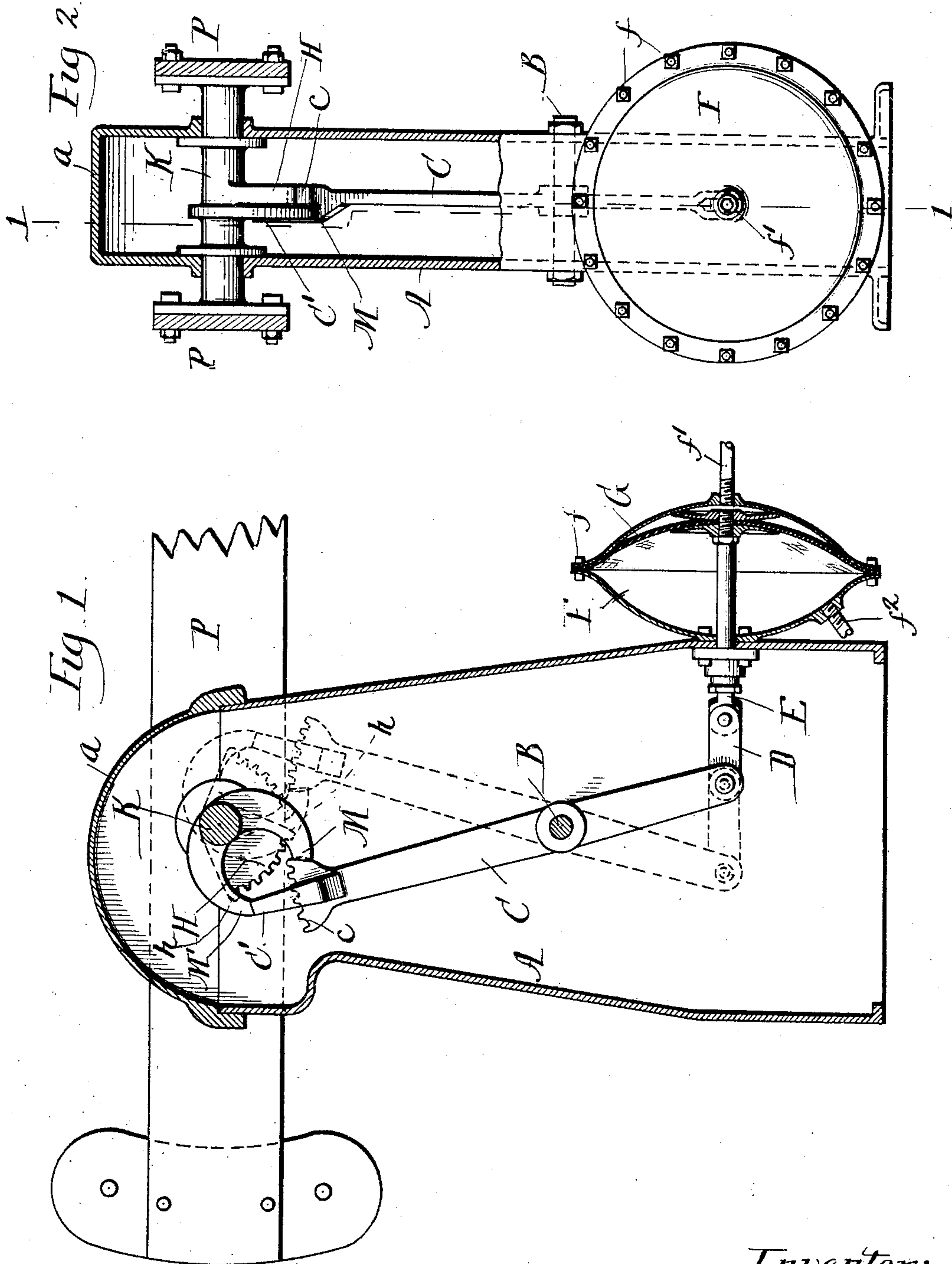


No. 771,622.

PATENTED OCT. 4, 1904.

J. J. GARD.  
GATE OPERATING MECHANISM.  
APPLICATION FILED JUNE 18, 1904.

NO MODEL.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## GATE-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 771,622, dated October 4, 1904.

Application filed June 18, 1904. Serial No. 213,075. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. GARD, a citizen of the United States, and a resident of Harvey, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gate-Operating Mechanism, of which the following is a full, clear, and exact description.

This invention has for its object more particularly to provide improved mechanism for operating the arms of vertically - swinging gates, such as are commonly used at railway-crossings, upon viaducts, or in like situations; and the invention consists of the features of improvement hereinafter described, illustrated in the drawings, and more particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in vertical section on line 1 1 of Fig. 2 of a gate-post embodying my invention, parts being shown in side elevation. Fig. 2 is a view showing the operating mechanism in side elevation, the gate-post being shown in vertical cross-section.

The body A of the gate-post is of metal and may be of any usual or suitable construction. In the side walls of the post A is journaled a shaft B, whereon is mounted the operating-lever C. As shown, the lower end of the operating-lever is connected by a link D to the inner end of the shifting rod E, that extends through the wall of the gate-post A and through one side of the air-chamber F. The air-chamber F is of usual construction, being formed of concavo-convex sections bolted together, as at  $f'$ , with the diaphragm G secured between the opposing edges of the sections. The diaphragm G is connected to the outer end of the shifting rod E in the usual manner, and the air-chamber is provided with suitable pipes  $f'$  and  $f''$  for the admission and discharge of air or other fluid under pressure to the chamber F. The mechanism connected to the lower end of the operating-lever C for shifting the same forms no part of the present invention, and any other suitable form of operating mechanism may be employed instead of that shown in the accompanying drawings.

