(No Model.)

C. MUNSELL.

SWING BRIDGE GATE.

No. 356,076. Patented Jan. 11, 1887.

Fig. 1.

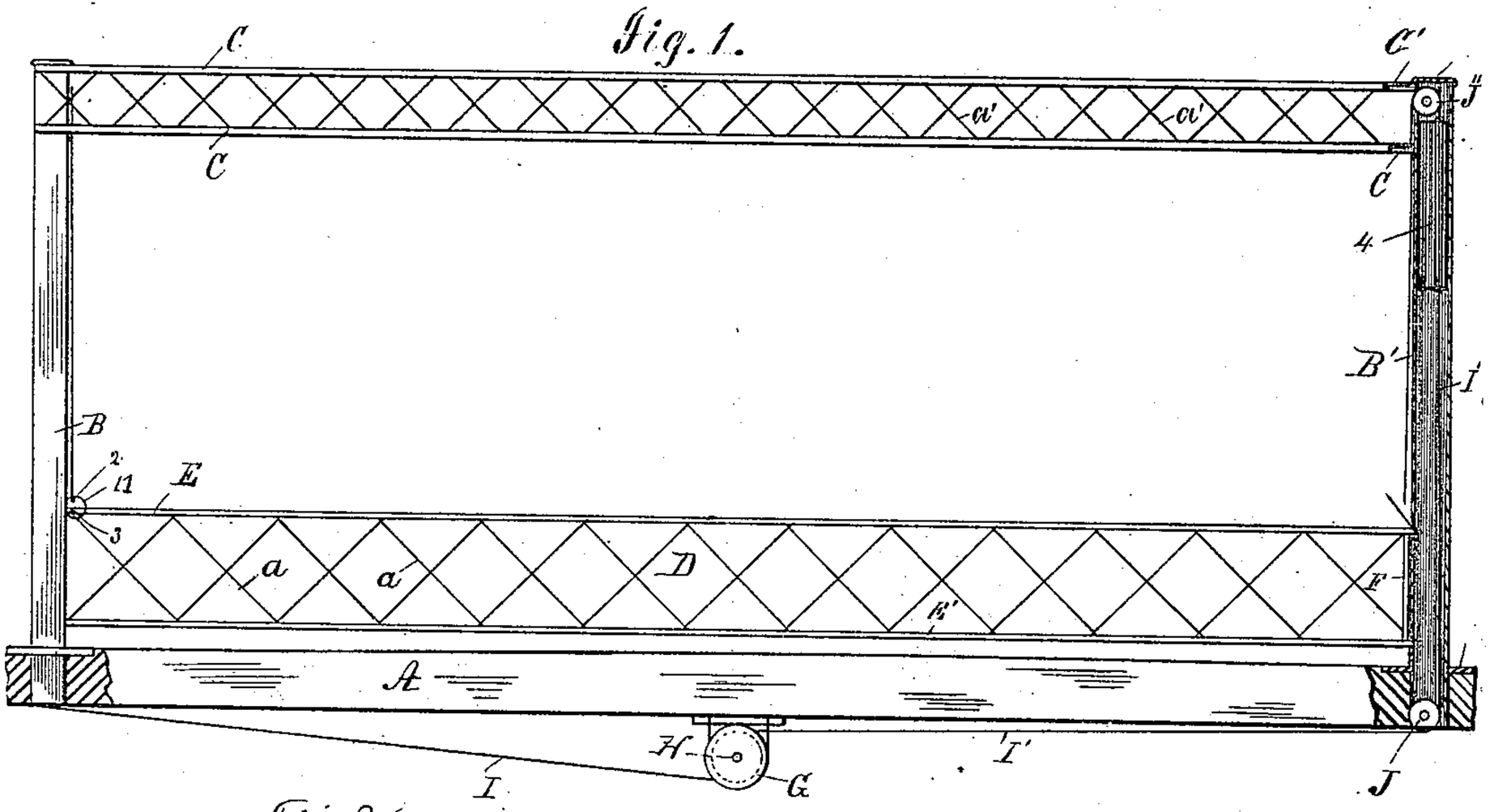


Fig. 2.

