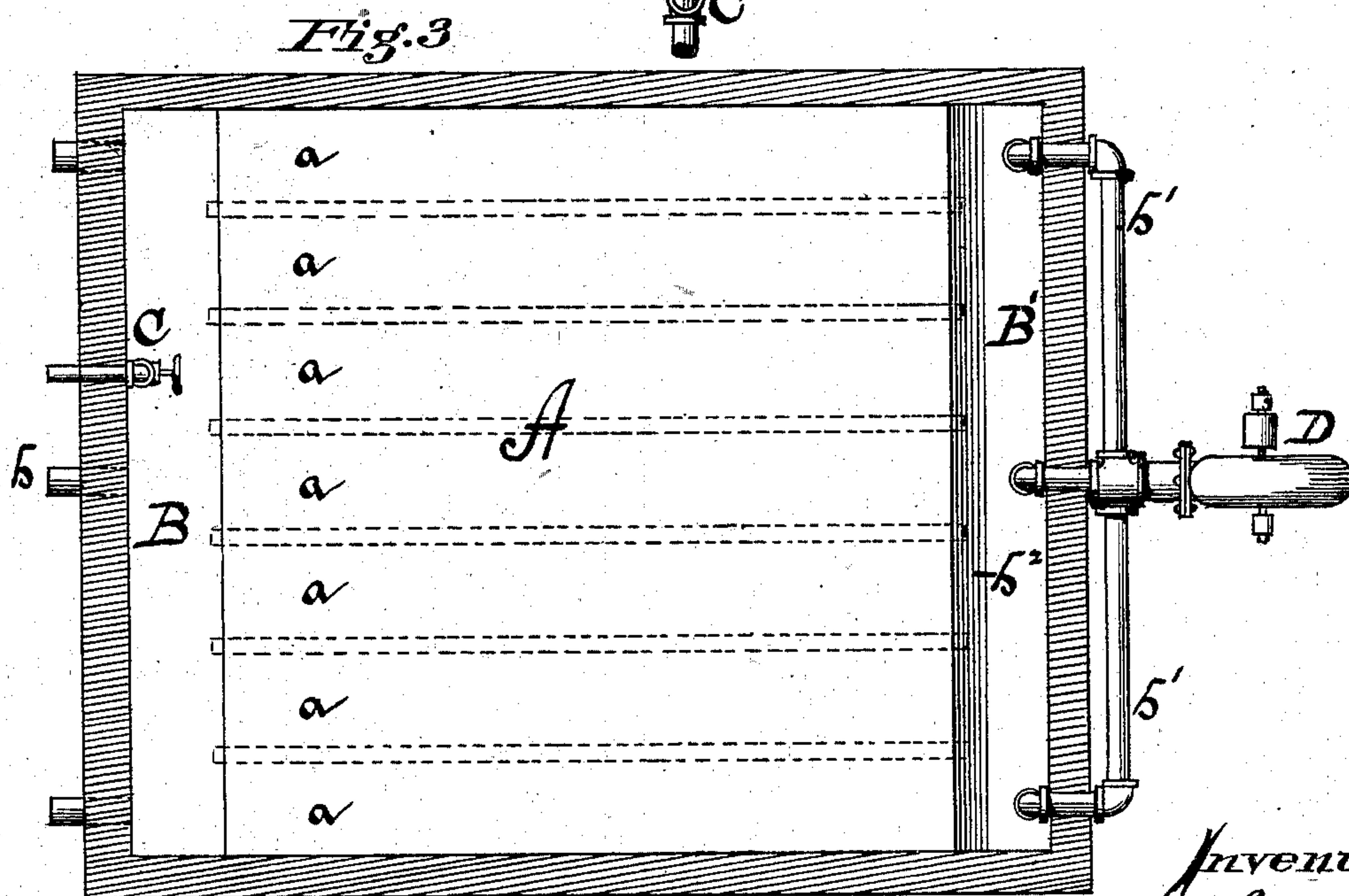
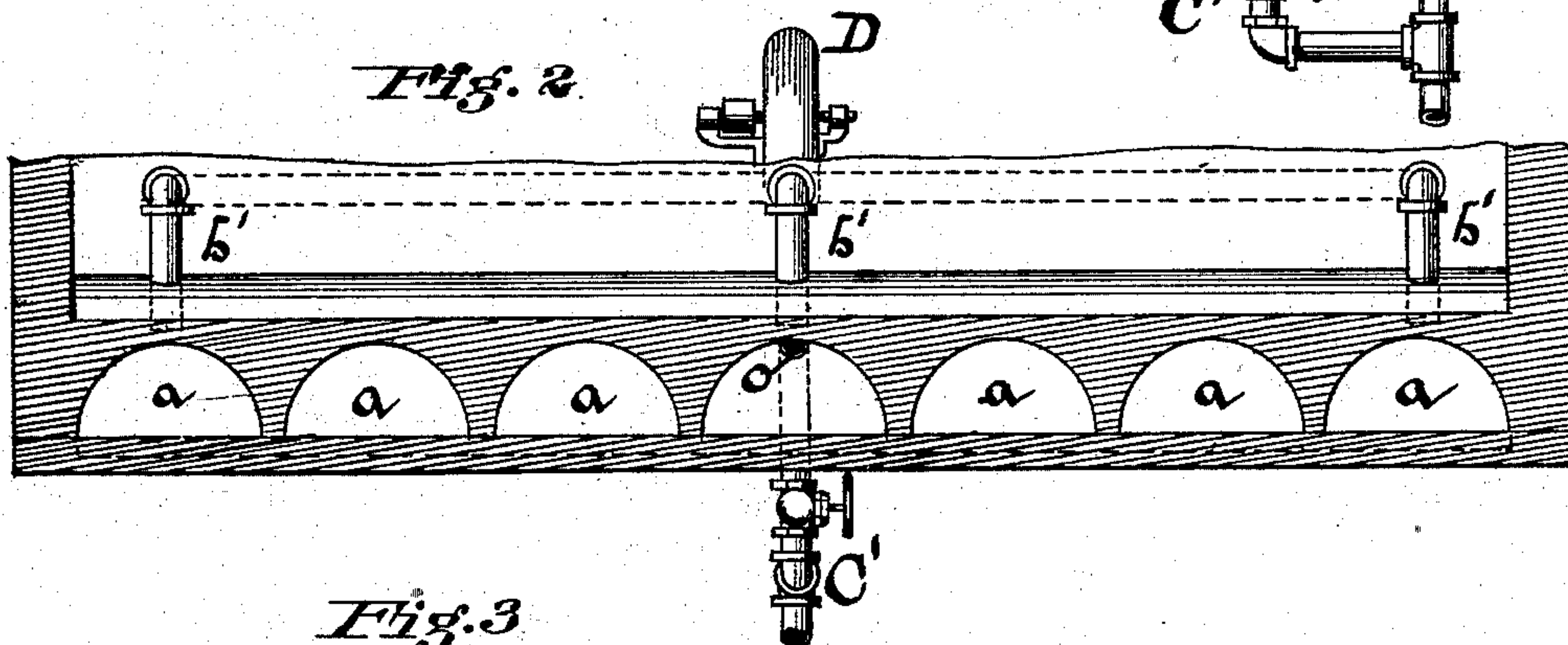
