

(No Model.)

2 Sheets—Sheet 1.

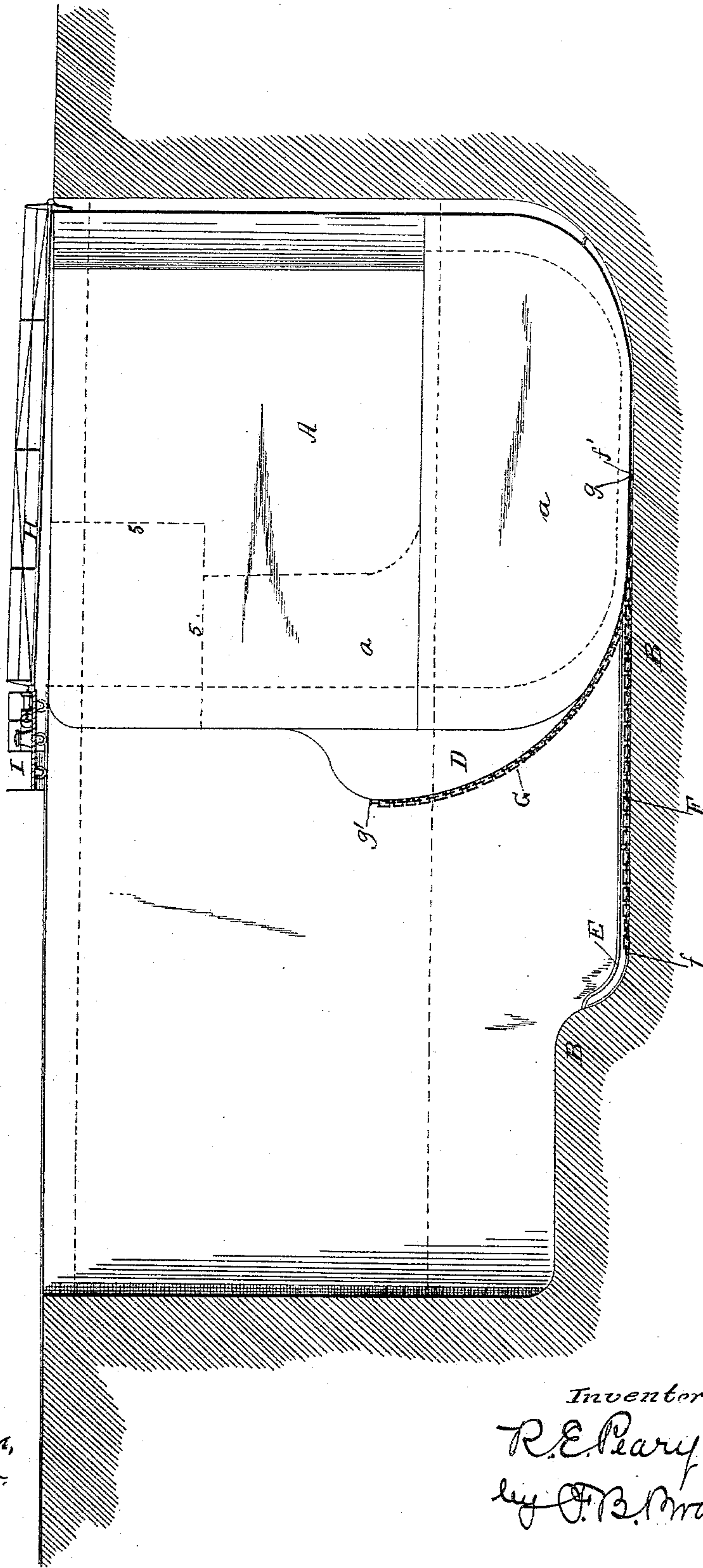
R. E. PEARY.

LOCK GATE.

No. 339,458.

Patented Apr. 6, 1886.

Fig. 1.



Attest:
B. M. Brown,
J. F. Brawner.

Inventor:
R. E. Peary,
by J. B. Brock, atty.

(No Model.)

2 Sheets—Sheet 2.

R. E. PEARY.

LOCK GATE.

No. 339,458.

Patented Apr. 6, 1886.

Fig 2.

