No. 895,169. PATENTED AUG. 4, 1908.

E. DEISTER.

ORE CONCENTRATOR.

APPLICATION FILED JUNE 23, 1906.

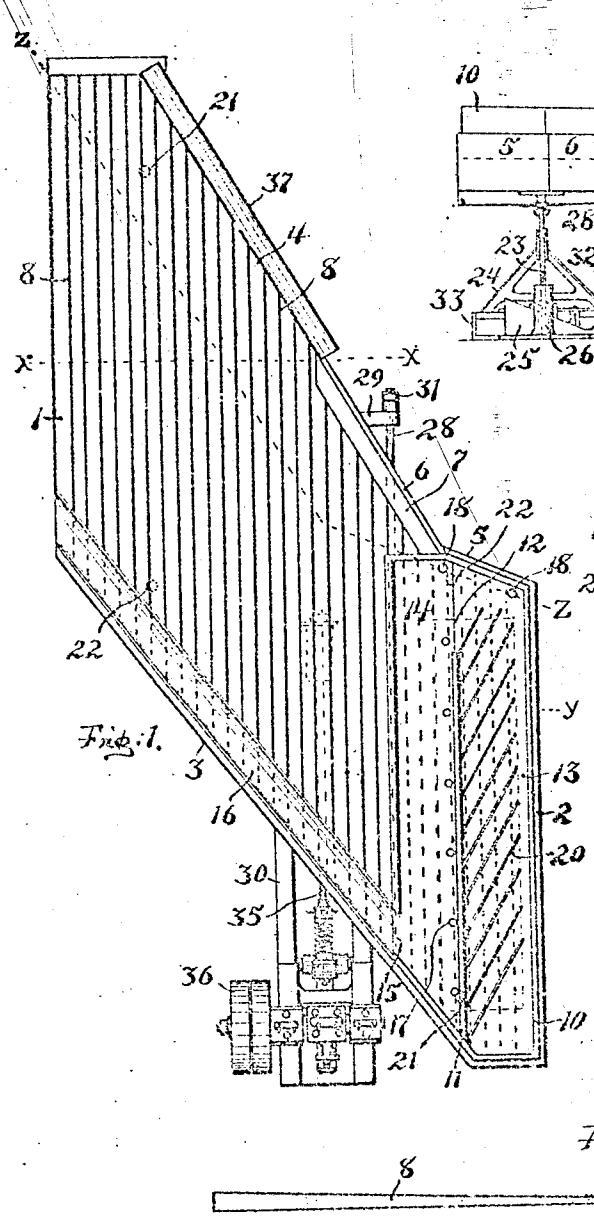


Fig. 1.

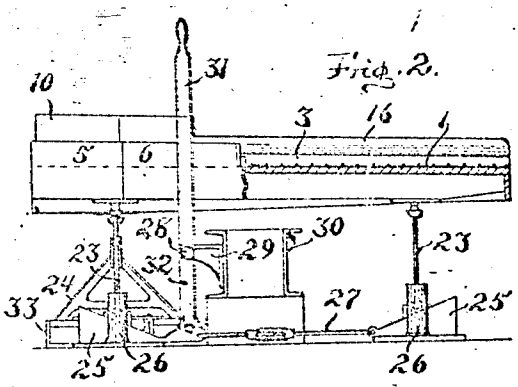


Fig. 2.

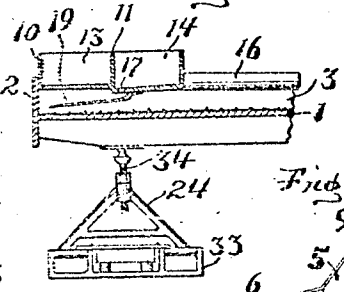


Fig. 3.

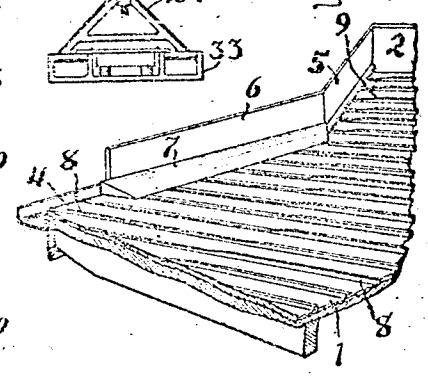


Fig. 4.

Fig. 5.

WITNESSES.

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

ORE-CONCENTRATOR.

No. 895,169. Specification of Letters Patent. Patented Aug. 4, 1908.

Application filed June 23, 1906. Serial No. 323,160.

