J. B. TAINTER.

DAM.

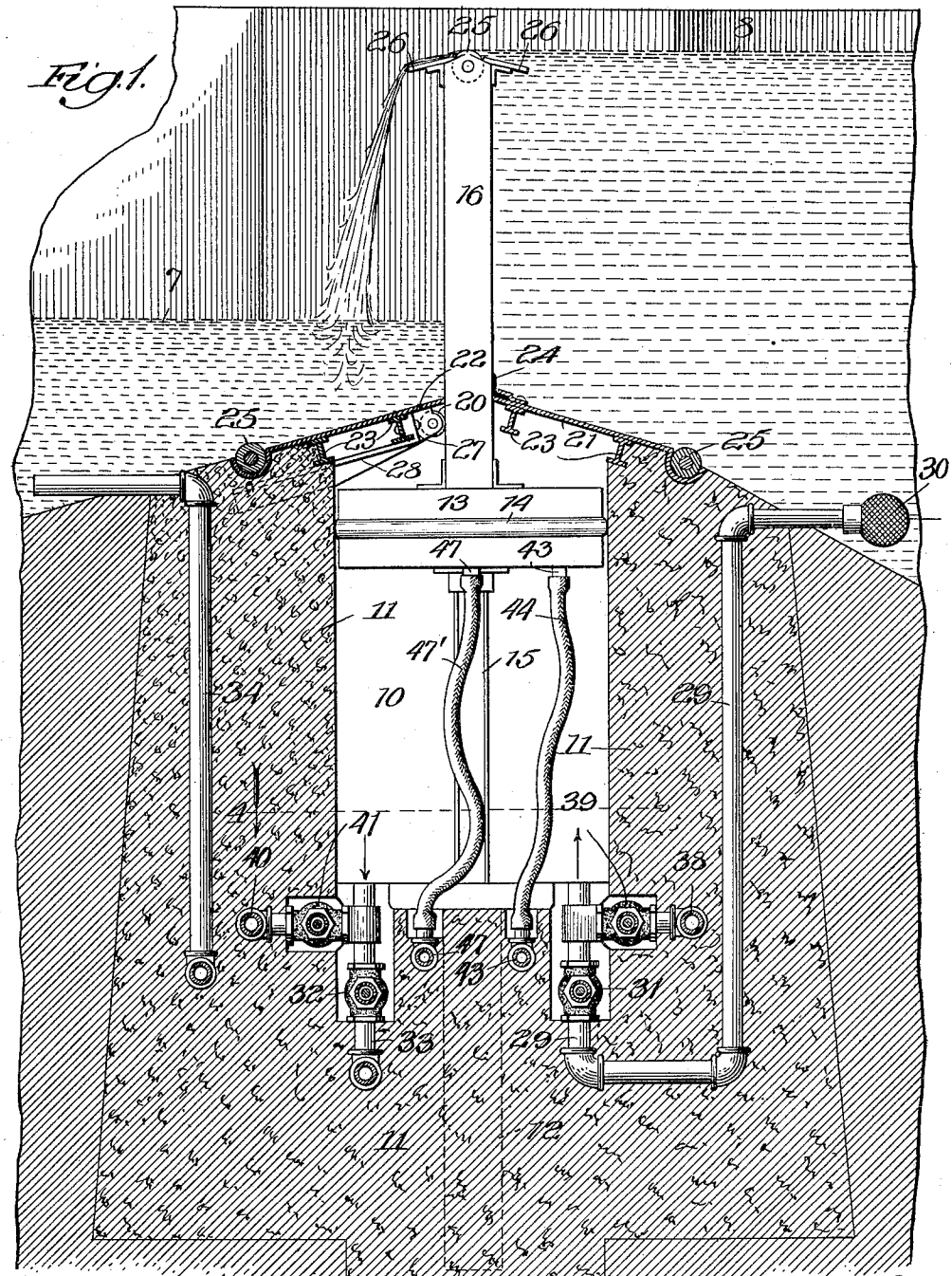
APPLICATION FILED APR. 28, 1913.

1,082,291.

Patented Dec. 23, 1913.

