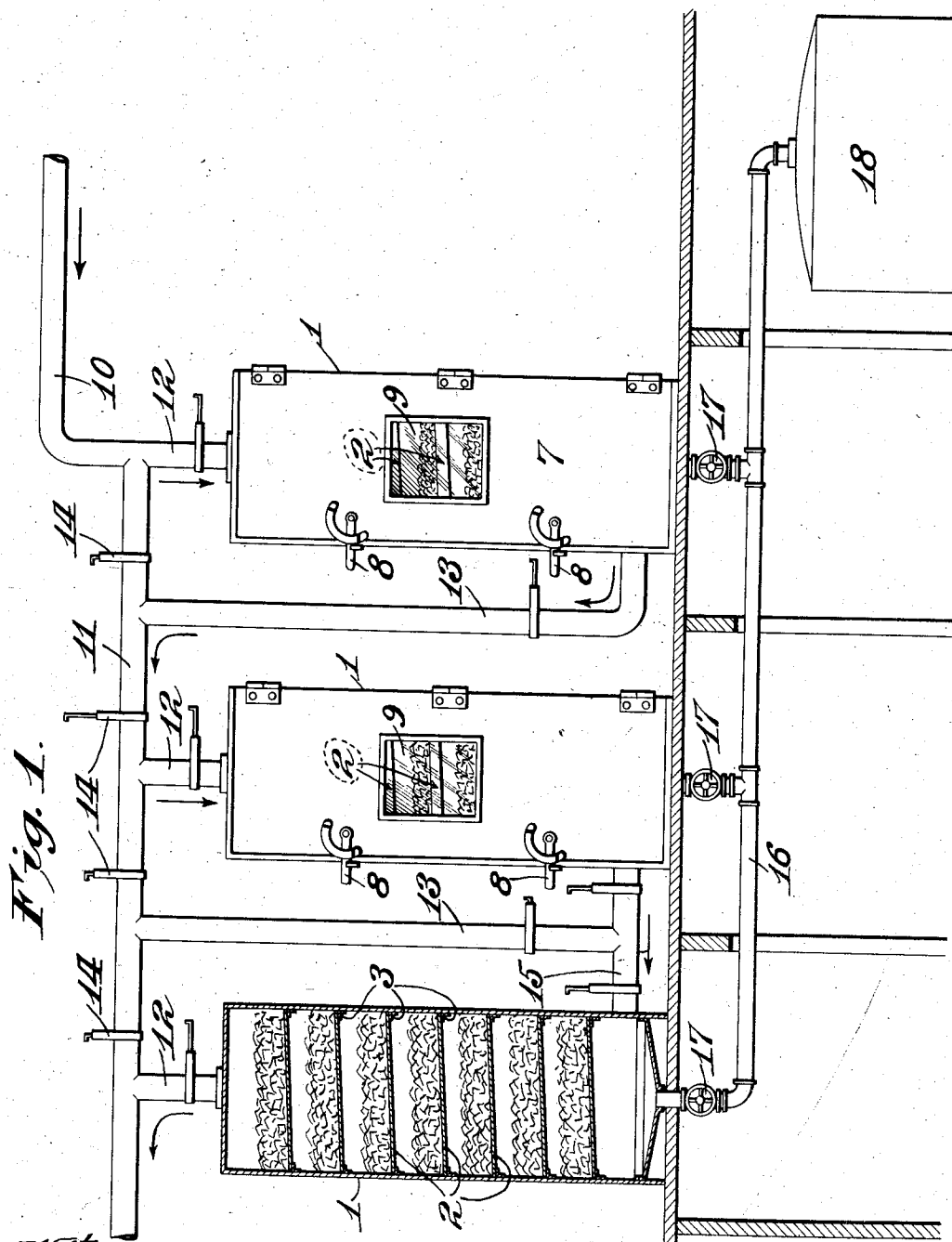


No. 834,698.

PATENTED OCT. 30, 1906.

C. O. WILLIAMS.
AIR DRYING APPARATUS.
APPLICATION FILED APR. 19, 1908.

2 SHEETS—SHEET 1.



Witnesses:

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2 SHEETS—SHEET 2.

Fig. 2.

