

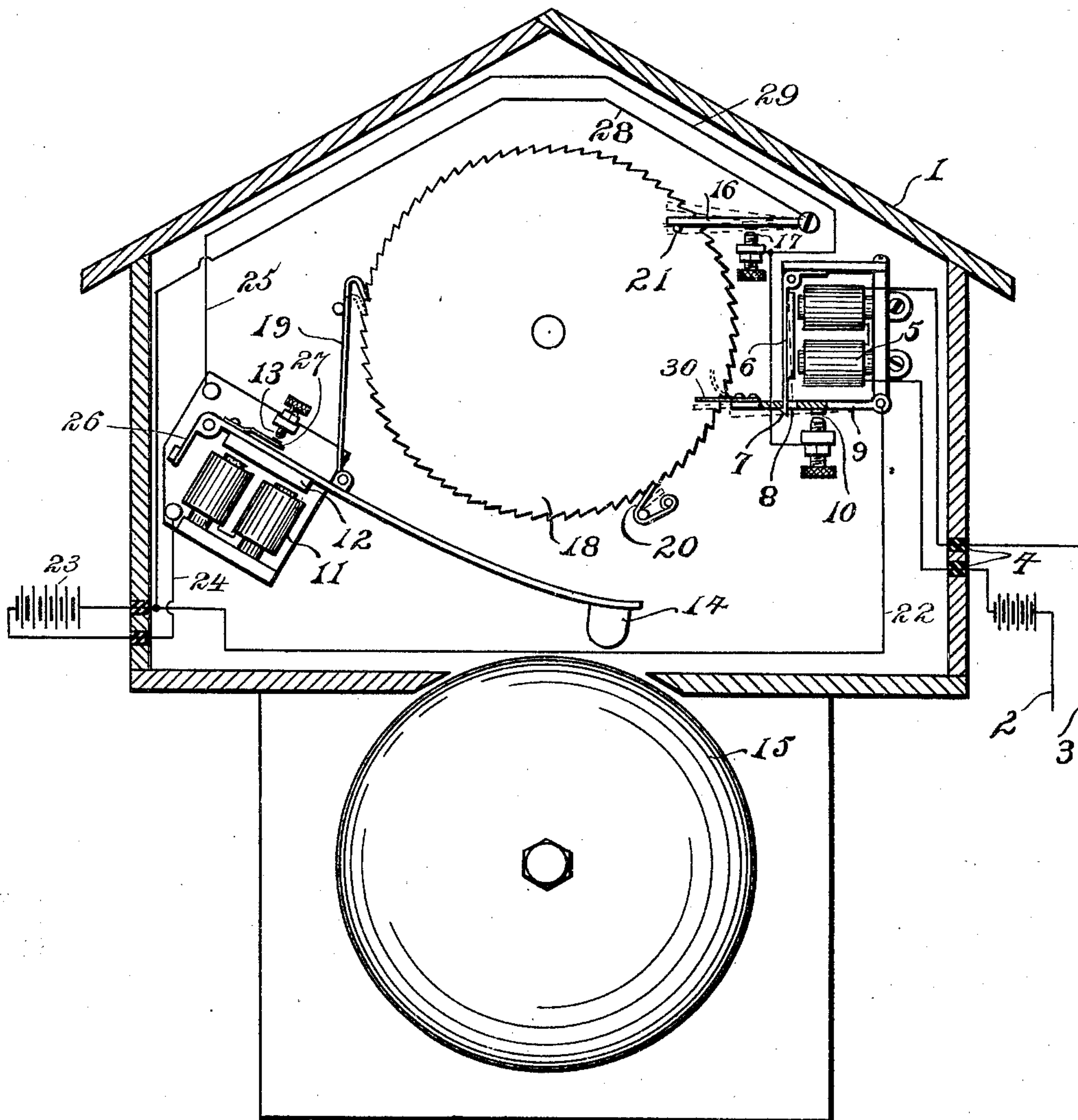
No. 686,973.

Patented Nov. 19, 1901.

B. A. KARR.  
RAILWAY CROSSING SIGNAL.

(Application filed July 18, 1901.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## RAILWAY-CROSSING SIGNAL.

SPECIFICATION forming part of Letters Patent No. 686,973, dated November 19, 1901.

Application filed July 18, 1901. Serial No. 68,803. (No model.)

