J. T. TERRY, JR.

ORE PULP CLASSIFIER.

APPLICATION FILED SEPT. 12, 1913.

1,109,485.

Patented Sept. 1, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

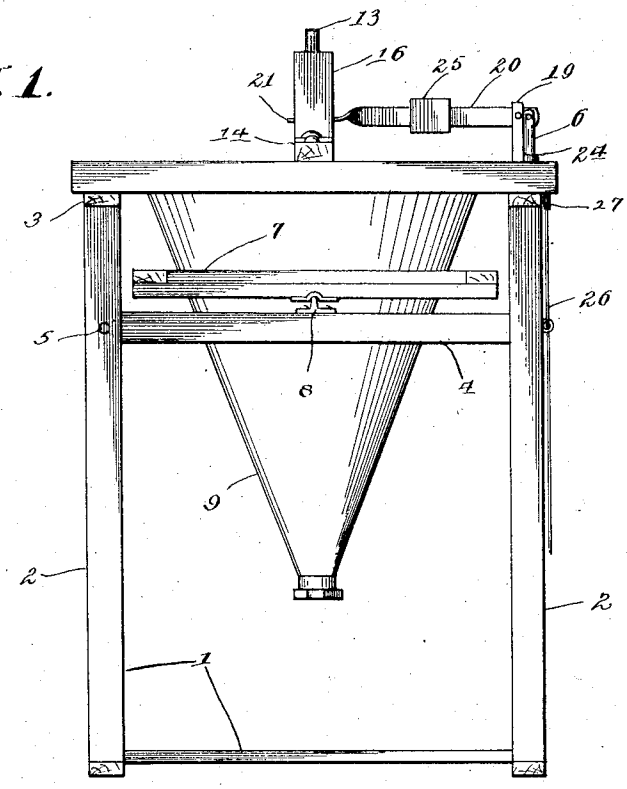
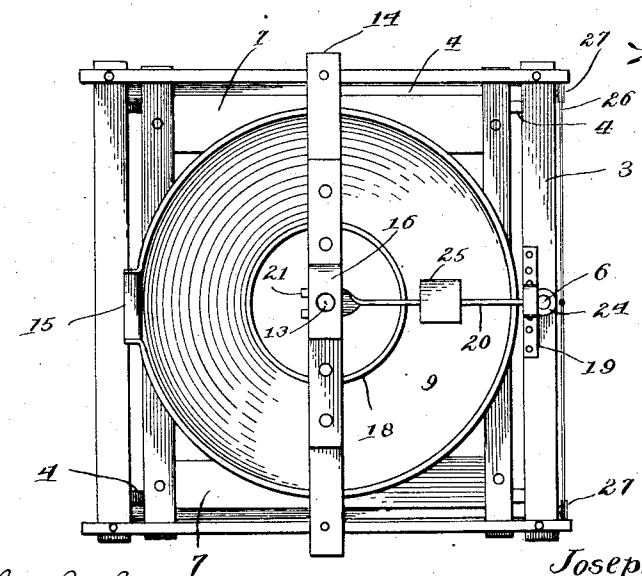


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

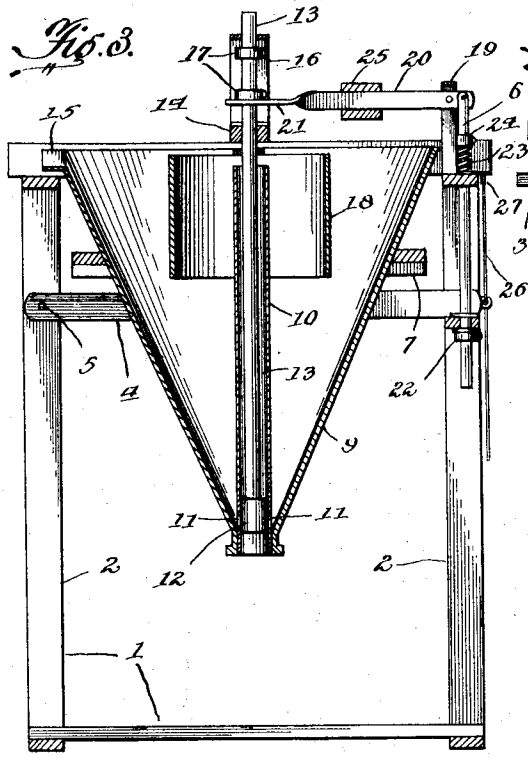


Fig. 4.