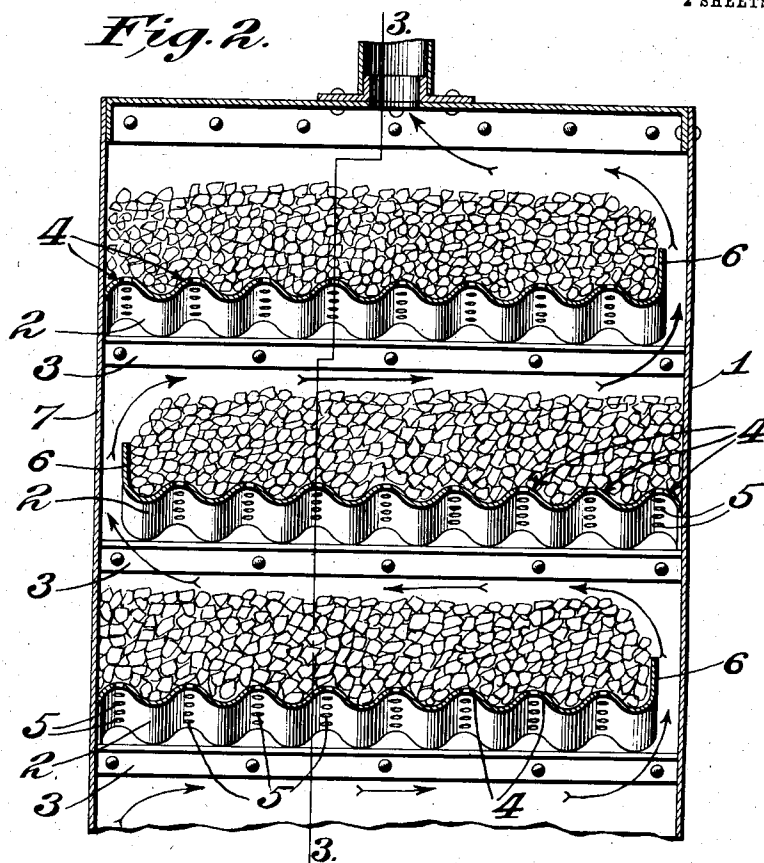
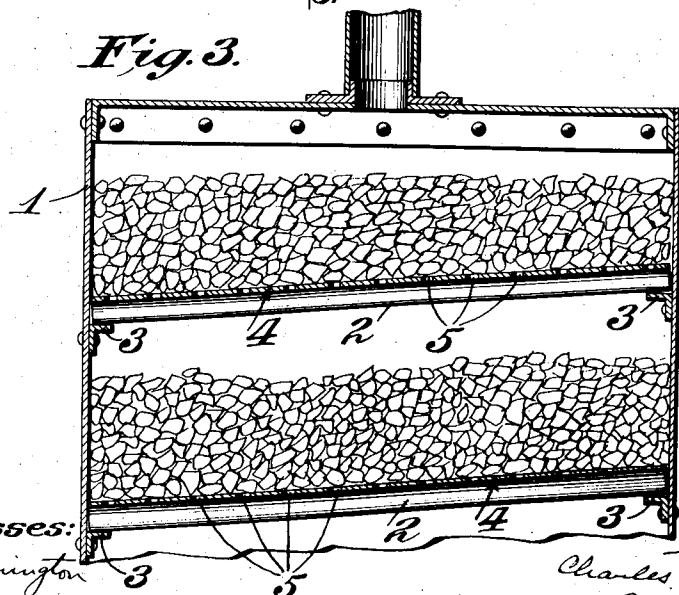


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES O. WILLIAMS, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF
TO FEDERAL GAS COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION
OF THE DISTRICT OF COLUMBIA.

AIR-DRYING APPARATUS.

No. 834,698.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed April 19, 1906. Serial No. 312,528.

To all whom it may concern:

Be it known that I, CHARLES O. WILLIAMS, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Air-Drying Apparatus, of which the following is a specification.

My invention relates to air-drying apparatus, and has for its principal objects to provide a better circulation of air within the drying-tank and to provide for cleaning the interior of the tank and for renewing the drying material and to attain other objects hereinafter more fully appearing.

In the accompanying drawings, which form part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a front elevation of the drying apparatus with one of the drying-tanks in section. Fig. 2 is a vertical section of a portion of one of the drying-tanks. Fig. 3 is a vertical section of a portion of one of the drying-tanks on the line 3 3 of Fig. 2.

The construction of one of the drying-tanks 1 will first be described.

