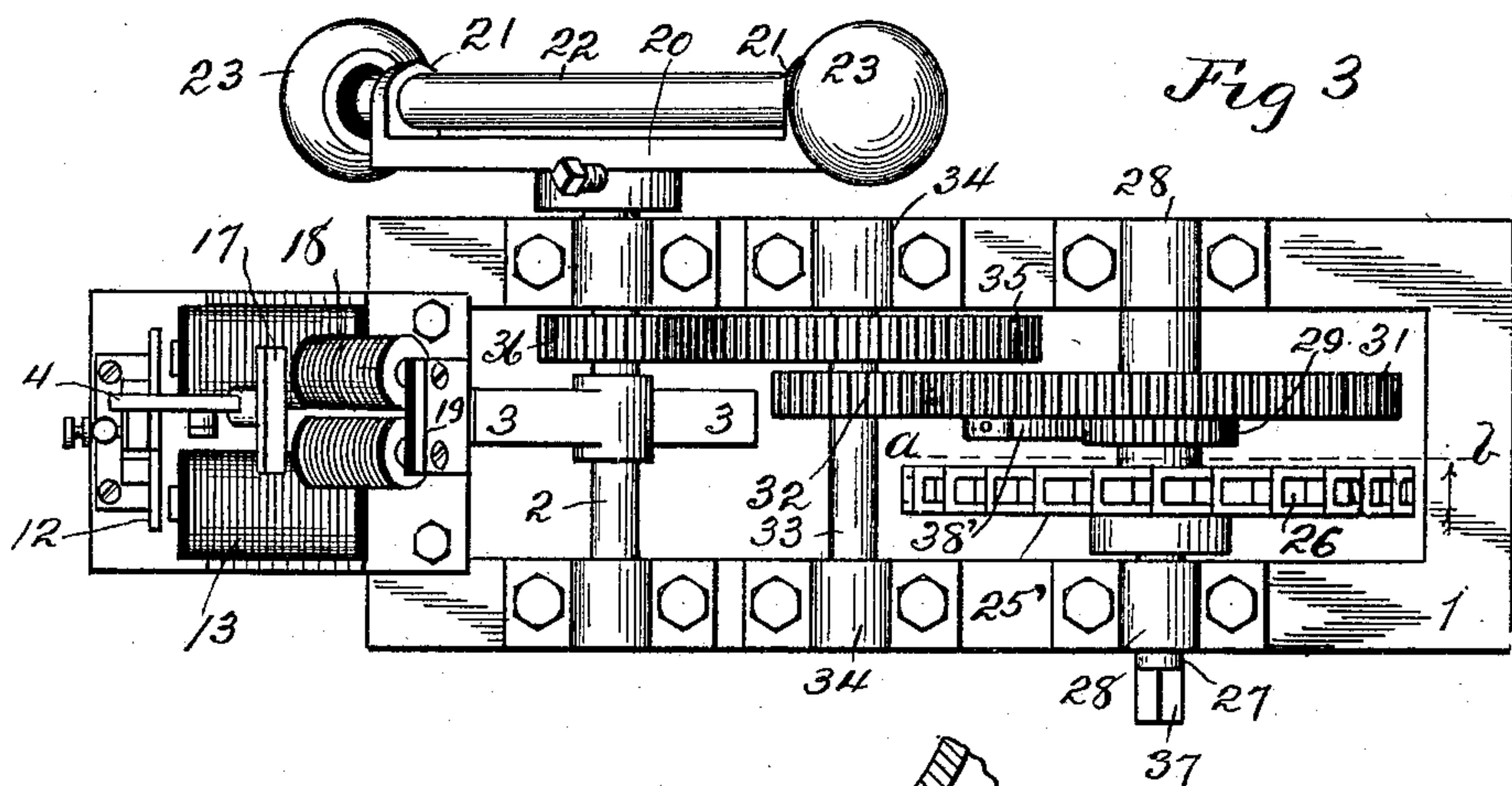
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By *Warren O. Stone*  
Their Attorney



# UNITED STATES PATENT OFFICE.

GUSTAF A. ANDERSON, OF KANSAS CITY, KANSAS, AND HARVARD O. HARPSTER, OF KANSAS CITY, MISSOURI.

