

No. 653,271.

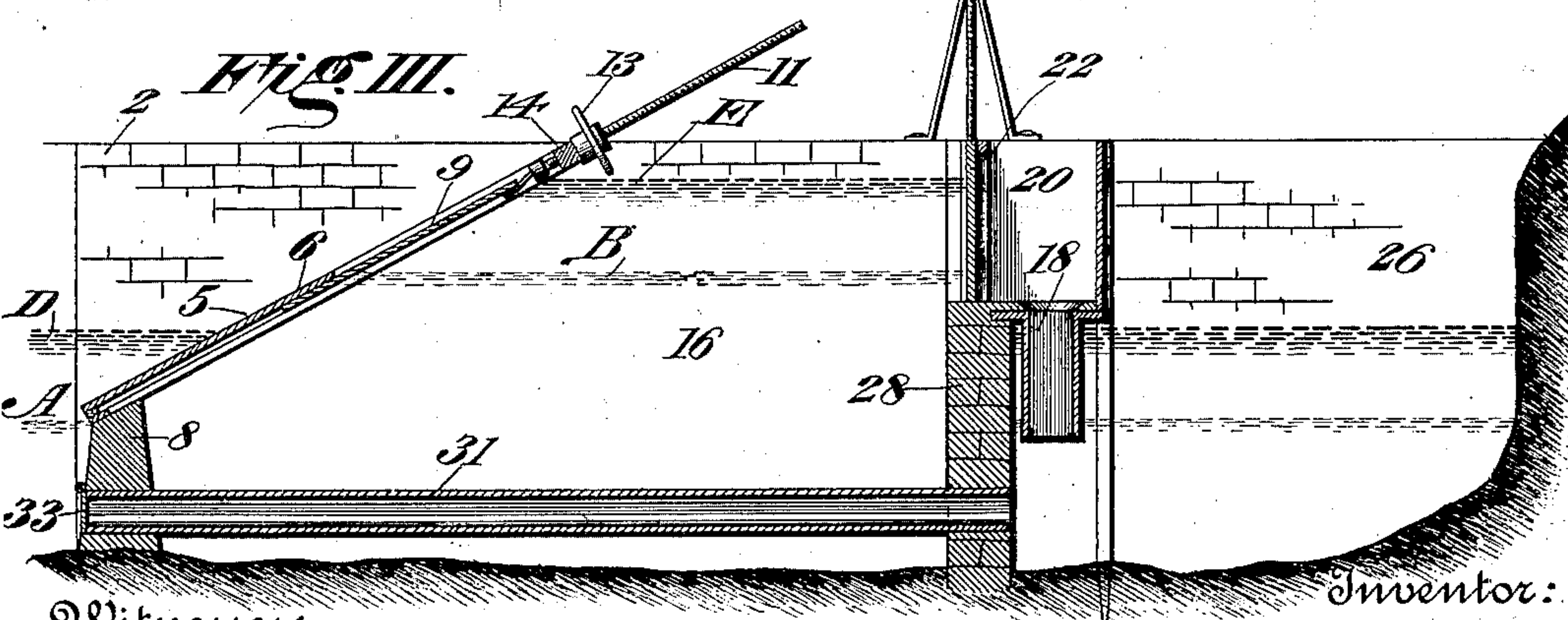
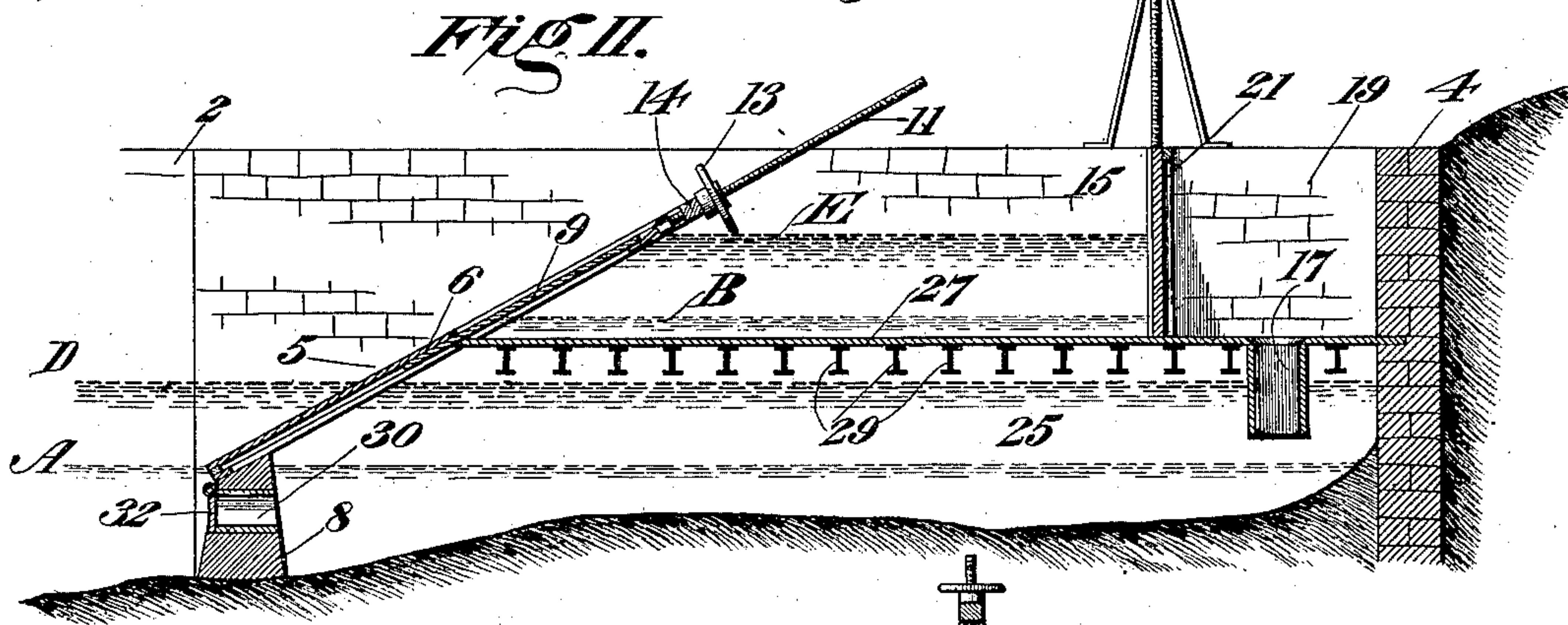
