G. CAETANI.

WATER JIG.

APPLICATION FILED DEC. 4, 1907.

923,328.

Patented June 1, 1909.

3 SHEETS—SHEET 1.

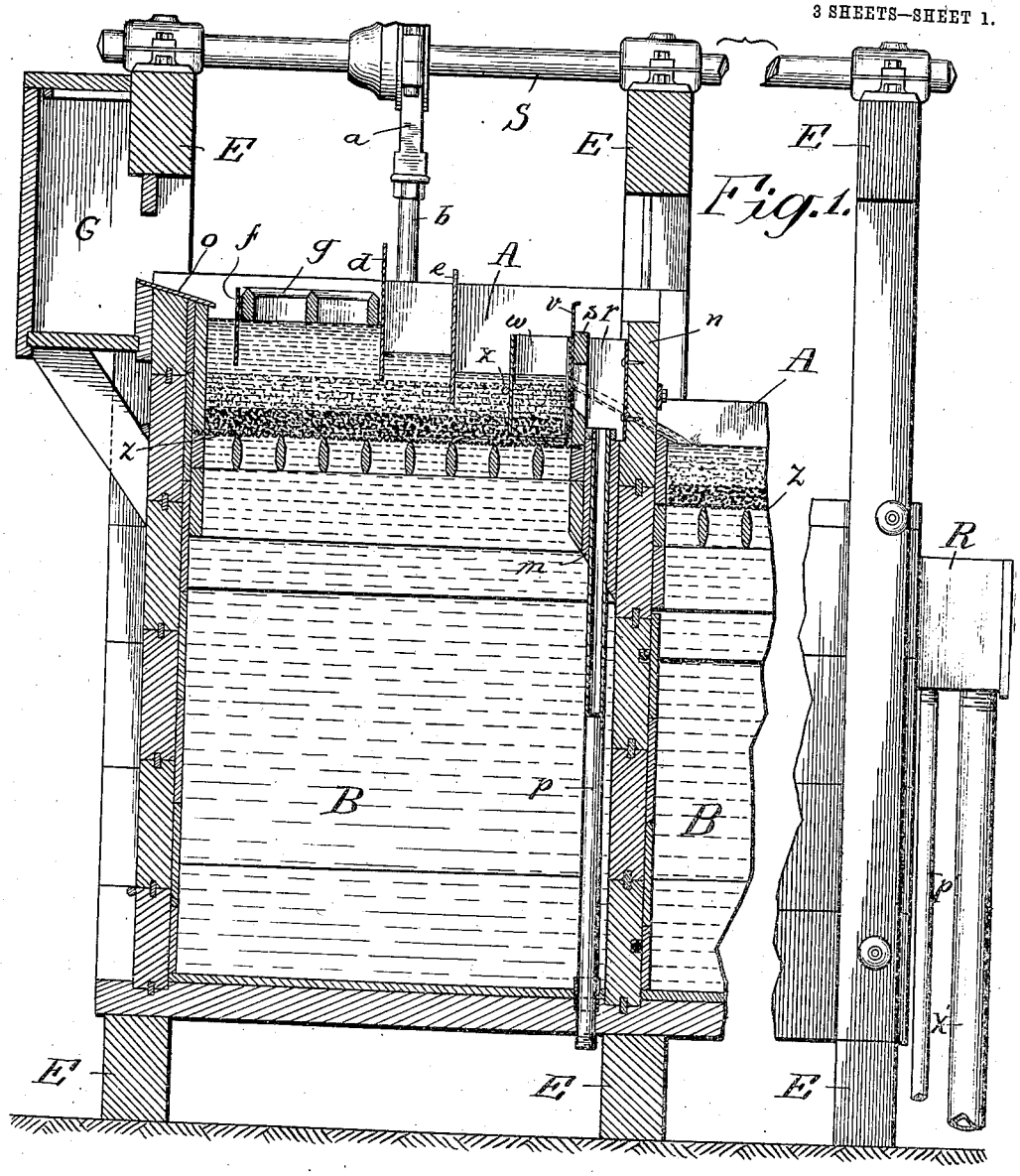

Fig. 1.

WITNESSES:

L. D. Pennifield

L. M. Barlow

INVENTOR:

Glasio Caetani,

BY

Lennie V. Goldsborough

ATTORNEYS.

