

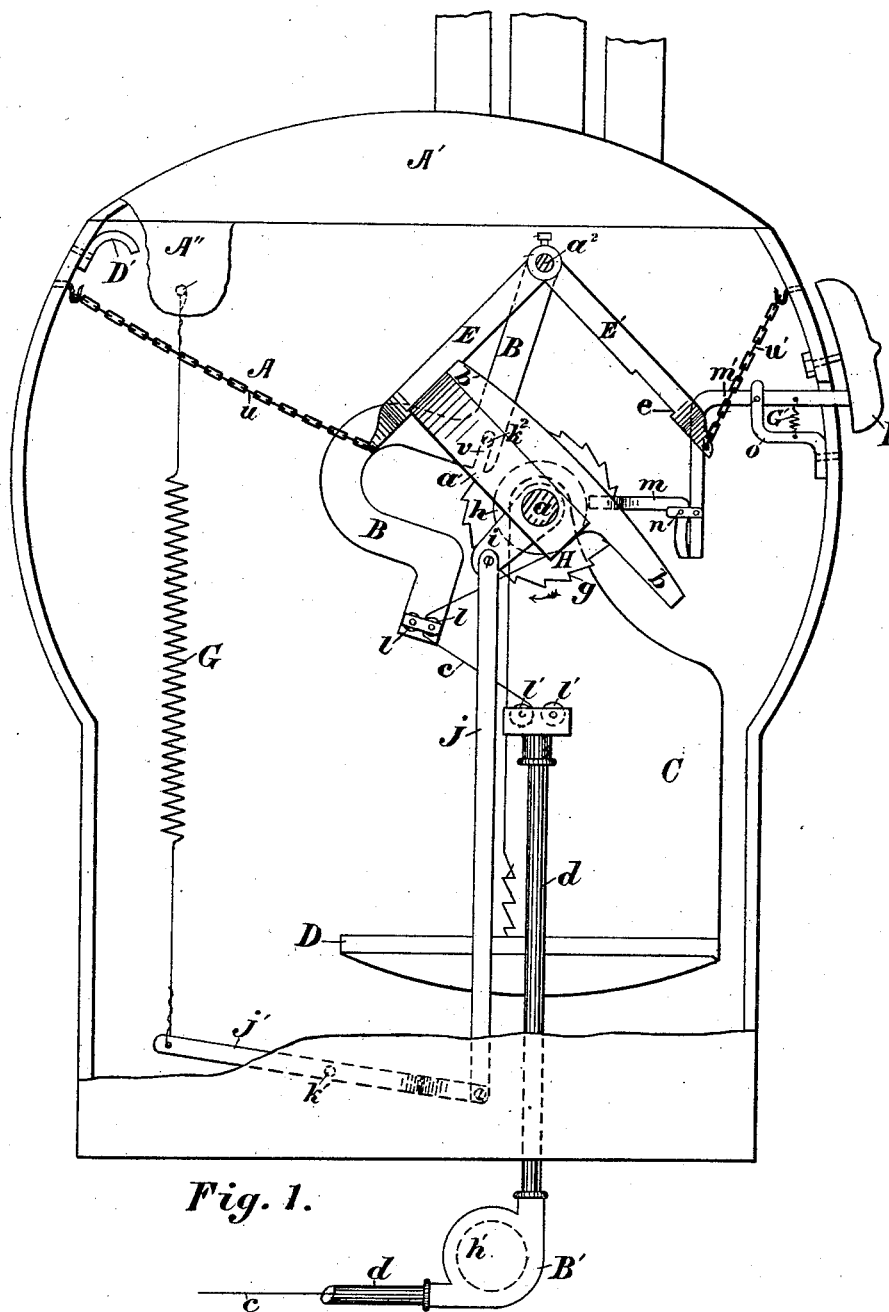
(No Model.).

2 Sheets—Sheet 1.

G. A. HALL.  
RAILROAD GATE.

No. 304,642.

Patented Sept. 2, 1884.



*Fig. 1.*

*Witnesses*

Wm M. Stockbridge.

Wm. A. Rosenbaum

*Inventor*

George A. Hall  
by W. D. Storkbridge  
A. K. Brown  
May

(No Model.)

