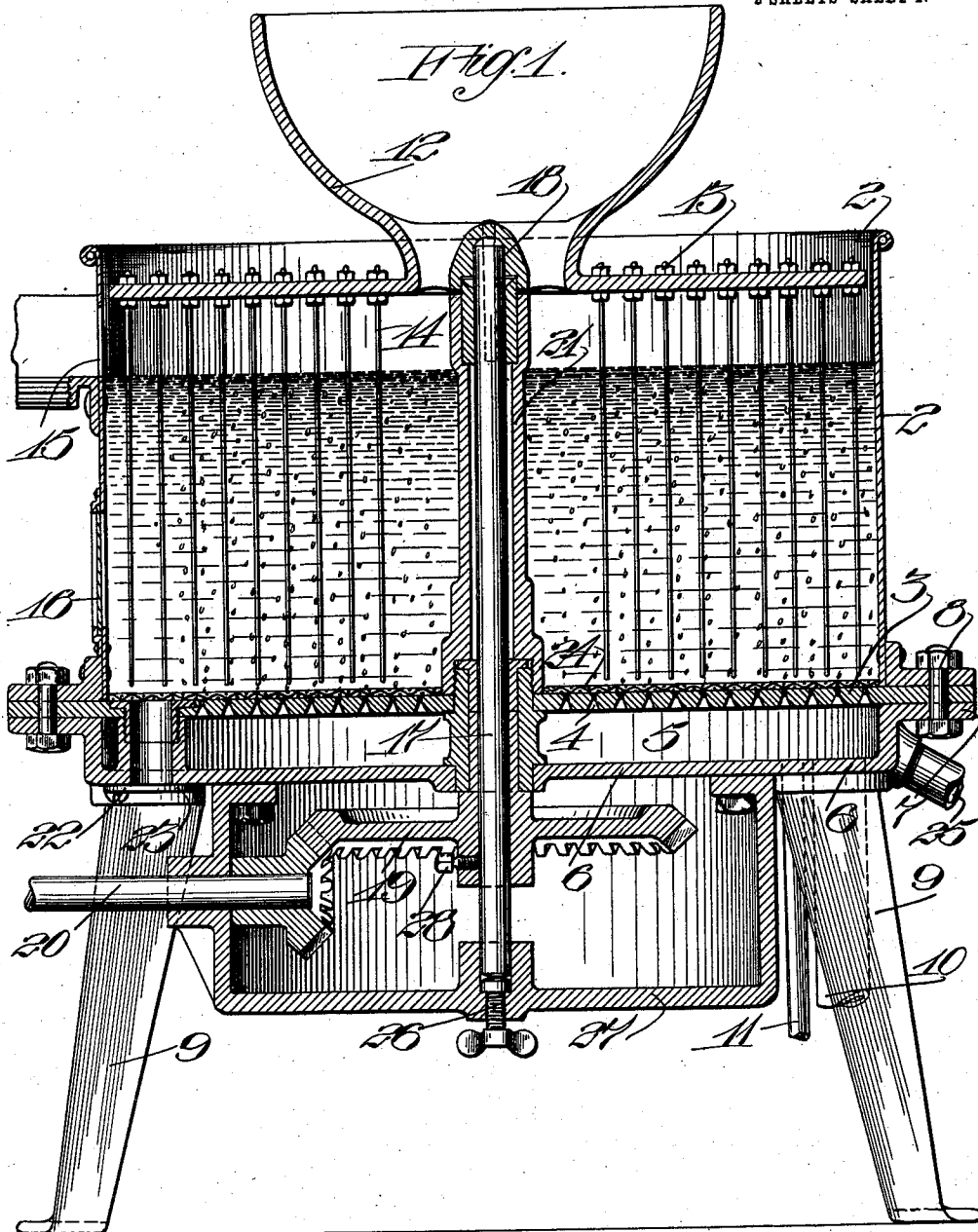


J. W. FAIRFIELD.
 AGITATING AND CLASSIFYING DEVICE.
 APPLICATION FILED APR. 22, 1911.

1,010,244.

Patented Nov. 28, 1911.

2 SHEETS—SHEET 1.



Witnesses:
Max Kasberg
 Frances V. Cole

Inventor:
Jason W. Fairfield
 By *E. H. Strong*
 Att'y.