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 construct a machine of its class of less size and weight as compared with ordinary concentrators, and at the same time capable of efficiently treating an equal quantity of ore matter; and second: to so construct the machine as to compensate for variations in the quantity of material fed to the machine, without the serious loss of mineral which ordinarily occurs when tables of ordinary construction become overloaded. The first object is accomplished principally by the form and arrangement of the table in connection with its various parts; and the second object is attained chiefly by the peculiarly constructed feed box and the manner of distributing the feed upon the table. The construction by which these objects are attained is illustrated by the accompanying drawings in which

Figure 1 is a plan view of this invention; Fig. 2 is a transverse section of the same on the line *x*—*x* of Fig. 1; Fig. 3 is a detail view showing a transverse section through a portion of the table and the feed box on the line Y; Fig. 4 is a detail view in perspective showing the bucking board and that portion of the table, which lies adjacent thereto; and Fig. 5 is a detail showing a side view of one of the riffles, somewhat exaggerated in height.

Similar numerals of reference indicate corresponding parts throughout the several views, and referring now to the same: 1 is a concentrating table having at one side thereof an upwardly projecting head-board 2, and along its rear end a similarly projecting breast-board 3. The opposite sides of the table are parallel and the rear end of the table ranges in a line oblique to the sides thereof, as also does a portion of its mineral discharge edge 4. An upwardly projecting bucking-board 5 extends along a part of the fore end of the table adjacent to and connecting with the corresponding end of the head-board 2, and, in effect, forms a continuation of the latter. That portion of the bucking-board adjacent the head-board 2 ranges at a sharper angle respecting the latter than does the other portion 6 thereof which extends to the mineral discharge edge 4 of the table. At the juncture of the bucking-board and the adjacent surface of the table is secured a shoal 7 which serves to spread dressing water fed thereon.

Upon the surface of the table is arranged a series of riffles 8 all of which are parallel with the sides of the table, and each riffle extends across the corresponding surface of the table to the opposite end thereof. These riffles taper from their rear ends toward their forward ends, and each has an off-set 9 where it decreases suddenly in height. The respective off-sets of the riffles are located approximately on the line Z—Z. Thus it will be understood that the section of the table bordering its forward edge has shallow riffles thereon, each of which is a continuation of the corresponding riffle on the rear portion of the table.

A feed box 10 is secured over that portion of the table adjacent the head-board 2, and a vertical partition 11 extends lengthwise in the feed box from its rear end to a point therein suitably distant from its forward end where it terminates and thus affords a passage-way 12 for pulp to flow from its one section 13 to the other section 14 thereof. The bottom of the feed box ranges upon a gradual descent from the rear end of the section 13 to the passage way 12, and from thence to the rear end of the section 14, and that portion of the bottom in the section 14 slants transversely downward toward the partition 11. A passage way 15 is made in the outer wall of the feed box adjacent the rear end of section 14, and a launder 16 is secured to the breast-board 3 and is connected with the feed box to receive the overflow therefrom through said passage way 15. A series of openings 17 are made in the bottom of the feed box in a line adjacent the partition 11, and other openings 18 are made in the bottom of the feed box at its forward end. An apron 19 is secured to the bottom of the feed box beneath the openings 17, and serves to direct material discharged therethrough toward the head-board 2. A series of diagonal riffles 20 are arranged upon the bottom

of the section 13 of the feed box which serve to direct underlying mineral toward the opening 18 nearest the head-board.

The table is supported from beneath at points indicated at 21—21 and 22—22, at the latter by means of movable posts 23, and at the former by rocking standards 24. The posts 23 are respectively supported upon oppositely disposed wedges 25 mounted in corresponding base castings 26, and the wedges are connected together by a rod 27 by means of which they are moved in unity. An adjusting shaft 28 is supported by brackets 29 which extend from the side of the base 30, and upon said shaft is fixed a lever 31 and a depending arm 32, the lower end of the latter having connection with the wedges 25 to actuate the same. Thus it will appear that by moving the lever 31, the table will be given more or less longitudinal incline. The standards 24 are made wide at the base and are mounted upon castings 33, and are adapted to permit longitudinal action of the table and prevent lateral motion thereof. Each of the standards 24 has an adjustable screw post 34 by means of which the table may be adjusted to have more or less lateral decline. The table thus mounted is connected, by means of a driving rod 35, with a suitable actuating mechanism 36 such as to impart differential reciprocating motion to the table.