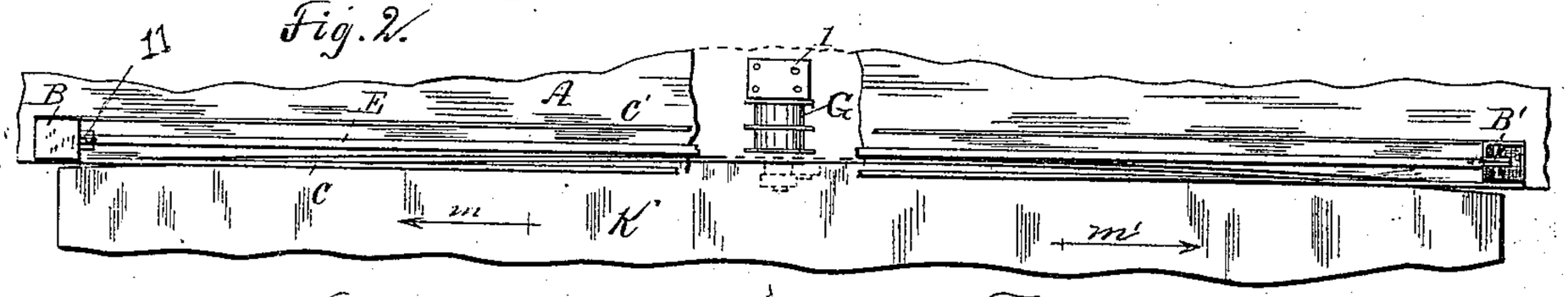
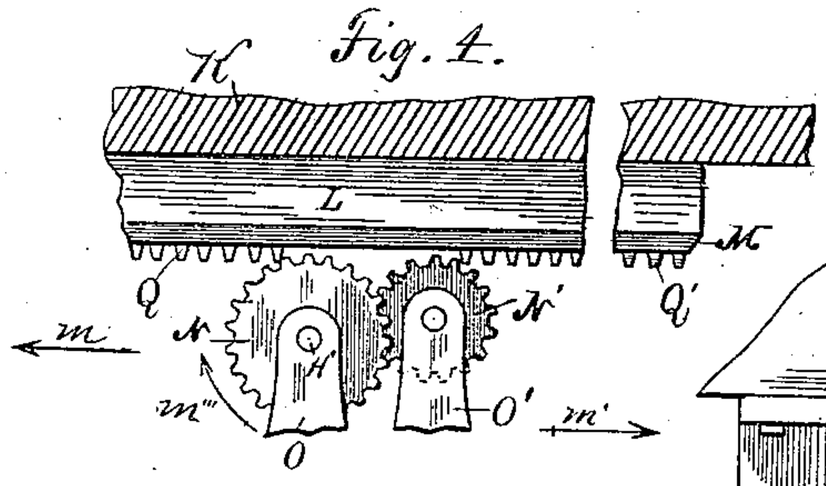


Fig. 4.



m''

Fig. 3.