## FIRE-ALARM.

No. 843,058.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed January 30, 1906. Serial No. 298,665.

*To all whom it may concern:*

Be it known that we, GUSTAF A. ANDERSON and HARVARD O. HARPSTER, citizens of the United States, residing, respectively, in Kansas City, in the counties of Wyandotte and Jackson and States of Kansas and Missouri, respectively, have invented new and useful Improvements in Fire-Alarms, of which the following is a specification.

Our invention relates to improvements in fire-alarms.

The object of our invention is to provide a fire-alarm apparatus that may be operated by a person distant from the apparatus for sounding the alarm and which is economically maintained, not liable to get out of order, and which may be readily installed in working order at a comparatively small expenditure.

The novel features of our invention are hereinafter fully described and claimed.

In the accompanying drawings, illustrative of our invention, Figure 1 is a side elevation view of the striking apparatus with the striker shown at rest, a portion of a bell being shown in vertical section. Fig. 2 is a vertical sectional view taken on the dotted line *a b* of Fig. 3, showing one of the gears and ratchet-wheel. Fig. 3 is a top view of what is shown in Fig. 1. Fig. 4 is a side elevation view of a part of the striker mechanism, parts of the frame being broken away and the striker shown in solid lines in contact with the bell, a portion of which is shown in vertical section. Fig. 5 is a diagrammatic view of the electric circuit containing the magnets and circuit maker and breaker.

Similar characters of reference denote similar parts.

1 denotes a frame of any suitable construction, on which is rotatively mounted a horizontal shaft 2, carrying two oppositely-projecting arms 3, adapted to bear alternately on one end of a detent comprising, preferably, a lever 4, pivotally mounted on the frame 1, so as to swing to two positions, one in and one out of the path of movement of the arms 3. The lever 4 is normally held in the position shown in Fig. 1 by means of a vertical arm 5, pivotally mounted at 6 upon the frame 1 and having at its upper end a hook 7, adapted to engage a projection 8 on the side of the lever 4 and at the end distant from the arms 3.

To the lower end of the arm 5 is secured one end of a coil-spring 9, the other end of which is secured to a horizontal screw 10, rotatively mounted in a screw-threaded hole provided in a post 11, the upper end of which is secured to the frame 1. Secured transversely upon the arm 5 is an armature 12, located in the magnetic field of an electromagnet 13, mounted on the frame 1 to the rear of or at the right of the arm 5 as viewed in the drawings. The spring 9 normally forces the arm 5 in position for it to engage the projection 8 when the lever 4 is swung to the position shown in Fig. 1. To swing the lever 4 to the said position, a weight 14 is secured to the lower end of a vertical bar 15, which extends through a hole provided in the frame 1 and has its upper end pivotally secured to the lever 4 to the left of the pivotal point 16 of the lever 4.

To retain the lever 4 in the position shown in Fig. 4, in which position the lever is held when it is desired to have the striker make a number of strikes in rapid succession, the lever 4 has secured transversely to its upper side an armature 17, movable when the lever is out of the path of the arms 3, as shown in Fig. 4, into the magnetic field of an electromagnet 18, supported at its rear upper end in an inclined position upon the upper end of an upwardly-extending bracket 19, the lower end of which is secured to the upper side of the frame 1 and the lower end of which is bifurcated and has pivotally mounted upon it at 16 the lever 4.

Upon one end of the shaft 2 is secured the striker-supporting means comprising, preferably, a transverse bracket 20, having two lateral diametrically opposite arms 21, having radial holes in which is slidable a striker-bar 22, the opposite ends of which are provided with heads 23, adapted alternately to strike a gong or bell 24, a part of which is shown in Figs. 1 and 4, which gong or bell is disposed so that when one end of the striker hits it the striker-bar 22 will be inclined, thus permitting the striker-bar to slide downward by gravity to clear the bell.