In the operation of this invention, pulp is fed to the feed box at the rear end of section 13, from whence it passes over the riffles 20 therein, through the passage way 12 into the section 14, and while so passing, more or less of the mineral portion of the pulp is directed by the riffles 20 so as to pass through the openings 18, and the other portion of the pulp is discharged from the feed box through the openings 17, except surplus water which overflows through the passage-way 15 and is carried by the launder 16 to the tailings discharge side of the table. By this operation the heaviest and cleanest portion of the mineral is fed to the table at points nearest its forward end, while the lighter mineral and pulp is carried through the openings 17 and deposited upon the table along the head-board which is farthest from the tailings discharge side of the table. The motion of the table and the arrangement of riffles thereon are such as to cause the mineral to move toward the forward end of the table, and that portion thereof which comes into contact with the bucking-board is subjected to more or less vigorous action because of the obstruction afforded thereby, which affects a tendency to displace the sand while the mineral passes along the bucking-board toward the mineral edge 4 over which it is discharged into the mineral launder 37. The portion 6 of the bucking-board acts upon the adjacent mineral with less force than the other portion thereof, because of its lesser angle to the direction of driving motion; and in passing along the shoal 7 the mineral is treated by the action of dressing water which is suitably fed upon the shoal and upon the table along the mineral discharge edge 4 thereof.

The off-sets of the riffles afford relief for the overlying gangue so that it tends to move downwardly toward the tailings discharge side of the table, while the underlying mineral portion of the pulp, thus relieved of the overlying gangue, is carried by the shallow extensions of the riffles outward to the mineral launder, and while being directed by said extensions, is treated to the action of dressing-water and thereby further relieved of gangue.

By providing an overflow outlet for surplus water from the feed box and conducting it therefrom without discharging it upon the table, the body of pulp upon the table is not affected thereby and the variations in the quantity of material fed upon the table is not so pronounced as would otherwise be the case, and consequently a corresponding improvement in the treatment of pulp is effected.

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

1. In an ore concentrator, a shaking table having an oblique forward end; a shoal along part of said end of the table adjacent the feed side thereof and extending out onto the table; and a series of riffles, those adjacent the shoal terminating at its inner edge, and the other riffles extending beyond the shoal to the concentrates discharge edge of the table.

2. In an ore concentrator, a shaking table having an oblique forward end and an upward projection extending along its rear end, feed side, and part-way along its forward end adjacent its feed side; a shoal adjacent the projection at the forward end of the table extending to the concentrates discharge portion thereof; and a series of riffles, those adjacent the shoal terminating at its inner edge, and the other riffles extending beyond the shoal to the concentrates discharge edge of the table.

3. In an ore concentrator, a shaking table; a feed box secured to the table having feed openings adapted to discharge onto the table; and having also an overflow outlet; and means in connection with the overflow outlet to convey the overflow therefrom away from the table.

4. In an ore concentrator, a shaking table; and a feed box in connection with the table, having two parallel sections with a passage-way connecting the sections at their forward ends, the bottom of the feed box ranging upon a gradual decline from the rear end of the outer section to said passage way and from thence to the rear end of the inner sec-

tion, and having also feed openings at its forward end, the inner section having feed openings along the side thereof adjacent the outer section and also an overflow outlet at its rear end.

5. In an ore concentrator, a shaking table; and a feed box connected to the table, having two compartments which communicate with one another at their forward ends, and riffles on its bottom adapted to direct underlying mineral toward said openings, the inner section having an overflow outlet near its rear end, and a series of feed openings located between its overflow outlet and its forward end.

6. In an ore concentrator, a shaking table; and a feed box connected to the table, having a central longitudinal partition dividing it into sections which communicate with one another at their forward ends, the feed box having also feed openings, and the inner section thereof having an overflow outlet.

7. In an ore concentrator, a shaking table having a feed box extending along its head side, the said feed box having feed openings in its bottom and an overflow outlet through its inner side; and a launder leading from said overflow outlet to the tailings end of the table where it is adapted to discharge the overflow from said feed box.

8. In an ore concentrator, a shaking table; and a feed box connected to the table, having a partition which divides the feed box vertically into two longitudinal sections which communicate with one another at their forward ends by means of a lateral passage-way, and having feed openings near the forward end of its outer section and a series of feed openings leading from its inner section.

9. In an ore concentrator, a shaking table; a feed box connected to the table, having a vertical partition dividing it into two longitudinal sections which communicate with one another by means of a suitable lateral passage-way, and having feed openings at its forward end and a series of feed openings leading from its inner section; and a series of riffles in the outer section adapted to direct underlying mineral therein toward the feed openings at the forward end of the feed box.

10. In an ore concentrator, a shaking table; and a feed box connected to the table, having a vertical partition, and also feed openings at its forward end; means to direct underlying mineral in the feed box toward said openings, the feed box having also another series of feed openings which are sheltered from the former feed openings by said partition.

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

EMIL DEISTER.

Witnesses:
MATHILDA METTLER,
W. G. BURNS.