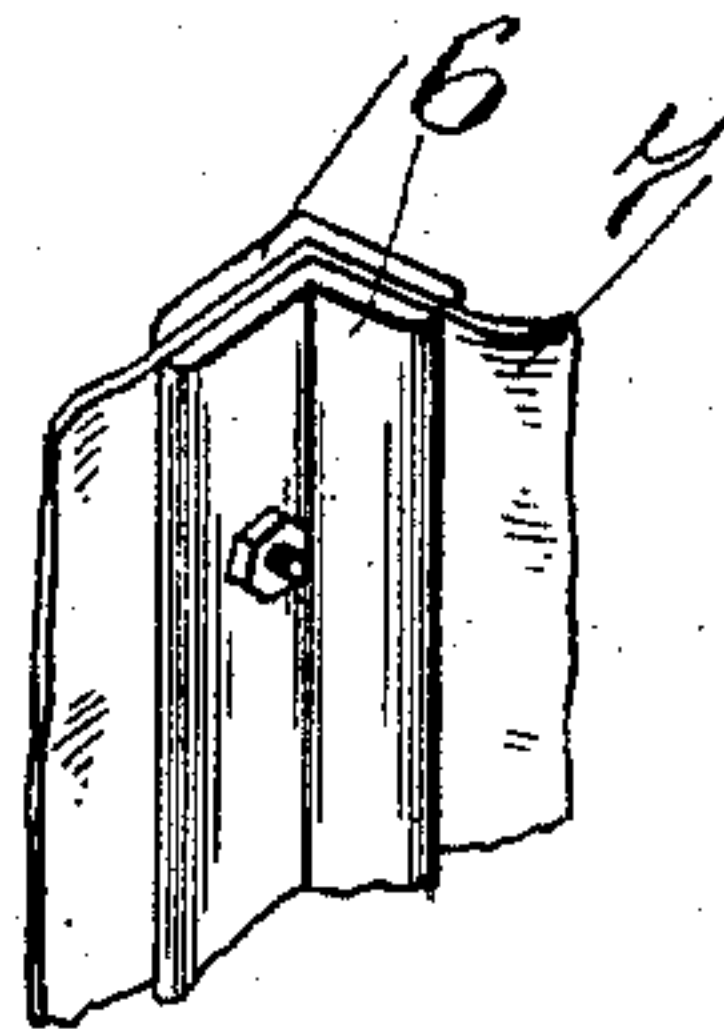
