No. 748,462. PATENTED DEC. 29, 1903.

W. J. ARMBRUSTER.

CHLORINATION BARREL.

APPLICATION FILED MAY 13, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1.

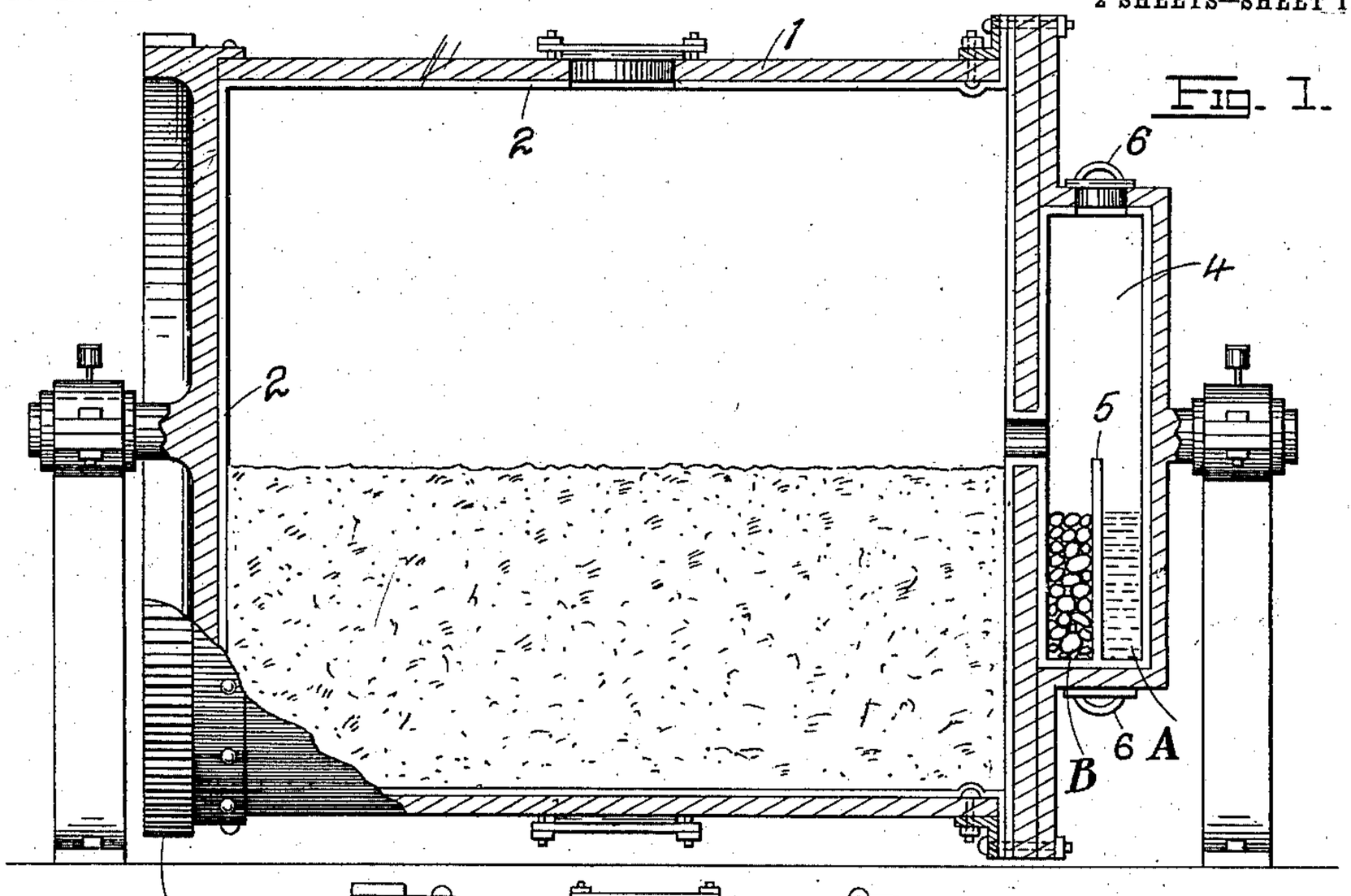
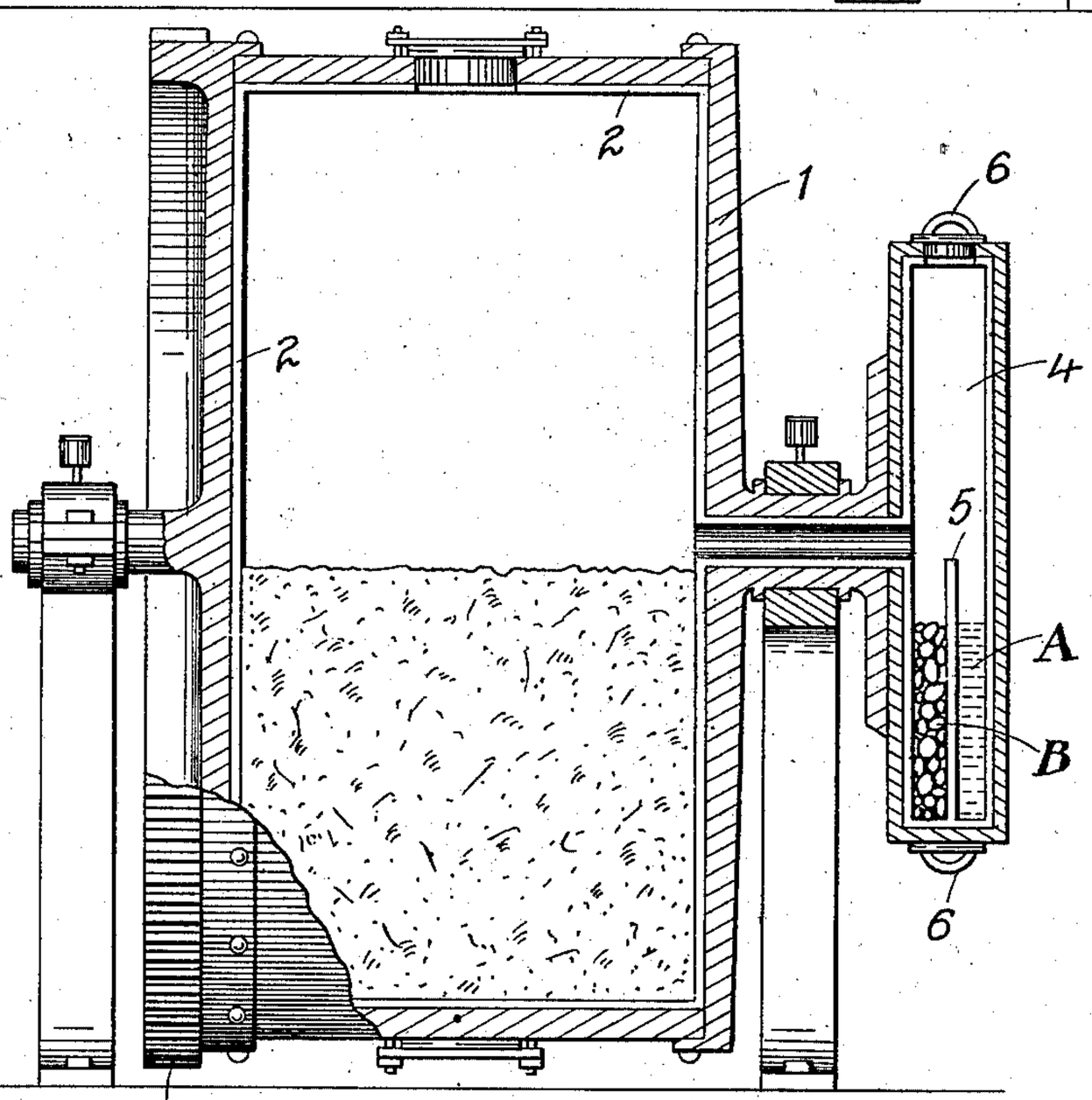


