

No. 859,489.

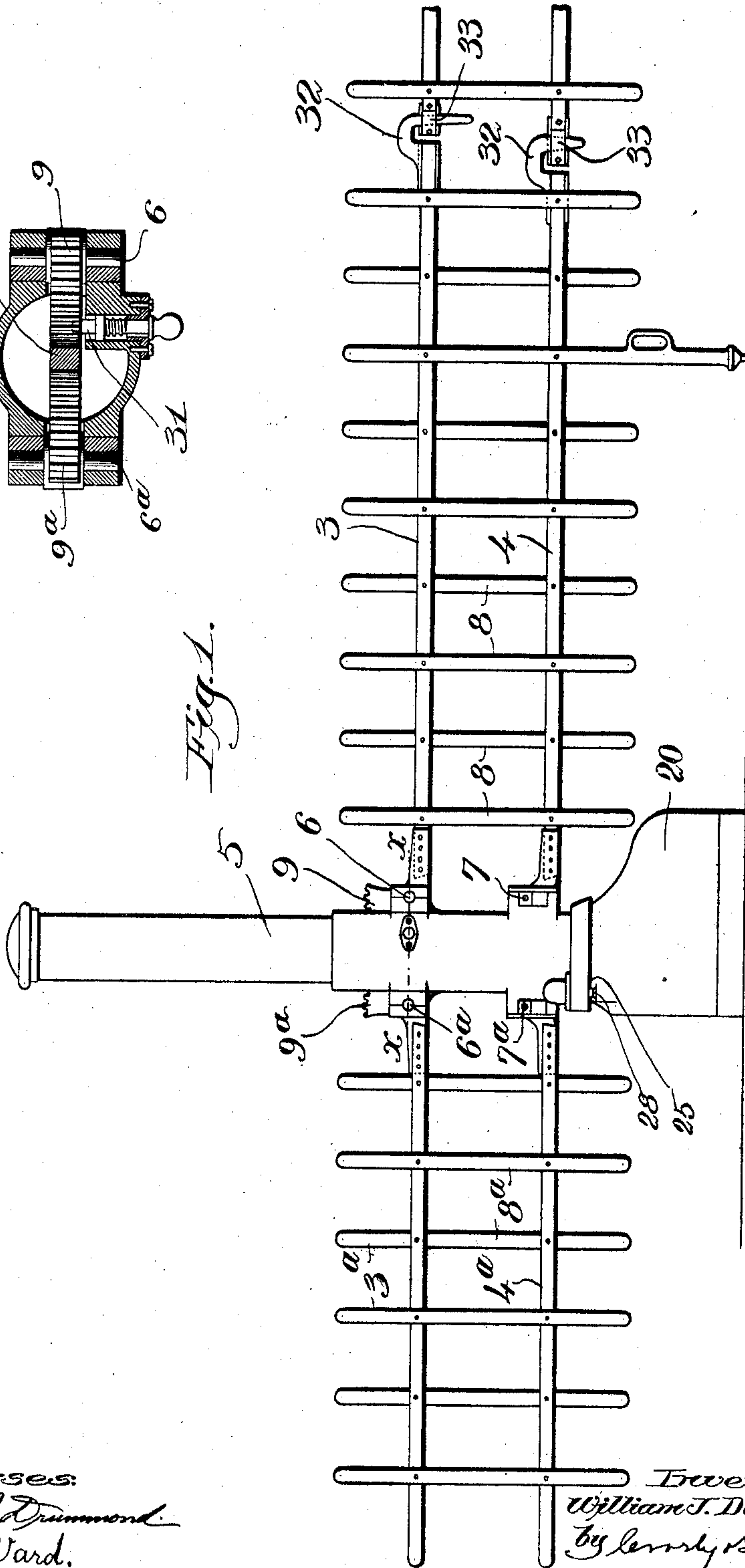