The drying-tank is preferably rectangular in cross-section and is provided with an air-supply pipe opening into the upper portion and an air-delivery pipe opening into the lower portion thereof. Within the tank a series of inclined shelves 2 are loosely mounted on angle-iron supports 3, secured to opposite side walls of the tank. The shelves support a suitable drying material, such as chlorid of calcium. Each shelf is slightly spaced from one of the side walls of the tank, and the spaces are oppositely disposed with respect to consecutive shelves. By this arrangement a circuitous passage-way for the air is provided. The shelves are corrugated, and the ridges 4 formed thereby have a number of openings 5, which provide passage-ways directly through the drying material. The shelves being corrugated, the liquid formed by the deliquescence of the drying material collects in the grooves or troughs between the ridges and drains to the side wall of the tank by reason of the inclination of the shelves, whence it drips down the wall to the bottom of the tank. By thus arranging the air-openings 5 above the liquid which forms in the air-drying process a free and unimpeded circulation of air is maintained.

Each shelf has an upturned flange 6 on its spaced end to retain the drying material in place on the shelf.

To provide for cleaning and for renewing the drying material on the shelves, the tank has a hinged door 7, which constitutes the front wall of the tank, and is provided with suitable locking devices, such as hasps 8. The door is provided with a window 9 in order that the attendant may note the condition of the interior of the tank and its contents.

The arrangement of a series of tanks is as follows: An air-supply pipe 10 is provided with a branch pipe 11, which is located convenient to the tank, preferably overhead, and from the branch pipe extend valved air-supply pipes 12, which open into the upper portion of the tanks. Valved delivery-pipes 13 open into the lower portion of the tank and communicate with said branch pipe. The branch pipe 11 also has valves 14 arranged intermediate the respective supply and delivery pipes.

The above-described arrangement of pipes may be applied to all the tanks of a series; but the last tank is preferably provided with a slightly different arrangement. The supply-pipe 15 for this tank opens into the lower portion of the tank and communicates with the delivery-pipe 13 of the preceding tank, so that the air from said preceding tank passes directly to the last tank. The delivery-pipe for the last tank communicates with the upper portion of the tank.

The lower heads of the tank are centrally depressed, and a drain-pipe 16, provided with valved branches 17, communicates therewith. Said drain-pipe opens into a suitable reservoir or drainage-receptacle 18.

The operation of the apparatus is as follows: Air is drawn through the pipe 10 by means of an air-pump and enters the first or leading tank of the series by way of its supply-pipe 12. The air circulates through the tank, as hereinbefore described, and then passes out into its delivery-pipe 13. Said delivery-pipe communicates with the second tank of the series by way of the branch pipe 11 and the supply-pipe 12 of that tank, the valves in the above-mentioned pipes being open. The air then circulates through the second tank as in the first, and the same process

may be continued through any number of tanks. A slightly-different arrangement of piping is preferably provided for the last tank of the series, as before described, so that the air enters that tank at the lower portion by way of the pipe 15, which communicates with the lower portion of the preceding tank. Consequently the air in this tank circulates upwardly and is delivered through the outlet-pipe at the top of the tank.

In order to cut off a tank from the series, so that it may be cleaned and the drying material renewed, the valves in the supply and delivery pipes of the tank are closed and the valve in the branch pipe 12 between said pipes is opened, so that the air will pass through said branch pipe 12 directly to the next tank of the series.

Obviously my device is capable of considerable modification within the scope of my invention, and therefore I do not wish to be limited to the specific construction shown and described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An air-drying apparatus comprising a tank, an air-supply pipe and an air-delivery pipe opening into said tank, and inclined corrugated shelves in said tank for the drying material having openings through the ridges thereof, said tank having a continuous passage-way between the supply-pipe and the delivery-pipe formed by the alternate shelves being spaced from one wall of the tank and the remaining shelves being spaced from the opposite wall thereof.

2. An air-drying apparatus comprising a tank, an air-supply pipe and an air-delivery pipe opening into said tank, and corrugated shelves in said tank for the drying material having openings through the ridges thereof, said tank having a continuous passage-way between the supply-pipe and delivery-pipe formed by the alternate shelves being spaced from one wall of the tank and the remaining shelves from the opposite wall thereof.

3. An air-drying apparatus comprising a plurality of tanks, a main air-supply pipe, a main delivery-pipe an air-supply pipe and an air-delivery pipe opening into each tank, the delivery-pipe of one tank communicating with another tank and with said main delivery-pipe, and valves for controlling the flow of air.

4. An air-drying apparatus comprising a tank, inclined corrugated shelves therein for the drying material, said shelves having openings through the ridges formed by the corrugations thereof, said tank having a continuous passage-way between the supply-pipe and the delivery-pipe formed by the alternate shelves being spaced from one wall of the tank and the remaining shelves being spaced from the opposite wall thereof and a drain-pipe opening into said tank.

Signed at St. Louis, Missouri, this 31st day of March, 1906.

CHARLES O. WILLIAMS.

Witnesses:

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WM. M. CADY.