5 SHEETS—SHEET 1.

Fig. 1.



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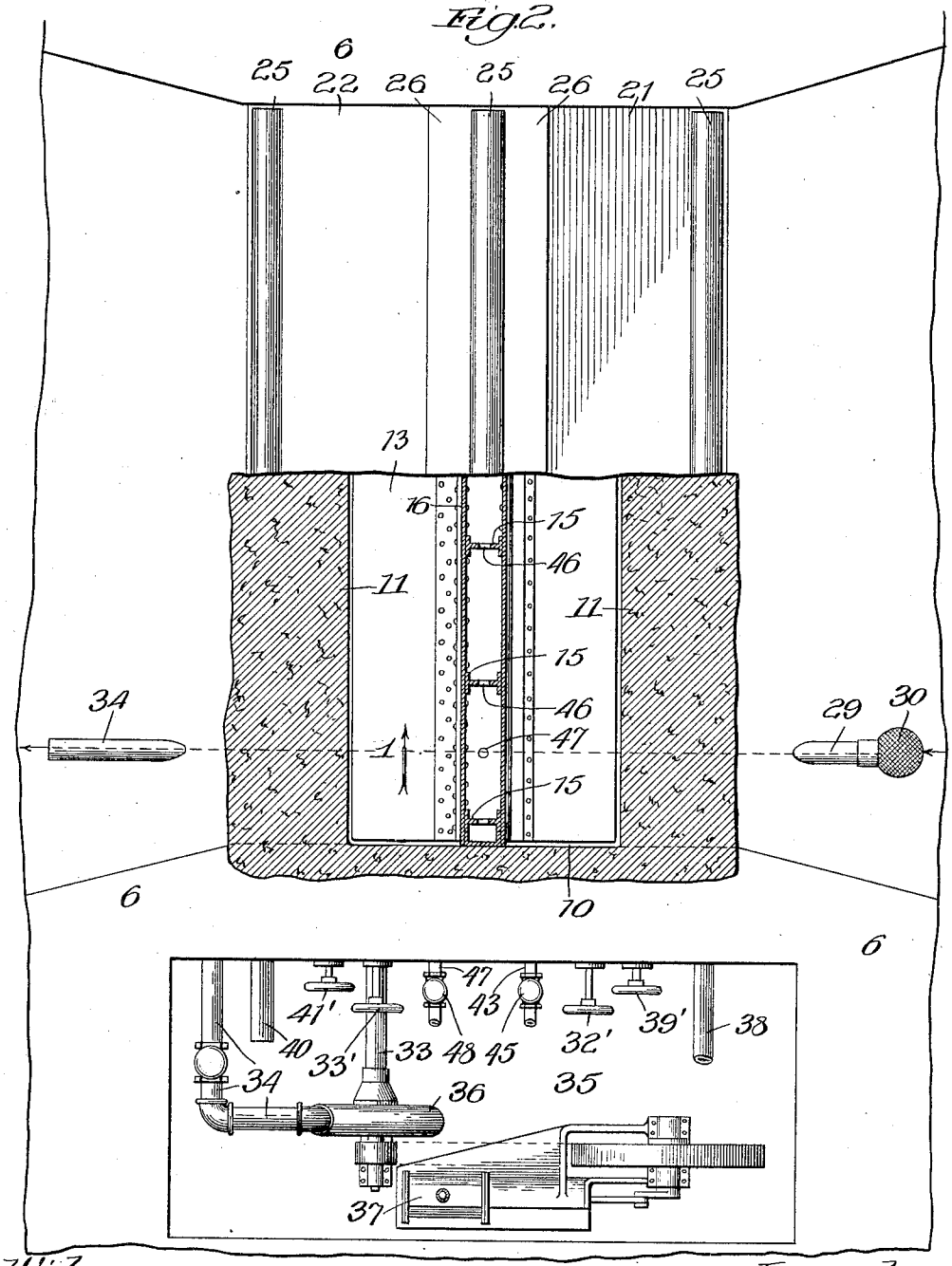
5 SHEETS—SHEET 2.

Fig. 2.



