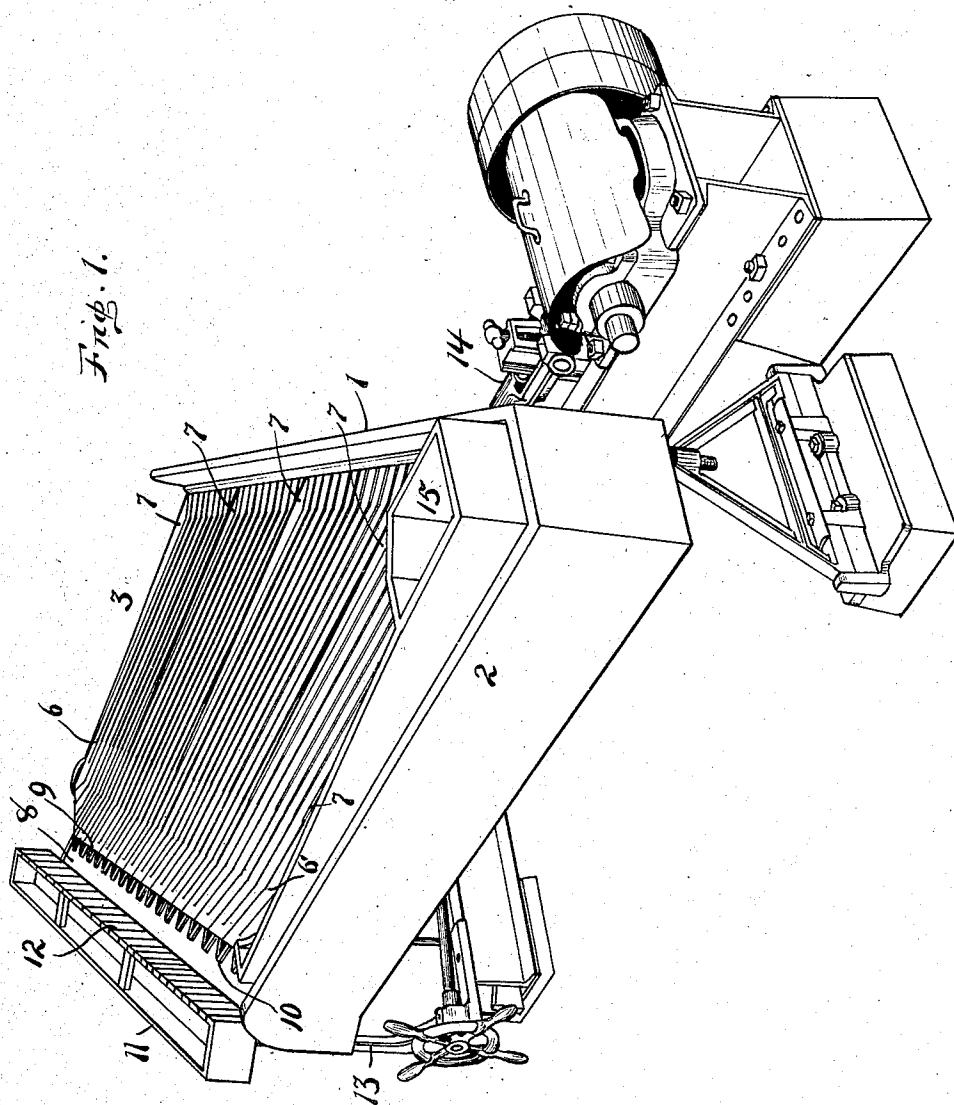


1,044,030.

E. DEISTER.
ORE CONCENTRATOR.
APPLICATION FILED JAN. 27, 1908.

Patented Nov. 12, 1912.
2 SHEETS—SHEET 1.



WITNESSES:

