

J. A. McCASKELL.

AGITATOR.

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981,098.

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Fig. 1.

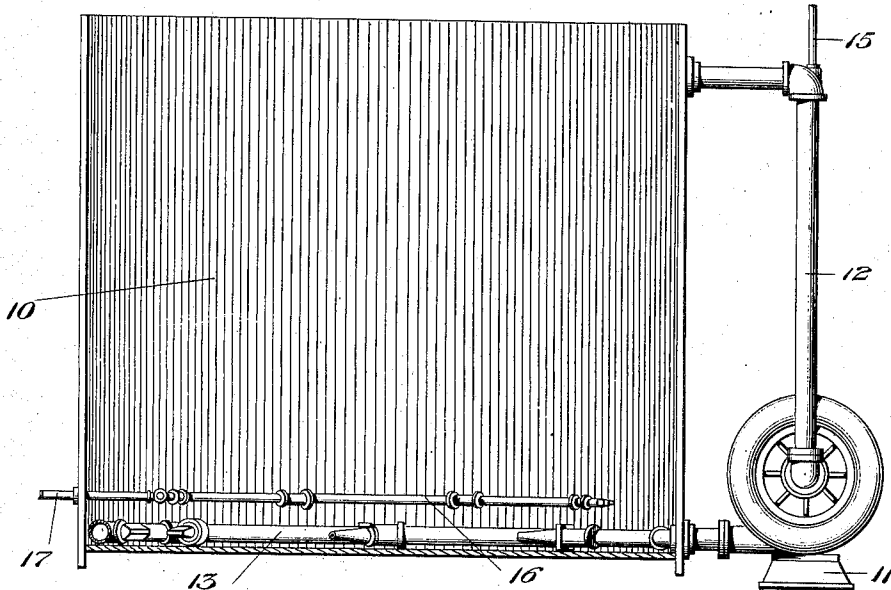
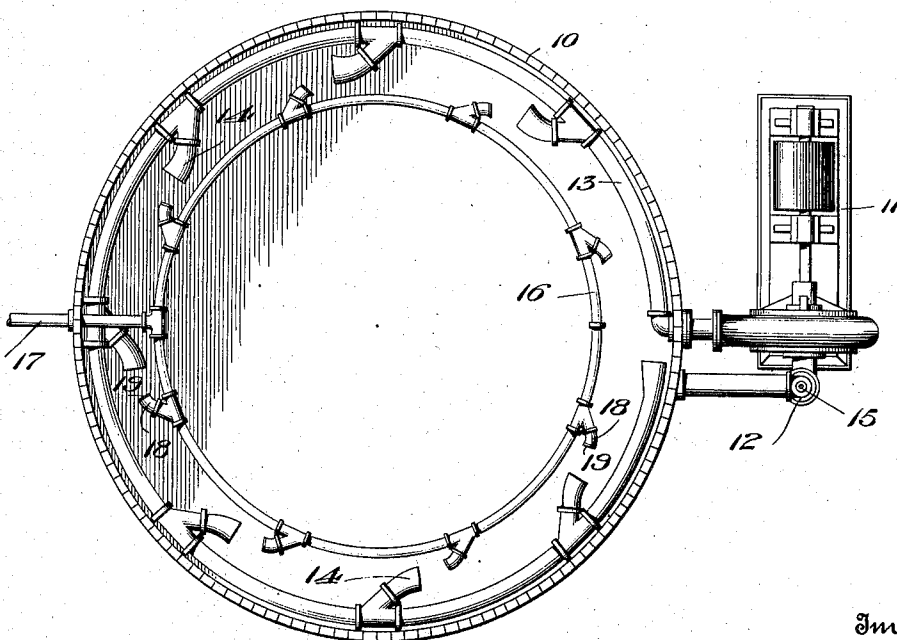


Fig. 2.



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JASPER A. McCASKELL, OF SALT LAKE CITY, UTAH.

AGITATOR.

981,098.

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To all whom it may concern:

Be it known that I, JASPER A. McCASKELL, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Agitators, of which the following is a specification.

This invention relates to slimes agitators, and particularly to apparatus designed to impart a circular motion to the slimes or solutions in a tank, caused by the tangential impetus given the solutions, by admitting the solutions under pressure at different points in the tank and in such a direction, as to cause a revolving of the solutions in the tank; at the same time admitting air under pressure around substantially the inner circumference of the tank and throughout the body of the solutions in the tank in an opposite direction to that of the motion of the solutions, thus causing a most efficient aeration of the slimes in solution.

The invention consists of the parts and the constructions and arrangements and combinations of parts which I will herein-after describe and claim.

In the accompanying drawings forming a part of this specification and in which similar reference characters indicate like parts in the several views, Figure 1 is a vertical sectional view of a slimes containing tank embodying the salient features of my invention, showing the slimes circulating pipes and air conducting pipes in side elevation. Fig. 2 is a top plan view of Fig. 1.