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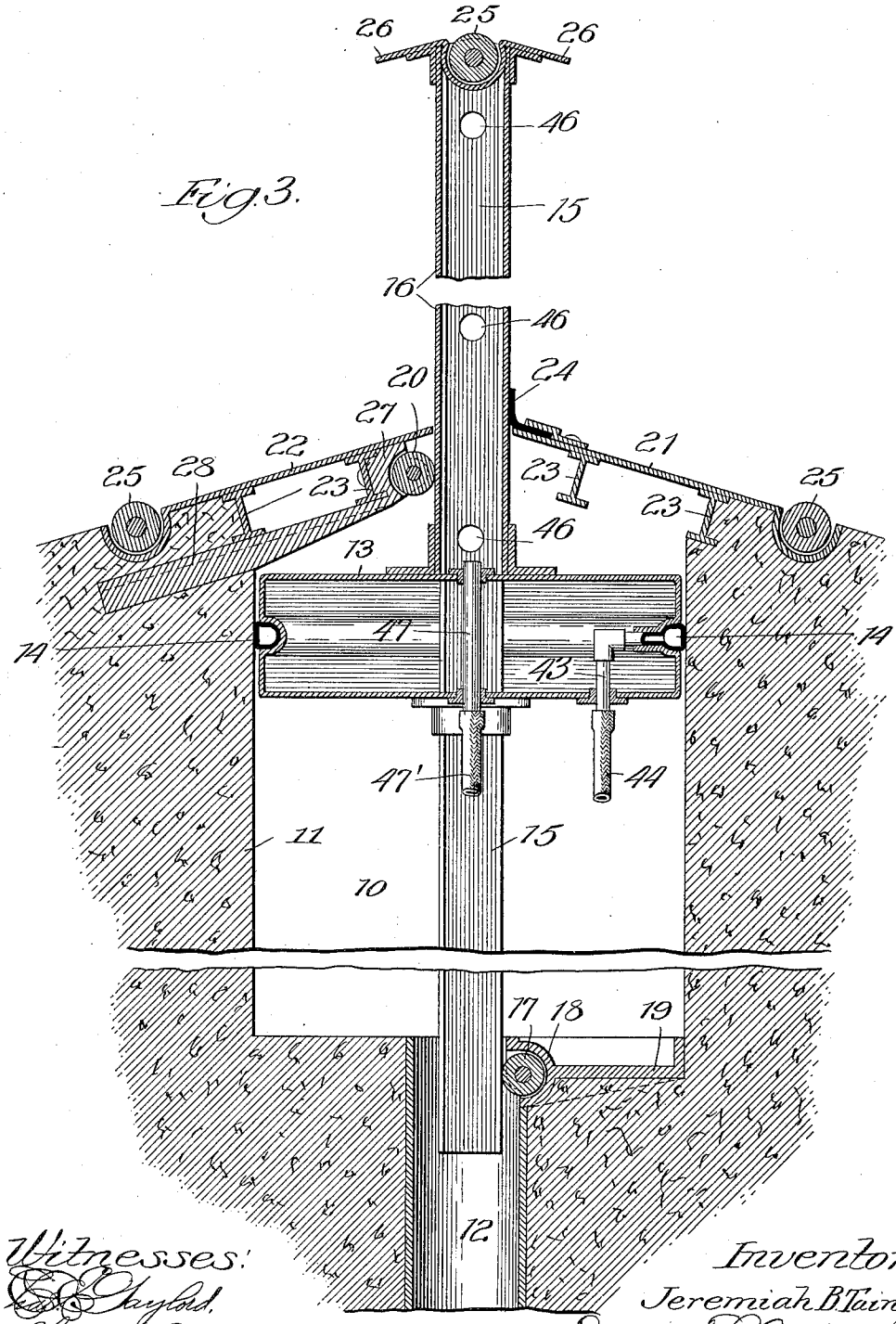
5 SHEETS-SHEET 3.

Fig. 3.