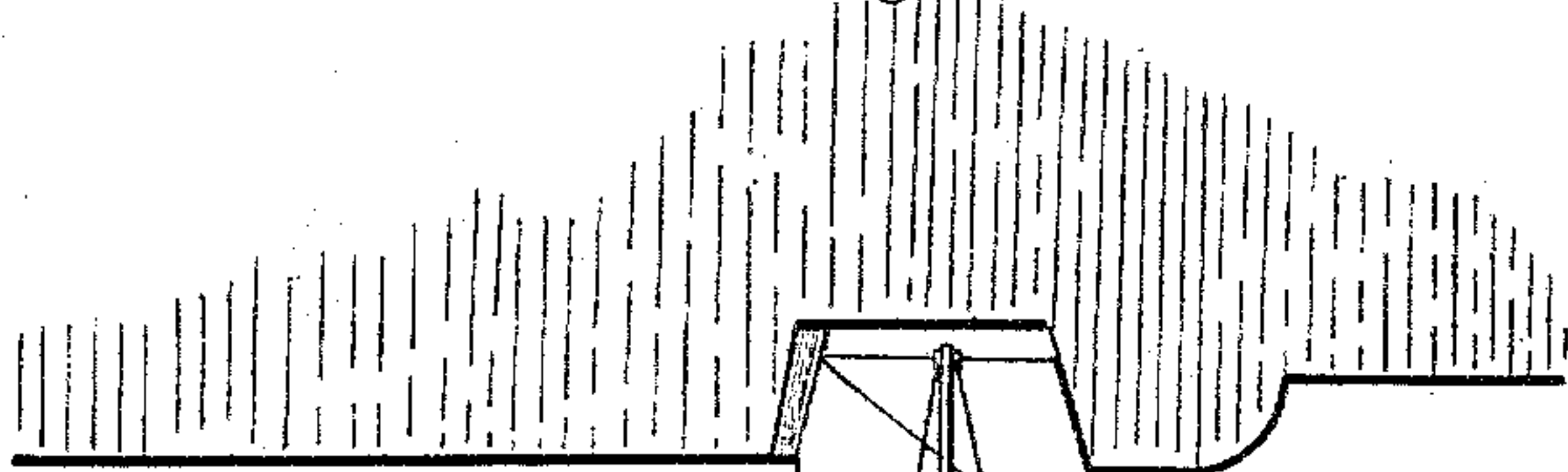