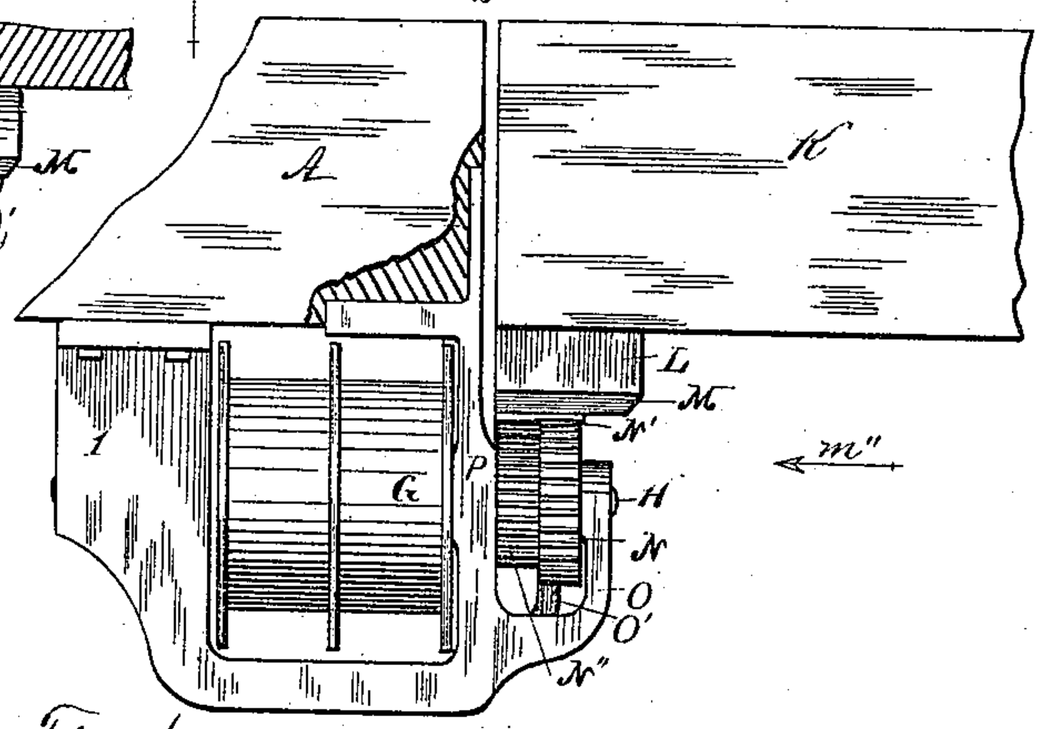


Fig. 5.

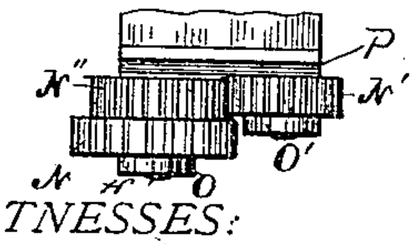
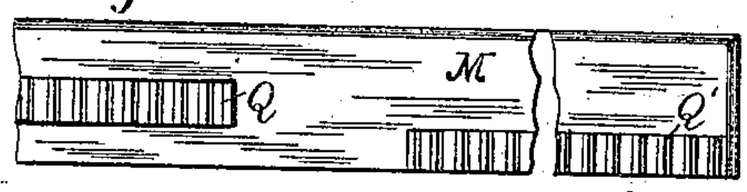


Fig. 6.



WITNESSES:

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CHARLES MUNSELL, OF RACINE, WISCONSIN.

SWING-BRIDGE GATE.

SPECIFICATION forming part of Letters Patent No. 356,076, dated January 11, 1887.

Application filed March 9, 1886. Serial No. 191,537. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MUNSELL, a resident of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Swing-Bridge 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 pertains to make and use the same.

My invention relates to improvements in swing-bridge gates of the class wherein the gate is opened and closed by the action of the swinging bridge, and is fully described in this specification, which refers to the accompanying drawings.

In the drawings, Figure 1 is an elevation of the closed gate looking from the bridge. Fig. 2 is a plan of the same with the contiguous end of the bridge. Figs. 3, 4, 5, and 6 are enlarged views of the mechanism through which the motion of the bridge is transmitted to the gate, and are all hereinafter fully explained.

In Fig. 1, A is the end of the approach, the support thereof not being shown. B B′ are hollow vertical posts on either side of the roadway, suitably secured to the approach. They are shown as passing entirely through the approach end; but in case the approach does not extend beyond its support, they are simply extended downward enough to give sufficiently rigid lateral support. C C′ are beams connecting the posts at the top, and are placed on either side, or on both sides, as shown. D is a gate consisting of two parallel horizontal bars, E E, connected by struts F F and light rods or wires *a a*. The top and bottom bars E E extend at each end into grooves in the posts B B′, and the gate is thus secured against transverse displacement. Near the middle of the approach, and below it, is a drum, G, rigidly mounted on a shaft, H, which rotates in suitable bearings fixed upon the approach. Two cables, I I′, oppositely wound upon the drum, pass respectively over pulleys J J′, fixed in the posts near their lower extremities; thence over similar fixed pulleys J″, near the tops of the posts; thence downward to the respective ends of the gate, to which they are securely attached.