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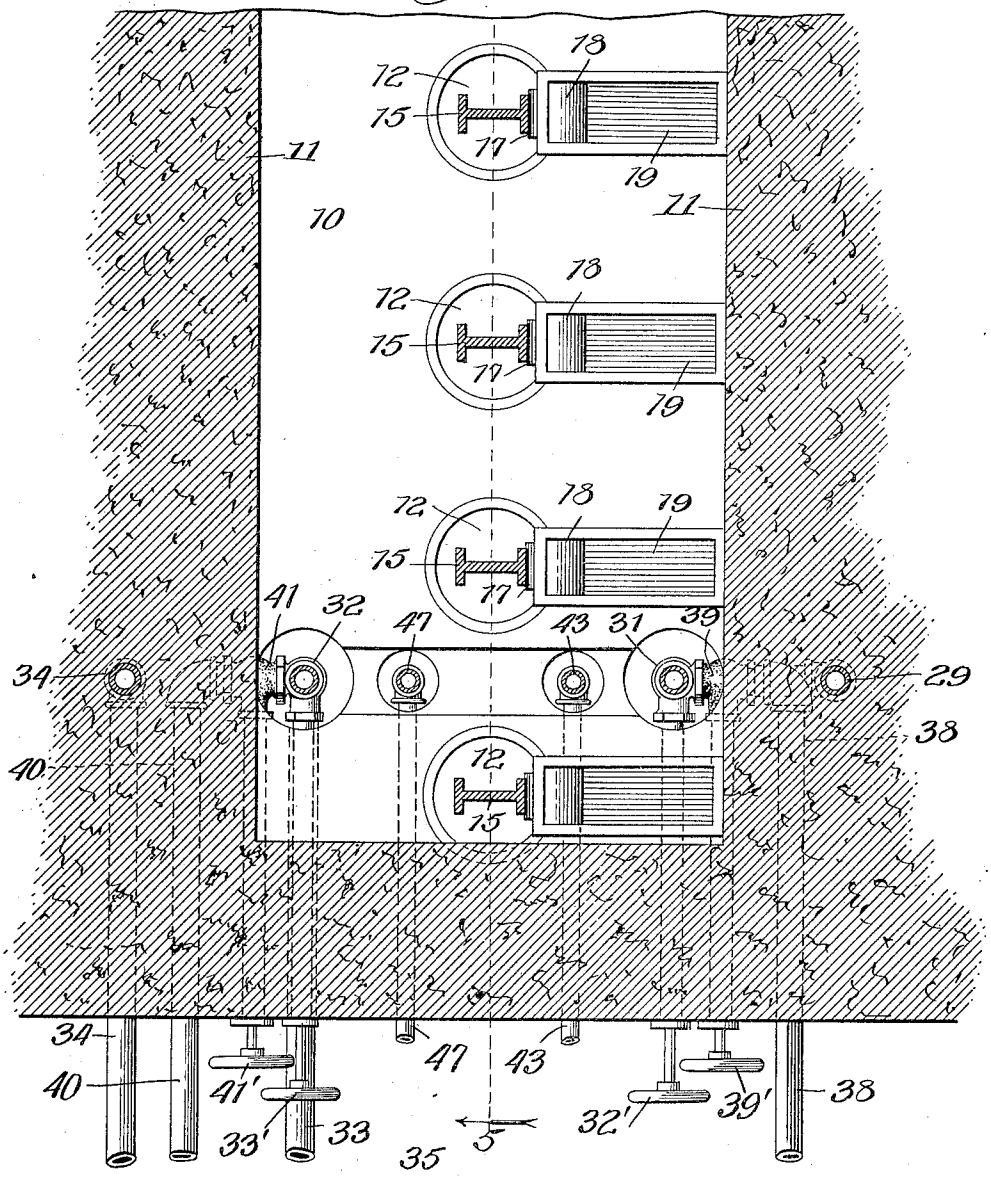
5 SHEETS—SHEET 4.

Fig. 4.