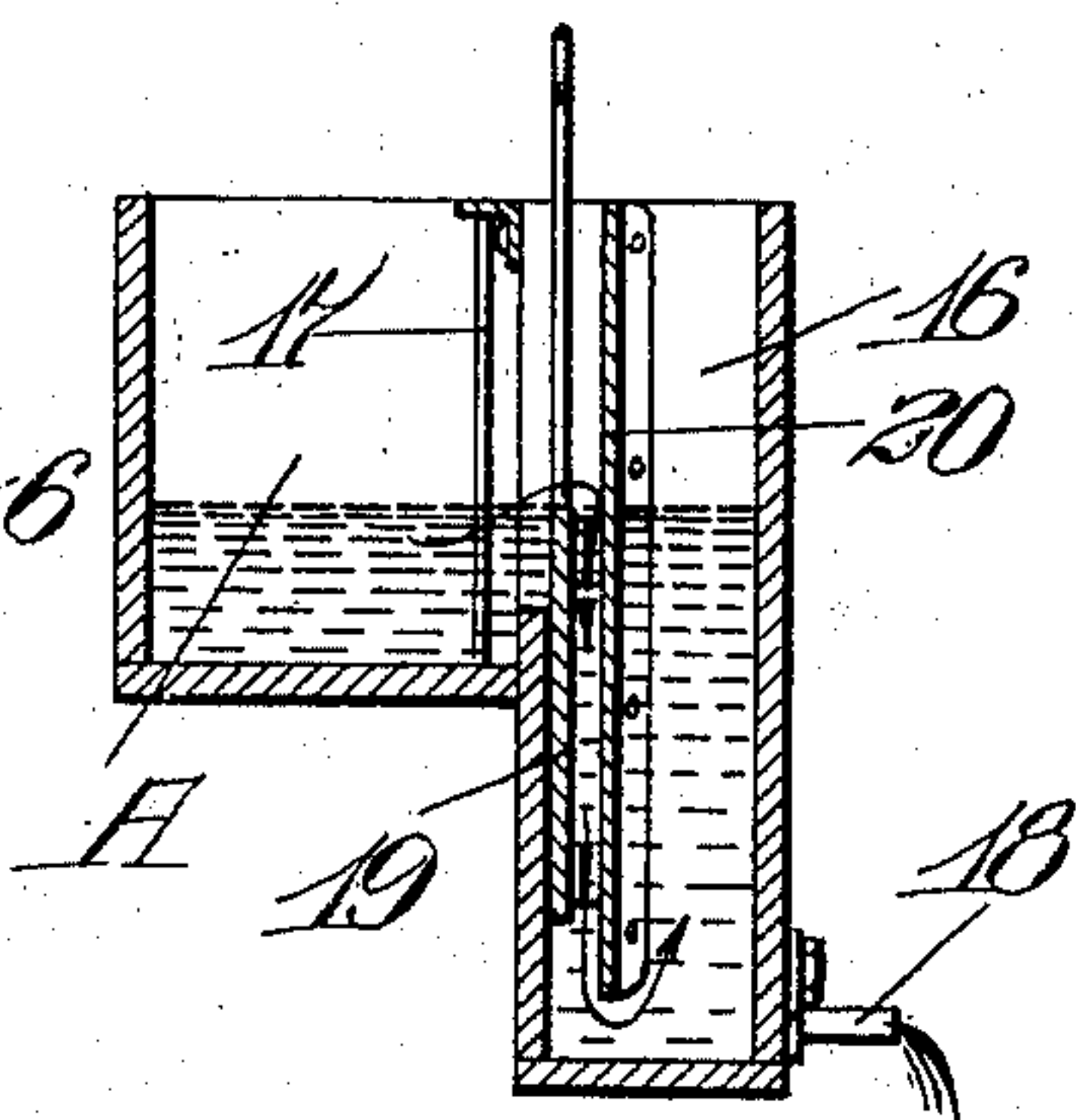
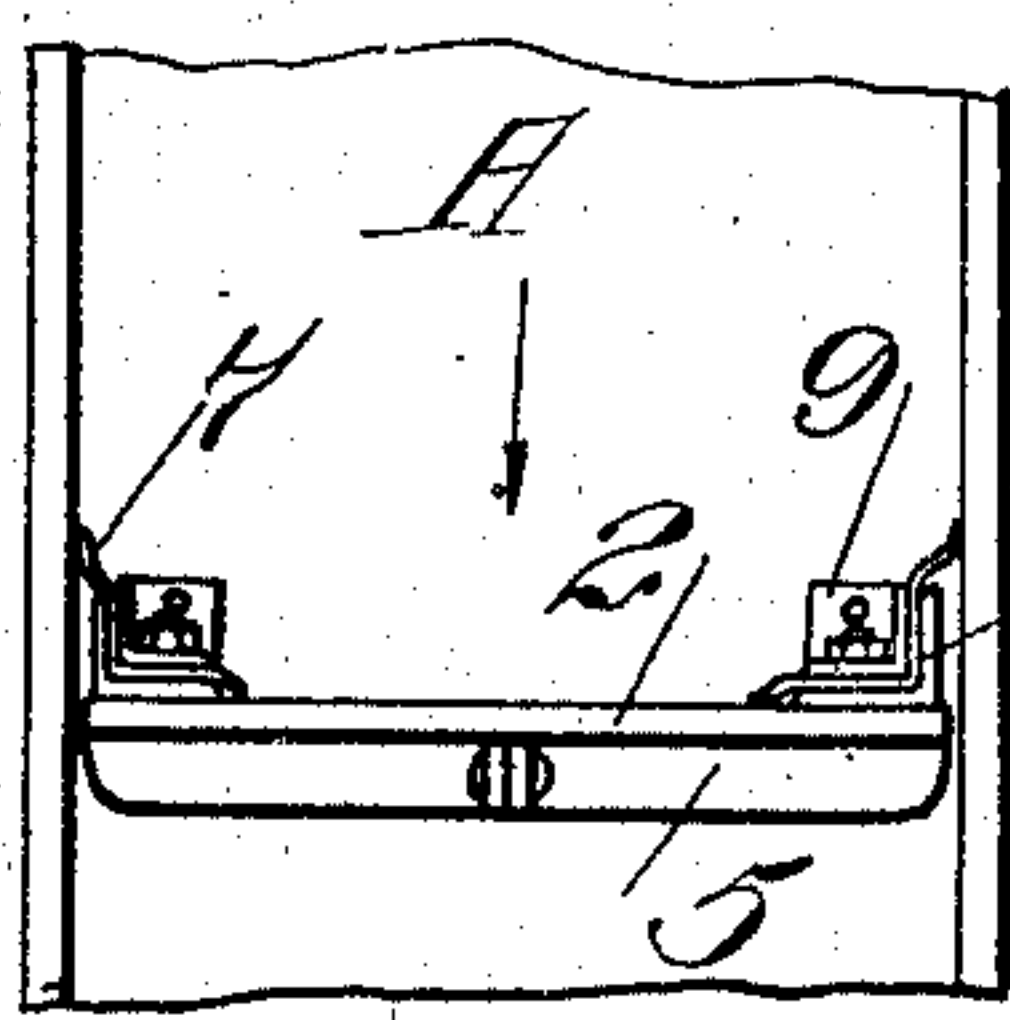
