No. 806,214. PATENTED DEC. 5, 1905.

L. C. TRENT.

AGITATING AND MIXING APPARATUS.

APPLICATION FILED JUNE 27, 1905.

Fig. 1.

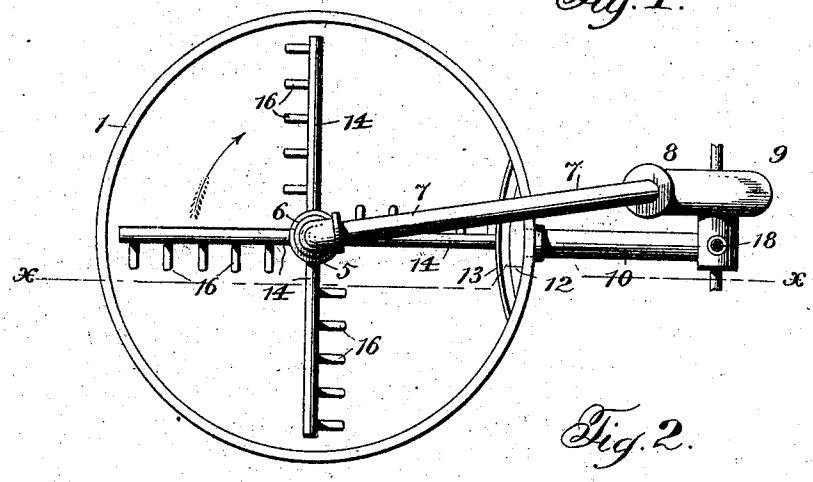


Fig. 2.

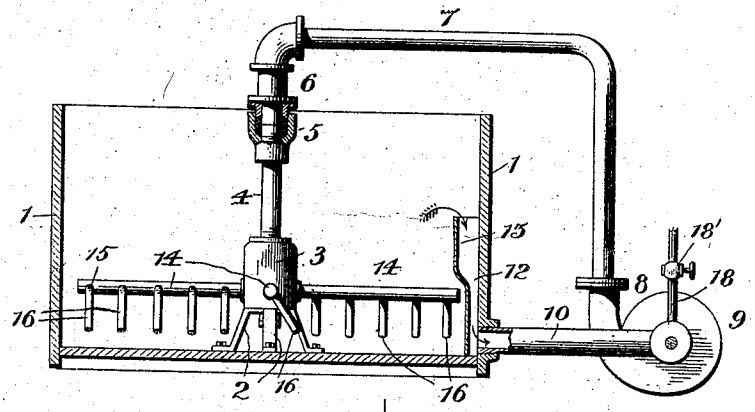
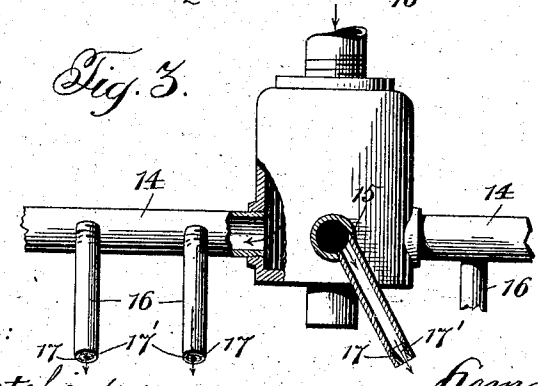


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

LAMARTINE C. TRENT, OF VANTRENT, CALIFORNIA.

AGITATING AND MIXING APPARATUS.

No. 806,214. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed June 27, 1905. Serial No. 267,238.

To all whom it may concern:

Be it known that I, LAMARTINE C. TRENT, a citizen of the United States, residing at Vantrent, Placer county, State of California, have invented certain new and useful Improvements in Agitating and Mixing Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same.

The apparatus is designed for the agitating and mixing of liquid slimes, clay, cement, slurry, and sludge generally, the essential object of the invention being to provide a cheap, simple, and effective apparatus for the agitation, circulation, and mixing of the above-mentioned material, at the same time providing for the aeration of the pulp or material being treated.

To comprehend the invention, reference should be had to the accompanying sheet of drawings, wherein—

Figure 1 is a top plan view of the apparatus. Fig. 2 is a cross-sectional view, in side elevation, taken on line *x x*, Fig. 1, of the drawings. Fig. 3 is a broken detail view of the receiver with one of the distributer and agitator arms attached thereto.

In the drawings the numeral 1 is used to designate any suitable form of a receiving-tank, the size or diameter of which is dependent on the work required. Within this receiving-tank is arranged a spider 2, which is bolted or otherwise secured to the floor of the said tank. Said spider supports a reservoir 3, revolubly mounted thereon. To the upper end of the reservoir 3 is connected a short extension 4, which connects with a stuffing-box 5, secured to the discharge end 6 of the stationary feed-pipe 7. The connection between the extension 4 and the end of the feed-pipe 7 is such that the said extension 4 may turn or rotate freely with the movement of the reservoir, which is driven as hereinafter explained.

