

(No Model.)

2 Sheets—Sheet 1.

L. FRACHER & B. R. HOYT.

GATE FOR DRAW BRIDGES.

No. 374,356.

Patented Dec. 6, 1887.

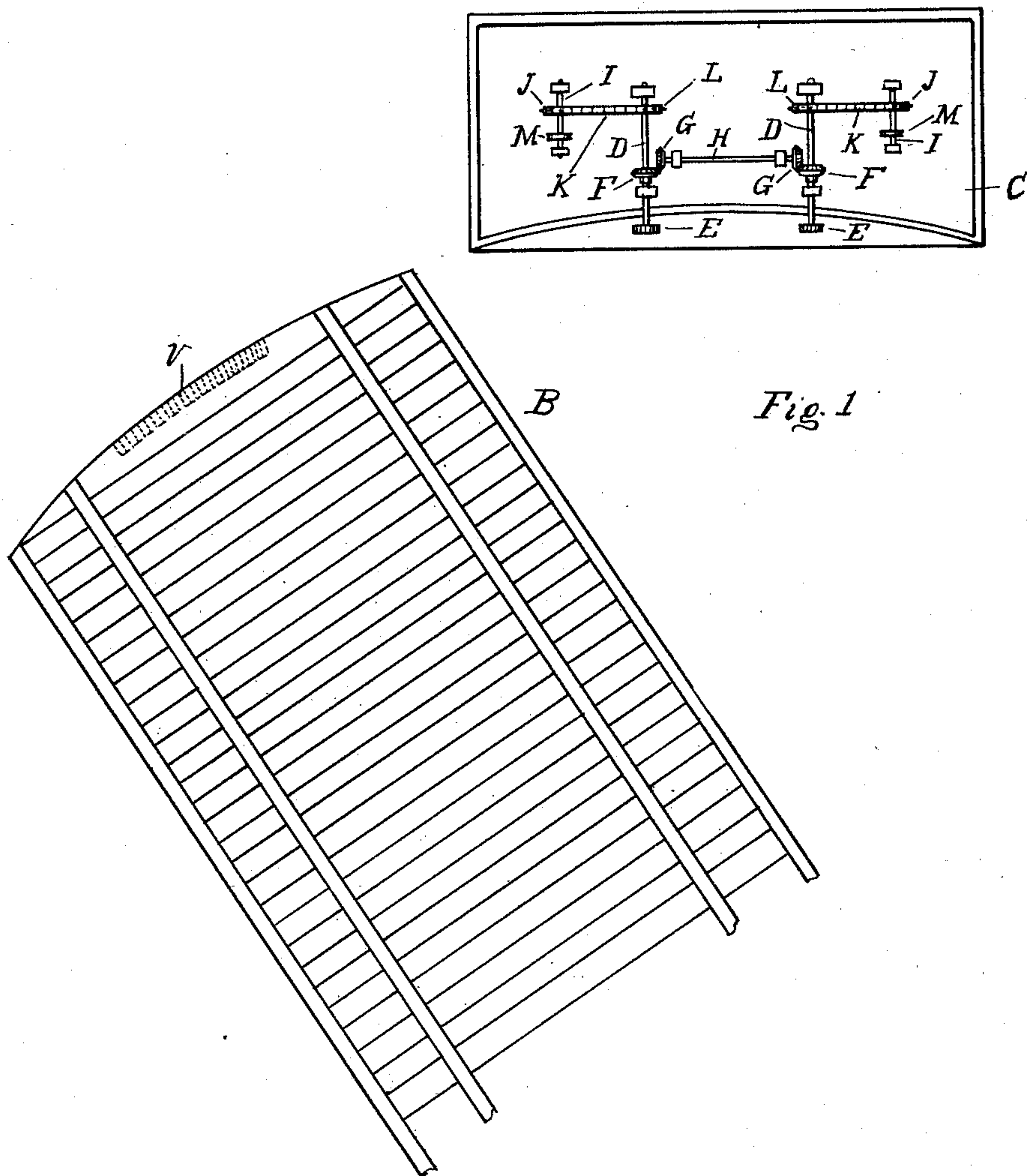


Fig. 1

Witnesses:

P. M. Hulbert

[Signature]

Inventors:

Louis Fracher

Benjamin R. Hoyt.