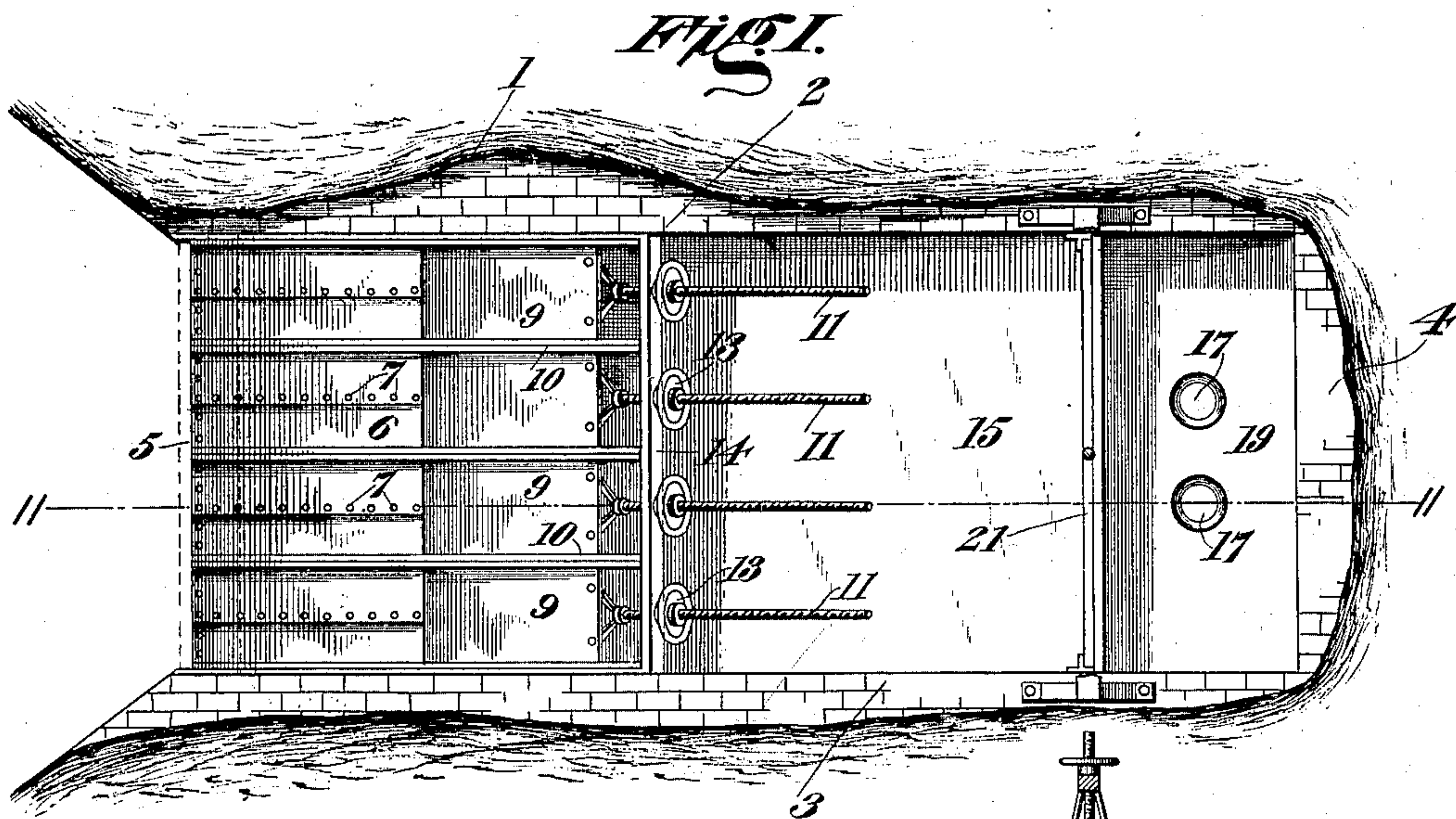
Patented July 10, 1900.