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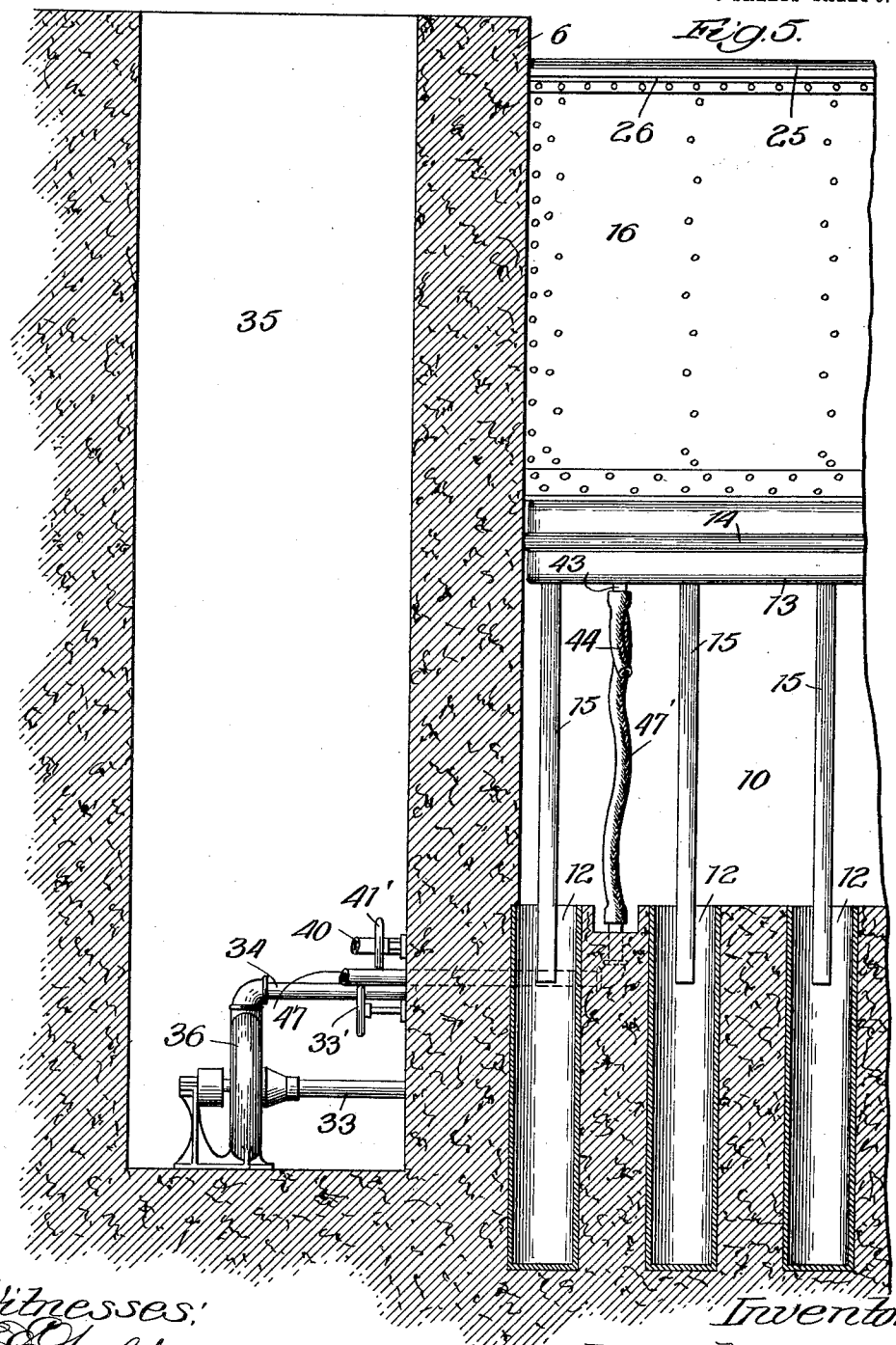
5 SHEETS—SHEET 5.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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DAM.

1,082,291. Specification of Letters Patent. Patented Dec. 23, 1913.

Application filed April 28, 1913. Serial No. 764,105.

To all whom it may concern:

Be it known that I, JEREMIAH B. TAINTER, a citizen of the United States, residing at Menomonie, in the county of Dunn and State of Wisconsin, have invented a new and useful Improvement in Dams, of which the following is a specification.