In Fig. 4 the two positions of the striker-bar 22 upon the support 20 are shown in solid and dotted lines, respectively. The following is a description of the shaft-driving means: 25 denotes a weight secured to one end of a chain 25', mounted on a chain-wheel



26, secured upon and rotatable with a horizontal shaft 27, mounted in suitable bearings 28 on the frame 1. Secured to the shaft 27 is a ratchet-wheel 29, which is engaged by a  
 5 pawl 30, carried by a spur gear-wheel 31, rotatively mounted on the shaft 27 and meshing with a spur gear-wheel 32, secured on a shaft 33, rotatively mounted in bearings 34, secured upon the frame 1. Secured to the  
 10 shaft 33 is a spur gear-wheel 35, meshing with a spur gear-wheel 36, secured upon the shaft 2. The end of the shaft 27 may be squared, as shown at 37, for mounting thereon a crank (not shown) for winding up the  
 15 chain 25', so as to raise the weight 25.

Referring to Fig. 5, 38 represents a circuit maker and breaker comprising a rotatable disk having peripheral teeth 39, adapted to be struck by a contact-spring 40 when the  
 20 disk 38 is rotated on its axial shaft 41. On the periphery of the disk 38 is a long contact-tooth 42. A conductor-wire 43 is connected at one end to the spring 40 and at the other end to one pole of a generator, preferably a  
 25 battery 44, to the other end of which is connected one end of a conductor 45, the other end of which is connected to the electromagnet 18, which is connected by a conductor 46 with the electromagnet 13, which in turn is  
 30 connected by a conductor 47 with the shaft 41. Other means than the means illustrated may be employed for energizing the electromagnets 13 and 18.

In operating our invention, the parts being  
 35 positioned as shown in Fig. 1, when the disk 38 is rotated and the teeth 39 or 42 strike the spring 40 the magnets 13 and 18 will become magnetized. The armature 12 and arm 5 will be drawn toward the magnet 13, thus releasing the lever 4, which will be forced by  
 40 the pressure of the arm 3 to the position shown in Fig. 4, in which position the lever 4 will be out of the path of movement of the arms 3, and the shaft 2 will then be permitted  
 45 to rotate by reason of the weight 25, chain 25', chain-wheel 26, shaft 27, ratchet-wheel 29, pawl 30, and gears 31, 32, 35, and 36. A spring 38', secured to the side of the gear-wheel 31, bears upon the pawl 30 and retains  
 50 it engaged with the ratchet-wheel 29. The shaft 2 will be rotated opposite to clockwise. The lower head 23 will be swung around toward the bell 24 and will be retained by centrifugal force in position for striking the bell.  
 55 As soon as the bell is struck movement of the shaft 2 is temporarily suspended and the striker-bar will slide downward until the head, which is now uppermost, will clear the bell 24. If at this time the spring 40 has  
 60 been upon a narrow tooth 39, it will have passed from the tooth, thus deenergizing the magnet 13 and the magnet 18 and permitting the spring 9 to retract the arm 5 to a position in which the hook 7 will engage the projec-  
 65 tion 8, thus locking the lever 4 in the position

shown in Fig. 1. In this position the opposite arm 3 will strike the lever 4 upon the continued rotation of the shaft 2 after the striker-bar has left the bell. If the spring 40  
 70 should be on the wide tooth 42, the magnet 18 will be energized when the arm 3 arrives at the position shown in Fig. 1, and the lever 4 will be held out of the path of movement of the arm 3. The shaft 2 will continue to rotate, and the striker-bar will alternately  
 75 strike at its opposite ends upon the bell 24 until the spring 40 passes off the contact 42. The magnet 18 will then be deenergized, and the armature 17 being released from the magnet 18 will permit the weight 14 to swing  
 80 the lever 4 to the position shown in Fig. 1.

The bell 24 should be positioned so that the heads 23 of the striker-bar 22 will strike the bell before the arms 3 strikes the lever 4. The bell will then absorb the momentum of  
 85 the moving parts, and the arms 3 will strike lightly upon the lever 4.

It will be obvious that any desired means may be employed for transmitting the electrical impulses to the magnets 13 and 18, it  
 90 being essential only that the impulses be properly spaced and of the proper duration for the two purposes described.