J. TONKIN, TH.

WAVE POWER.

(Application filed Oct. 17, 1898.)

(No Model.)



Witnesses:

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# UNITED STATES PATENT OFFICE.

JUAN TONKIN TH., OF IQUIQUE, CHILE.

## WAVE-POWER.

SPECIFICATION forming part of Letters Patent No. 653,271, dated July 10, 1900.

Application filed October 17, 1898. Serial No. 693,798. (No model.)

*To all whom it may concern:*

Be it known that I, JUAN TONKIN Th., of Iquique, in the Province of Tarapaca, Republic of Chile, have invented certain new and useful Improvements in Wave-Powers, of which the following is a complete specification, reference being had to the accompanying drawings.

My invention relates to that class of apparatus in which the force of waves, as of the ocean, is utilized for creating a head of water; and the object of the invention is to provide improvements in such apparatus, and more particularly in the wave-entrapping mechanism thereof or in that mechanism by which waves are caught and retained for the purpose of creating a water-pressure supply or head.

In the accompanying drawings, Figure I is a top plan view of one form of embodiment of my apparatus complete. Fig. II is a section on the line II II thereof. Fig. III is a view corresponding to Fig. II, illustrating a modified form of embodiment of my invention.

In the accompanying drawings I illustrate my apparatus as located in a cove or such an arm of the sea as affords a natural abutment-wall for three sides of my apparatus; but it may be stated that the employment of my apparatus is not limited to a site of that sort, however desirable such a site may be where it is found. In such a location, 1 indicates the shore-line, 2 and 3 perpendicular side walls of masonry, and 4 an end wall joining the side walls at their respective opposite extremities. At the ends of the side walls 2 and 3, opposite the end wall 4 and where the cove opens toward the sea, I provide a fixed inclined plane 5, which may be made of metal—for example, sheet-metal—plates 6, bolted or riveted together, as indicated at 7. This inclined plane preferably rests upon a subbase 8 of masonry, extending between and connecting the walls 2 and 3. Upon the same inclination with the plane 5 and preferably incorporated with it, so as to afford guides, I employ one or more sliding gates 9. In the form illustrated four gates are shown working, respectively, in guide-frames 10, that constitute also a part of a frame incorporated with the plates 6. The gates 9 are provided, respectively, with threaded rods 11, each of

which is actuated by a hand-wheel 13, working against a cross-bar 14, that is apertured at suitable intervals for the admission of the rods 11 and which is secured to the ends of the guide-pieces 10.