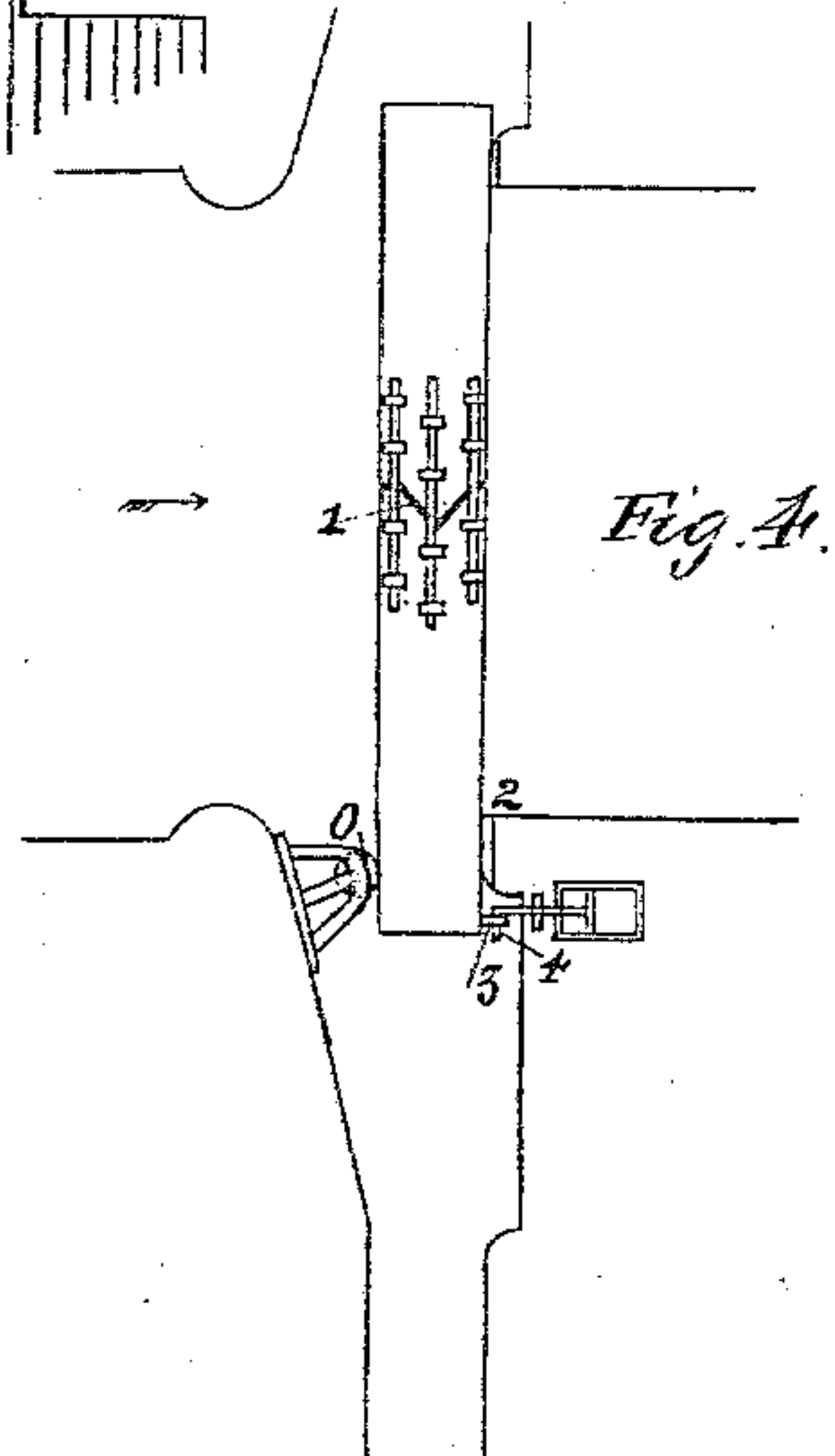
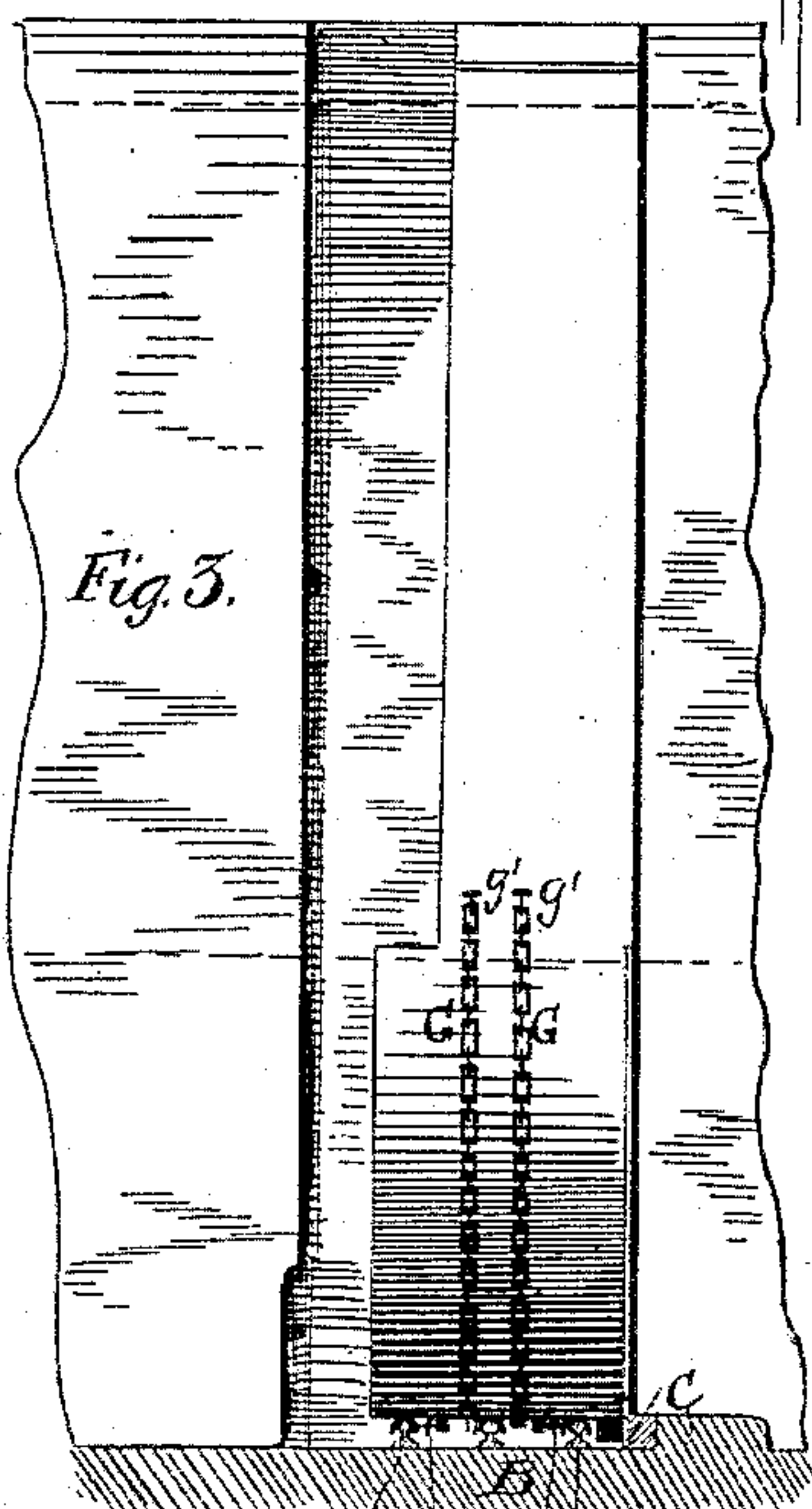