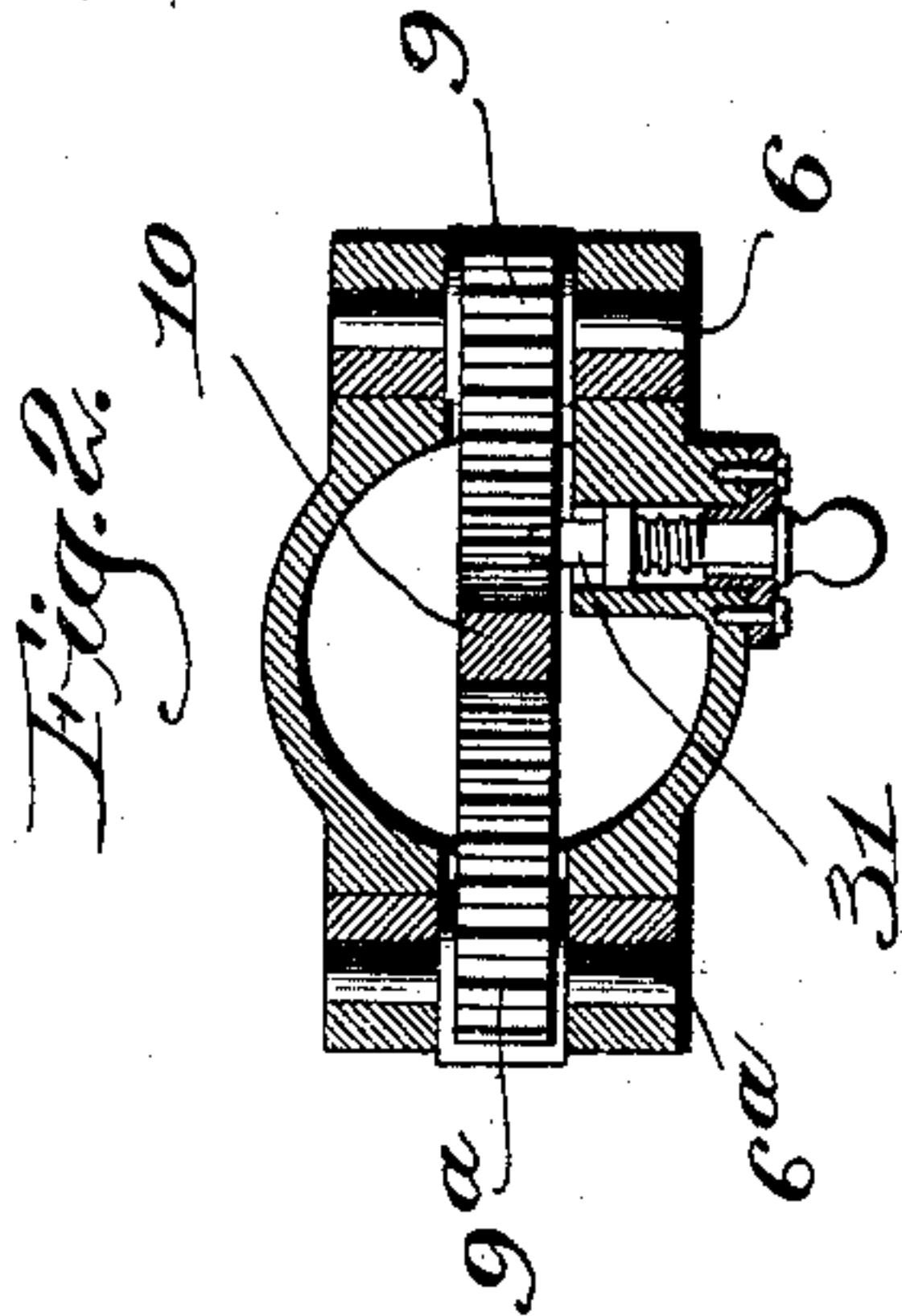
PATENTED JULY 9, 1907.