FIG. 2.



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NO MODEL. 2 SHEETS—SHEET 2.

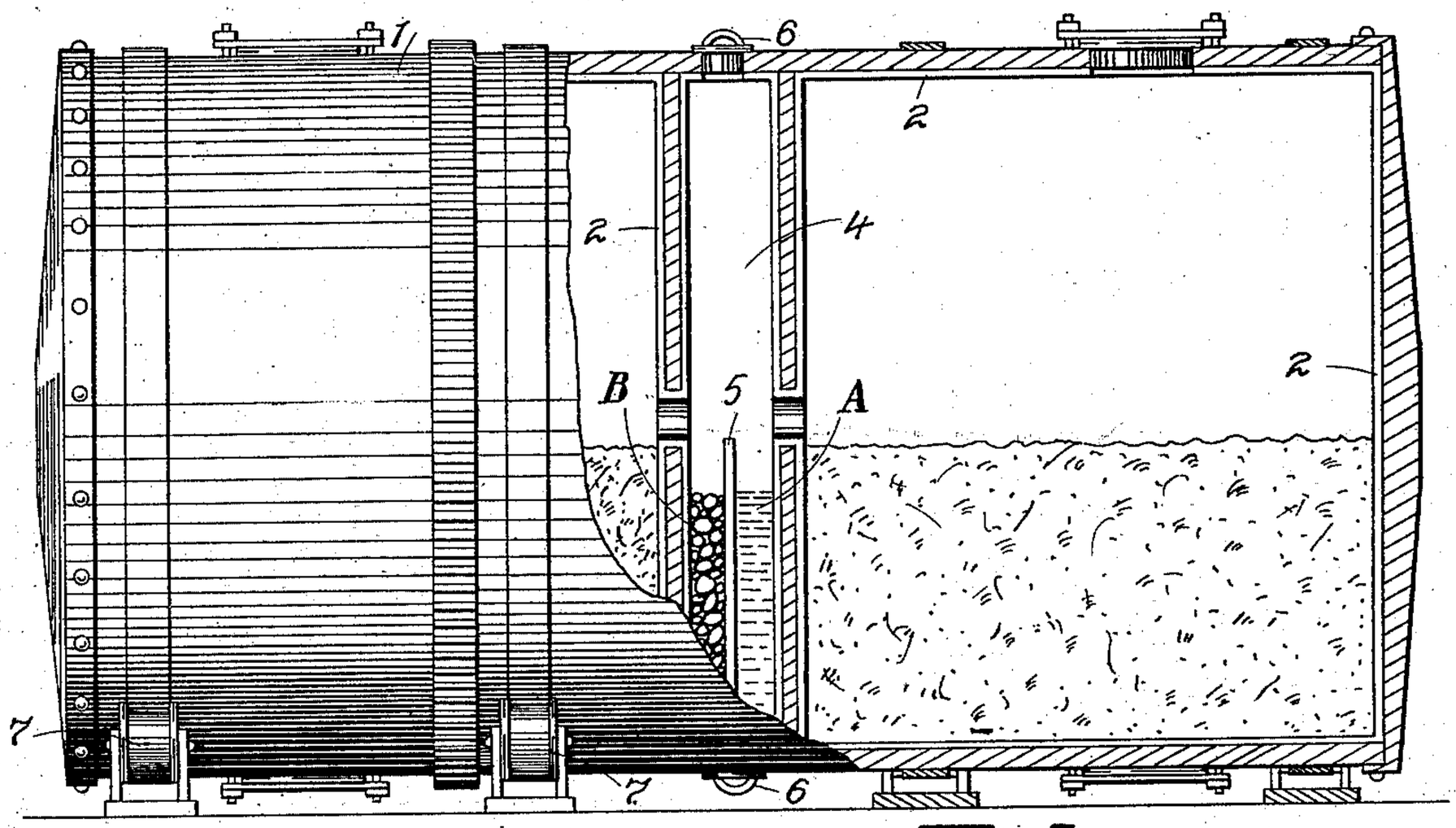
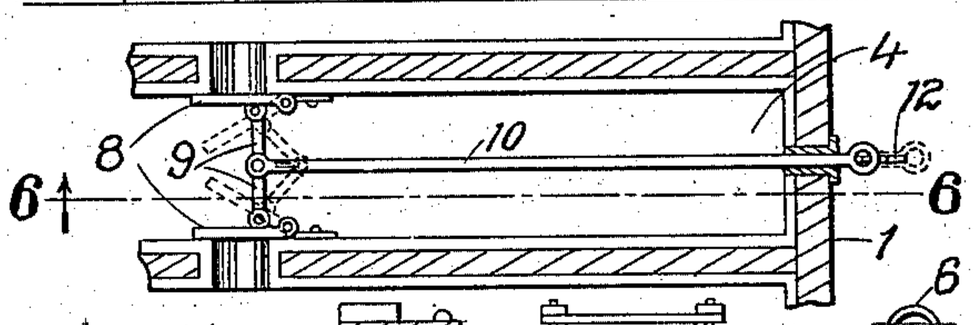


Fig. 3.