G. CAETANI.

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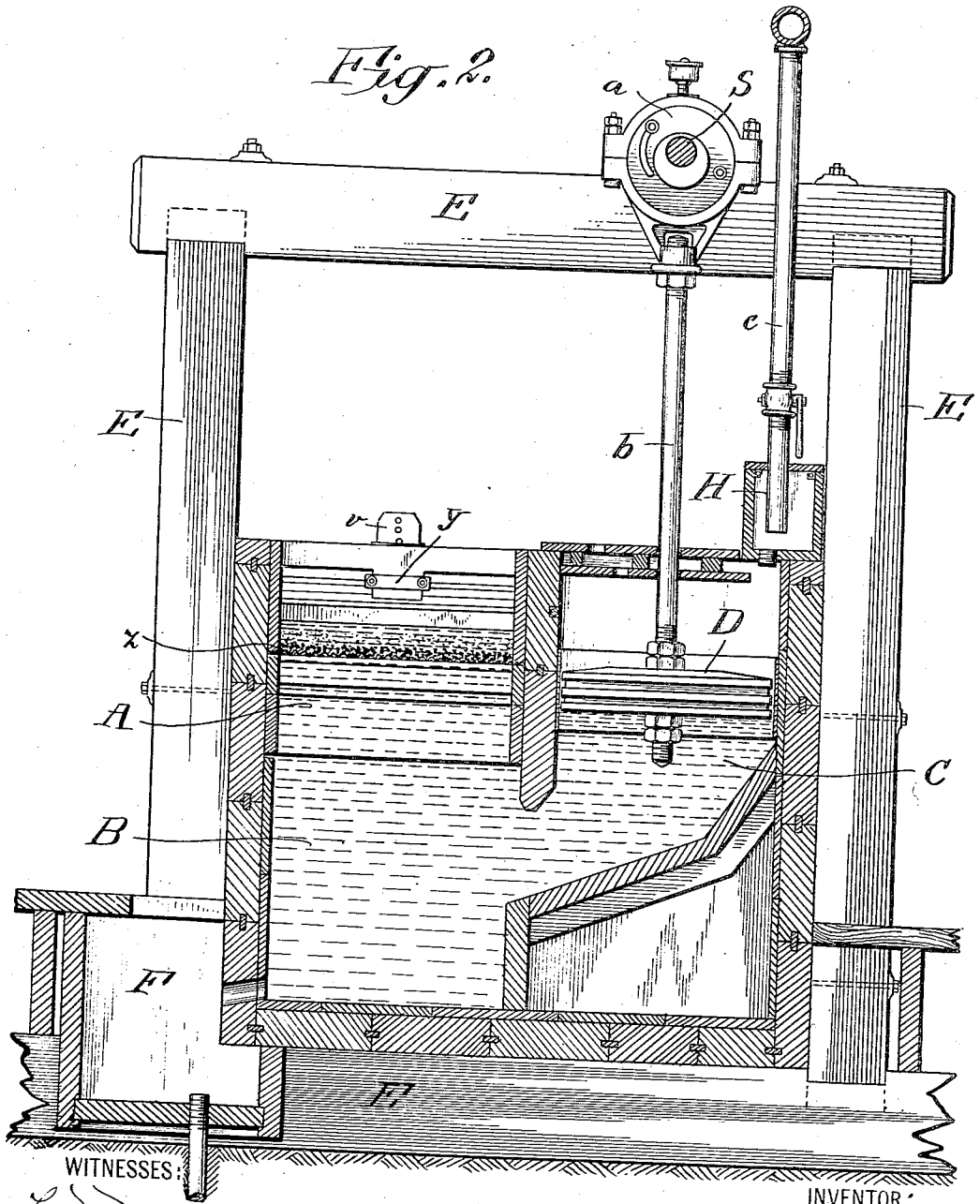
3 SHEETS—SHEET 2.

Fig. 2.



WITNESSES:

L. B. Templeton

L. M. Barlow.

INVENTOR:

Gelasio Caetani,

BY

Dennie & Goldsborough

ATTORNEYS

G. CAETANI.

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3 SHEETS—SHEET 3.

Fig. 3.