W. J. DONOVAN.

FERRY GATE.

APPLICATION FILED JAN. 30, 1907.

28 SHEETS—SHEET 1.



Witnesses:

Thomas J. Drummond.
Joseph M. Ward.

Inventor
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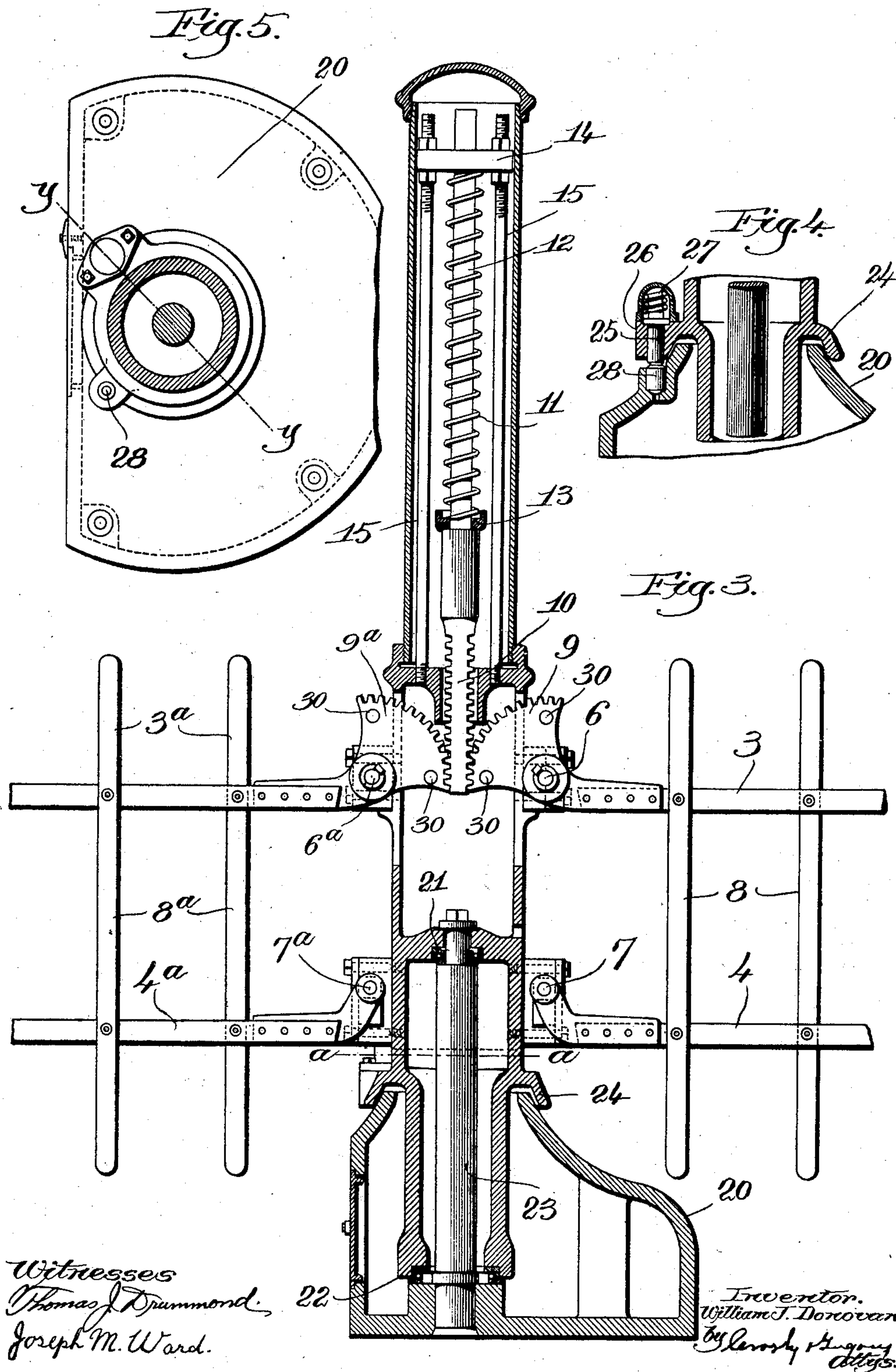
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

WILLIAM J. DONOVAN, OF BOSTON, MASSACHUSETTS.