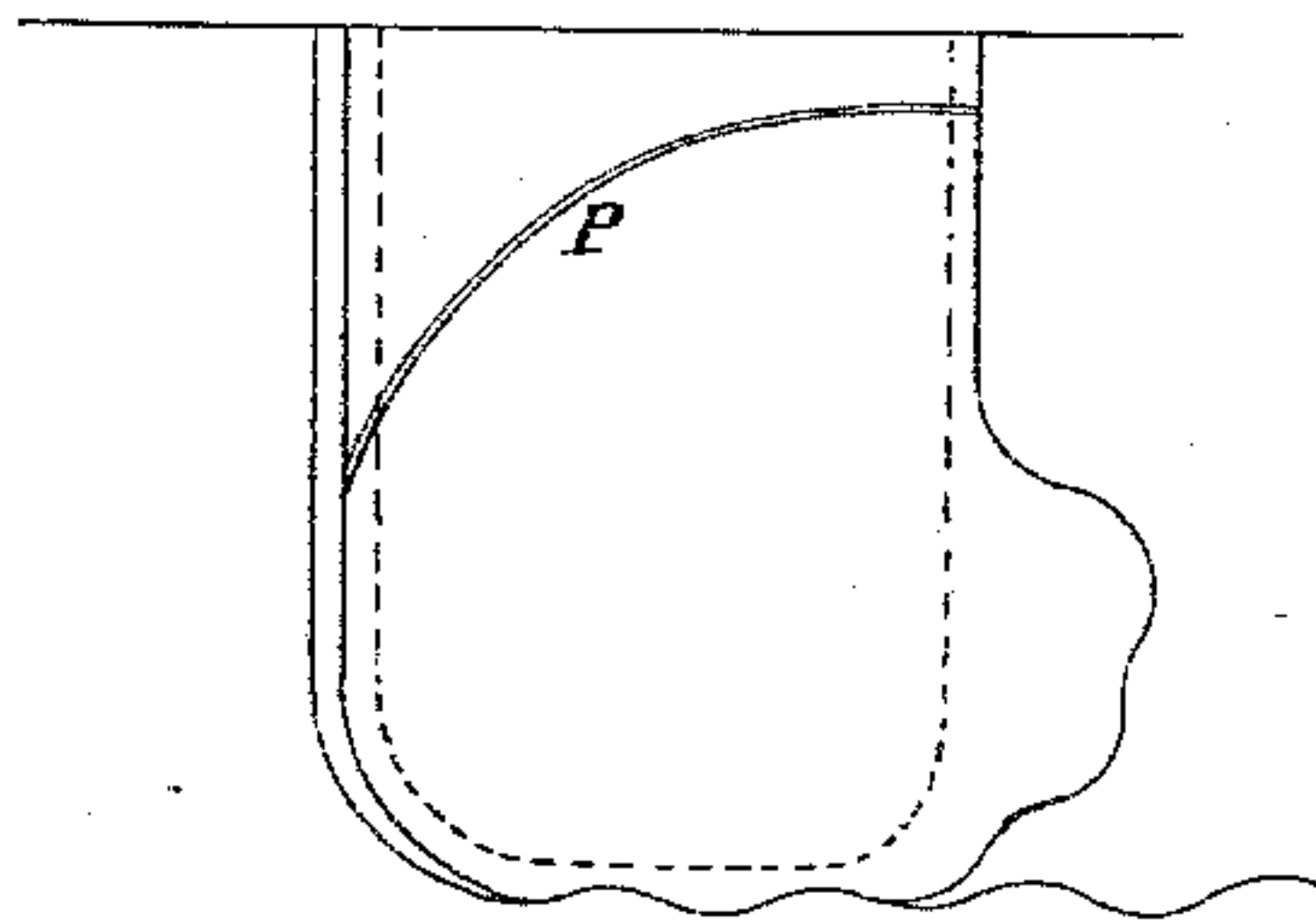