Wm. H. Brumman
Mathilda Mettler

Emil Deister

INVENTOR

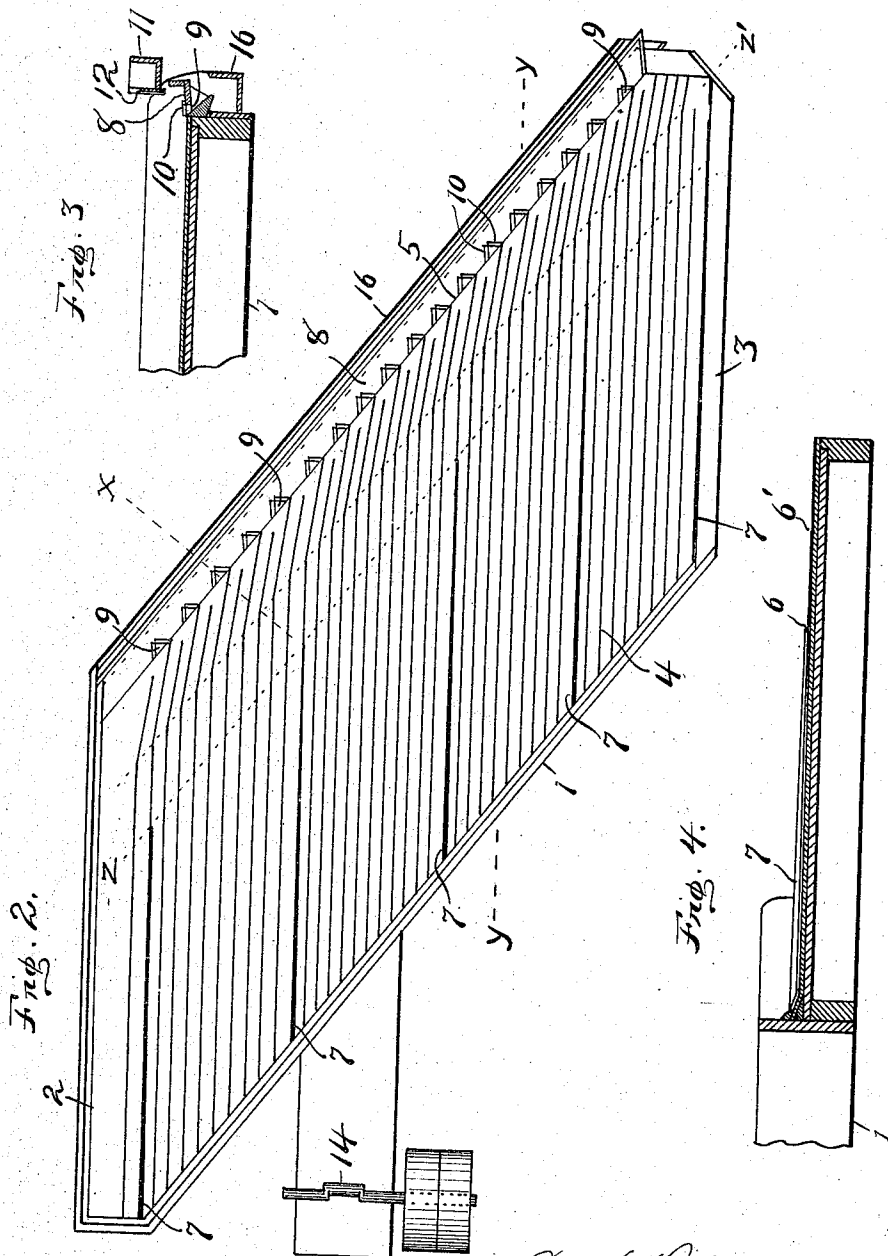
BY *M. G. Burns*

ATTORNEY

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WITNESSES:

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Emil Deister, INVENTOR

BY N. G. Burns

ATTORNEY

UNITED STATES PATENT OFFICE.

EMIL DEISTER, OF FORT WAYNE, INDIANA, ASSIGNOR TO THE DEISTER CONCENTRATOR COMPANY, OF FORT WAYNE, INDIANA, A CORPORATION.

ORE-CONCENTRATOR.

1,044,030.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed January 27, 1908. Serial No. 412,761.

To all whom it may concern:

Be it known that I, EMIL DEISTER, a citizen of the United States of America, and resident of Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Ore-Concentrators, of which the following is a specification.

This invention relates to improvements in ore concentrators and the objects thereof are: First, to provide means of applying the dressing water gently to that portion of the table's surface where final separation of the mineral from its gangue is effected; and second, to arrange the riffles of the table in such relation with the dressing water feed-board as to effect final washing of mineral at the points of its discharge. I accomplish these objects by the construction illustrated in the accompanying drawings in which—

Figure 1 is a perspective view showing a concentrating table embodying the invention; Fig. 2 is a plan view of the table showing the dressing water feed board in connection therewith; Fig. 3 is a detail showing a section at the concentrates discharge edge of the table on the line *x* of Fig. 2; and Fig. 4 is a detail showing a section of the table on the line *y—y*.

Similar numerals of reference indicate corresponding parts throughout the several views and referring now to the same:—

1 is a concentrating table, 2 is its feed end, and 3 its tailing discharge end. Upon the surface of the table is arranged a series of riffles 4 which are parallel with one another and extend from the rear of the table to its forward edge 5, the alternate riffles extending entirely to said edge, and the intervening riffles terminating respectively at points suitably distant therefrom. All of said riffles have off-sets 6 and 6' where they decrease suddenly in height at their intersections with the dotted lines *z* and *z'* and each riffle is slightly bent, at its intersection with the line *z'*, laterally toward the tailings discharge end of the table. Occasional of said riffles (as indicated at 7) are higher than the riffles lying adjacent thereto and are

spaced so as to divide the surface of the table into riffled sections. Those portions of the riffles 7 which extend forward beyond the line *z*, are uniform in their height with the similar portions of the adjacent riffles. Thus it will be observed that the table's surface from the line *z* rearwardly is divided into riffled sections by the occasional high riffles, while that portion of its surface which lies forwardly beyond the line *z* is uniform throughout in respect to the height of the riffles, and owing to the offsets 6 and 6', the forward portion of the table presents a shallow riffled surface as compared with the rear portion.