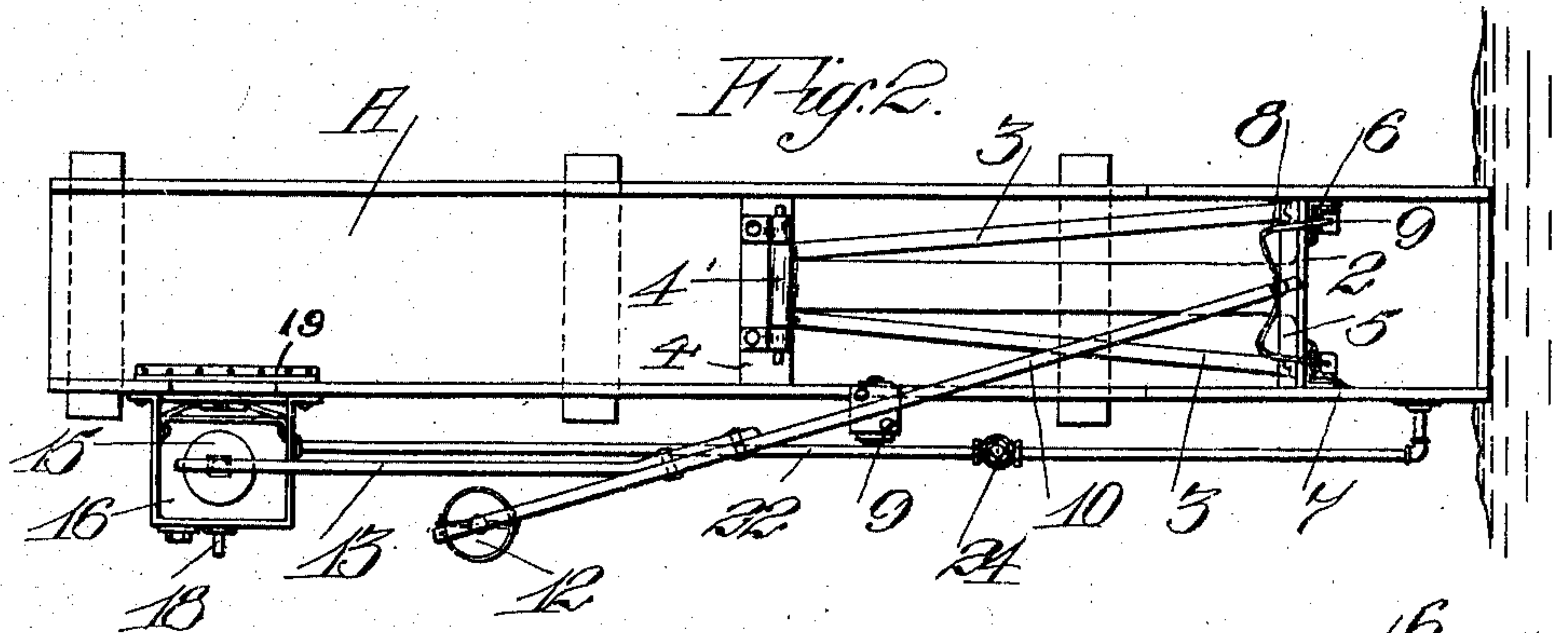
