

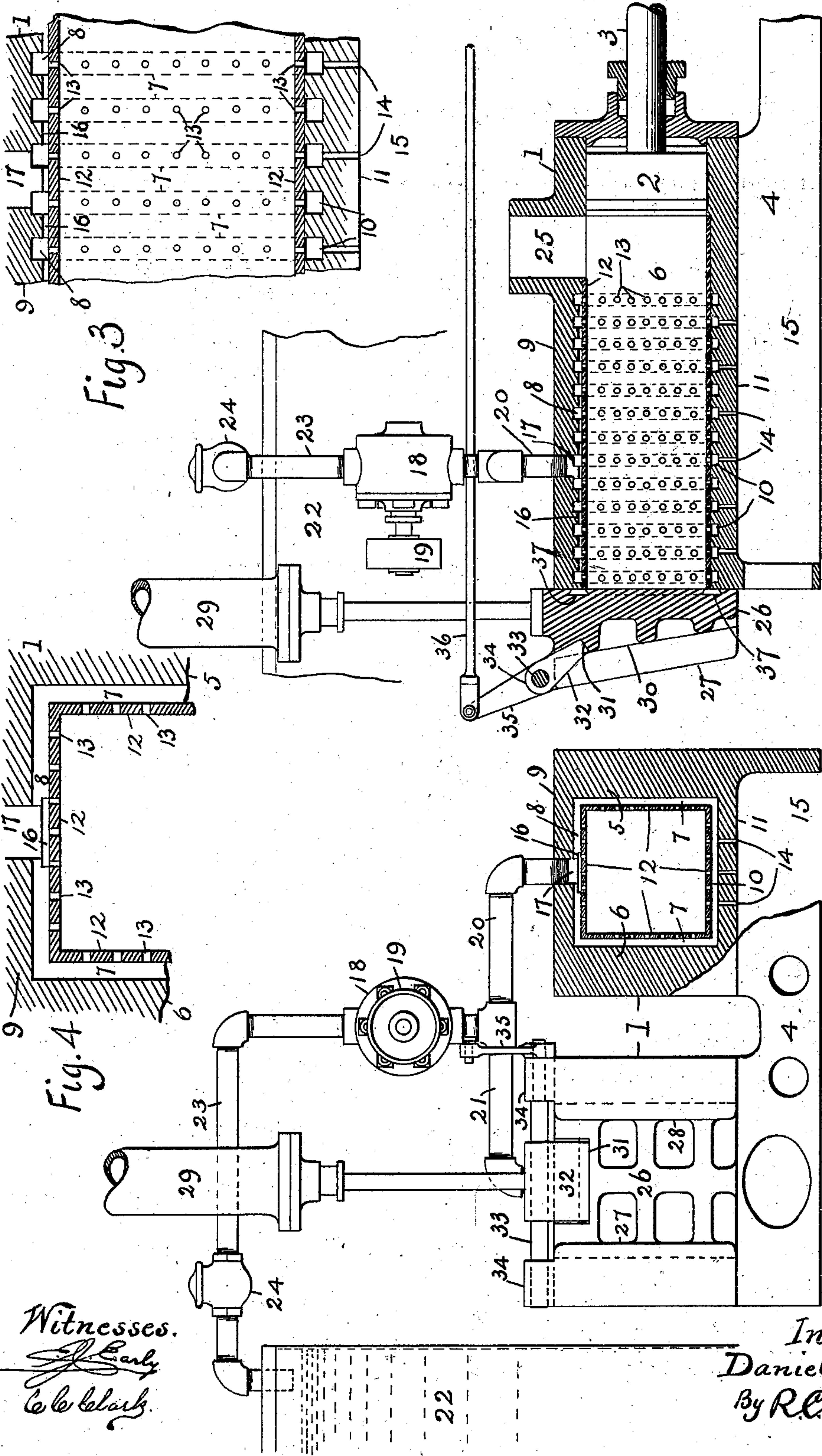
No. 701,882.

Patented June 10, 1902.

D. L. HOLDEN.
PRESS FOR ICE MACHINES.

(Application filed Aug. 16, 1901.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

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PRESS FOR ICE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 701,882, dated June 10, 1902.

Application filed August 16, 1901. Serial No. 72,220. (No model.)

To all whom it may concern:

Be it known that I, DANIEL L. HOLDEN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Presses for Ice-Machines, of which the following is a specification.

My invention relates to improvements in ice-machines, and especially to the presses for such machines; and the objects of such improvements are, first, a deaerating mechanism by which the air passing to the presses with the ice particles shall be removed as the ice is forced in for compression in order to produce a solid and transparent block, and the same means is utilized to also remove any water which passes above the ice block; second, the more secure and tight fastening of the removable end gate against which the block is compressed and which is required to be firmly held during the process of block formation and its possible moving prevented while under such pressure.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is for the most part a central vertical section through a press with the air-pumps and connections not in section. Fig. 2 is an end view of one of a pair of presses and a central cross-section of the other with the air-pumps and connections in elevation. Fig. 3 is an enlarged partial longitudinal section of a press. Fig. 4 is an enlarged partial cross-section of a press.