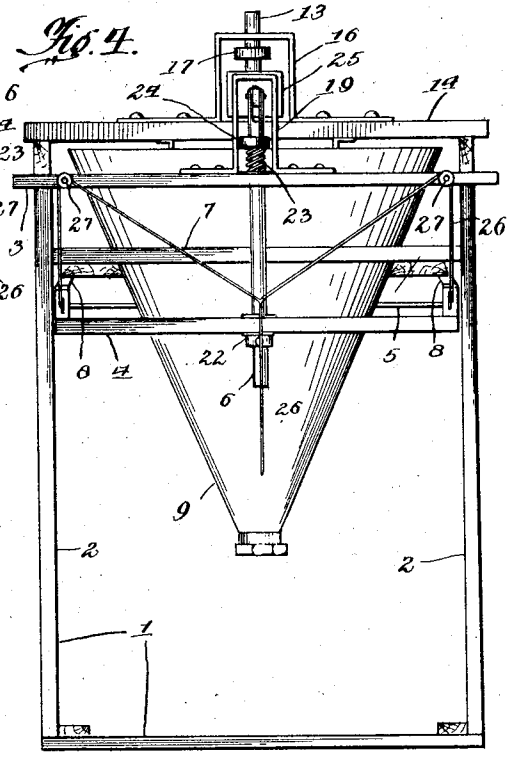
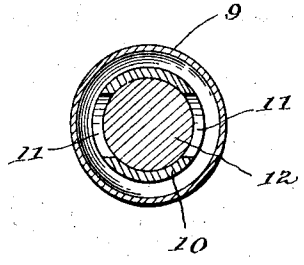


Fig. 5.



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ORE-PULP CLASSIFIER.

1,109,485. Specification of Letters Patent. Patented Sept. 1, 1914.

Application filed September 12, 1913. Serial No. 789,498.

To all whom it may concern:

Be it known that I, JOSEPH T. TERRY, JR., a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Ore-Pulp Classifiers, of which the following is a specification.

The invention relates to an improved metallurgical apparatus of that type known as hydraulic classifier wherein the slimes are collected by gravity to a certain point and automatically discharged.

The main object of the present invention is the provision of an apparatus of this type in which the entire operation is automatically performed, the delivery of the slime being controlled through the adjustment provided in accordance with the character of the ore being handled.

The invention in the preferred form of details will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a side elevation of the improved classifier. Fig. 2 is a top plan of the same. Fig. 3 is a vertical section. Fig. 4 is a side elevation. Fig. 5 is a horizontal section through the cut-off.

Referring particularly to the accompanying drawings 1 represents the main frame including uprights 2 and cross strips 3, said frame being of any appropriate or desired size in accordance with the work in hand, 4 represents the adjusting frame of rectangular form and pivotally supported upon a rod 5 connecting two of the uprights of the main frame.

The opposite or movable end of the adjusting frame is supported upon the connecting rod 6, which will be hereinafter more fully described.

7 represents the supporting frame of rectangular outline fulcrumed upon fulcrum brackets 8 secured to the adjusting frame.

The main receptacle 9 in the form of a cone is secured within the supporting frame with its discharge or small end depending below said frame and its receiving or open end arranged above said frame. Secured within the main receptacle and rising vertically and centrally thereof is a discharge tube 10, the lower open end of which extends through the discharge end of the receptacle and forms the main discharge outlet from said receptacle, any suitable mechanical construction being provided at this point to secure the desired connection. Immediately above and within the discharge end of the receptacle the tube 10 is formed with diametrically opposed openings 11 which form the sole connection between said tube and receptacle. A valve operates within the tube comprising a plunger body 12 and a stem 13 connected thereto, the latter extending through and above the tube and through a cross bar 14 fixed upon the upper edges of the extreme upper cross strips of the main frame. The receptacle 9 is formed in its upper edge to provide a discharge lip or spout 15 for directing the delivery from said receptacle of the accumulated water and lighter products, as will later appear.

Secured upon the cross bar 14 is an inverted U-bracket 16 through the upper cross part of which the stem 13 of the valve extends, the said stem between said cross frame and bar 14 being provided with spaced collars 17 so arranged as to permit a limited vertical movement of the stem. A cylindrical fluid guide member 18 is secured to the cross strip and to the cross bar 14 and depends within the main receptacle, guiding the material discharged into said receptacle in a central path to avoid interfering with that material rising and being discharged from the spout.

Secured to one of the side cross strips 3 of the frame, that is the strip receiving the connecting rod 6 is a bracket 19 in the upper end of which is fulcrumed a lever 20, the long arm of which lever extends toward the stem 13 of the valve and has its terminal bifurcated at 21 to embrace the stem beneath the lower collar 17 thereon. The short arm of the lever 20 is secured to the upper end of the connecting rod 6, said rod passing loosely through the adjacent cross strip 3 and through the end strip of the adjusting frame 4 at the free end of said frame, the connecting rod below the frame being provided with a stop, as a collar 22 to limit the movement of the frame. An adjusting spring 23 encircles the connecting rod above the cross strip 3, said spring bearing upon the cross strip at its lower end and against the collar 24 adjustably secured upon the rod above the strip. The lever 20 is constructed to adjustably receive a weight 25, whereby the device may be adjusted in ac-

cordance with the position of said weight upon the lever.