Fig. 5.



Attest:
b. W. A. Brown,
Attorney.

Inventor:
R. E. Peary,
by J. B. Brock, atty

UNITED STATES PATENT OFFICE.

ROBERT E. PEARY, OF CAPE ELIZABETH DEPOT, MAINE.

LOCK-GATE.

SPECIFICATION forming part of Letters Patent No. 339,458, dated April 6, 1886.

Application filed October 31, 1885. Serial No. 181,441. (No model.)

To all whom it may concern:

Be it known that I, ROBERT E. PEARY, a citizen of the United States, residing at Cape Elizabeth Depot, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Lock-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.

Figure 1 represents a transverse section of a canal-lock, to which my improvements have been applied, showing the lock-gate and operative mechanism in side elevation; and Fig. 2 is a top plan view of the same, showing in outline a portion of the lock. Fig. 3 is an end elevation of the lock-gate and gate-recess. Fig. 4 is a diagram view showing a double lock-gate embodying my invention, and other details hereinafter referred to. Fig. 5 is also a diagram view showing a modification of my improved gate.

My present invention relates to gates for locks, docks, caissons, and other similar structures.

The objects of my improvements are to provide structures of the character above referred to with a gate or gates which may be easily opened or shut, notwithstanding the size of the structure to which they may be applied or the lift which may be required.

With these objects in view the invention consists of a rolling lock and dry-dock gate, having means for opening and closing it, means for balancing it, means for holding it in position and keeping it upon its sill, and means for correcting any deflection of its alignment, all of which will be hereinafter fully set forth, and the points of novelty therein indicated in the claims.

To enable others skilled in the art to make and use my invention I will now proceed to describe it in detail, referring to the different parts by appropriate reference-letters, the same part being designated by the same reference-letter in all the figures.

A represents a lock-gate. This gate may be arranged either as a single or double gate, and for any practical lift. The gate will, of course, be constructed of varied dimensions

to suit the service required of it in its application to locks, docks, or other like structures.

Each gate has an arc-shaped surface, preferably upon the bottom and outer side, upon which the gate rolls in its movements.

B is the sill of the gate, and C is the miter-sill in the bottom of the lock. The rounded edge of the rolling gate may be variously modified to secure good results—as, for example, by the addition of a curved extension frame-work, D, to the outer edge of the gate.

a is a water-ballast compartment in the lower part of the gate. The upper portion of the gate may be an inclosed box or an open truss or trusses plated on the downstream side. The arc-shaped edge of the gate rests upon rails E laid upon the gate-sill B. The gate itself may have flanges conformable to the rails.

The lock-gate is prevented from having any slip or dislodgement in its operative movements in a novel manner. To effect such purpose a series of wire-ropes or chains are employed.