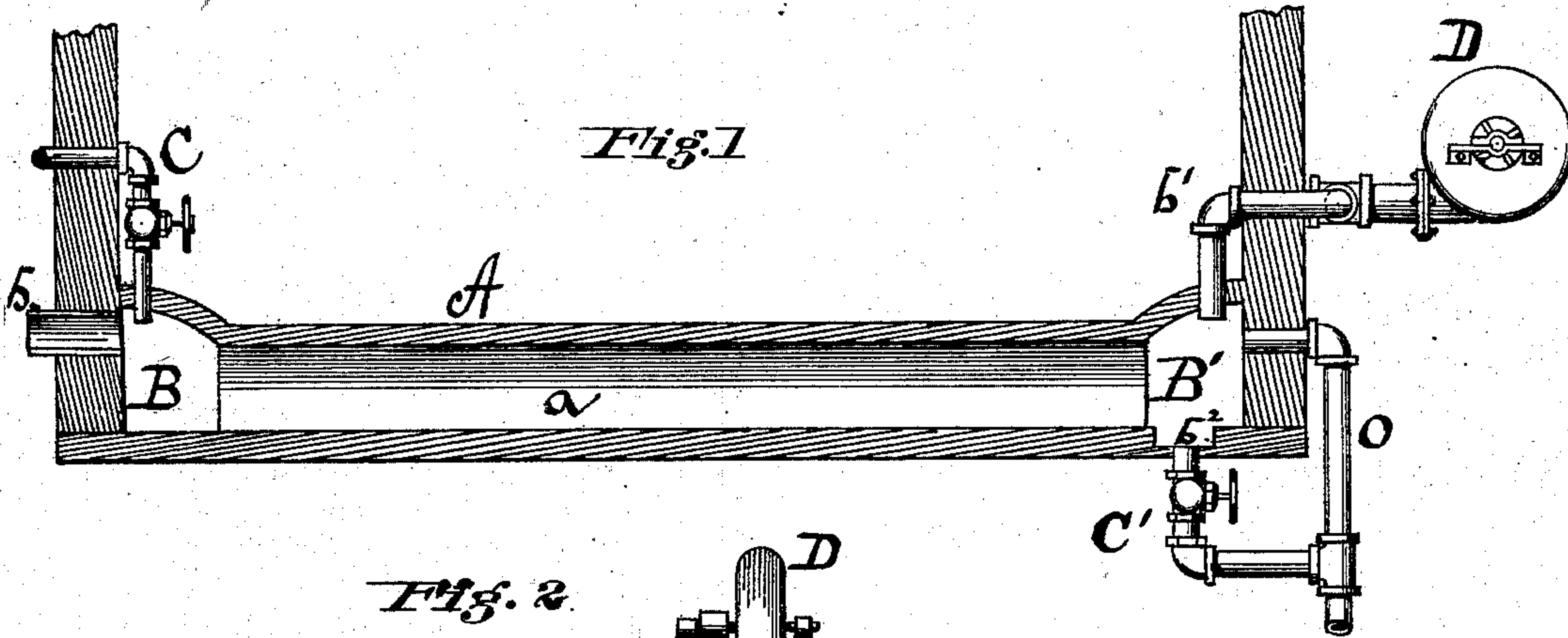