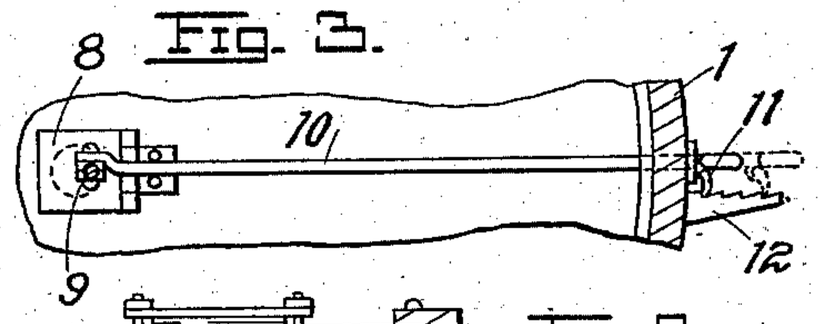


Fig. 5.

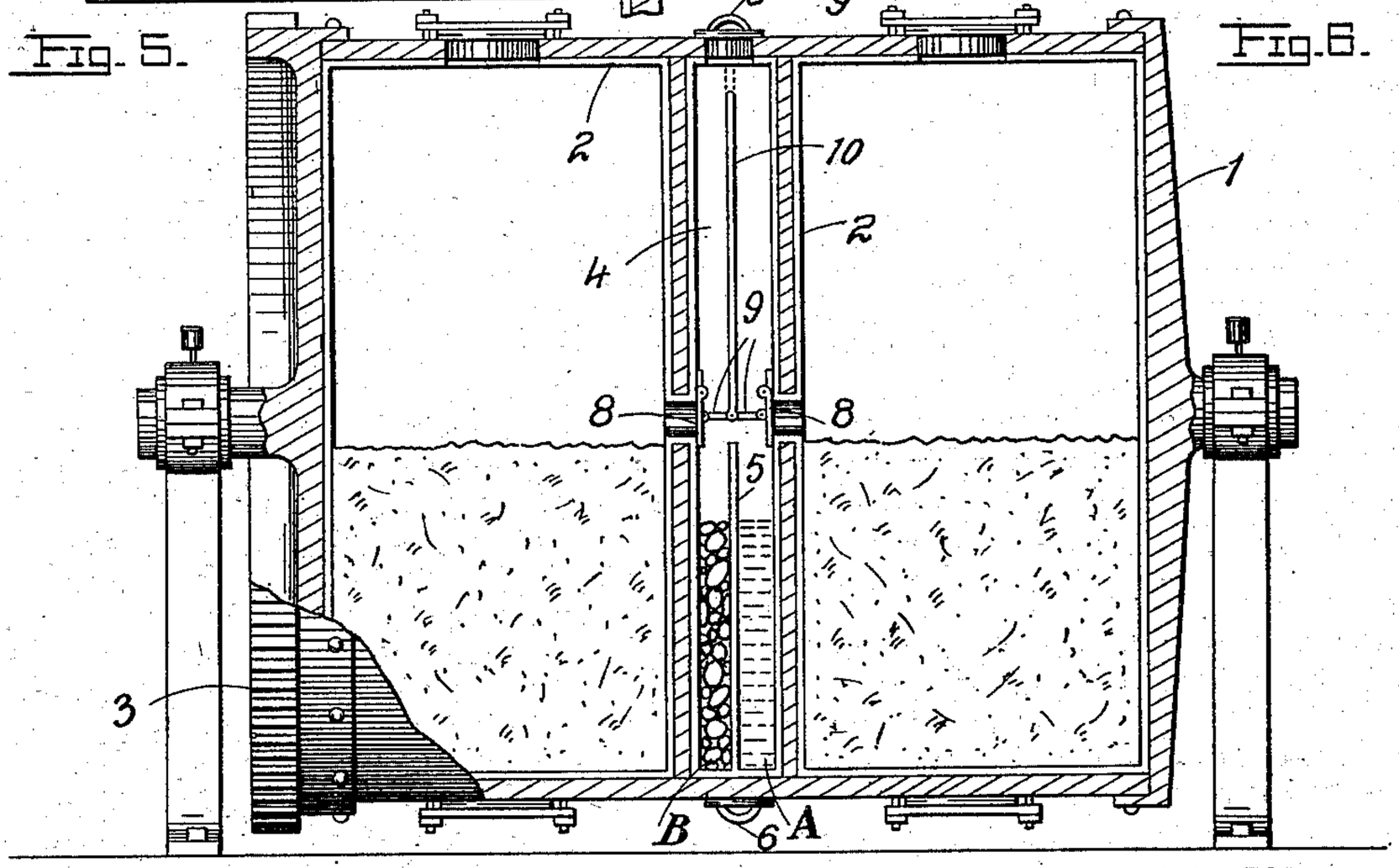


Fig. 6.

Fig. 4.

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No. 748,462. Patented December 29, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM J. ARMBRUSTER, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO FLORANCE ARMBRUSTER, OF NEW YORK, N. Y.

CHLORINATION-BARREL.

SPECIFICATION forming part of Letters Patent No. 748,462, dated December 29, 1903.

Original application filed March 13, 1903, Serial No. 147,672. Divided and this application filed May 13, 1903. Serial No. 156,998. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. ARMBRUSTER, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Chlorination-Barrels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in chlorination-barrels; and it consists in the novel construction of barrel more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a middle vertical section of one of the forms which my barrel may assume. Fig. 2 is a similar section of a modified form. Fig. 3 is a part section and part elevation of still another modification. Fig. 4 is a part section and part elevation of a fourth modification. Fig. 5 is a sectional detail showing one form of valve for controlling the chemical-compartment, and Fig. 6 is a section on line 6 6 of Fig. 5.

The present application is a division of original application for Letters Patent on chlorination-barrel, filed March 13, 1903, Serial No. 147,672, and while possessing the several advantages enumerated as being inherent in the construction of the pending application the present device is qualified to the extent that the chlorin generated in the chemical-compartment is at all times delivered above the surface of the pulp in the pulp-chamber, such flow being free and uninterrupted during the rotation of the barrel. Like in the parent application referred to, the chlorin-generating compartment in the present case forms a part of or is carried directly by the barrel and rotates with it.

In detail the invention may be described as follows:

Referring to the drawings, 1 represents the barrel, having the usual lead lining 2 and the driving gear-wheel 3. Located at one end of the barrel is a compartment 4, divided at the base into two sections by a division-wall 5, disposed in a plane at right angles to the axis of rotation of the barrel and extending to a point slightly below (or to one side of) said