As a means for the mechanical agitation of the main receptacle I provide the free end of the adjusting frame 4 with cables 26 which pass over and around pulleys 27 supported upon the overlying cross strip 3, the free ends of the cables depending from the pulleys and being preferably connected to provide a means for rapidly moving the adjusting frame and hence the main receptacle when agitation of its contents are necessary.

In the use of the device the main receptacle receives either continuously or intermittently the pulp consisting of water, sand and slime. The lighter material received in the receptacle is discharged through the spout 15, while the heavy material settles to a point adjacent the openings 11 of the discharge tube. In the normal position of the parts the weight 25 is adjusted so as to counterbalance the receptacle when filled with water, and in the counterbalanced position the plunger body 12 of the valve will close the openings 11 in the discharge tube and hence prevent communication between said tube and the receptacle 9. In the operative position the weight of the accumulated sand, slimes or the like upon the receptacle forces the free end of the supporting frame downwardly, pulling upon the connecting rod 6, moving the lever 20 upon its fulcrum and elevating, through the stem 13, the plunger body 12. The openings 11 are thus cleared to provide an outlet or discharge from the main receptacle for such material accumulations. After the discharge to a degree sufficient to reduce the weight of the receptacle and material therein the parts return to normal position, as will be evident.

It will be appreciated that with the weight and spring set as desired an automatic discharge of the slimes, sand or other heavy material will be maintained as readily as said material accumulates in the desired volume at the bottom of the receptacle, and that no manual operation of any part is necessary until the hand agitation may be required as previously provided for. The fulcrum support of the frame 7 provides for maintaining the main receptacle upright at all times.

With the improvement I am enabled to produce a much thicker product of sand, slimes or the like than is usual in classifiers, and thereby reduce the time, labor and expense of the subsequent metallurgical treatment.

The improved classifier is equally efficient whether the feed of the pulp is continuous or intermittent, as the automatic discharge is governed solely by the gravical influence of the accumulations in the bottom of the receptacle without regard to the character of the feed.

What is claimed is:—

1. A hydraulic classifier including a weight yielding adjusting frame, an automatically leveling supporting frame movably mounted therein, a main receptacle movably mounted in the supporting frame, said receptacle being formed with a valved discharge opening, and means connected to the valve and operating in the movement of the receptacle under the accumulations of material therein to actuate the valve to free the discharge opening.

2. A hydraulic classifier including a main frame, a weight yielding adjusting frame pivotally mounted therein, an automatically leveling supporting frame movably mounted in the adjusting frame, a cone shaped main receptacle in the supporting frame and formed with a discharge opening, a valve controlling said opening, a weighted lever supported on the main frame and connected to the valve, and a connection intermediate said lever and adjusting frame.

3. A hydraulic classifier including a main frame, a weight yielding adjusting frame pivotally mounted therein, an automatically leveling supporting frame fulcrumed on the adjusting frame, a cone-shaped main receptacle fixed on the supporting frame, a lever pivotally mounted on the main frame, a connection intermediate one arm of said lever and the supporting frame, and a valve for the main receptacle connected to the opposite end of the lever.

4. A hydraulic classifier including a main frame, a weight yielding adjusting frame pivotally mounted therein, an automatically leveling supporting frame fulcrumed on the adjusting frame, a cone-shaped main receptacle fixed on the supporting frame, a lever pivotally mounted on the main frame, a connection intermediate one arm of said lever and the supporting frame, and a valve for the main receptacle connected to the opposite end of the lever and a weight adjustable longitudinally of the lever.

5. A hydraulic classifier including a main frame, a weight yielding adjusting frame pivotally mounted therein, an automatically leveling supporting frame fulcrumed on the adjusting frame, a cone-shaped main receptacle fixed on the supporting frame, a lever pivotally mounted on the main frame, a connection intermediate one arm of said lever and the supporting frame, and a valve for the main receptacle connected to the opposite end of the lever and a weight adjustable longitudinally of the lever, and feed means depending within the main receptacle.

6. A hydraulic classifier including a main frame, a weight yielding adjusting frame pivotally mounted therein, an automatically leveling supporting frame fulcrumed on the

adjusting frame, a cone-shaped main receptacle fixed on the supporting frame, a lever pivotally mounted on the main frame, a connection intermediate one arm of said lever and the supporting frame, and a valve for the main receptacle connected to the opposite end of the lever, the upper edge of said main receptacle being formed to provide a spout.

7. A hydraulic classifier including a main frame, adjusting frame pivotally mounted therein, a supporting frame fulcrumed on the adjusting frame, a cone shaped main receptacle fixed on the supporting frame, a tube fixed within the receptacle and opening through the bottom thereof, said tube having communication with the interior of the receptacle adjacent the bottom, a valve operative within the tube to close said communicating opening, a rod projecting vertically of the tube and terminating above the receptacle, a lever pivotally mounted on the main frame, a connection intermediate one arm of the lever and the supporting frame, and a weight adjustable longitudinally of the lever.

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

JOSEPH T. TERRY, JR.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."