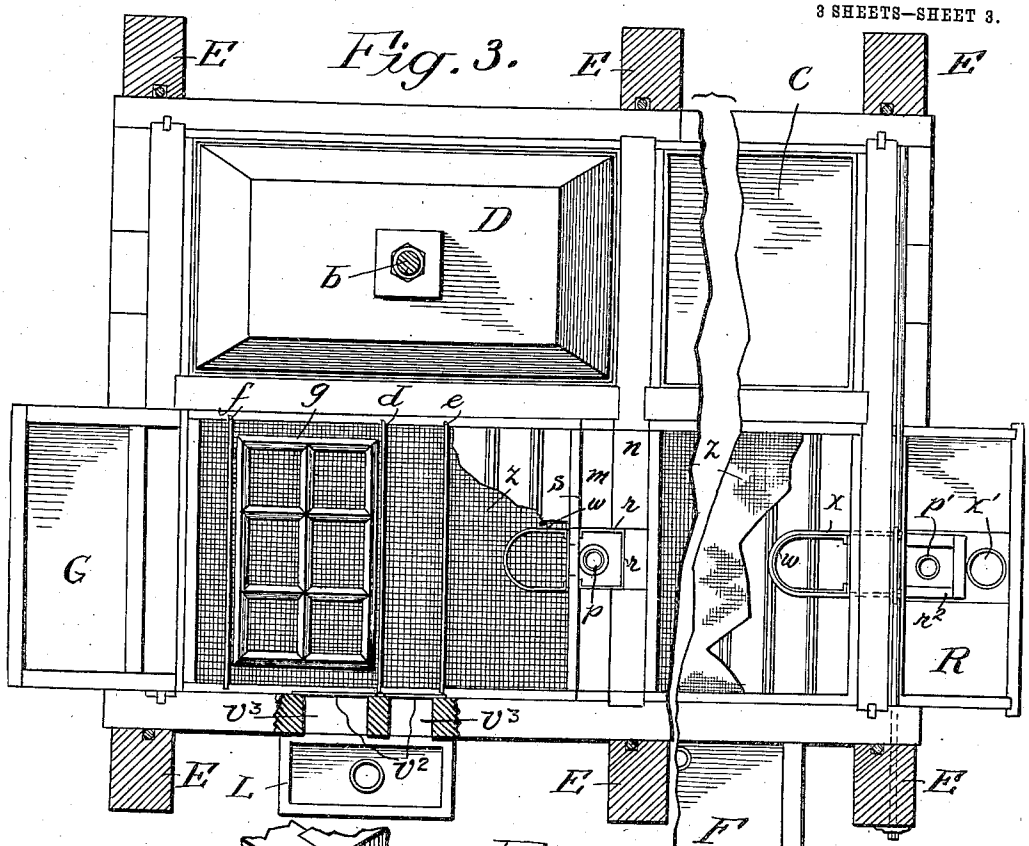


Fig. 4.

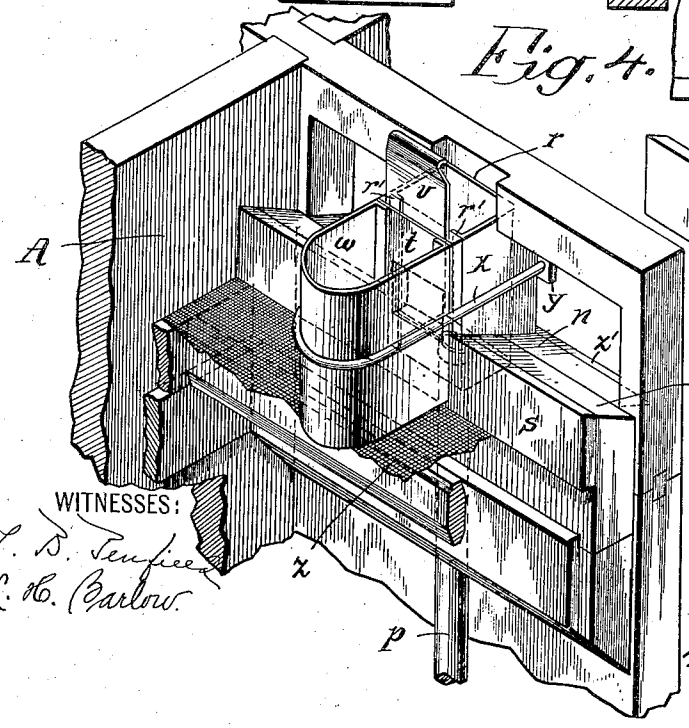
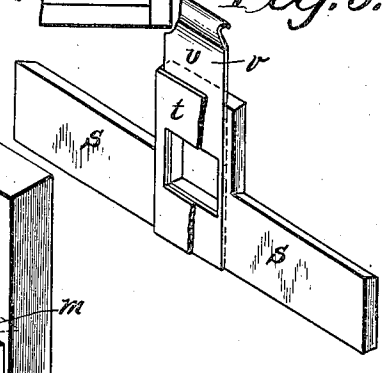


Fig. 5.