axis, the space on one side of the division-wall being adapted to contain the acid A and that on the other to receive the hypochlorite of calcium or bleaching-powder B, by the reaction of which the chlorin gas is generated. Each chemical is introduced through an opening closed by a plug 6, and until the barrel is started the reagents are kept apart, so that no chlorin is generated while the reagents are being introduced. In the modifications covered by the present application the gas escapes directly from the chemical-compartment into the pulp-chamber, Figs. 1, 3, 4, or from the compartment through the hollow trunnion into the pulp-chamber, Fig. 2. In each of these modifications of course the level of the pulp must be below the axis of rotation of the barrel to keep the pulp out of the chlorin-generating compartment. In that event of course the capacity of the barrel is materially reduced over the form shown in the parent application.

In Figs. 3 and 4 I have shown barrels of increased capacity where the chemical-compartment is located centrally between two pulp-chambers. Barrels of extra length, such as shown in Fig. 3, may be mounted on rollers 7 instead of on the trunnions shown in connection with the remaining forms. In Fig. 4 I have shown one form of valve for simultaneously controlling the openings leading to the pulp-chambers. This valve may be in the form of two hinged plates 8, coupled by means of pivoted links 9 to a common stem 10, passing through the wall of the barrel and operated from the outside thereof. When the stem is forced inwardly, the toggle-links 9 expand and close the valve, Figs. 4 and 5, and when drawn outwardly the links converge and open the valves, as is clearly obvious from the dotted position of the parts in said figures. The projecting end of the stem 10 is provided with a pawl 11, which engages the teeth of a locking-arm 12, along which the stem can be locked when once forced to either of its extreme positions. This valve, though in effect shutting off the gas-supply from the chlorin-compartment when closed, is primarily intended to cut off connection between the pulp-chamber and said chlorin-compartment when the barrel is being flushed

to remove the contents of the pulp-chamber. In that case the pulp-chamber is filled with water, the latter and the pulp under the circumstances being prevented from running into the chlorin-compartment and mixing with the chemicals contained therein.