As shown in Fig. 2, the pawl 30 may be retained in engagement with the ratchet-wheel  
 95 39 by means of a spring 38', having one end secured to the gear-wheel 31 and the other end bearing upon the said pawl.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination with a bell or gong, of a rotatable striker-support, and a striker carried by said support and movable to and from a position in which it will strike the bell  
 105 or gong, the striker being retained, when rotated, by centrifugal force in position for striking the bell or gong, the striker after each striking operation being moved by gravity from contact with the bell or gong.

2. The combination with a bell or gong, of a rotatable striker-support having an arm, means for rotating said striker-support, a striker-bar movable upon said support to and from a position in which opposite ends of  
 115 the bar will alternately strike the bell or gong when the support is rotated, the bar being moved by gravity so as to clear the bell after each striking operation, the bar being retained in the striking position by centrifugal  
 120 force, a detent movable to and from a position for engaging said arm for preventing rotation of said striker-support, releasable locking means for retaining said detent in position for engaging said arm, electromag-  
 125 netically-operated means for releasing the detent from the locking means, and electromagnetically-operated means for holding the detent in position for clearing said arm.

3. The combination with a bell or gong, of



a rotatable striker-support having an arm, means for rotating said striker-support, a striker-bar rotatable with said support and slidable thereon to and from a position in which it will strike the bell or gong when the support is rotated, the striker-bar being retained by centrifugal force in the striking position and movable by gravity after striking from such position, a detent comprising a lever pivoted so as to swing to and from a position supporting said arm, means for moving said lever to the said position, releasable means for locking the lever in the said position, electromagnetic means for releasing the lever from said locking means, and electromagnetic means for holding the lever out of the path of movement of said arm.

4. The combination with a rotary shaft having an arm, of means for rotating said shaft, a gong or bell, a support on said shaft and rotatable therewith, a striker-bar slidable to and from positions in which the opposite ends will alternately strike the bell or gong when the support is rotated, said bar being retained on the support by centrifugal force in position for striking and movable by gravity out of contact with the bell or gong, a lever pivoted so as to swing to and from a position supporting said arm and movable out of said position by said arm, electromagnetic means for retaining said lever out of said position, means for swinging said lever to said position, and electromagnetically-controlled means for holding the lever in said position.

5. The combination with a rotary shaft having an arm, of means for rotating said shaft, a gong or bell, a support carried by said shaft and rotatable therewith, a striker-bar radially slidable upon said support and extending radially in opposite directions from the shaft, said bar being slidable to and from positions in which opposite ends will alternately strike the gong or bell, the bar being retractable after striking from such positions by gravity, a lever pivoted so as to swing to and from a position supporting said arm, and movable out of said position by said arm, electromagnetic means for retaining said lever out of said position, means for moving said lever to said position, automatically-operated means for locking said lever in said position, and electromagnetic means for operating the said locking means to release the lever.

6. The combination with a rotary shaft having an arm, of means for rotating said shaft, a bell or gong, a striker rotatable with said shaft and positioned so as to strike said bell or gong, a lever pivoted so as to swing to and from a position supporting said arm, means for moving said lever to said position, releasable means for locking the lever in said position, electromagnetic means for operat-

ing said locking means to release the lever, and electromagnetic means for holding the lever out of said position.

7. The combination with a rotary shaft having an arm, of means for rotating the shaft, a bell or gong, a striker rotatable with the shaft and positioned so as to strike said bell or gong, a lever pivoted so as to swing to and from a position supporting said arm, means for moving said lever to said position, automatically-operated means for engaging and locking said lever in said position, an electromagnet, means by which when said magnet is energized said locking means will be operated to release the lever, a second electromagnet, means by which when said lever is moved from said position and the second electromagnet is energized, the lever will be held out of said position, and means for energizing said magnets.

8. The combination with a rotary shaft, of means for rotating said shaft, striker-bar-supporting means carried by said shaft, a striker-bar radially slidable upon said supporting means, a gong or bell positioned so as to be struck by said striker-bar when the bar is rotated with the shaft, a lever, means carried by the shaft for engaging said lever to prevent rotation of the shaft when the lever is moved to a certain position, means for moving said lever to said position, releasable means automatically operated for locking the lever in said position, electromagnetic means for operating said locking means to release the lever, an electromagnet, means for energizing said electromagnet, and an armature carried by the lever and movable to a position to be held by said electromagnet when the lever is swung to a position in which the shaft will be free to rotate.