WITNESSES:

L. B. Tenfield

L. H. Barlow.

INVENTOR;

Gelasio Caetani

BY

Munn & Goldsborough

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GELASIO CAETANI, OF KELLOGG, IDAHO.

WATER-JIG.

No. 923,328. Specification of Letters Patent. Patented June 1, 1909.

Application filed December 4, 1907. Serial No. 405,003.

To all whom it may concern:

Be it known that I, GELASIO CAETANI, a citizen of Italy, residing at Kellogg, county of Shoshone, in the State of Idaho, have invented certain new and useful Improvements in Water-Jigs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in that type of classifying ore concentrators known as water jigs.

It has for one of its objects the recovery of the slimes which, in the usual practice, are carried off with the tailings, and it also provides a suitable and convenient arrangement for locating the discharge for the heads of the several screen compartments centrally of the tails boards thereof and adjacent to said tails boards, a location which contributes to the general efficiency of the apparatus but which is difficult of satisfactory realization in practice.

In the accompanying drawings, Figure 1 represents a vertical section, and partial elevation of a multiple compartment water jig embodying my improvements, certain of the compartments between the first and last of the series being omitted as is indicated by the broken lines; Fig. 2 represents a vertical section, on a plane transverse to Fig. 1; Fig. 3 represents a top plan view of the parts shown in Fig. 1; Fig. 4 represents, in perspective, the tails board end of one of the screen compartments; and Fig. 5 represents in detail the construction of the dam partition and gate for the heads discharge.

Similar letters of reference indicate similar parts throughout the several views.

Referring to the drawings, it will be noted that in its general structure, the jig is of the Hartz type, comprising a multiple series of units, consisting of screen compartments A, hutch compartments B, piston chambers C, pistons D, supported in a suitable frame E, the pistons being conveniently operated from a power shaft S, common to them all, through the intermediacy of the adjustable eccentrics *a* and piston rods *b*. F indicates the usual hutch box; G indicates the supply receptacle for the ore to be classified, and H indicates the water supply box and *c* its feed pipe. The construction and mode of operation of these parts require no description to those skilled in the art. I have found it convenient, in some instances, to employ as many as five or more of the multiple units (screen compartment, piston chamber, and hutch compartment, with their adjuncts) but it is evident the number employed may be varied within considerable limits. In the present drawings, I have chosen for illustration, the initial unit, a portion of a second unit, and a portion of the final unit of a series.

For the purpose of separating and saving the slime contained in the feed and preventing it from being carried off with the tailings, I arrange one or more vertically adjustable partitions or slime dams *d*, *e* transversely across the screen compartment. These slime dams dip into the jig-bed, and the lime water, therefore, banks up in the manner indicated in Fig. 1, and flows out through the side discharge openings v^3 shown in Fig. 3, and which are to be provided with adjustable gates v^2, into the slimes collecting receptacle L, from which they may be supplied for further treatment to any suitable slime table. The slimes cannot pass below the second dam or partition *e*, because they are prevented from so doing by the pulsating body of water rising through the jig bed.

In the first of the slime water sections I preferably arrange a splash partition *f* leaving an intervening free space for the ore to pass down from the ore feed box to the screen bottom, and between the partitions *f* and *d* I place the wooden float *g*, which may conveniently be of the open, cellular structure shown. It thus floats on the top of the trapped slime water and has the function of breaking up the waves that would otherwise result from the violent agitation of the slime water by the action of the reciprocating piston.

In carrying out that portion of my invention which involves providing the several screen compartments with a central discharge for the heads, I proceed as follows:

To the tails board *n* of each of the compartments, I secure a block *m* which may be in two pieces, if desired, as shown in Fig. 4. By this expedient, I double the thickness of the partition between adjacent compartments, and provide means for accommodating the heads discharge pipe *p*, which, as shown in Figs. 1 and 4, may pass down-

wardly through the pipe block *m* and through the hutch compartment of the jig.