Under certain conditions, as above suggested, only one gate 9 may be required; but ordinarily I prefer a plurality in order that excessive weight in the gates may be avoided.

Behind the plane 5 and the gate or gates employed in connection therewith I provide a supply-tank, (indicated by 15 in Fig. II and by 16 in Fig. III.) This supply-tank is designed to afford a head of water from which water under suitable pressure may be supplied to a chute or chutes, (designated in Fig. II by the reference-numeral 17 and in Fig. III by the numeral 18,) as through a penstock, (indicated by 19 in Fig. II and by 20 in Fig. III.)

Within the chute 17 or 18 is located in practice a hydraulic motor. (Not illustrated.) The penstock in practice is preferably shut off from the supply-tank, as by a gate, (indicated by 21 in Fig. II and by 22 in Fig. III.) The gate works in suitable guides in the side walls and may be raised or lowered, as by a threaded rod, hand-wheel, and bar, corresponding to the rod 11, hand-wheel 13, and bar 14, previously described.

The chute 17 or 18 communicates with a discharge-tank, (indicated by 25 in Fig. II and by 26 in Fig. III.) The discharge-tank is designed to afford a low level for drawing off the water from the supply-tank and for affording a current in passing from one to the other adapted to drive a hydraulic motor located in the chute. The discharge-tank is separated from the supply-tank by a horizontal wall 27 in Fig. II and by a vertical wall 28 in Fig. III.

In Fig. II the horizontal wall is supported upon cross-girders 29, anchored in the opposite side walls 2 and 3, respectively, and supporting the horizontal partition 27, substantially in a plane in which the upper edge of the inclined plane 5 is located.

Outlet communication from the discharge-tank with the sea is afforded through numerous discharge-ports 30 (see Fig. II) or by a series of discharge-conduits 31. (See Fig. III.) The discharge-ports and discharge-conduits



are controlled by outwardly-opening valves 32 and 33, respectively. The object of the valves 32 or 33 is to permit efflux of water from the discharge-tank to meet the lowest level afforded by the trough of a wave of the sea, but to prevent influx. By this means a level in the discharge-tank approximate to the level of the trough of the sea-waves is obtainable. The valves referred to may be located at any convenient part of the means of discharge from the discharge-tanks and are illustrated as closing the outer ends of the discharge-ports 30 and the discharge-conduits 31, respectively.

The operation of my apparatus is as follows: Suppose the mean level of the sea to be indicated at A and that waves (not illustrated) are breaking against the inclined plane 5. The gate or gates 9 are lowered until the waves will force a supply of water over it or them into the supply-tank. The water thus supplied is held, say, at the level B in the supply-tank and may be drawn off thence through the chute or chutes 17 or 18 to the discharge-tank. The current so generated may be utilized for driving a motor located in each chute. As the tide rises the gate or gates 9 will be gradually raised by the aid of the hand-wheel 13 until high tide is reached, when the sea-level D will produce, say, a level E in the supply-tank. The rise of the level in the supply-tank will be accompanied by a corresponding rise of the level in the discharge-tank, but a proportionate difference of levels from which a current is derivable will be maintained between the two tanks.

What I claim is—

1. The combination with a discharge-tank

provided with means of preserving a low-water level therein, of a supply-tank provided with an inclined gate movable edgewise and adapted to afford means of preserving a higher level therein.

2. The combination with a discharge-tank provided with means of preserving a low-water level therein, of a supply-tank, a series of movable inclined gates in front of the supply-tank, and independent means for raising and lowering the gates, substantially as set forth.

3. The combination with a supply and a discharge tank, and means of preserving a low-water level in the discharge-tank, of a fixed inclined plane in front of said tanks, and a movable inclined plane, or gate cooperating with said inclined plane in front of the supply-tank, substantially as and for the purpose specified.

4. The combination with side walls and an end wall, of a fixed inclined plane connecting the side walls near their respective ends, opposite the end wall, a horizontal partition extending between the side and end walls, and the upper edge of the inclined plane, means of preserving a low-water level below the horizontal partition, and a movable inclined gate adapted to be elevated and depressed, with respect to the upper edge of the fixed inclined plane, and to afford means of preserving a high-water level above the horizontal partition, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

JUAN TONKIN TH.

Witnesses:

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