Fig. 2 shows the same parts in plan, the approach being broken away in the middle to show the position of the drum G and the bearing 1 of its shaft. The gate is shown as in the plane passing through the longitudinal axis of each post, and in this figure, as in Fig. 1, the posts being similar in construction, the interior of one only is shown. The cables I I′ are oppositely wound upon the drum G, one passing over while the other passes under the drum, by which arrangement rotation of the drum winds both or unwinds both. The drum-shaft projects beneath the bridge end K, and is rotated by gears meshing with a rack upon the lower surface of the bridge. A side elevation of this mechanism is shown in Fig. 3, a view in the direction *m″* (Figs. 2 and 3) in Fig. 4, a plan of the gears in Fig. 5, and in Fig. 6 the rack-plate M of Fig. 4, revolved (upward) one hundred and eighty degrees. The gear N engages with the part Q, Figs. 4 and 6, of the rack whenever the bridge swings in the direction *m′*, Figs. 2 and 4, from its normal position, but passes freely under a part of the rack-plate bearing no cogs when rotated in a contrary direction. When engaged by the moving rack it rotates in the direction *m‴*, and being rigidly mounted on the drum-shaft H it causes a similar rotation of the drum, unwinding the two cables equally, and the gate being thereby released gradually descends in its grooves in the posts. If the motion of the bridge be in the direction *m*, the rack Q′ engages the gear N′, rotating it in a direction opposite to the direction of the arrow *m‴*; but as this gear engages a third gear, N″, rigidly mounted upon the drum-shaft, the motion is reversed and the drum rotates in the same direction and with the same effect as before. In this case, as before, the gear, when not engaged by the rack Q′, passes freely under the surface at one side of the other rack.

The gear N″ is made smaller than the gear N, so that it may pass the rack Q′, while the gear N′ engages with that rack. The latter gear is still smaller, but its bearing is placed nearer the rack. The relative size of the gears N′ N″ may be such that the speed of rotation of the drum when actuated by these gears is the same as when actuated by the gear N. The length of the racks is not the same, but is in both cases such that the last rack-tooth leaves its gear just when the gate reaches its lowest point, and throughout the remainder

of the arc of the racks' motion with the moving bridge the drum is stationary, being held by inertia, or by devices not of my invention, and consequently not shown. Evidently the return movement of the bridge causes the rack which rotated the drum to rotate it again, but in a contrary direction, whereby the gate is raised to its normal position at the top of the posts B B', and the gears and racks are left in the position shown in Fig. 4.

Wheels 11, eccentrically mounted on the sides of the top rail, E, Fig. 1, and in contact with the posts, serve as a brake in case the supporting-cables give way. The cables are attached at points 2, directly over the points of support 3. If the cable break, gravity rotates these wheels into contact with the post, and the consequent friction continues the rotation, causing outward pressure and arresting the fall of the gate. Counter-weights 4, Fig. 1, within the posts, facilitate the raising of the gate.

With trifling change the gate may extend through or beyond the posts, obstructing outer sidewalks.

Having now described and explained the operation of my invention, what I claim is—

1. The combination, with the posts B B' and gate D, of the eccentrics 11, attached to the gate, the cables I I', fastened to the eccentrics and supporting the gate, and means, substantially as shown and described, for winding and unwinding the cables and raising and lowering the gate.

2. The combination of the gate D, posts B B', cables I I', drum G, shaft H, gears N N' N'', racks Q Q', eccentrics 11, and counter-weights 4, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES MUNSELL.

Witnesses:
EDUARD KRAFT,
J. A. CRAIN.