(No Model.)

W. ANDREW.
APPARATUS FOR MALTING GRAIN.

No. 249,570.

Patented Nov. 15, 1881.



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UNITED STATES PATENT OFFICE.

WILLIAM ANDREW, OF CINCINNATI, OHIO.

APPARATUS FOR MALTING GRAIN.

SPECIFICATION forming part of Letters Patent No. 249,570, dated November 15, 1881.

Application filed March 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ANDREW, a citizen of the United States, residing at Cincinnati, Hamilton county, Ohio, have invented new and useful Improvements in Apparatus for Malting Grain, of which the following is a specification.

My invention relates to the construction of malting-floors for brewing and distilling purposes; and its object is to provide means for artificially cooling or warming the floor, and thereby preventing the overheating or the too rapid germination of the grain during the process of malting.

To this end my invention consists in apparatus for regulating the temperature of the malting-floor by means of currents of water or other cooling-liquids, or of air or both, drawn through suitable channels beneath the floor proper during the malting operation, and in the construction and arrangement of a series of channels beneath the floor, and of means for the proper admission of water, air, or both, for absorbing the excess of heat.

My invention is illustrated in the accompanying drawings, in which Figure 1 is a vertical section of the floor, taken through one of the longitudinal channels. Fig. 2 is a vertical section, taken laterally across the longitudinal channels; and Fig. 3 is a plan view of the floor.

Similar letters of reference indicate similar parts in both specification and drawings.

Malting-floors are ordinarily constructed of cement, or of brick or stone covered with and laid in cement, forming a solid compact mass for the malting operations.

In my invention the floor is channeled with connecting-chambers in any suitable manner, to permit the introduction of water or air for the purpose of regulating the temperature of the floor.

The drawings exhibit one form of my improvement, in which the floor A is hollowed beneath the surface into numerous parallel channels *a*, which may be constructed of tile, brick, or of any other suitable material. I prefer, however, to construct them in the final layer of cement by spreading the cement over short molds or cores, which, by forming a small portion of the floor at a time, can be slipped along until the whole is completed in the long con-

tinuous channels *a*. The longitudinal channels preferably extend into cross-channels B B' at the ends of the floor adjacent to the side walls. Into the cross-channel B openings *b* enter through the walls of the building, with which may connect pipes extending externally to a cellar or other reservoir of cool air, and into the same cross-channel also enters one or more water-pipes, C, provided with stop-cocks, for the purpose of flooding the subsurface channels, when necessary. A single pipe, C, with a horizontal distributing-pipe laid in the channel, with orifices suitably arranged, may be used to distribute the water to the channels *a*. From the corresponding cross-channel B' pipes *b'* lead to a suitable exhaustor, D, which may be a vertical flue or a fan-exhaustor driven by power or any other convenient means, by which air may be drawn from the channels *a*, and thus a current established. It is also provided with an exit-pipe, C', for drawing off the water from the floor-channels, to aid which the mouth of the exit-pipe C' is placed at a depression, *b*², sunk in the bottom of the main channel B', to insure a complete drainage. An overflow-pipe, O, is also arranged in the channel B' to take off any excess of water which may accumulate in the chambers. I prefer to use a number of overflow pipes or orifices distributed laterally along the channel B', in order to secure a uniform discharge throughout, and these may discharge into a common pipe or receptacle.

In operation, the surface water, which would naturally absorb the heat of the superjacent floor, would flow off by the overflow-pipes, and thus the cooling operation would be continuous by the use of water alone. It may also be desirable to place gate-valves at proper intervals across the channels B B', by which means a portion only of the floor may be used at will.

The disposition of the channels may be varied. Thus the channels *a* may be arranged as return channels, forming a continuous passage throughout; but the arrangement shown is preferred, as it is more economical in construction and more easily operated.

By giving a slight inclination of the channels from end to end the drainage may be facilitated.

It will be readily understood that when the

channels have been once flooded with water and a current of air caused to pass through by exhaustion at one end the temperature will be rapidly lowered by evaporation.

5 By my improvement a much heavier layer of grain may be manipulated at one time on the malt-floor during the warm season of the year, and all danger of overheating effectually prevented.

10 It will be readily understood that by the use of heated air or water, with the construction above described, the reverse result of that before obtained may be secured.

Having described my invention, I claim and
15 desire to secure by Letters Patent—

1. A malting-floor consisting of a layer of

cement formed with parallel channels in its substance beneath the surface, connected and arranged to permit the passage of air or water beneath the entire floor, substantially as speci- 20
fied.

2. The channeled malting-floor A, in combination with the air-openings *b b'*, exhauster D, and water-pipes C C', and overflow-pipe O, substantially as specified. 25

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

WILLIAM ANDREW.

Witnesses:

C. P. DOOLITTLE,

L. M. HOSEA.