By *[Signature]* Attorney.

(No Model.)

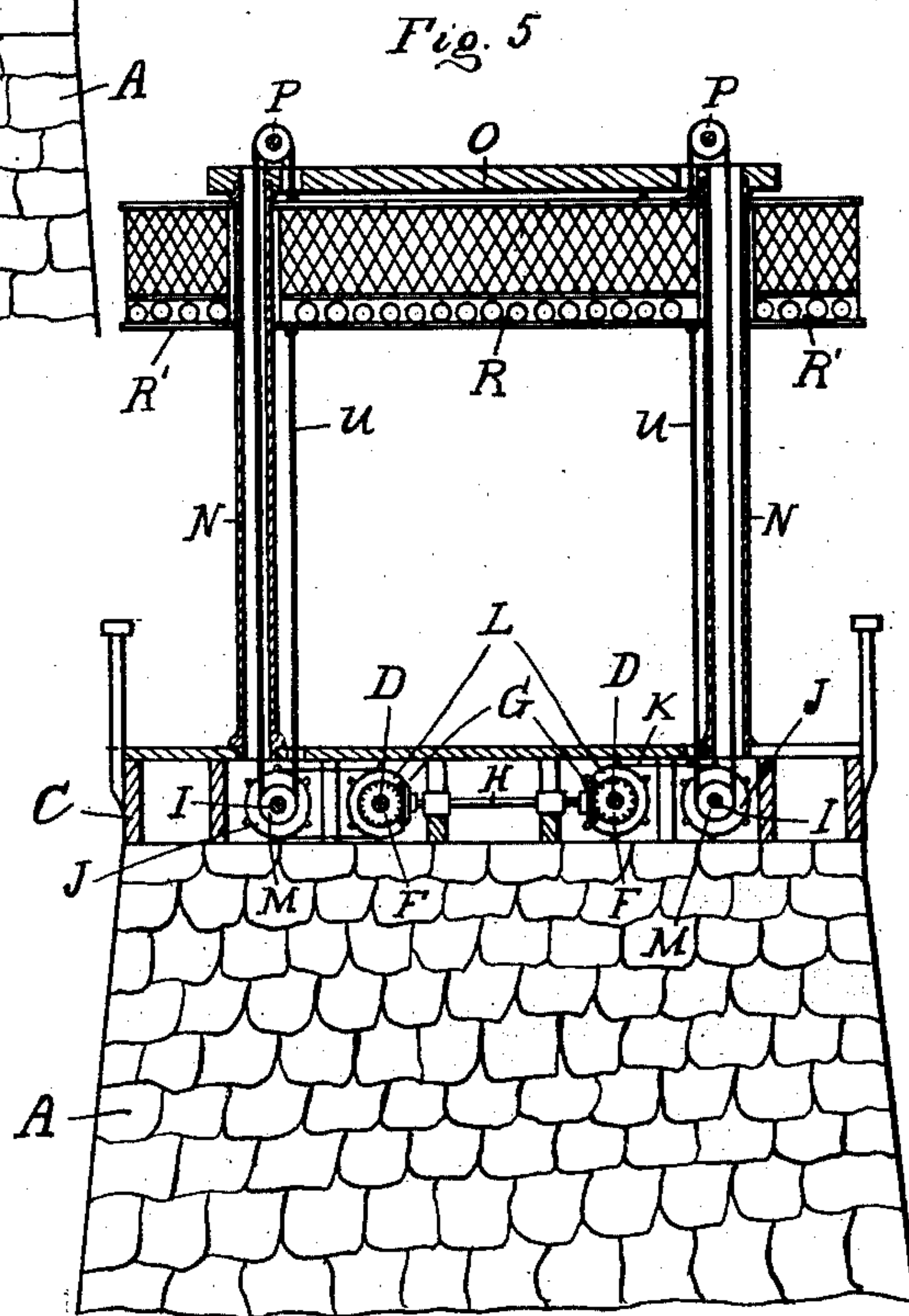