In carrying out my invention I construct a tank, 10, of suitable shape, dimensions and capacity into which tank the slimes or solutions to be treated are conducted and are designed to be kept in constant motion by means which I will now describe. These means include a centrifugal or other pump, 11, having its discharge connecting with the lower portion of the tank, said pump connecting through its center with a pipe, 12, which leads to the upper end of the tank and is designed to conduct the overflow from the tank to the pump so that said overflow may be pumped back into the tank through the distributing pipe at the bottom thereof. This distributing pipe, 13, is herein shown as being circularly arranged in or near the bottom of the tank, the inlet end of the pipe being coupled or otherwise connected to the discharge end of the pump and said pipe be-

ing provided with a number of nozzles or outlets, 14, placed to discharge tangential to the direction of the pipe, so that the whole mass of solution in the tank is given a circular motion and the contents of the said tank are maintained in a constant state of agitation.

As shown in Fig. 1, an air pipe, 15, connects with the overflow pipe, 12, thus admitting air from this pipe to the suction end of the pump for delivery with the fluid contents into the bottom of the tank. A second pipe, 16, of circular or other form is placed within the tank above and substantially close to the first-named circular pipe, said second pipe connecting with an air pipe, 17, which pierces the side of the tank, said second circular pipe being provided with a series of tangentially arranged outlets, which may be in the form of nozzles, 18, adapted to admit air in substantially an opposite direction to the motion of the revolving slimes in the tank, thus inducing a thorough aeration of the whole mass of slimes.

As shown in Fig. 2, at the discharge end of the nozzles, 18, leading from the circular air pipe, 16, there is placed a small flap or other valve, 19, which is designed to be closed when the air ceases to flow through and from said circular pipe.

The pump may be of any appropriate type; in fact other forms of pressure means might be used without departing from the spirit of my invention. Likewise there may be a plurality of the circular slimes-conducting pipes in the tank and a plurality of air-conducting pipes arranged with their nozzles or outlets oppositely placed relatively to the outlets or nozzles of the slimes-conducting pipe, without altering the character of the invention. It is also true that the circular character of the pipes, 13 and 16, may be changed and these pipes given a different formation without materially modifying the action of said pipes, but the circular arrangement shown and particularly the opposite disposition of the discharges and the tangential discharge are thought to give the best results.

From the foregoing, it will be apparent that when the apparatus is in action the solutions in the tank are given a circular motion caused by the tangential impetus induced by the arrangement of the outlets or nozzles and by admitting the solutions

under pressure at different points in the tank; and by admitting air under pressure around the periphery of the tank and throughout the body of the solutions in said tank, and in an opposite direction to that of the motion of the solutions, a most efficient aeration and agitation of the slimes is effected.

After the slimes are agitated in the tank, they are drawn off and run through an appropriate filter press, not shown.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In an agitating mechanism for solutions, the combination of a solution-containing tank, a solution-conducting pipe in the lower portion of said tank having outlets adapted to discharge the solutions tangentially at different points around the tank, to thereby induce a circular motion to the solutions, and a pipe extending around the tank having tangentially arranged nozzles substantially opposite said outlets for admitting air to the lower portion of the tank at different points, and tangentially in a direction substantially opposite to the discharge of the solutions into the tank, and means for circulating the solutions through said tank.

2. In an apparatus of the character described, the combination of a tank and a pipe in the lower portion thereof having outlets arranged to discharge tangentially to thereby induce a circular motion to the contents of the tank, and an air pipe within the tank having outlets at numerous points in the tank arranged tangentially with one substantially opposite a corresponding outlet in the first-named pipe, said second outlets adapted to discharge air under pressure in a direction substantially opposite to the delivery of the solutions into the tank, whereby the mass of material is thoroughly agitated and aerated, and means

for inducing a circulation of the solutions through said tank.

3. In an apparatus of the character described, the combination of a tank, a circular pipe in the lower portion thereof having nozzles arranged at different points in its length, said nozzles adapted to discharge tangentially to thereby give a circular motion to the solutions, a pump connecting with the pipe and with the upper portion of the tank, and an air-pipe above and proximate to the solutions pipe, said air-pipe having outlets at various points adapted to discharge the air tangentially into the tank and substantially in opposition to the circular motion of the solutions, whereby the fluid contents of the tank are thoroughly agitated and at the same time aerated.

4. In an apparatus of the character described, the combination of a tank, a circular pipe in the lower portion thereof having nozzles arranged at different points in its length, said nozzles adapted to discharge tangentially to thereby give a circular motion to the solutions, a pump connecting with the pipe and with the upper portion of the tank, and an air-pipe above and proximate to the solutions pipe, said air-pipe having outlets at various points adapted to discharge the air tangentially into the tank and substantially in opposition to the circular motion of the solutions, whereby the fluid contents of the tank are thoroughly agitated and aerated, and valves carried by the nozzles of the air-pipe adapted to automatically close the outer ends of the nozzles when air pressure in the said pipe ceases.

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

JASPER A. McCASKELL.

Witnesses:

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C. B. FELT.