*To all whom it may concern:*

Be it known that I, BURTON A. KARR, a citizen of the United States, residing at Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in Railway-Crossing Signals; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in railway-signals, and particularly to that class of signals which are used at railway-crossings and wherein the passage of a train over the track closes momentarily an electric circuit in which is included a gong or other similar signaling apparatus.

The object of the invention is to provide a simple means whereby the operation of a gong or similar signal may be continued for a predetermined length of time without the necessity of keeping the track-circuit closed.

It consists in a gong mechanism having an electromagnet connected with the track-circuit for closing a local circuit, a magnet in the local circuit ringing the gong or other signal, and means for maintaining the local circuit a predetermined length of time, comprising a disk and arms connected in parallel circuit with the local battery, whereby the said disk will be rotated for resetting the armature of the starting-magnet and then breaking the local circuit.

It also consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawing the figure represents a vertical section through the housing containing my improved signal mechanism, the parts of the said mechanism being shown in side elevation.

In embodying this invention in a practical form a suitable housing, as 1, is constructed, which is adapted to inclose a signal mechanism. Wires 2 and 3 of a track-circuit pass into the housing 1, preferably through suitable insulating-sleeves, as 4, the said wires passing thence to the coils of small electromagnets 5. The electromagnets 5 are mounted in any suitable manner within the hous-

ing 1 and have an armature 6, pivoted so as to hang in front of the poles of said magnets. The armature 6 is formed with a latch 7 at its lower end, which is adapted to pass through an aperture 8, formed in an arm 9, pivoted to one side of the magnets, the said latch engaging said arm so as to support it normally in a raised position. When the track-circuit is completed so the wires 2 and 3 and the magnets are energized, they will draw the armature 6 toward them and the arm 9 will be released from the latch 7 and permitted to drop against a contact-point 10, mounted within the housing 1. By this means a local circuit within the housing is completed, said circuit passing from the arm 9 over a wire 22 to a local battery 23, and thence over a wire 24 to coils of magnets 11. The circuit then passes from the magnets over a wire 25 back to the contact-point 10. The contact-point 10 may be made in any suitable form, it being usual to employ a simple adjusting-screw, as illustrated in the drawing. The magnets 11 are also provided with an armature 12, which is normally held a suitable distance from the poles of the magnets 11 by a spring 26. Adjacent to magnets 11 is arranged a contact-breaking point 13, which engages a spring 27, carried by the armature 12. The armature 12 also carries a hammer 14, adapted to strike a gong 15, arranged in suitable proximity thereto. The action of the armature 12 when a circuit is completed over the magnets 11 will be the same as in ordinary electric bells, the breaking contact-point 13 and springs 26 and 27 operating to cause the armature to vibrate continuously under the action of the circuit in the magnets 11. The armature 12 also carries a pawl 19, which engages the teeth formed upon the periphery of a disk 18, mounted within housing 1. A pawl 20 also engages the teeth of said disk to prevent the teeth rotating backwardly. As the armature 12 vibrates the pawl will engage the successive teeth of the disk 18 and rotate the same. A local circuit is also adapted to be maintained through a second arm, as 16, pivoted in the housing 1, which arm 16 is adapted to engage, when lowered, a contact-point 17. The arm 16 and the contact 17 are connected in parallel with the arm 9 and contact 10 by means of wires 28 and 29, which run, respec-



tively, to the battery 23 and the magnets 11. The disk 18 carries a pin 21 near its periphery which travels in a path intersecting the position of the ends of the arms 9 and 16, so that as the disk revolves the said pin 21 is capable of raising the said arms 9 and 16 successively. The arm 9 is preferably provided with a spring-point, as 30, for engaging the pin 21, so that the said arm will not be lifted too high as the pin passes the same.

The operation of the device above described is as follows: When the track-circuit is completed over the wires 2 and 3, the magnets 5 are energized, so as to draw the armature 6 toward them, releasing the arm 9 from the latch 7 and permitting the said arm to drop upon the contact-point 10. The arm 9 thus completes the local circuit through the magnets 11, setting the armature 12 into vibrating condition, by which the gong 15 will be sounded. The vibration of the said armature 12 also begins the rotation of the disk 18 through the agency of the pawl 19, and the pin 21, carried by the said disk, will leave its normal position, as shown in the drawing, beneath the end of the arm 16, permitting the same to drop upon the contact 17, so that a second path for the circuit through the magnets 11 is provided. The rotation of the disk 18 with a step-by-step movement can be made to ring a gong for a sufficient length of time, and as the said disk continues its revolution the pin 21 will come in contact with the spring 30 at the end of the arm 9 and will raise said arm until the latch 7 again engages the same and supports it in its lifted position, the track-circuit having been long since opened. The rotation of the disk will, however, be continued after the arm 9 has been lifted from the contact 10, since the local circuit is simply maintained through the arm 16 and contact 17, and the said disk will continue to rotate until the pin 21 again engages the arm 16 and lifts it from the contact 17, thereby breaking said local circuit.