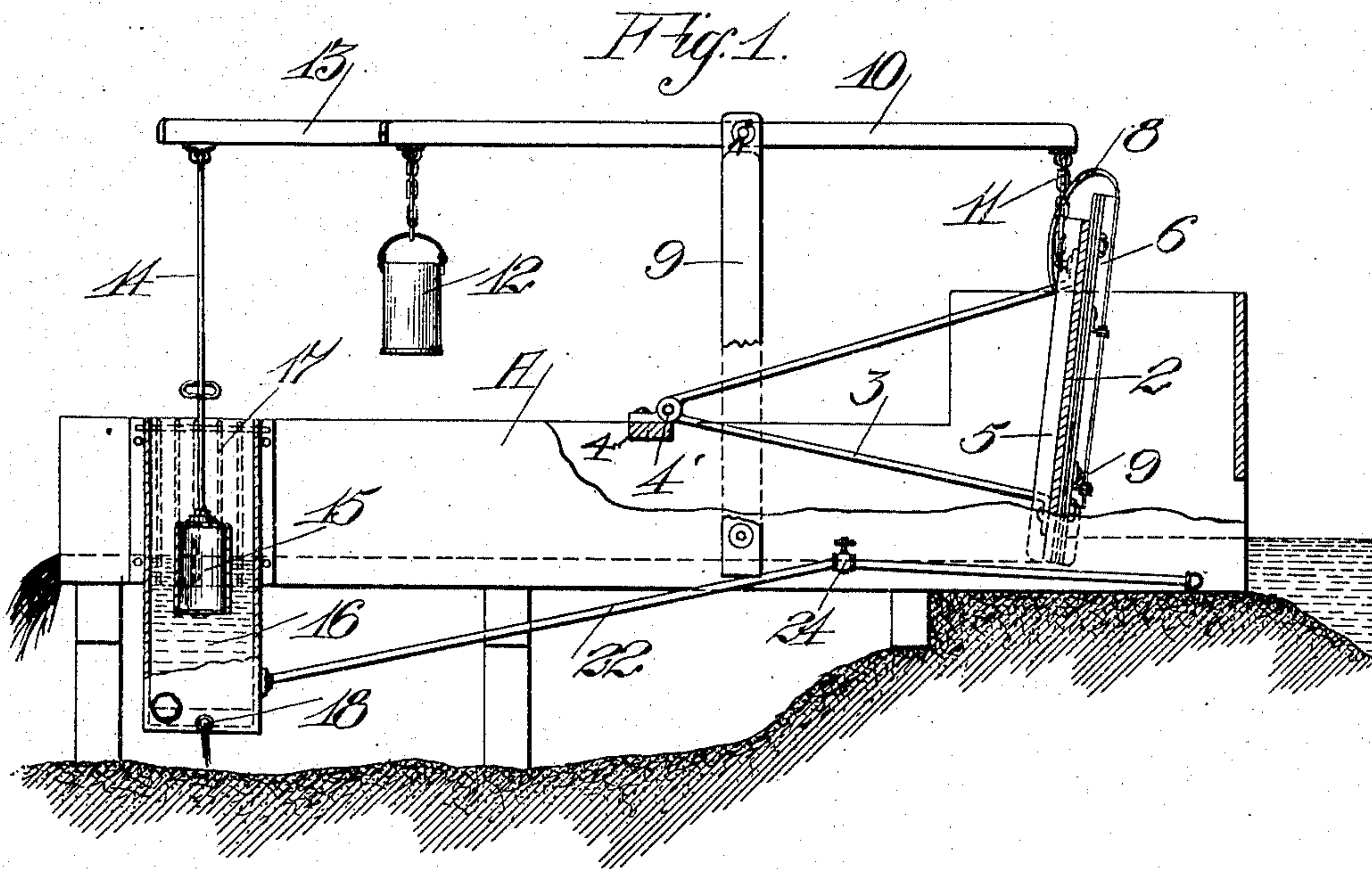