The primary object of my invention is to provide a construction of river-dam which shall readily enable it to be raised and lowered to meet requirements relative to the height of the water in the river.

In the accompanying drawings, Figure 1 shows my improved dam by a view in cross-sectional elevation, the section being taken at line 1, Fig. 2; Fig. 2 is a broken plan section of the dam; Fig. 3 is a broken vertical sectional view of the same, somewhat enlarged over the scale observed in Fig. 1, and showing the float in section; Fig. 4 is a section on line 4, Fig. 1, and Fig. 5 is a section on line 5, Fig. 4.

The concrete-work 6 (Fig. 2) at the opposite banks of a river, the regular water-level of which is indicated at 7 in Fig. 1 and the level to which it may be raised by the dam-gate being indicated at 8 in the same figure, need contain no features of novelty. Across the river extends between the sides 6 a well 10 formed preferably in the river-bed and reinforced along its sides and bottom by concrete-work 11 sloping, shed-like, in opposite directions at its upper end from the mouth of the well, in the concrete bottom of which are formed, at intervals, vertical metal-lined holes 12 to receive the float supporting legs, hereinafter described, and the depth of which should be sufficient to permit the float, when sunk, to lie on the bottom of the well. A hollow rectangular body, constructed preferably of metal and forming a float 13, extends throughout the length of the well, which it fits; and it has let into its sides and ends inflatable tubing 14 to surround it with packing and thus render the well below the float air-tight in operating the latter by air-pressure, as hereinafter described. At intervals corresponding with those of the holes 12, depend legs 15 which are preferably formed of I-beams. Centrally from the top of the float rises the gate 16, which is shown to be formed of the I-beams 15 and sheet-metal sides riveted thereto. To take the thrust of the river-stream against the gate, a roller 17 is journaled in suitable bearings and engages one side of the legs 15, this roller being housed in a metal shield 18 let into the row of holes at that side and being formed on the inner end of an angular frame 19 let into the bottom of the well; and a roller 20 is journaled to bear against the gate at the side thereof opposite the sides of the legs against which the roller 17 bears. Metal facings 21 and 22 cover the sloping top of the well, being shown supported by I-beams 23 and meeting the opposite sides of the gate, where the facing 21 carries a packing-strip 24 to keep the water at that side of the gate out of the well. In a depression in the lower edge of each facing is shown a roller 25, and a similar roller 25 is shown to be let into the top of the gate, from which ledges 26 incline laterally in opposite directions to extend over the inner edges of the facings 21 and 22 when the gate is lowered and cover the opening through which it works. The rollers 25 facilitate the movement of ice and refuse matter off the top of the dam; and all the rollers herein mentioned may be formed in relatively-short lengths where the span of a river equipped with my improved dam is very long. As shown in Fig. 3, the roller 20 is shielded by a metal head 27 riveted to the adjacent I-beam and formed on the edge of a plate 28 embedded in the concrete work 11 to incline correspondingly with the facing 22 and carry the I-beams which support the latter.

For raising the float to dam the stream by the gate 16, water may be introduced into the bottom of the well through a pipe 29 having a strainer 30 on its inlet-end and containing a valve 31; and to lower the gate, the valve 31 is closed, and a valve 32 is opened in a discharge-pipe 33 leading from the bottom of the well and connected with a riser 34 extending upwardly through the concrete to discharge at the river-bed. The mechanism for working the valves is contained in a chamber 35 formed in a concrete side 6, and is shown to contain a centrifugal pump 36 interposed between the