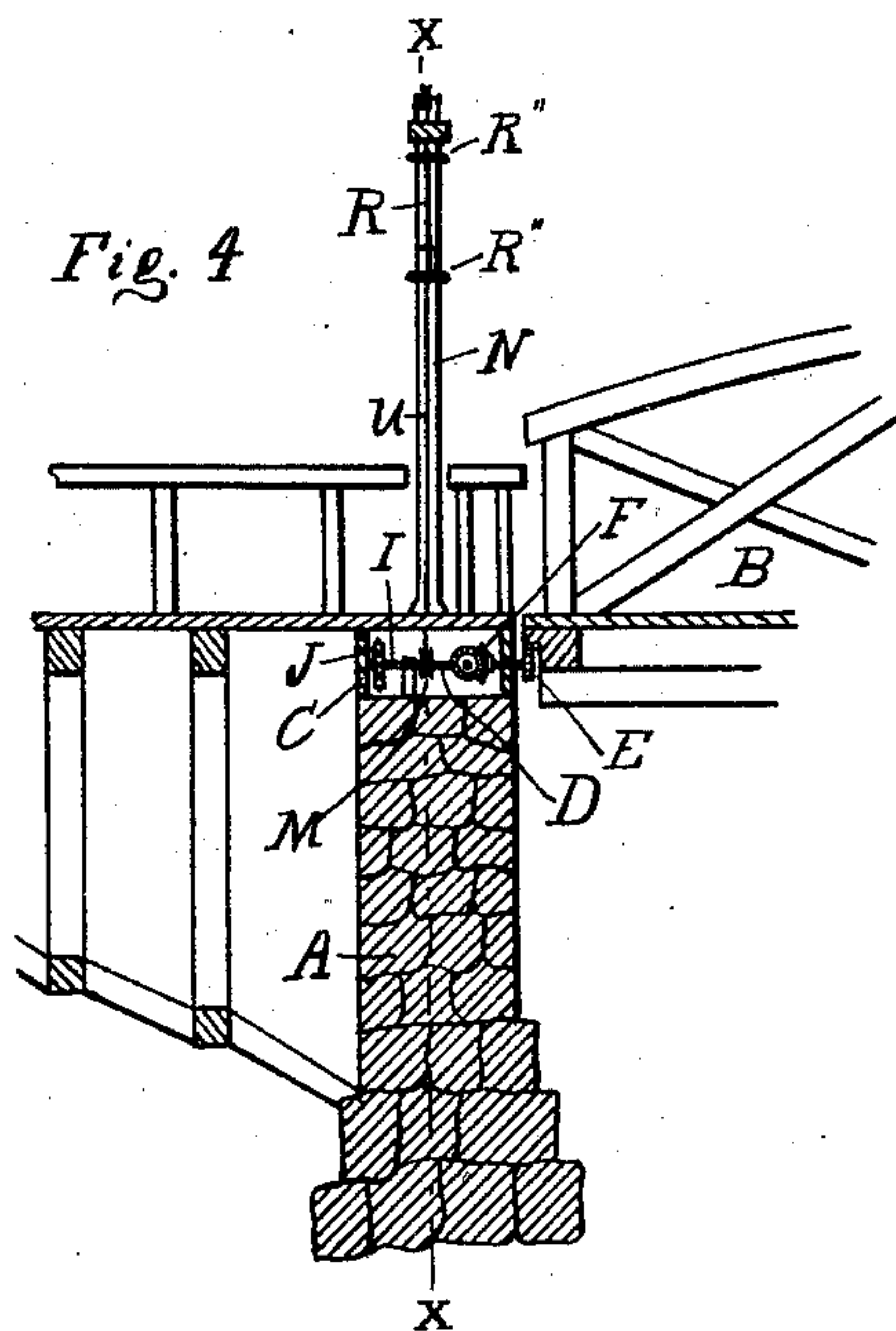
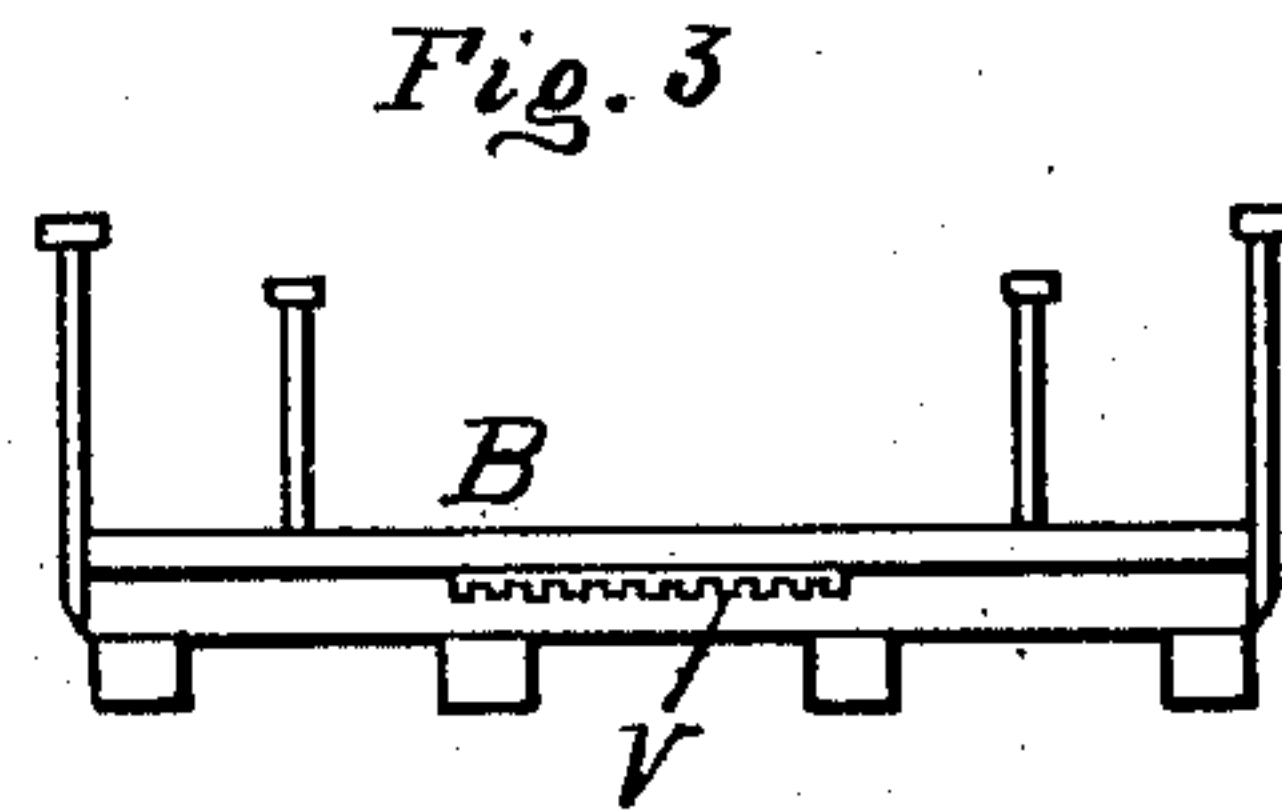