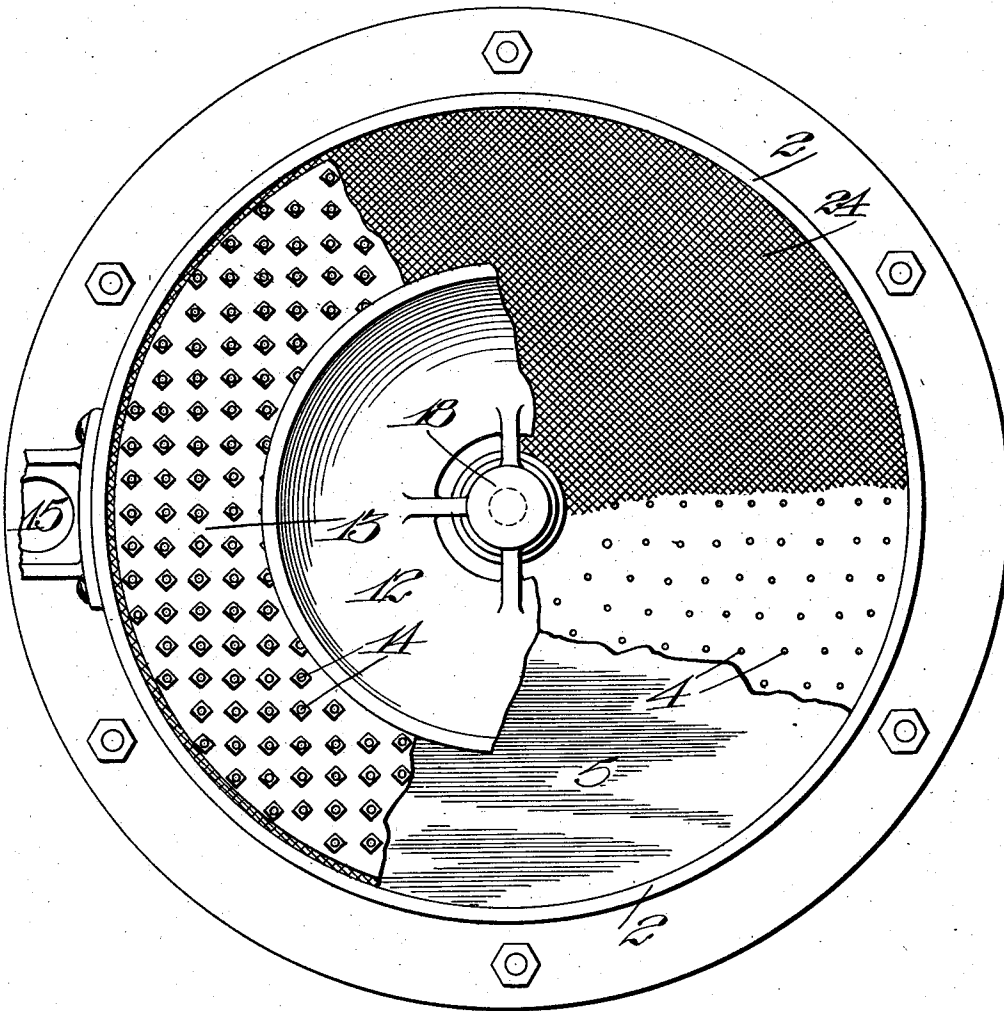
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Fig. 2.



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UNITED STATES PATENT OFFICE.

JASON W. FAIRFIELD, OF GOLDFIELD, NEVADA.

AGITATING AND CLASSIFYING DEVICE.

1,010,244.

Specification of Letters Patent.

Patented Nov. 28, 1911.

Application filed April 22, 1911. Serial No. 622,784.

To all whom it may concern:

Be it known that I, JASON W. FAIRFIELD, a citizen of the United States, residing at Goldfield, in the county of Esmeralda and State of Nevada, have invented new and useful Improvements in Agitating and Classifying Devices, of which the following is a specification.

This invention relates to ore treating machinery, and particularly to classifiers and agitators.

The object of the present invention is to provide a simple, efficient and continuous running apparatus for the classification of pulp; and to provide an apparatus in which tests may be made for treatment by cyanid and whereby pulp may be agitated by mechanical and pneumatic or hydraulic instrumentalities.

The invention consists of the parts and the construction and combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a vertical section through the machine. Fig. 2 is a plan view of the same.

In the present embodiment of my invention, 2 represents a tank of suitable proportions provided with a false bottom 3, which is provided throughout its upper surface with a number of relatively small perforations 4 through which fluid under pressure may be projected from a chamber 5 below the bottom 3. The chamber 5 is formed beneath the perforated bottom 3 by attaching to the under surface of the latter a closure 6, having a flange 7 upon which the perforated false bottom 3 may be placed and upon which latter the shell or tank 2 is connected by suitable means, as bolts 8.

The chamber forming closure 6 may be provided with suitable pedestals or legs 9 whereby the device is elevated a convenient height above a support. Water may be admitted to the chamber 5 through a supply pipe 10 and, when desired, air may be admitted through one or more pipes 11 attached to the closure 6.

The present machine is adapted particularly for the classification of mineral or other pulp which may be fed into the tank 2 through a suitable hopper 12 projecting above the tank and secured to or formed with a turn-table 13 of area approximately equal to the interior of the tank 2. Removably connected to the turn-table 13 are a

number of agitator rods 14 which project downwardly from the under side of the turn-table into close juxtaposition with the upper surface of the false bottom 3.

When the pulp fed into the hopper 12 reaches a certain level in the tank 2, the slimes and fluid portion of the pulp may be discharged through a discharge opening 15 attached to one side of the tank. During the feeding of the pulp the coarser material will collect adjacent the bottom 3 of the tank and the quantity of coarse particles in the pulp settling toward the bottom 3 may be rendered visible through a sight glass 16 in one side of the tank.