FERRY-GATE.

No. 859,489.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed January 30, 1907. Serial No. 354,891.

To all whom it may concern:

Be it known that I, WILLIAM J. DONOVAN, a citizen of the United States, and a resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Ferry-Gates, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention relates to gates and especially to gates adapted for use on ferries. Gates for this purpose are commonly mounted so as to swing vertically in opening or closing, and when they are in their open position they are apt to project slightly into the roadway so that there is danger that loaded vehicles will strike against the gate in passing in and off the ferry.

One of the objects of my invention is to provide a novel manner of mounting the gate so that when it is open the gate-post with the gate attached thereto may be swung around so as to carry the gate entirely out of the way of loaded vehicles.

Another object of my invention is to provide a novel counterpoise for the gate which has greatest counterpoising action when the gate is horizontal, and least counterpoising action when the gate is vertical, whereby the gate is evenly balanced in all positions.

I will first describe one embodiment of the invention and then point out the novel features thereof in the appended claims.

In the drawings Figure 1 is a front elevation of one-half of a gate embodying my invention; Fig. 2 is a section on the line $x-x$, Fig. 1; Fig. 3 is a vertical section through the gate-post; Fig. 4 is a section on the line $y-y$, Fig. 5; Fig. 5 is a section on the line $a-a$, Fig. 3.

The gate-arm herein shown comprises two bars 3 and 4 each of which are pivoted to the gate-post 5 at 6 and 7, respectively, said bars 3 and 4 being pivotally connected together by slats 8 as usual. The bar 3 has at its inner end a segmental gear 9 which meshes with a rack 10 mounted for vertical movement in the gate-post and which is acted on by a counterbalancing spring 11 that tends to counterbalance the weight of the gate-arm. This counterbalancing spring 11 surrounds the stem 12 of the rack and bears at one end against the shoulder 13 on said stem, and at the other end against a fixed abutment herein shown as a cross-head 14 through which the upper end of the stem 12 extends, and which is held in place by tie-rods 15.

The counterbalancing spring 11 tends to move the rack 10 downwardly and thus to elevate the gate-arm. In these ferry gates it is customary to have two gate-arms extending from each gate-post, one gate-arm to extend across and close the roadway for vehicles, and the other gate-arm to extend across and close the passage for foot passengers.

The gate-post 5 herein shown has pivoted to its opposite side a gate-arm comprising two bars 3^a and 4^a simi-

lar to the bars 3 and 4, and pivotally connected by slats 8^a. These bars 3^a and 4^a are pivoted to the gate-posts at 6^a and 7^a, respectively, and one of the bars has a segmental gear 9^a which meshes with the rack 10, said rack being a double rack for this purpose. The spring 11 is of such a tension as to counterbalance both of the gate-arms. When the gate-arms are down, as shown in Fig. 3, the spring is under greatest tension and has, therefore, the greatest counterbalancing effect. As the gate-arms are swung into their vertical or open position the tension of the spring decreases and will, therefore, have a constantly decreasing counterbalancing effect. It will be readily seen that without any counterbalancing a greater force would be necessary to lift the gates when they are in their horizontal position than would be necessary when they are nearly in their vertical position, and by using a spring for the counterbalance, as above described, the effective counterbalancing action thereof varies according to the demands therefor.

The gate-post 5 is shown as mounted to turn so as to permit the gates to be swung around into line with the roadway or at right angles to the position shown in the drawings. For this purpose the gate-post is rotatably mounted on the stationary base 20, said gate-post being supported by two bearings 21 and 22, preferably of the anti-friction type. The bearing 21 is shown as formed at the upper end of a spindle or support 23 extending from the base, although these bearings might be made in any way so long as they would properly support the gate-post for rotative movement. The gate-post is herein shown as provided with a flange 24 which overlies the upper edge of the wall of the base 20 and prevents foreign matter from entering said base and clogging the bearing.