Similar figures of reference indicate similar parts throughout the views.

The presses 1 are of rectangular section, having pistons 2, whose rods 3 connect them with the hydrostatic cylinders. (Not shown.) A hollow bed-plate 4 supports the presses. The sides 5 6 of the presses have vertical grooves 7 formed on their inner sides, which are met by cross-grooves 8 in top 9 and 10 in bottom 11, and within the press is a rectangular lining 12, having multiple perforations 13 leading to the grooves. From grooves 9 there are also water-passages 14, leading to the space 15 under the presses and to a proper receptacle. (Not shown.) Grooves 8 have longitudinal channels 16 connecting them and exterior to the lining 12 for air or water pas-

sage, and above the grooves an opening 17. An air-pump 18 is located above the presses, driven by pulley 19, and thereto are attached suction-pipes 20 21, tapping openings 17 and therethrough the whole system of grooves and channels for the purpose of removing the air from the presses. The pump delivers its accumulation to freezing-tank 22 through delivery-pipe 23, and a check-valve 24 prevents any return. By the means described all free air passing into the press with the ice particles, as also all released air when the ice is being pressed to a block, is removed, thus making a transparent block. The ice particles are delivered to the presses through passage-ways 25, the delivery being controlled by pumps and valves which are the subject of other patents and need not be further mentioned in this application.

At the outer end of the presses, opposite pistons 2, are the removable end gates 26, wedge-shaped or formed straight on the inner or press side and tapered on the opposite or outer side, guided for vertical movement by ways 27 28 and operated by cylinders 29, having suitable attachments for the purpose. The great pressure produced by pistons 2 on the ice particles in forming the block is such as to sometimes overcome in a measure the power of cylinders 29 to hold gates 26 to a close stoppage of the presses' ends, owing to slight lost motions, wear, &c., which when the gates are under pressure cause them to move up on the inclined outer surface 30 of the ways 27 28. To overcome this liability, a notch 31 has been formed in the gates 26, and therein seated is the end or lower edge of a dog 32, which is swingingly supported above the notch on a shaft 33, carried by bearings 34. An arm 35 is secured to shaft 33. It has a rod 36 attached thereto, which passes back to the operator's position, and by it he can move dog 32 into or out of notch 31, thereby locking or unlocking the gate. To still further insure close contact between the gate and the ends of the presses, a dovetailed recess or groove 37 is formed in the straight face of the gate around the press end, and a compressible material 38 is placed therein, so that when the gates are in position the material shall yield to a sufficient degree to insure a perfectly air-tight fit. The material

might be inserted in the press end; but on account of renewals and better facility for handling it is deemed best to insert the yielding material in the gates.

5 I claim—

1. In an ice-machine, rectangular-section presses therefor, rectangular linings in the presses, vertical grooves around the side linings, horizontal grooves above the top lining
10 and below the bottom lining, and passage-ways for air above the top lining and for water below the lower lining and connections from the top grooves to an exit for the air.

2. In rectangular - section ice - machine presses, perforated rectangular linings therefor, vertical and horizontal grooves around the linings and connected to the interior of the presses by the perforations aforesaid, water-passages from the grooves at the bottom
20 of the presses, air and water channels connecting the grooves at the top of the presses, a central passage, and a pump having connections to said passage and adapted to remove the air from the passage-ways and grooves.

3. In an ice-machine, rectangular-section presses therefor, perforated linings for the presses, vertical and horizontal air and water grooves and passages around the linings, a pump having its supply or suction connections in communication with said grooves
30 and passages and to the presses by the lining-perforations, and a delivery from the pump to the freezing-tank of the machine.

4. In an ice-machine, a pair of rectangular-section presses therefor, a pump having connections to each press to remove the air therefrom, and a check-valve in the delivery-pipe of the pump.

5. In an ice-machine, rectangular-section
40 presses therefor, end gates therefor, having a vertical side next the press end, and an an-

gular side opposite thereto, means to remove the gates and uncover the press ends and means independent of the moving means to lock the gates when moved into position, to
45 thereby prevent the pressure from forcing the gates upward on their inclined face.

6. In an ice-machine, presses therefor, vertical end gates for the presses and means for their moving, shafts supported above the
50 gates, notches in the gates, and means supported on the shafts to engage the notches and thereby lock the gates from raising.

7. In an ice-machine, presses therefor having end gates and means for their vertical operation, and means under control of the operator for locking the gates when moved into position and thereby prevent their raising when subjected to pressure.

8. In an ice-machine rectangular-section
60 presses, end gates therefor of wedge shape, means to lift and lower the gates to cover or to uncover the press ends, and a yielding material inserted in the vertical face of the gates and adapted to be compressed to exclude air
65 from the presses.

9. In an ice-machine, rectangular-section presses therefor, wedge-section end gates for the presses, means to operate the gates for closing and unclosing the presses, and yielding material so placed and fixed in the vertical face of the wedge-shaped gates as to prevent air-passage between the ends of the presses and their gates when the gates are in operative position against and closing the
75 presses.

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

DANIEL L. HOLDEN.

Witnesses:

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