2 Sheets—Sheet 2.

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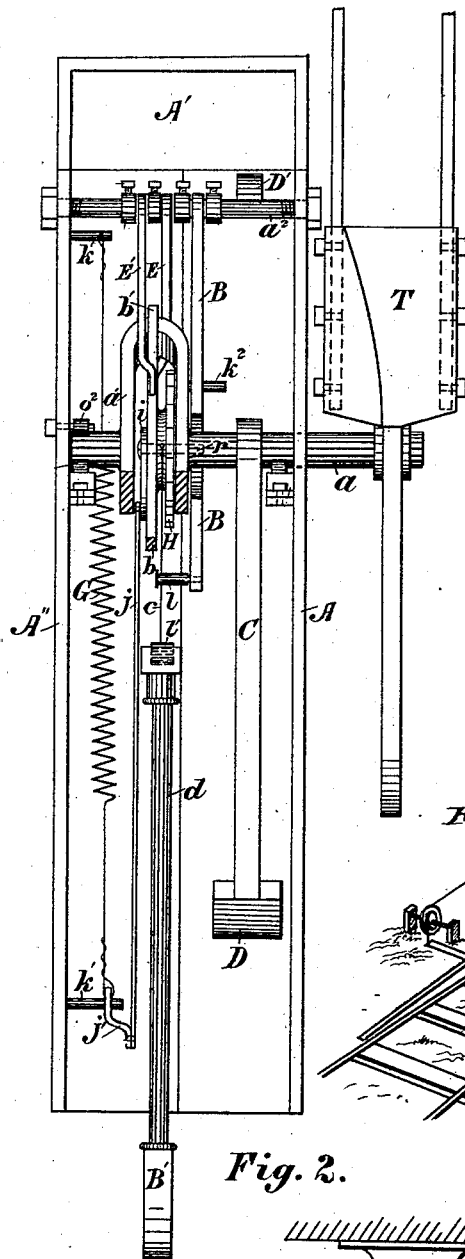


Fig. 2.

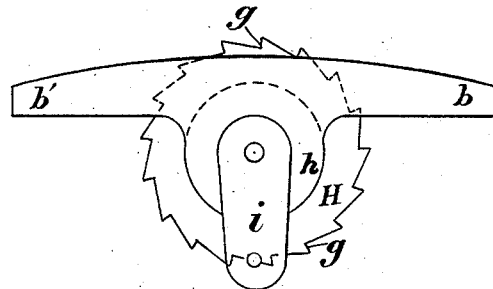


Fig. 3.

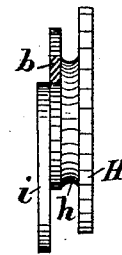


Fig. 4.

Fig. 6.

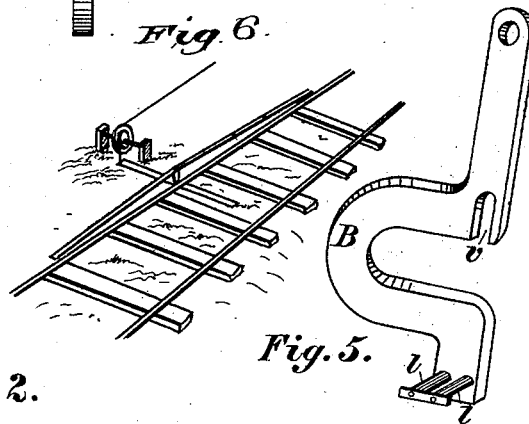


Fig. 5.

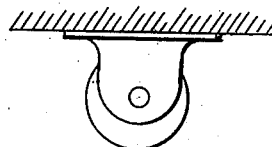


Fig. 7.

Witnesses  
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Inventor  
George A. Hall,  
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Attys

# UNITED STATES PATENT OFFICE.

GEORGE A. HALL, OF PORTLAND, MAINE.

## RAILROAD-GATE.

SPECIFICATION forming part of Letters Patent No. 304,642, dated September 2, 1884.

Application filed April 22, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. HALL, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Railroad-Gates; 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 automatic railroad-gates, and particularly to improvements in that form of gate described in my Patent No. 282,631, and in an application for patent now pending, Serial No. 122,042, filed February 26, 1884.

The object of the invention is to simplify the construction and combination and increase the efficiency of the mechanism for automatically operating railroad-gates.

In the drawings, Figure 1 is a view showing one side of the casing removed and the mechanism in elevation. Fig. 2 is an end elevation of the gate mechanism. Fig. 3 is a detail view of a crank, a cross-head, a pulley, and a gong-ringer. Fig. 4 is an end view of same. Fig. 5 is a perspective of the shifting-guide. Fig. 6 is a view representing means for automatically operating the gate through the moving train. Fig. 7 is view of a roller attachment to be applied to some part of a moving train to operate in conjunction with the mechanism shown in Fig. 6.

A is the casing, within which the principal part of the operating mechanism is mounted, and A' is the lid or cover for the same. The gate T is of essentially the same construction, and is mounted in the same manner as that described in my aforesaid application.

a is a main shaft mounted upon anti-friction rollers supported on suitable boxes and brackets within the casing. This shaft a is provided with a U-shaped bend or crank a', and is held firmly in its socket or bearings by a projection carrying anti-friction rollers o'. Fixed into the side of this U is a pin or roller, k<sup>2</sup>, which plays in a slot, v, of the arm or shifting-guide B.

Above the main shaft a, and extending across the casing, is a counter-shaft, a<sup>2</sup>, upon which are loosely hung latches or stops E E',

and an arm or shifting-guide, B, having a yoke or bend therein, as shown. The latches E E' are held at an angle, as shown, by chains u u', and are provided at their lower ends with a bend, for the purpose hereinafter described. The latches and the lever B are held in their proper planes by means of collars and set-screws on the shaft a<sup>2</sup>. The swinging arm or shifting-guide B is provided at its lower end with guide-eyes or pulleys l, and with a notch or slot, v. This guide operates to lead the main cable or wire first to one side of the center or axis of the gate and then the other.