9. The combination with a bell or gong, of a rotary shaft having an arm, a striker-bar support carried by the shaft, a striker-bar intersecting the axis of rotation of the shaft and slidable radially back and forth by gravity the bar being positioned so that when its support is rotated the bar will have its ends alternately strike said bell or gong, the bar being movable by gravity so as to have the striking end clear the bell or gong after each striking operation, a lever pivoted to swing to and from a position in which it will support said arm and prevent rotation of said shaft, means for moving said lever to said position, automatic locking means for engaging and holding the lever in said position, electromagnetic means for operating the locking means to release the lever, an electromagnet, means for energizing said electromagnet, and an armature carried by the lever and movable to a position to be held by said electromagnet when the lever is swung to a position clearing said arm.

10. The combination with a gong or bell, of a rotating striker, means for rotating said



striker, a lever, means by which said lever may be moved to a position for holding the striker-rotating means from operation, means connected with the striker-rotating means for engaging the lever when it is moved to the said position, releasable means for locking the lever in the said position, electromagnetic means for operating the locking means to release the lever, an electromagnet, means for energizing said electromagnet, and an armature carried by the lever and movable therewith to a position in which the armature will be held by said magnet when the lever is swung so as to release the striker-rotating means.

11. The combination with rotary shaft having an arm, of means for rotating said shaft, a bracket carried by and rotatable with said shaft and provided with two diametrically opposite arms each having a radial hole, a striker-bar slidable endwise in said holes, a bell or gong positioned so as to be struck alternately by opposite ends of said striker-bar, a detent movable to and from a position in the path of movement of said arm, means for moving said detent to said position, releasable means for locking the detent in said position, electromagnetic means for operating the locking means to release the detent, and electromagnetic means for holding the detent away from said position.

12. The combination with a rotary shaft having an arm, of means for rotating said shaft, a diametrically slidable bar carried by and rotatable with said shaft and movable back and forth to positions in which opposite ends will be alternately in the striking position, a detent movable to and from a position in the path of movement of said arm, means for moving said detent to said position, releasable means for locking the detent in said position, electromagnetic means for operating the locking means to release the detent, and electromagnetic means for holding the detent out of said position.

13. The combination with a rotary shaft having an arm, of means for rotating said shaft, a striker carried by and rotatable with said shaft, a detent movable to two positions one in and one out of the path of movement of said arm, the detent being movable out of the path of movement by said arm, means

for moving the detent into the path of movement of said arm, two electromagnets forming part of an electric circuit, means by which said electromagnets respectively control the holding of said detent in said two positions, an electric generator forming part of said circuit, and means for making and breaking said circuit.

14. The combination with a rotary shaft having an arm, of means for rotating said shaft, a gong or bell, a striker-support carried by said shaft, a striker-bar movable to positions on said striker-support in which the opposite ends of the striker-bar will alternately strike the gong or bell when the shaft is rotated, a detent movable to two positions one in and one out of the path of movement of said arm, the detent being movable out of said path by the arm, means for moving the detent into said path, two electromagnets forming part of an electric circuit, means by which said electromagnets respectively control the holding of said detent in said two positions, an electric generator forming part of said circuit, and means for making and breaking said circuit.

15. The combination with a rotary shaft having an arm, of means for rotating said shaft, a gong or bell, a striker-support carried by and rotatable with said shaft, a striker-bar radially slidable upon said support to positions in which opposite ends will alternately strike said gong or bell when the shaft is rotated, a detent movable to two positions one in and one out of the path of movement of said arm, the detent being movable by said arm out of said path, means for moving the detent into said path, two electromagnets forming part of an electric circuit, means by which said electromagnets respectively control the holding of said detent in said two positions, an electric generator forming part of said circuit, and means for making and breaking said circuit.

In testimony whereof we affix our signatures in presence of two subscribing witnesses.

GUSTAF A. ANDERSON.

HARVARD O. HARPSTER.

Witnesses:

WARREN D. HOUSE,

HENRY F. ROSE.