Along the forward edge 5 of the table is secured a dressing water feed-board 8 which, from its outer side, slants slightly downward toward the table with its inner side meeting the edge 5 thereof, and at the juncture, the surface of the board 8 is flush with the surface of the table. The board 8 has a series of openings 9 along its inner edge which afford discharge passage-ways for mineral. Back of each of the openings 9 are secured projecting strips 10 which serve to prevent dressing water from passing directly from the board into said openings. A dressing water launder 11, having discharge slots 12 in its side, is suitably supported upon stands 13 with its discharge side overhanging the feed board 8, and said launder is adapted to discharge dressing water through its numerous slots 12 onto said feed board.

The table is mounted in connection with the driving mechanism 14 to be reciprocated in line with the riffles, and a feed box 15 is secured at the head of the table. The driving mechanism and the feed box as well as the means of mounting the table and adjusting the table are each of any suitable construction for their respective purposes as is well understood in the art.

In the operation of this invention, the machine is set in reciprocating motion, and pulp is fed to the table through its feed box. The launder 11 is continuously supplied with dressing water from any suitable source. The table is adjusted in longitudinal

and transverse slants such as will cause the pulp to flow from the head of the table to the tailing discharge end, and during its passage thereover the heavier or mineral portion of the pulp stratifies upon the surface of the table and is carried between the riffles forwardly to the discharge edge 5. The high riffles 7 have the effect of flooding adjacent preceding riffles and thereby afford pools of comparatively quiescent water in which settlement of mineral values and solids of the pulp is facilitated. The forward movement of the settled material is effected by the differential reciprocating movement of the table imparted thereto by the driving mechanism and as the material moves forward beyond the offsets 6 where the riffles are shallow, the overlying sands wash downward toward the foot or tailing end of the table, while the underlying mineral which lodges between the riffles and is held from further downward movement, continues its movement between the riffles to the edge 5 of the table and becomes discharged through the openings 9. The dressing water falling onto the feed board 8 from the launder, flows therefrom gently onto the surface of the table at its edge 5 and washes the mineral as it passes to the openings 9, and thus freeing it of particles of gangue. This method of applying dressing water gently to the mineral at the time of its discharge from the table results beneficially in that the very fine particles of mineral are not disturbed and washed away as is the case where dressing water is applied directly to the mineral in falling jets.

Another feature in this invention is that the series of openings 9 provides for the discharge of mineral from the table commencing at the terminals of the first riffles and from thence on down to the foot of the table: Thus it will appear that during the passage of the ore matter across the table from its head to its foot it becomes impoverished of its contained values continually at the successive stages of separation because of the discharge of mineral through the openings as its separation from the gangue occurs.

As a convenient means of catching the mineral as it is discharged from the table, a launder 16 is secured along its forward edge below the openings 9 so as to receive the discharge therefrom.

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

1. In an ore concentrator, a reciprocating table; a series of riffles on said table which alternately extend from the rear of the table completely to its mineral discharge edge, the other of said riffles which intervene between the former riffles extending from the rear of

the table to points suitably distant from its mineral discharge edge; a dressing water feed board arranged along the mineral discharge edge of the table, its inner edge being parallel with the edge of the table and having a series of discharge openings which register respectively with the riffles which extend to the edge of the table; and means for applying dressing water to said feed board.

2. In an ore concentrator, a reciprocating table adapted to discharge mineral over its forward edge; a dressing water feed board secured to the table along its mineral discharge edge and having in its side adjacent said edge a series of discharge openings; protecting strips arranged at each of said openings to prevent dressing water from passing directly from the feed board into said openings; and means for applying dressing water to the feed board.

3. In an ore concentrator, a reciprocating table adapted to discharge concentrates at its forward edge; a series of riffles on the table extending from the rear end thereof to its concentrates discharge edge; a dressing water feed-board arranged along the concentrates discharge edge of the table in parallel relation therewith with its inner edge against the same and having a series of discharge openings in its inner edge, said openings registering respectively with the corresponding riffles; and means for applying dressing water to said feed-board.

4. In an ore concentrator, a reciprocating table adapted to discharge concentrates from its forward edge; a dressing water feed-board extending along the concentrates discharge edge of the table in parallel relation therewith and having a series of discharge openings in its inner edge adjacent the table; and means for applying dressing water on the feed-board, the latter being adapted to discharge water from between its openings onto the adjacent surface of the table.

5. A differentially reciprocating table having concentrating riffles extending from its head motion end toward its concentrates discharge end; alternate riffles extending to the concentrates discharge end and the other riffles terminating short of said end to form washing sections between said alternate riffles, a concentrates discharge opening being provided at each washing section, a guard in proximity to each opening and means for flowing a washing film past the guards and opening onto the washing sections.

6. In an ore concentrator, a reciprocating table adapted to discharge concentrates at its forward edge; a series of riffles on the table extending from the rear end thereof toward its concentrates discharge edge, occasional of said riffles being higher than

those lying adjacent thereto; a dressing water feed-board extending along the concentrates discharge edge of the table in parallel relation therewith and having a series of openings in its inner edge at its juncture with the table; and means for applying dressing water onto the feed-board, the latter being adapted to discharge water from between its openings onto the adjacent surface of the table. 10

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

EMIL DEISTER.

Witnesses:

WM. H. BEUSMAN,
W. G. BURNS.

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