F F represent parallel chains secured to the bottom of the gate (when in its closed position) at one end and to the bottom of the lock-sill at the other.

G G are similar chains, secured at one end to the outer side of the gate and at their other ends to the lock-sill.

f' f' are the points of attachment of chains F F to the gate, and f f the points on the lock-sills, where the other ends of the chains are secured. In like manner g g and g' g' represent the points to which chains G G are fastened to the sill and gate, respectively. This method of securing the rolling gate in the same relative operative positions is productive of two results in that it prevents the gate slipping in any of its rolling movements and also from becoming derailed or dislodged.

The axis of the gate-recess of the lock is at right angles to the axis of the lock in the drawings; but the gate and gate-recess may be arranged for operation at an oblique angle to the lock's axis. The depth of the gate-recess is such that the gate may roll to that degree as will fully clear the passage through the lock. The gate-sill and bottom of the gate-recess may be other than a horizontal plane, and the

construction of the gate made to conform thereto.

The gate shown in the drawings is adapted to run on triple rails, and the chains or cables are arranged to work in pairs. I prefer this form; but it will be obvious that the arrangement of the tracks may be changed or dispensed with altogether, and that the chains may be single instead of in pairs and still come within the spirit of my invention.

H represents the operating connecting-rod of the gate. It has pivotal connection at the upper opposite end of the gate from the side on which it is worked. This rod has guys for strengthening and adjusting the alignment of the gate, which will be described.

My preferred method of operating the gate is by means of a car, I, running upon rails laid upon both sides of the gate-recess K. The car spans the recess. The connecting-rod H is pivotally connected to this car. The car is made to run back and forth upon the track, and thus roll the gate open or close it through the rod-connection.

For the purpose of correcting any deflection which may be given to the gate or connecting-rod by wind or current or other causes, I make the guy-ropes adjustable. This is done by securing these ropes L L at their outer extremities fast to the connecting-rod and leading them around pulleys M M on the car I to a common capstan, N, also on the car. By rotating the capstan in one direction one guy-rope is drawn in or tightened and the other paid out, and vice versa. In this way the upper portion of the gate A is adjusted and supported precisely in the plane of revolution.

Motion may be communicated to the car in various known ways. A boiler and engine may be located on the car itself for the purpose, or a stationary plant may be used with cable connections. Hydraulic power may be utilized, and may be derived from the waste-flume. The invention is not confined to the means for working the gate.

Where the gate is a single one, a shallow recess is made in the lock, opposite the gate-recess, to receive its outer end. Where the gates are double, the meeting sides are dovetailed and locked or clamped together in any suitable manner to secure both a water-tight connection, a mutual support, and the requisite strength.

It will be observed in the operation of my improved lock-gate that the operating connecting-rod is attached at the point having the maximum leverage for rolling the gate throughout every portion of its movement.

In the movement of the gate the water-ballast in the compartment a shifts its position constantly as the gate rolls in either direction, so that the force required to move the gate during any period of its throw is practically the same. In other words, the gate is perfectly balanced throughout all its operative movements. It follows then that, being a balanced gate, the power required to move it

is such only as to give it a movement against the friction of the gate and the displacement of the water.

The water-ballast of the gate is regulated by a pump in the usual manner, the gate by means of the ballast being adjusted to bear upon the rails as lightly or as heavily as may be judged desirable.

The shape of the gate-recess may be variously modified in order to facilitate the putting of the gate in position for operation and its removal for any purpose. The configuration (shown in Fig. 2) of the gate-recess serves such purpose for the gate here described.

Diagram Fig. 4 indicates the arrangement where a double gate is applied to a lock. The dovetailed meeting edges of the gates are shown at 1.

O, Fig. 4, is a guide-roller, for the purpose of insuring the seating of the gate against the abutment 2, and for guiding the movements of the gate.

P indicates, approximately, the path which the roller will describe upon the gate in its operation. (Shown in Fig. 5.) A rail may be laid at that point upon the gate. Roller O is mounted in bearings projecting into the gate-recess.