I preferably provide suitable means for locking the gate-post in either of its two adjusted positions, and for this purpose have herein shown the gate-post as carrying a spring-pressed locking member 25 adapted to engage notches or co-operating projections sustained by the base 20. This locking member 25 is in the nature of a pin which projects through a flange 26 on the gate-post and is acted on by a spring 27, the lower end of said pin being adapted to engage recesses formed in the top of two separated pins or members 28 carried by the base 20. These pins 28 are properly positioned so that when the locking pin 25 engages one or the other the gate-post will be held either in the position shown in Figs. 1 and 3, in which position the gates when down will close the passageways, or at right angles thereto, thus carrying the gates when open entirely out of the line or path of any loaded vehicles passing off the ferry. I have also provided suitable locking means for holding the gates locked in their open or closed position, and for this purpose have provided one or both of the segmental gears 9, 9^a with recesses 30 which co-operate with a spring-pressed locking pin 31 carried by the

gate-post to hold the gate either in opened or closed position. One of the gate-arms is herein shown as provided with hooks 32 adapted to engage eyes 33 on the corresponding arm, thereby connecting the two opposing gate-arms. I have not attempted herein to describe all embodiments of my invention which may be covered by the appended claims, but for the purpose of illustrating the invention have selected the preferred embodiment thereof.

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

1. In a gate, the combination with a gate post of a vertically-swinging arm pivoted thereto to turn about a fixed axis, a spring for counterbalancing said arm, and
15 connections between the spring and arm whereby the spring is under greatest tension when the arm is horizontal.

2. In a gate, the combination with a gate post of a vertically-swinging gate arm pivoted thereto, a spring
20 counterbalance for said arm located within the gate post, and connections between said spring and gate arm whereby the spring is under greater tension when the gate arm is horizontal than when it is vertical.

3. In a gate, the combination with a gate post of a swinging gate arm pivoted thereto and a spring within
25 the gate post for counterbalancing the arm, said spring being under greatest tension when the gate is horizontal.

4. In a gate, the combination with a vertically-swinging gate-arm of a segmental gear connected thereto, a rack
30 meshing with the gear, and a counterbalancing spring acting on the rack to thereby counterbalance the gate-arm.

5. In a gate, the combination with a vertically-swinging

gate-arm of a segmental gear connected thereto, a rack meshing with the gear, and a spring acting on said rack
35 and tending to raise the gate-arm.

6. In a gate, the combination with a gate-post rotatable about a vertical axis, a vertically-swinging gate-arm pivoted thereto and a counterbalance for the gate arm situated within the gate post.

7. In a gate, the combination with a gate-post rotatable about a vertical axis of a vertically-swinging gate-arm pivoted thereto, and a locking device to hold the gate-post in adjusted position.

8. In a gate, the combination with a gate-post rotatable about a vertical axis of a vertically-swinging gate-arm pivoted thereto, and a spring counterbalance for said gate-arm located within the gate-post.

9. In a gate, the combination with a gate-post of a vertically-swinging gate-arm, a spring counterbalance therefor located within the gate post, and a spring-pressed
50 locking device to hold the gate-arm in its lowered or raised position.

10. In a gate, the combination with a spindle or support having a bearing at each end of a gate post rotatably mounted on said spindle or support, and a vertically-swinging gate arm pivoted to the gate post.

11. The combination with a spindle or support 23 having a bearing at each end of a gate post pivoted on said spindle, a vertically-swinging gate arm pivoted to the gate
60 post, and a spring counterbalance for the gate arm located within the gate post.

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

WILLIAM J. DONOVAN.

Witnesses:

LOUIS C. SMITH,
ELIZABETH R. MORRISON.