The upper end of the operating-lever C is

provided with a short rack  $c$  and with a stop-arm C', the rack  $c$  and stop-arm C' being preferably cast in piece with the lever C. As shown, the stop-arm C' projects upward and at one side of the path of the rack  $c$ . The rack  $c$  is adapted to engage a corresponding segmental rack H, that is carried by the shaft K, this shaft being journaled in suitable bearings in the side walls of the post or casing A. Preferably the rack H is formed integral with the shaft K, and from this shaft extend the stops M and M', that are preferably formed of the shape shown and cast integral with the shaft K. As shown, the rack H has its end teeth  $h$  longer than the intermediate teeth of the rack, and the end teeth of the rack  $c$  will make initial contact with the elongated teeth  $h$  when the rack  $c$  is shifted to engage the rack  $h$ . One or both ends of the shaft K will project beyond the gate-post or casing A and will have fixed thereto the gate P. Preferably the upper part or cover  $a$  of the gate-post A will be formed separate from the body of the post and will be connected thereto through the medium of the overhanging flange in the usual manner.

From the foregoing description it will be seen that when the parts are in the position shown by full lines in the drawings the gate P will be closed, and at such time the stop-arm C' at the top of the operating-lever C will lie beneath the end of the stop M'. Hence it will be seen that the gate P cannot be swung upward until the operating-lever C is shifted, because of this interlocking of the stop M' with the stop-arm C'. If now the operating-lever C be moved in the direction of the arrow, Fig. 1, the stop-arm C' will first pass from beneath the stop M' and the end of the rack-bar  $c$  will engage with the elongated tooth  $h$  of the rack H about the time that the stop-arm C' passes from beneath the stop M'. As the rack  $c$  thus comes into engagement with the rack H the shaft K is turned and the gate P is swung upward until it reaches the open or vertical position, at which time the operating-lever C and rack H will occupy the relative position shown by dotted lines in the drawings and the stop-arm C' will pass beneath the stop M,



and thus securely lock the gate in open position. When the gate is to be turned from the open to the closed position, the shifting of the operating-lever C will cause the stop-arm C' 5 to first pass from beneath the stop M, after which the rack c will contact with the adjacent elongated tooth h of the rack H and the racks being engaged will effect the turning of the shaft K and the downward movement of 10 the gate to the position shown by full lines in the drawings.

My invention not only provides a most effective means for locking the gate in open and closed position, but affords also a simple and 15 most efficient means for moving the gate, as the rack of the operating-lever applies its thrust to the rack of the gate-shaft in such a direct manner as to secure a uniformity and ease of movement not possible with prior con- 20 structions of gate-operating mechanism.

It is manifest that the precise details of construction above set out may be varied without departure from the spirit of the invention, and to such details, therefore, I do not wish 25 the invention to be understood as restricted. Thus, for example, while I prefer to employ the two movable stops M and M', carried by the gate-shaft K, it is obvious that one stop might be used with advantage even should the 30 other stop be omitted. So, also, any other suitable form of stop may be employed at the end of the operating-lever instead of the stop-arm C'.

Having thus described my invention, what 35 I claim as new, and desire to secure by Letters Patent, is—

1. A gate-operating mechanism comprising in combination an operating-lever having at its end a rack and a stop and a gate-moving shaft 40 carrying a rack to engage the rack of the operating-lever and a stop to cooperate with the stop of the lever.

2. A gate-operating mechanism comprising an operating-lever having a short rack at its 45 end in combination with a gate-shaft having a gate connected therewith and having a downwardly-extending rack provided with elon-

gated teeth at its ends, which teeth project below the ends of the intermediate teeth and with which elongated teeth the ends of the rack 50 of the operating-lever will engage.

3. A gate-operating mechanism comprising an operating-lever provided at its upper end with a short rack and with a stop, a gate-moving shaft carrying a rack adapted to be en- 55 gaged by the rack of the operating-lever, said racks being normally separated, and a stop carried by said gate-shaft into the path of which stop the stop of the operating-lever will pass when the rack of the operating-lever has 60 been disengaged from the rack of the gate-shaft.

4. In gate-operating mechanism the combination of a gate-moving shaft provided with a projecting stop, and with a rack-bar, an oper- 65 ating-lever provided with a rack-bar, means for shifting the rack-bar of said operating-lever into and out of engagement with the rack of the gate-shaft and a stop on the operating-lever adapted to be brought into the 70 path of the stop that is carried by the gate-shaft.

5. A gate-operating mechanism comprising in combination an operating-lever having at its end a rack and a stop-arm projecting be- 75 yond said rack, and a gate-moving shaft carrying a rack adapted to engage the rack of the operating-lever and a stop projecting beyond said last-mentioned rack and adapted to en- 80 gage with the stop-arm of the operating-lever.

6. A gate-operating mechanism comprising in combination an operating-lever having a rack and having at one side of said rack a stop projecting upwardly beyond the teeth of the 85 rack, and a gate-moving shaft carrying a rack adapted to engage with the rack of the operating-lever, and carrying stops projecting downwardly and at one side of the rack carried by said shaft and adapted to engage with the stop of the operating-lever.

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Witnesses:

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