A. J. COLLAR.
DITCH GATE.

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970,308.

Patented Sept. 13, 1910.



Witnesses.
H. K. Berg.
G. E. Chaynard.

Fig. 5.

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UNITED STATES PATENT OFFICE.

ADONIRAM J. COLLAR, OF YREKA, CALIFORNIA.

DITCH-GATE.

970,308.

Specification of Letters Patent.

Patented Sept. 13, 1910.

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To all whom it may concern:

Be it known that I, ADONIRAM J. COLLAR, citizen of the United States, residing at Yreka, in the county of Siskiyou and State of California, have invented new and useful Improvements in Ditch-Gates, of which the following is a specification.

My invention relates to an improved gate for ditches, and like means for providing a flow of water.

It consists in the combination of a rising and falling gate having fulcrum rods, and counterbalancing weights, and mechanism whereby the gate is automatically actuated, and a regular flow maintained.

It also comprises details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation partly in section. Fig. 2 is a plan view. Fig. 3 is a section through the sluice and well. Fig. 4 is a plan view showing the position of the gate in the sluice. Fig. 5 shows the manner of holding the flexible packing strip.

A is a sluice through which a body of water flows, and 2 is a gate which is fitted sufficiently closely across this space to be moved up and down without undue friction. This gate has connected with it radius rods 3 of considerable length, and these rods extending along the sluice are hinged or pivoted at 4 to a fixed transverse bar 4, which forms a fulcrum around which the rods and the gate may rise and fall in an arc of a circle. In order to stiffen the gate, and to prevent twisting strains thereon when the sluice is wide, I have shown braces 5 which are fixed to the back of the gate, and diverge from the top downwardly to the outer edges of the bottom. One of the radius rods connects with the gate and the brace ribs at a suitable point below the top of the gate. The other two rods diverge from the hinge point, and connect with the ribs at the bottom of the gate, thus forming a double triangular brace which insures the rigidity of the gate of any dimensions, and its easy operation.

In order to provide means for preventing undue leakage, and a close joint at the edges of the gate, without too much friction, I have shown two inclined iron strips 6 bolted together, with a flexible packing 7 between them. One side of each angle iron strip

rests against the gate, and is held in place by elastic arms 8 passing through lugs 9 fixed to the angle iron strips. The other edges of the strips extend parallel with the side of the sluice, and the flexible packing strip projects from these edges, and is adapted to be pressed snugly against the side of the sluice by the pressure of the water. The angle iron clamping strips being thus loosely mounted are free to turn upon their supports, and thus allow the joint to be easily maintained. The strips are preferably bent at an obtuse angle, leaving room for the bolt-heads to hold them together, and to allow the edges of the packing to rest against the side of the sluice. This furnishes a water-tight packing for the gate, and yet causes very little friction. The sides of the sluice at this point are preferably made of or lined with some smooth surfaced metal, or other surfacing material. By means of this peculiar mounting, these strips may be raised and removed from the gate at will.

At a suitable distance from the gate, and beside the sluice, is a fulcrumed post 9, at the top of which is hinged a beam 10. The gate is suspended from the end of the fulcrumed beam which projects over the sluice, by means of a chain or other flexible connection 11. At the opposite end of the beam is suspended a counterweight 12, which may be in the form of a bucket containing rocks or some other heavy material. This weight should be slightly less than that of the gate and its fixtures, when the gate is used for a head gate, or when a uniform flow of water is to be maintained below the gate. It may be considerably heavier than the gate when using it for a relief gate, or when a uniform height of water is to be maintained above the gate, as will be more fully described hereafter.

Bolted to the side of the beam 10 and just behind the fulcrum post 9, is a shorter beam 13, which is set slightly divergent from the beam 10, so that it stands substantially parallel with the sluice, and its outer free end is above, and to one side of the wall of the sluice. Suspended from this end of the supplemental arm by means of a rod 14, or equivalent connection, is an auxiliary weight 15. This auxiliary weight can be comparatively small and it is suspended within a well or tank 16, fitted to the side of the sluice, and having an opening protected by

gratings 17. Through this opening water is allowed to flow into the tank, and the gratings will prevent any obstructing material from passing through. A supplemental weight thus attached is of considerable importance, since it may be made small, and a small tank employed which, when large gates are used, is an important item. The supplemental weight 15 is preferably in the form of a float which will be affected by the rise and fall of water within the tank. This tank is provided with a small outlet 18 which draws the water from it, but which is so small that when the flow of water through the sluice increases, and is admitted into the tank, this flow will cause the water to rise within the tank, and thus actuate the float, and raise the end of the fulcrumed beams, and correspondingly depress the gate and reduce the flow of water beneath it.