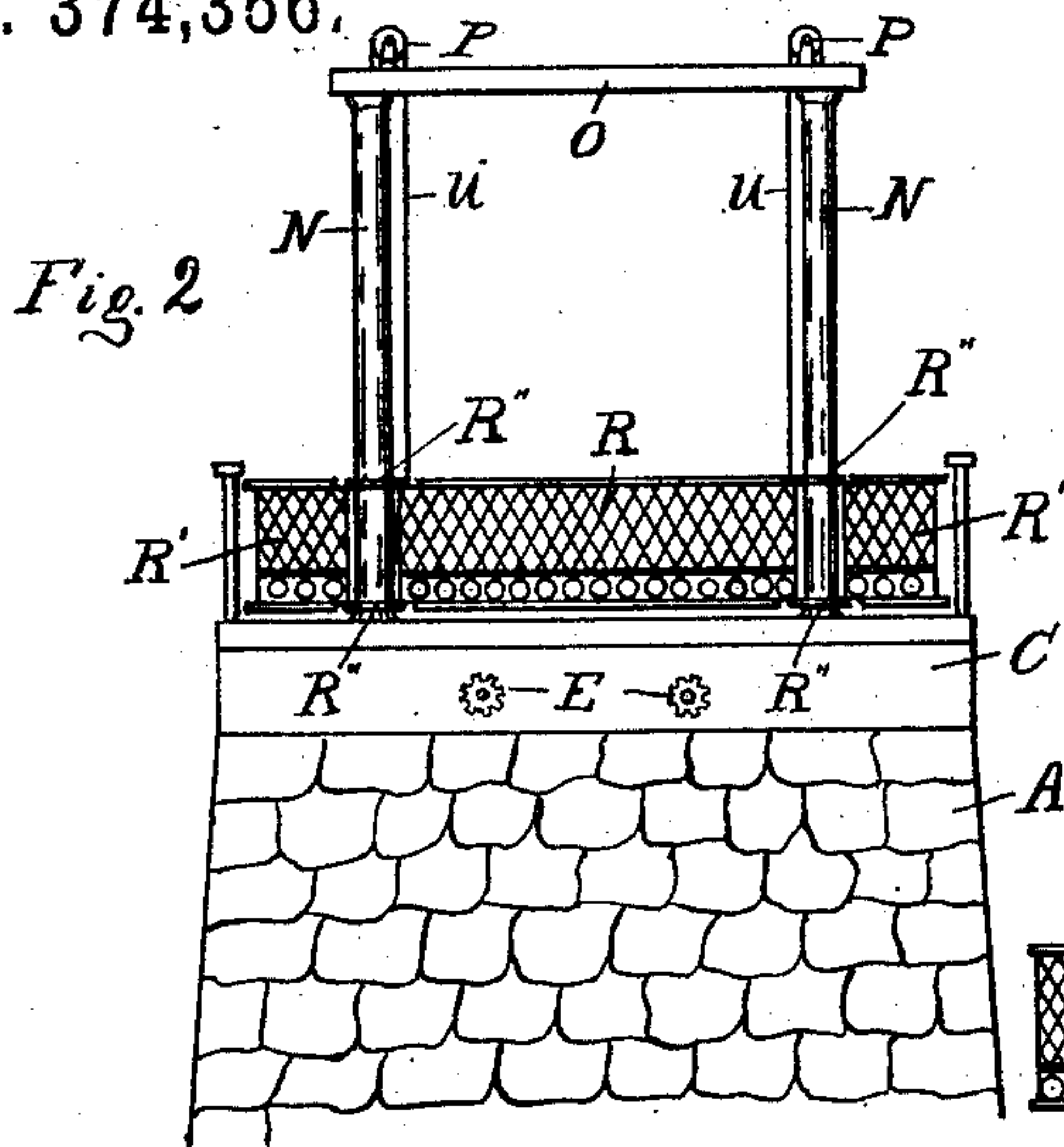
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UNITED STATES PATENT OFFICE.