The free end of the feed or supply pipe 7 connects with the receiving-chamber 8 of any suitable centrifugal pump or circulating-pump 9. The suction extension or pipe 10 of the pump leads from the tank 1, preferably extending within the overflow-chamber 12, formed by the separating-wall 13. The height of the wall 13 is such that its upper edge is a given distance below the upper edge of the tank 1. Consequently as the liquid material reaches the level of the wall 13 the same is "decanted," so to say, into the chamber 12. Hence the lighter portion of the material treated is drawn into the circulating-pump.

Into the reservoir 3, adjacent the bottom edge thereof, is screwed a series of radial pipes 14, the outer ends of which are closed. These pipes form radial arms, each arm being provided with a series of tangential outlet-openings 15, through which the material forced into the radial arms makes its escape. In each outlet-opening is screwed a short discharge-pipe 16, which pipes depend from the radial arms and in addition to serving as discharge-fingers serve as stirrers for the material within the tank 1. These fingers or stirrers extend to within a short distance of the tank's floor, and each stirrer or finger is set at an angle to the horizontal, thus serving as tangential discharge-fingers for the radial arms. To reduce the outlet area of the discharge stirrers or fingers, there is located in the end of each a plug 17, formed with a tapered or inclined bore 17′. By thus reducing the outlet area of each discharge stirrer or finger a back pressure is maintained within the radial arms 14 and the reservoir 3, besides causing the pulp passing through the radial arms to discharge into the tank in the form of fine impelling-jets.

In operation the material to be treated is fed in any suitable manner into the tank 1 until it reaches the desired level. The pump 9 is then put into operation, drawing the material from the tank into the pump-chamber 8 and forcing the same from said chamber through the pipe 7 into the reservoir 3. As the pressure in said reservoir is increased by the material forced therein the same is forced therefrom into the hollow radial arms 14, escaping under pressure from said arms through the tangentially-disposed depending discharge stirrers or fingers 16. This discharge is in the form of fine jet-streams, which discharge into or impinge against the body of material within the tank, the radial arms 14 being submerged therein. Owing to the tangential disposition of the depending stirrers or fingers 16, an impelling action is imparted thereto, due to the strains or recoil of the escaping jets, which is sufficient to impart rotation to the radial arms and connected reservoir 3 in a horizontal plane, causing the arms 14 and depending fingers or stirrers 16 to thoroughly agitate and mix the material or pulp within the tank 1. It will be understood that so long as the pump 9 is operating the body of

pulp or material within the tank 1 will be maintained in continuous circulation.

For the purpose of aerating the pulp or material circulating through the pump to the reservoir 3 an air-supply pipe 18 connects with the said pump 3. The suction created by the body of material passing through the pump draws air into the pump through said pipe 18. The air thus admitted to the pump intermixes with and thoroughly aerates the material being treated. By means of the valve 18′ the quantity of air admitted through the pipe 18 may be regulated. The aeration of the material is essential where the same consists of a cyanid solution.

Having thus described the invention, what is claimed as new, and desired to be protected by Letters Patent, is—

1. In an apparatus for the described purpose, the combination with a holding-receptacle for the material to be treated, of a reservoir rotatably held therein, a series of tubular arms radially extending therefrom, a series of tubular stirrers depending from the said arms, said stirrers being arranged at an incline to the horizontal axis of the arms, of a circulating-pump for the liquid material, of connection between the pump and the tank for the withdrawal of the material and connection between the pump and the rotatable reservoir, through which the material entering the pump is forced into the reservoir under pressure.

2. In an apparatus for the described purpose, the combination with a holding-receptacle for the material to be worked, of a reservoir rotatably held therein, of a series of hollow arms radially extending therefrom, a series of outlet-openings in each arm, of a circulating-pump located outside of the holding-receptacle, connection between said receptacle and the pump for the withdrawal of the material being treated, and connection between the said pump and the rotatable reservoir, through which the material entering the pump is forced under pressure into the said rotatable reservoir.

3. In an apparatus for the described purpose, the combination with a holding-receptacle for the material to be worked, of a reservoir rotatably held therein, of a series of hollow distributing-arms radially extending from the reservoir, of a circulating-pump located outside of the holding-receptacle, of connection between the pump and the holding-receptacle for the withdrawal of material, and of connection between the said pump and the rotatable reservoir, through which connection the material entering the pump is forced under pressure into the said reservoir.

4. In an apparatus for the described purpose, the combination with a holding-receptacle for the material to be treated, of a reservoir rotatably held therein, of tubular distributing-arms radially projecting therefrom, an overflow-chamber formed in the holding-receptacle, of a circulating-pump located outside of the receptacle, of pipe connections between the overflow-chamber and the pump, and pipe connection between the rotatable reservoir and the pump, through which connection the material entering the pump is forced under pressure into the said reservoir.

5. In an apparatus for the described purpose, the combination with a holding-receptacle for the material to be treated, of a reservoir rotatably held therein, of tubular distributing-arms radially projecting therefrom, of a circulating-pump for the material being treated, of connection between the holding-receptacle and the pump for the withdrawal of material, of connection between the pump and the rotatable reservoir through which the material entering the pump is forced under pressure into the said reservoir, and of means for admitting air to the pump for the aerating of the material passing therethrough.

In testimony whereof I have hereunto affixed my signature in the presence of witnesses.

LAMARTINE C. TRENT.

Witnesses:
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D. B. RICHARDS.