It will be observed that by the above mechanism a momentary closing of the track-circuit will be sufficient to set the alarm mechanism in operation and that by employing two arms, as 9 and 16, together with their contact-points connected in parallel circuit with the local battery and magnets, the said local circuit may be made to ring the gong a sufficient length of time and reset the apparatus for another signal through the track-wires and afterward break the local circuit at the proper time, leaving all the parts as they were originally.

The parts are simple in construction and arrangement and the device exceedingly effective for the required purpose.

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

1. A railway-signal, comprising starting-magnets in circuit with track-wires, an armature moved thereby, means controlled by said

armature for completing a local circuit through the signal mechanism, and a second means connected in parallel with said latter means for completing the circuit after the mechanism has been started and for maintaining said local circuit after the first means is thrown out of operation, so as to cause the actuation of the signal device for the proper length of time and the resetting of the starting-magnets, and mechanical means for breaking the local circuit first at one place and then at the other, substantially as described.

2. A railway-signal, comprising a starting-magnet in circuit with track instruments, an arm controlled by the said magnet and adapted to complete a local circuit, a second arm connected in parallel with the said local circuit for maintaining the same after the first arm is raised for starting the mechanism again, substantially as described.

3. In a railway-signal, the combination of wires for introducing a track-circuit, magnets connected therewith, an arm controlled by the said magnets, a contact-point adapted to be engaged by said arm for completing a local circuit through the signal mechanism, a second arm and contact connected in parallel with the first arm and contact for maintaining the said local circuit after the first arm has been raised, and a magnet in the said local circuit for operating the said signal and raising the said arms, substantially as described.

4. A railway-signal, comprising a starting-magnet, a pivoted armature hanging in front of the same, a latch carried thereby and a pivoted arm adapted to be held in a raised position by the said latch, a contact-point for completing a local circuit with the said arm when released from the said latch, a second arm and contact connected in parallel with the first arm and contact and with the local circuit, a disk mounted within the said alarm mechanism and adapted to operate the said arms, and a magnet in the local circuit adapted to actuate the said disk and operate the signal.

5. A railway-signal comprising a starting mechanism, arms connected in parallel with the local circuit, one of said arms being controlled by the starting-magnet, a magnet in the local circuit having a suitable vibrating armature, a hammer carried by the said armature, a gong adapted to be sounded by the said hammer, and a rotating disk mounted within the housing of the signal mechanism and operated by the vibrating armature for regulating the time during which the gong will be sounded and for resetting the starting-magnets, substantially as described.

6. A railway-signal, comprising a suitable housing, starting-magnets mounted therein, and connected with track-wires, means controlled by the said magnets for closing a local circuit in the housing, a magnet included in said local circuit, a rotating disk mounted in said housing and formed with ratchet-teeth



on its periphery, a pawl operated by the armature of said local magnet for engaging the teeth of said disk and rotating the same, a pawl for preventing the disk from rotating  
5 backwardly, and a pin carried by the said disk adapted to engage the means for closing the local circuit whereby, after the signal has been actuated for a suitable length of time, the mechanism will be reset and the  
10 local circuit broken, substantially as described.

7. A railway-signal, comprising a starting-magnet, an arm controlled thereby for closing the local circuit, a second arm for main-  
15 taining the local circuit after it has been broken through the first arm, a disk rotated

in suitable proximity to the path of said arms, and having a pin adapted to engage the ends thereof, a magnet in the local circuit for rotating said disk and sounding an alarm, the  
20 structure being such that the disk will rotate until the pin carried thereby resets the arm controlled by the starting-magnet and then breaks the local circuit by engaging the second arm, substantially as described. 25

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

BURTON A. KARR.

Witnesses:

O. B. MCCLINTOCK,  
D. O. BARVELL.