Another means for holding the gate against its seat when closed is indicated in Fig. 4. It consists simply of a cylinder and piston, the piston-rod of which is hook-shaped at its outer end. The gate A carries an eyebolt, 3, which, when the gate is closed, passes over the hooked end 4 of the piston-rod. The piston-rod is then forced inwardly, thereby drawing the gate tightly against the abutment 2.

In Fig. 1 the dotted lines 5 indicate the location of an auxiliary water-compartment, which I may use as an additional means for facilitating the operation of the gate. This compartment is designed to be connected to a source of water-supply, so that when it is desired to open the gate the compartment may be filled and emptied. When it is charged with water, it acts as a weight to aid the opening of the gate, and when emptied (when the gate is open) offers no impediment to its closing.

In diagram Fig. 5 the rolling edge of the gate and the gate-sill are modified by making their surfaces corrugated. This modification will prevent any slipping of the gate upon its sill, and enable me to dispense with the employment of the chains for the same purpose, should I so desire. A rack and pinion might also be employed for the same purpose.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A tilting rolling gate for canal-locks, docks, and the like, provided with a substantially water-tight side or sides for controlling the passage of water and vessels through the lock or chamber, as set forth.

2. A tilting rolling gate for locks, docks, and similar structures, having a shifting ballast, as set forth.

3. A tilting rolling gate having a shifting ballast, in combination with a gate-receiving recess in the side of the chamber or lock.

4. A tilting rolling gate, in combination with a gate-receiving recess in the side of the lock or chamber, both the gate and recess being made substantially water-tight, whereby the passage of water and vessels through the chamber may be controlled, for the purposes set forth.

5. The combination of a lock, dock, caisson, or like chamber, and a tilting rolling gate, substantially as set forth.

6. The combination of a lock, dock, caisson, or similar chamber, a gate-recess communicating with the chamber, and a rolling tilting gate for operation within the chamber and gate-recess, substantially as set forth.

7. A tilting rolling gate for locks, docks, and similar structures, having a water-ballast, as set forth.

8. A tilting rolling gate for locks and the like, having means, substantially as described, upon the gate and gate-sill for preventing any slipping of the gate in its operative movements.

9. A canal-lock, dock, or the like having a tilting rolling gate provided with a shifting ballast, in combination with a track laid upon its operating-sill, as set forth.

10. A tilting rolling gate, a sill upon which it operates, and a chain or rope attached to the outer end or part of the sill and to the bottom of the gate, all in combination, as set forth.

11. A tilting rolling gate, a sill upon which the gate operates, and a chain attached to the outer edge of the gate at one end and to the sill at the other, all in combination, as set forth.

12. A tilting rolling gate, a sill upon which the gate operates, a chain or rope attached to the gate-bottom and to the sill, and a second chain attached to the outer edge of the gate and to the sill, all in combination, as set forth.

13. A gate having an arc-shaped edge upon

which it rolls in opening or closing and provided with a shifting ballast, as set forth.

14. A tilting rolling gate, a chain attached to the sill and outer edge of gate, and another chain attached to sill and to bottom of gate, a track upon the gate-sill, and corresponding flanges upon the gate, all combined to operate as set forth.

15. A water-chamber and, in combination, a tilting rolling gate for locks and similar structures, having a curved extension framework attached to the side and edge of the gate, and upon which it tilts and rolls, as set forth.

16. A gate having a shifting ballast and an arc-shaped edge upon which it rolls, in combination with a hinged connecting-arm for operating the gate.

17. A water-chamber, and a gate having an arc-shaped edge upon which it rolls, in combination with a hinged operating-arm pivoted to the gate at a point substantially opposite the segmental bearing of the gate.

18. A gate, a gate-recess in the side of the lock, a car spanning the gate-recess, means, as described, for moving the car, and a connecting-rod attached to the car and gate, all in combination, as set forth.

19. A gate, in combination with an operating connecting-rod having adjustable guy-lines for correcting any deflection of the gate.

20. A rolling tilting gate for docks, locks, and the like, provided with means, substantially as described, for holding the gate against its seat when shut.

21. A gate, a lock, dock, caisson, or like chamber, a gate-recess, a car spanning said recess and adapted to travel thereover, means, as described, for moving the car, and a connection between the car and gate, all in combination, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT E. PEARY.

Witnesses:

I. T. STRATTAN,
JAMES B. PHILP.