Mounted on the shaft a are the arm and counter-weight CD. The counter-weight is adapted to receive additional or auxiliary weights, as may be required for different weights and lengths of gate. A disk, H, provided with teeth g, a pulley, h, an arm or cross-head, b b', and a crank, i, are bolted or otherwise secured together, as shown in Figs. 3 and 4, and are all of them mounted loosely on a bolt or mandrel, r, which secures them axially with the shaft a, as shown in Fig. 2.

Coupled with the crank i is a connecting-rod, j, which is also connected with the vibrating lever j', which is operated in one direction by a strong spring, G, which is connected at one end with any suitable part of the casing, and at the other with the lever. The fulcrum of the vibrating lever may be moved relatively farther from the spring, according to the power required.

Extending from the main-line pipe or conduit for the operating-chain up into the casing is a section or continuation of the conduit d, as shown in Fig. 1. At the top of this pipe are suitably mounted guide-pulleys l' l'.

Extending through the conduit d over the guide-pulleys l' l' and ll to the pulley H is the main cable or wire c.

Mounted upon a bracket, o, is a bell-crank, m', at the inner extremity of which is pivoted, at n, another forked bell-crank, m, as shown in Fig. 1. A gong or bell, I, is connected with the casing A, as shown. A spring, G', operates to cause the bell-crank m' to strike the bell or gong as it is vibrated by the notches g of gong-ringer H. When the gate is in its horizontal position, its weight is partly balanced by toe D of the counter-weight resting

against the under side of the bracket D', thus relieving the strain on the latch E'.

The operation of my invention is as follows: The gate being in a vertical position and the  
 5 approaching train operates upon the main cable or wire *c*, and therethrough operates pulley *h* and turns it with its attachments, the gong-ringer H, the cross-head *b b'*, and crank *i*, so  
 10 that the end *b* of the cross-head first lifts the stop or latch E by impinging against its end, which is bent so as to come within its plane, and then comes in contact with the U or bend in the shaft *a*. At this time the crank *i* has  
 15 passed up and beyond its center, when the spring G, acting through lever *j'* and connecting-rod *j*, serves to continue the movement of the cross-head *b b'*, and thereby carry, by means of the bend, the shaft *a* around one-  
 20 quarter turn, when the U-bend is caught by latch E', and the gate has arrived at a horizontal position. When the gate is in its horizontal position, and there locked by the latch E', the arm or shifting-guide B has been carried  
 25 across and beyond the center of the shaft by means of the stud or roller *k*<sup>2</sup>, connected to the bend in the shaft through the medium of slot or notch *v*. When in this position, and a train is departing from the crossing, it operates in a well-known way upon the cable or  
 30 wire *c*, and the pulley *h*, having the wire or cable wound thereon, will be operated in a direction opposite to its first movement, and will carry the end *b'* of the cross-head around so  
 35 as to lift the latch E', when the crank *i* will have arrived at such position that the spring G, through its connections, will continue the movement of the cross-head, and carry the shaft and gate back to their first position, as  
 40 shown in Fig. 1.

Previous to and during the dropping of the gate from its vertical to horizontal position the gong-ringer H will cause a continuous alarm or ringing of the bell through its ham-  
 45 mer or bell crank *m'* and the loose arm *m*. During the backward movement of the gong-

ringer the bell-hammer is unaffected, because the arm *m* may be lifted without interfering with it.

Having thus fully described my invention, 50 what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the gate-supporting shaft *a*, provided with a bend or crank, of a shifting-guide, substantially as described. 55

2. The combination, with the operating-pulley, of a shifting-guide for changing the direction of the draft on the pulley through the main cable, substantially as specified.

3. The combination of a bent or crank shaft, 60 *a*, provided with a projecting stud, *k*<sup>2</sup>, and a shifting guide or arm, B, provided with slot *v*, as described.

4. The combination, with the crank-shaft *a*, of the loosely-hanging latches E E'. 65

5. The combination of the crank-shaft, the latches, and the cross-head.

6. The combination of the pulley *h*, the cross-head, the crank *i*, and the main cable or wire, and the spring-operating connections, as de- 70 scribed.

7. The combination, with a gate-supporting shaft, of a pulley and gong-ringer secured together and mounted loosely upon the shaft, and means for first operating the pulley and 75 gong-ringer alone and then with them the shaft and gate, whereby an alarm is given before and during the fall of the gate.

8. In an automatic gate, the combination of a bent or crank shaft, a pulley, a crank, and 80 cross-head connected axially with the shaft, and means for vibrating the crank from side to side of the axis of the shaft through the main wire or cable, as set forth.

In testimony that I claim the foregoing I 85 hereunto affix my signature in the presence of two witnesses.

GEORGE A. HALL.

Witnesses:

WILLIAM C. NELSON,  
 FREMONT M. PALMER.