LOUIS FRACHER AND BENJAMIN R. HOYT, OF DETROIT, MICHIGAN.

GATE FOR DRAW-BRIDGES.

SPECIFICATION forming part of Letters Patent No. 374,356, dated December 6, 1887.

Application filed September 24, 1887. Serial No. 250,610. (No model.)

To all whom it may concern:

Be it known that we, LOUIS FRACHER and BENJAMIN R. HOYT, citizens of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Automatic Gates for Draw-Bridges, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in automatic gates for draw-bridges.

The invention consists in the peculiar construction of the mechanism employed, whereby the gate is elevated and lowered automatically as the bridge is swung upon its pivot, and in the combinations of the various parts, all as more fully hereinafter set forth.

Figure 1 is a plan with the floor of the abutment removed and the bridge partially swung open. Fig. 2 is an end elevation of the abutment with the gate closed. Fig. 3 is an end elevation of the bridge, showing the segmental rack. Fig. 4 is a vertical section through the abutment and bridge, with the latter closed. Fig. 5 is a vertical cross-section on the line x in Fig. 4.

In the accompanying drawings, which form a part of this specification, A represents one of the abutments of a draw-bridge, and B the bridge, the latter being constructed and arranged to be swung upon a central pivot, as in the ordinary manner of building bridges of this class.

Upon the top of the abutment A is erected a hollow casing, C, which contains the operating mechanism. The upper face of this casing serves as a continuation of the approach to the bridge.

D are two shafts journaled in proper bearings within the case, and the front ends of such shafts project through the casing and have secured thereon the pinions E. To these shafts within the casing are also secured the bevel-pinions F, which mesh with similar bevel-pinions, G, secured upon the transverse shaft H.

I are shafts journaled in proper bearings parallel with the shafts D. Each of these shafts I has secured upon it a sprocket-wheel, J, which is driven by means of a chain, K, from a similar sprocket-wheel, L, upon the shaft D.

These shafts I also carry grooved wheels or drums M.

N are hollow columns rising from the abutment, their upper ends being connected together by means of a girt, O, upon which are properly journaled the grooved pulleys P, the peripheries of which extend to the center of the hollow columns N.

R is the gate, which is made of any desired material. This gate is provided with extension ends R', and with rings or sleeves R'', which embrace the hollow columns, and thus retain the gate in its intended vertical position, while they also form guides for the gate as it is raised and lowered.

To the upper edge or rail of the gate one end of each of the cables U is secured, which leads up to and over the grooved pulleys P, down through the hollow columns to and under the pulleys or drums M, and thence up through a proper opening in the floor of the abutment, and are secured to the lower rail of the gate. If desired, weights may be secured to the cables within the hollow columns, so as counterbalance the weight of the gate, not only to prevent it from accidentally falling, but also decrease to the minimum the power required to operate the gate.

In practice, the gate being closed, Fig. 4, when it is swung open in either direction, the segmental rack V upon the end of the bridge engages with one of the pinions E, causing it to revolve, and by the connections herein described motion is communicated to the pulleys or drums M, which in turn draw down upon the cables that are secured to the lower rail of the gate, and compel it to descend and close the approach to the bridge, both across the carriage-way and the sidewalk. As the bridge swings shut, motion is communicated to the operating mechanism in an opposite direction to that above described, which elevates the gate, Fig. 5, and thus opens the approaches to the bridge.

What we claim as our invention is—

1. The combination, with the bridge and the abutment, of the suspended gate, the centrally-disposed shafts carrying upon their extended ends pinions, bevel-gears on said shafts, a transverse shaft carrying bevel-gears meshing therewith, shafts parallel with the central shafts, a

sprocket wheel and chain connection between said shafts, and connections between the outer shafts and the gate, as set forth.

2. In a draw-bridge, the combination of
5 the bridge provided with segmental racks, pinions carried upon shafts projecting from the abutment, a gate provided with end extensions, and with rings R'', embracing the guide-columns and adapted to slide vertically be-
10 tween said hollow columns, with the mechanism described intermediate between the gate and bridge for automatically operating said gate as the bridge is swung open or closed, substantially as described.

15 3. In a draw-bridge, the combination of the bridge B, abutments A, casing C, shafts D, H,

and I, pinions E, F, and G, sprocket-wheels J L, drive-chains K, grooved pulleys M P, hollow standards or columns N, gate R, provided with end extensions, R', cables U, and seg- 20 mental racks V, the parts being constructed, arranged, and operating substantially in the manner and for the purposes described.

In testimony whereof we affix our signatures, in presence of two witnesses, this 15th day of 25 September, 1887.

LOUIS FRACHER.
BENJAMIN R. HOYT.

Witnesses:

H. S. SPRAGUE,
JOS. WHITTEMORE.