The division-wall 5, as obvious, keeps the two reagents by which the chlorin is generated apart while the same are being introduced, so that there can be no disengagement of gas until after the barrel is started, when they will readily mix and react chemically on one another.

I am aware that a chlorination-barrel provided with a chemical-compartment communicating therewith through a hollow trunnion is known in the art; but so far as I am aware no provision exists for delivering the chlorin freely into the space above the surface of the pulp, it being the practice to allow the gas to permeate the semidry contents of the barrel through a sheet or web disposed about the axis of rotation of the barrel, such web in time becoming clogged and arresting the free passage of the gas into the barrel. Under my construction whether the chemical-compartment be situated contiguous to the pulp-chamber, as shown in Figs. 1, 3, and 4, or whether separated therefrom by a hollow trunnion, as shown in Fig. 2, the gas flows uninterruptedly into the pulp-chamber and under any degree of pressure, there to become thoroughly incorporated with the mass of wet ore or pulp.

To insure compactness of construction, it will be noticed that with the exception of the modification shown in Fig. 2 I locate my chemical-compartment contiguous to the pulp-chamber—that is to say, I make such compartment a part of the barrel. In this way I dispense with the necessity of passing the gas through the trunnion. Necessarily the passage or opening (formed in the wall separating the pulp-chamber from the chemical-compartment) through which the gas escapes into the pulp-chamber must be disposed about the axis of rotation of the barrel to remain permanently above the surface of the pulp during the rotation of the barrel; otherwise the pulp would run into the chemical-compartment when the opening or passage reached a position below the surface of the pulp.

It is apparent, of course, that I may alter the details of the present construction without departing from the spirit or nature of my invention.

Having described my invention, what I claim is—

1. A chlorination-barrel having a pulp-chamber, and a chlorin-generating compartment carried thereby and rotatable, and in unobstructed communication therewith through one of the ends of the barrel, and freely discharging the chlorin thereinto above the surface of the pulp, substantially as set forth.

2. A chlorination-barrel having a pulp-chamber, and a chlorin-generating compartment carried thereby and located contiguous thereto and rotatable, and in unobstructed communication therewith through one of the ends of the barrel, and freely discharging the chlorin thereinto above the surface of the pulp, substantially as set forth.

3. A chlorination-barrel having a pulp-chamber and a chlorin-generating compartment rotatable therewith, a wall separating the pulp-chamber from the compartment, said wall having an unobstructed opening disposed about the axis of rotation of the barrel for freely permitting the discharge of the chlorin above the surface of the pulp in the pulp-chamber, substantially as set forth.

4. A chlorination-barrel having a pulp-chamber, a chlorin-generating compartment carried thereby and rotatable therewith, an unobstructed passage disposed about the axis of rotation of the barrel connecting said compartment with the pulp-chamber, whereby the chlorin is permitted to freely discharge into the pulp-chamber above the surface of the pulp during the rotation of the barrel, substantially as set forth.

5. A chlorination-barrel having a pulp-chamber, a chlorin-generating compartment carried thereby and rotatable, and in unobstructed communication therewith through one of the ends of the barrel, and freely discharging the chlorin thereinto above the surface of the pulp, and a valve for cutting off communication between the pulp-chamber and the chlorin-compartment, substantially as set forth.

6. A chlorination-barrel having a pulp-chamber, a chlorin-generating compartment carried thereby and rotatable, and in unobstructed communication therewith through a central opening disposed about the axis of rotation of the barrel, and freely discharging the chlorin, into the pulp-chamber through said opening, above the surface of the pulp, and a valve for cutting off communication between the pulp-chamber and the chlorin-compartment, substantially as set forth.

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

WILLIAM J. ARMBRUSTER.

Witnesses:
EMIL STAREK,
G. L. BELFRY.