At its upper end, the pipe *m* communicates with a dam-discharge chamber having a suitable wall casing *r*, preferably of metal, flanged at *r'*, which casing rests within a recess formed in the combined tails board and pipe block. In front of the pipe block *m* is secured the liner *s*, having a dam aperture and provided with a similarly apertured cover plate *t*; and an apertured gate *v*, adjustable to varying heights, permits the effective level of the dam to be suitably established. Finally, in front of the dam partition or liner *s*, is located the flanged counter-cup *w*, which is releasably secured in position by the yoke *x*, whose screw-threaded ends pass through the cross-piece *y* and are provided with tightening nuts. As illustrated in Figs. 1 and 4, the lower edge of the counter-cup is located at the appropriate distance above the upper surface of the screen *z* to effect the classification desired. It will also be noted that the upper edge of the pipe block *m* is inclined to correspond to the inclination of the upper edge of the tails board, as are also, the upper edges of the liners *s*, and *z'* and, in practice, it will be preferable to cover the entire slope thus provided, with a wear plate *o*, as shown in Fig. 1. In the final unit of the series, I may carry the dam discharge chamber beyond the jig wall, as indicated at r^2, in which case the discharge pipe *p'* for the heads may pass downwardly outside the jig, as well as the final tailings pipe *x'* from the tailings box R.

Having thus described my invention, what I claim is:

1. A water jig having a screen compartment provided with a heads discharge cup, dam, and dam chamber arranged adjacent to the tails board, a vertical discharge pipe leading downwardly from the dam chamber, and a block through which the discharge pipe passes; substantially as described.

2. A water jig having a screen compartment provided with a heads discharge cup, dam, and dam chamber arranged adjacent to the tails board, a discharge pipe leading downwardly from the dam chamber, and a block through which the discharge pipe passes, the dam chamber having a wall casing resting within a recess of the block; substantially as described.

3. A water-jig, having a screen compartment provided with a pipe block adjacent to its tails board, and further provided with a dam discharge chamber having a wall casing; a discharge pipe for said chamber passing through the pipe block; a counter-cup; and a dam partition between the counter-cup and casing, said dam partition being provided with a dam aperture and a gate therefor; substantially as described.

4. A water-jig, having a screen compartment provided with a pipe block adjacent to its tails board and further provided with a dam discharge chamber having a flanged wall casing; a discharge pipe for said chamber passing through said pipe block; a flanged counter-cup; a dam partition between the counter-cup and casing and against which their flanges abut; and a yoke for releasably clamping the counter-cup in place; substantially as described.

5. A water-jig having a screen compartment provided with a pipe block adjacent to its tails board, and further provided with a dam discharge chamber having a wall casing; a discharge pipe for said chamber passing through said pipe block; a counter-cup; and a dam partition between the counter-cup and casing, said partition being provided with a dam aperture and with a cover plate, and a gate vertically adjustable between the cover plate and the main body portion of the dam partition; substantially as described.

6. A water jig having a screen compartment provided with heads discharge and tails discharge both at one end of the compartment, means for trapping the slimes in said compartment in advance of the tails discharge and means for separately discharging the trapped slimes and controlling said discharge; substantially as described.

7. A water jig, having a screen compartment provided with heads and tails discharges and provided further with transverse partitioning subdividing said compartment and forming a slimes compartment therein in advance of the tailings discharge, said slimes compartment having its individual slimes discharge passage; substantially as described.

8. A water jig, having a screen compartment provided with heads and tails discharges and provided further with transverse partitioning subdividing said compartment and forming a slimes compartment therein closed except for a slimes discharge passage leading from the side, and a gate for said side passage, and having side discharge openings for the slime, provided with movable gates; substantially as described.

9. A water jig having a screen compartment, provided with heads and tails discharges, a series of vertically adjustable dams, arranged across the compartment transversely to the path of movement of the ore, so as to be set at appropriate heights to trap the slimes and prevent them from being carried off with the tailings, said vertically adjustable dams subdividing the compartment into a plurality of slimes compartments, and means for controlling the discharge of the trapped slimes between the dams; substantially as described.

10. A water jig having a screen compartment, and a series of vertically adjustable

dams, arranged across the compartment transversely to the path of movement of the ore, so as to be set at appropriate heights to trap the slimes and prevent them from being carried off with the tailings, and a side receptacle for collecting and carrying off the trapped slimes; substantially as described.

11. In a water jig, the combination with a slime-trap section for the screen compartment, of a floating frame adapted to float in said section; substantially as described.

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

GELASIO CAETANI.

Witnesses:
U. B. HOUGH,
M. NICHOLSON.