The feed-way from the sluice into the tank is controlled by a movable flash-board 19, which is guided so as to be raised and lowered, and behind this flash-board is a partition 20, extending not quite to the bottom of the tank, making a small forebay at the flash-board, which prevents water from dashing over into the float 15 in case of sudden rise of the water. This feed end is made wide, and the outlet is very small, as enough water will flow over the feed to maintain a certain amount within the tank, when the gate is standing about stationary. The wider the feed, the shallower the sheet of water which pours over the flash-board, and the less chance there is of any debris flowing over into the tank. The flash-board 19 is raised or lowered to set the flow of water in the ditch or sluice at the right depth to suit the operator, and the water will then always flow just flush with the top of the flash-board.

The operation will then be as follows: As long as there is plenty of water passing through the gate, it will flow in the ditch or sluice just flush with the upper edge of the flash-board, and no higher; as water at any appreciable height above the flash-board will cause the float 15 to rise, and the gate being heavier than the counterbalance weight, the gate will descend enough to prevent surplus water coming through, and will thus maintain the water in the ditch at the desired level. During high water, when the water stands nearly level with the top of the gate on its up-stream side, the gate will remain very close to the bottom of the sluice, as the increased pressure will force water enough under the gate to run even with the top of the flash-board. Now when the water begins to lessen in the stream from which it is being drawn, less water will pass under the gate, and the water will cease to flow over the flash-board. The drainage from the tank through the small opening will

then lower the weight and raise the gate a little, thus increasing the flow in the sluice. The gate will continue to rise as long as the water falls in the stream until there is not enough to fill the sluice to the top of the flash-board, when the gate will rise to its full height, and remain in this position as long as the water is low. Should the flow of water within the sluice be considerably increased when the gate is wide open, the increased flow will pass over the top of the flash-board, and raise the weighted float, thus lowering the gate, and reducing the flow to the normal amount.

If it is desired to close the gate and keep it closed, it is effected by means of a small pipe 22, leading from the sluice at a point above the gate, and opening into the tank 16. The flow from this pipe is controlled by any ordinary or suitable stop cock, as at 24, and when this flow is not desired, the stop cock may be closed, and the device will then operate as previously described. It is preferred that this pipe should have its highest point near the stop cock, and descend each way to its entrance and exit points. The reason for this is that the water within the pipe being stationary, the inclines will assist to prevent the settlement of sediment, which might otherwise clog the pipe.

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

1. In combination with a sluice, a rising and falling gate, a fulcrumed lever having a fixed counterbalance weight, and a supplemental branch lever connected therewith, a float weight suspended from said supplemental lever, a tank within which said float is located, means for admitting water to said tank from the sluice, and an open escape passage from the tank.

2. In combination with a sluice, a fulcrumed counterbalanced lever, and a supplemental float suspended therefrom, of a gate having radius rods fixed to its back extending to a distance therefrom, and a bar and hinge joint to which the radius rods are connected.

3. In combination with a sluice, a gate fitting therein having radius rods converging from the back of the gate, and a hinge point about which the outer ends of said rods are turnable, of bars fixed upon the back of the gate, and coacting with the radius rods to stiffen the gate, and prevent its twisting, and a fulcrumed counterbalanced lever connected with the gate.

4. In combination with a sluice, a gate, a fulcrumed counterbalanced lever, with one end of which the gate is connected, radius rods connecting with the gate, a fixed hinge or fulcrum point to which said radius rods converge, angle iron strips loosely attached to the vertical edges of the gate,

flexible joint-forming strips clamped between said angle iron strips, and adapted to form joints with the sides of the sluice.

5 5. In combination with a sluice, a rising and falling counterbalanced gate, radius rods having one end attached to the gate, and converging to a distant fixed hinge point about which said rods are turnable, angle iron clamping strips with flexible packing
10 secured thereto, extending vertically contiguous to the edges of the gate, said strips having perforated lugs and elastic rods carried by the gate, and extending through the lugs, said rods acting to maintain joints
15 between the packing and the sides of the sluice.

6. In combination with a sluice, a rising and falling gate, having divergent fulcrumed radius rods, a fulcrumed counter-

balance beam, a branch of said beam extending parallel with the sides of the sluice, a tank located beneath the outer end of said supplemental branch, and having a small permanent discharge opening, a float located within the tank and connected with
20 the branch beam, an opening from the sluice into the tank, a flash-board and means for adjusting said board vertically, and a partition between the flash-board and
25 the tank.
30

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ADONIRAM J. COLLAR.

Witnesses:

JAS. R. TAPSCOTT,
CARRA BUSH.