As pulp is being fed through the hopper 12 into the tank, the turn-table 13, carrying the agitator rods 14, may be revolved by means of a shaft upon which the hopper and turn-table are mounted by a hub 18. Power is transmitted to the shaft 17 by any suitable means, such, for instance, as a bevel gear 19 deriving power from a shaft 20.

A stationary sleeve 21 is attached to the closure 6 at the bottom of the tank and projects upwardly around the shaft 17 so as to support its upper end and also prevent the escape of pulp around the bearings of the machine.

During the feeding of pulp into the tank 2 the turn-table 13, being revolved, moves the agitators 15 through the pulp and prevents the coarser materials from settling upon the bottom 3. This prevention of settling is further enhanced by applying water or a solution under pressure in the chamber 5 below the false bottom 3 so that the fluid or water will be projected in comparatively close fine jets upwardly into the agitated mass or pulp. By this means the pulp is constantly in movement and the fluid and slimes in the pulp discharged continuously at the opening 15 while the coarser material of the pulp is drained from the tank 2 at a drain 22 which is closable by means of a gate 23.

The machine is adapted with equal facility to the treatment and test of certain ores when it is desired to accurately determine the nature of, and the treatment necessary to best recover by cyaniding the values from the pulp. When the apparatus is to be used as a testing machine the water supply through the conduit 10 is cut off and pulp fed into the tank 2 while a volume of air is simultaneously forced into the chamber 5

through the pipe 11, the pressure of the air in the chamber being sufficient to constantly rise through the perforations 4 and thereby supply a necessary quantity of oxygen to the pulp being treated in the tank 2.

It is well-known that in the cyanid process of recovering gold the presence of oxygen is necessary and greatly beneficial. By the present means a given quantity of pulp which has been discharged into the tank 2 may be thoroughly subjected to air agitation by the numerous and comparatively close jets of air rising through the perforated bottom 3. When the apparatus is employed in cyanid testing, preferably there is laid over the upper surface of the bottom 3 a suitable filtering medium, such as canvas, burlap, matting or other appropriate material 24.

After the quantity of pulp in the tank 2 has been subjected to agitation by the air rising through the perforated bottom 3 and filtering medium 24, the air supply is cut off and a vacuum created in the chamber 5 by a suitable connection 25 with some apparatus capable of producing a vacuum. Thereby the solution in the tank 2 is withdrawn through the filtering medium 24 and the perforated bottom 3 into the chamber 5, from which it will pass through the conductor 25 to a receptacle, not shown, where it can be tested. The filtering medium 24, upon which are solids contained in the pulp subjected to the test, may be lifted from the tank and the solid tested to determine its value.

When the apparatus is used as a cyanid testing device the rods 15 are lifted sufficiently to permit the insertion of the filtering mattress 24 by means of a screw or other device 26 adjustable in a bearing 27 attached to the closure 6. By turning the screw so as to advance it, the shaft 17 is lifted, thus carrying upwardly the turntable 13 and increasing the distance between the lower ends of the agitating rods 15 and the bottom 3 to permit the insertion of the mattress 24. When the shaft 17 is so adjusted one of the beveled gears 19, which is attached to the shaft, may be temporarily unlocked therefrom to permit the adjustment of the shaft. When this adjustment has been obtained, the gear carried on the shaft 17, meshing with its complementary gear, is again locked to the shaft by means of the set-screw 28, or other means.

It will thus be seen that by the present machine ore or pulp may be continuously fed

into the tank 2 and kept in an active state by the rotation of the turn-table 13 carrying the agitating pins 14 and also by reason of the numerous jets of fluid projected into the mass through the perforated plate 3. If desired, instead of projecting water in the form of sprays into the pulp mass the mass can be subjected to agitation by forcing air into the chamber 5 and through the perforations 4 in the plate 3; the essential purpose and office of the perforated bottom 3 being to provide means whereby a large area is enlivened by the projection of the sprays of water or air.

Having thus described my invention what I claim and desire to secure by Letters Patent, is—

1. An ore treating apparatus including a tank, a closure for the lower portion of the tank having a depressed body with a central hub supporting an agitator, a perforated plate interposed upon the closure, means for securing the elements in position, a discharge passage extending from the plate through the chamber formed above the closure whereby the tank can be cleared of its contents, means for mechanically agitating pulp in the tank, a connection with the closure whereby fluid under pressure may be delivered to said chamber from beneath the plate, and a filter medium upon the plate through which the fluid rises.

2. An ore treating apparatus including a tank, a closure for the lower portion of the tank having a depressed body with a central hub supporting an agitator, a perforated plate interposed upon the closure, means for securing the elements in position, a discharge passage extending from the plate through the chamber formed above the closure whereby the tank can be cleared of its contents, means for mechanically agitating pulp in the tank, a connection with the closure whereby fluid under pressure may be delivered to said chamber from beneath the plate, a filter medium upon the plate through which the fluid rises, and a vacuum and drain connection for exhausting the fluid from the chamber.

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

JASON W. FAIRFIELD.

Witnesses:

A. D. ARMSTRONG,
THOS. V. CONNOR.