discharge-pipe 33 and riser 34 and driven by a suitable engine 37 to be used in case the weight of the float and gate is insufficient to force the water out of the well through the riser. Instead of operating the float with water-pressure, as in the event of that system being out of order, the valves 31 and 32 are closed by suitable hand-wheels 32′ and 33′ in the chamber 35, and provision is made for operating by pneumatic pressure. To this end, an air-pipe 38, coming from any suitable source (not shown) of air under pressure, leads from the chamber 35 and connects with the pipe 29, adjacent to which it contains a valve 39 opened and closed through the medium of a hand-wheel 39′ in the chamber; and for the discharge of the air-pressure from underneath the float, a pipe 40, containing a valve 41, which is manipulated through the medium of a hand-wheel 41′ in the chamber, leads into the latter from the pipe 33, as shown. Thus, for pneumatically operating the float, to raise it, the valve 41 is closed and the valve 39 is opened to admit air-pressure underneath the float to raise it and dam the river by the gate; and to lower the float the air-pressure supply is shut off and the valve 41 is opened to permit the air-pressure to discharge from the well. In thus working pneumatically, to seal the well against the loss of pressure, the packing tube 14 is inflated by air-pressure introduced into it through a pipe 43 containing a hose-section 44 in the well and equipped with a shut-off valve 45.

To facilitate raising the float when the river is frozen over, it is desirable to cause the gate in rising to thaw its way through the ice. For that purpose, the compartments of the gate formed by the I-beams are caused to intercommunicate through holes 46 provided in the webs of the latter, and a pipe 47 for conducting steam, or other suitable heating medium, from a suitable source (not shown) leads from the chamber 35 through the float into the bottom of the gate, this pipe containing a hose-section 47′ in the well, and being equipped with a shut-off valve 48 in the chamber.

I realize that considerable variation is possible in the details of construction thus specifically shown and described, and I do not intend by illustrating a single specific or preferred embodiment of my invention to be limited thereto; my intention being in the appended claims to claim protection upon all the novelty there may be in my invention as broadly as the state of the art will permit.

What I claim as new and desire to secure by Letters Patent, is:—

1. A dam comprising, in combination, a well extending across a river-bed, a float working in the well and having a gate rising from it through the well, and fluid-pressure mechanism communicating with the well beneath the float therein for operating the float, for the purpose set forth.

2. A dam comprising, in combination, a well extending across a river-bed and having holes at intervals in its bottom, a float working in the well, having legs depending into said holes and a gate rising through the well, and fluid-pressure mechanism communicating with the well beneath the float therein for operating the float, for the purpose set forth.

3. A dam comprising, in combination, a well extending across a river-bed, a float working in the well and having depending legs working through the well-bottom and a gate rising through the well, thrust-taking rollers bearing in opposite directions respectively against the legs and gate, and fluid-pressure mechanism communicating with the well beneath the float therein for operating the float, for the purpose set forth.

4. A dam comprising, in combination, a well extending across a river-bed, a float working in the well, having a gate rising from it through the well and an inflatable packing-tube extending horizontally about it, a pipe leading into said tube for inflating it with air-pressure, and fluid-pressure mechanism communicating with the well beneath the float therein for operating the float.

5. A dam comprising, in combination, a well extending across a river-bed, a float working in the well and having a hollow gate rising from it through the well, a steam-pipe extending into said gate for introducing steam therein, and fluid-pressure mechanism communicating with the well beneath the float therein for operating the float, for the purpose set forth.

6. A dam comprising, in combination, concrete sides at the opposite banks of a river and a concrete well extending between said sides, a chamber in one of said sides, a float working in the well and having a gate rising from it through the well, and fluid-pressure mechanism leading through the bottom of the well for operating the float and provided with means in said chamber for controlling it, for the purpose set forth.

7. A dam comprising, in combination, a well extending across a river-bed and having holes at intervals in its bottom, a hollow metal float working in the well, having depending legs extending into said holes and a gate rising from it through the well and formed of a central series of I-beams and sheet-metal sides secured to said beams, and fluid-pressure mechanism communicating with the well beneath the float therein for operating the float, for the purpose set forth.

8. A dam comprising, in combination, a well extending across a river-bed, having its top sloping downwardly in opposite direc-

tions from its mouth, metal facings on said top extending over the well, rollers let into said facings near their outer ends, a float working in the well, having a gate rising from it between said facings, a roller let into its upper end and sloping ledges at opposite sides thereof, and fluid-pressure mechanism communicating with the well beneath the float therein for operating the float, for the purpose set forth.

JEREMIAH B. TAINTER.

In presence of—
HERMAN H. FORSTER,
JOHN W. MACAULEY.