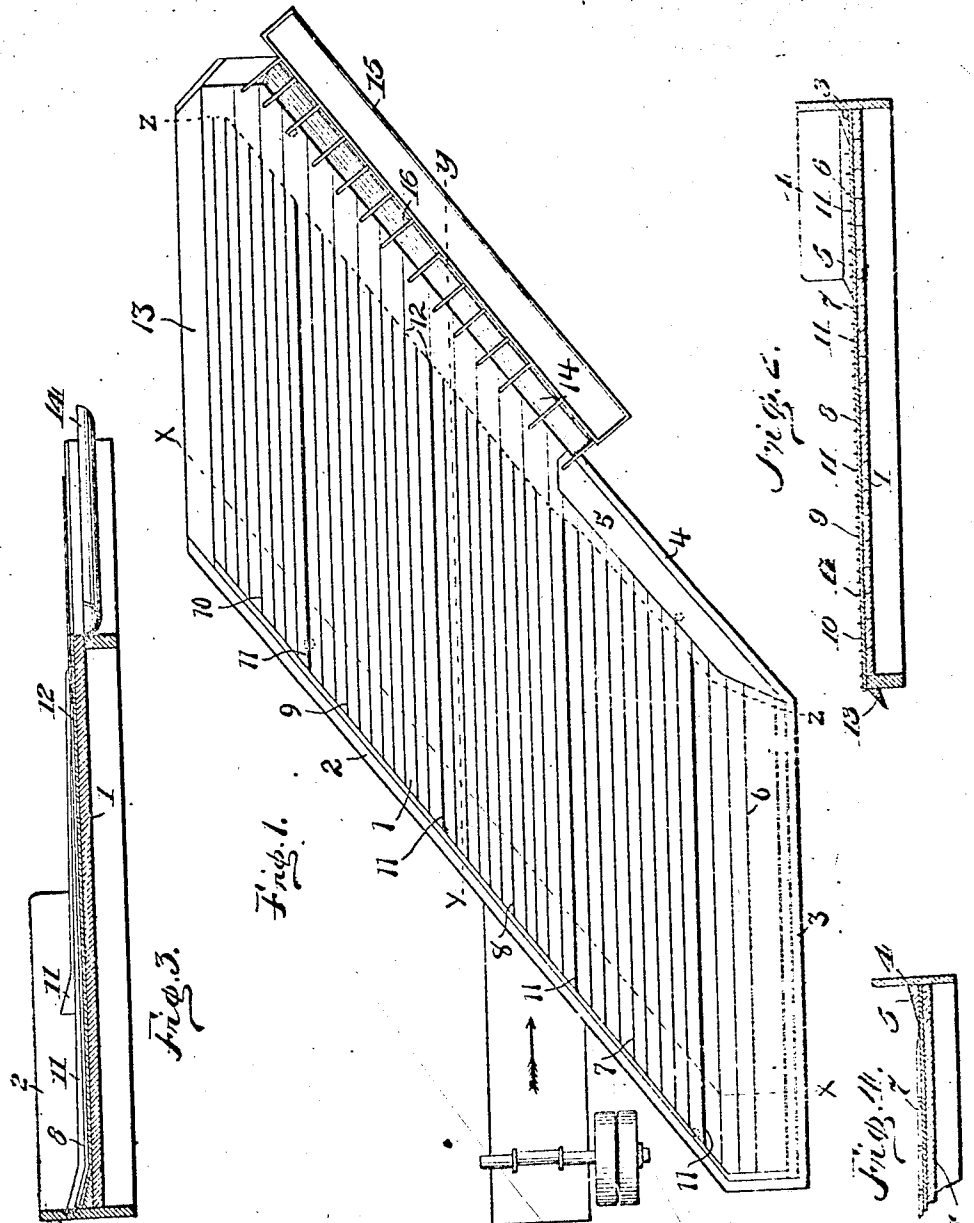


No. 895,170.

PATENTED AUG. 4, 1908.

E. DEISTER.
ORE CONCENTRATOR.

APPLICATION FILED OCT. 8, 1906.



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

ORE-CONCENTRATOR.

No. 895,170.

Specification of Letters Patent.

Patented Aug. 4, 1908.

Application filed October 8, 1906. Serial No. 337,953.

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 a concentrating table so constructed as to effect the movement of gangue thereon at a broad angle from that in which the underlying mineral moves; and second, to provide riffles so arranged upon the table as to most effectively act upon the mineral in its various stages during the passage of pulp over the table.

My objects are accomplished by the construction illustrated in the accompanying drawings in which

Figure 1 is a plan view of an ore concentrating table showing the relative arrangement of riffles thereon; Fig. 2 is a cross section of the table projected from lines drawn parallel with the riffles, the section being on the line $x-x$ of Fig. 1; Fig. 3 is a section of the table, the section being on the line $y-y$ of Fig. 1; and Fig. 4 is a detail sectional view through the parts 4 and 5 of the table.

Similar numerals of reference indicate corresponding parts throughout the several views and referring now to the same: 1 is a rhomboidal table having a projecting breast-board 2 at its rear end and a similarly projecting head-board 3 at one side thereof. The head-board 3 has an extension 4 which projects upward along the adjacent portion at the front end of the table, and a feather-edged shoal board 5 is secured upon the surface of the table adjacent the extension 4, its feather edge extending out onto the table.

A particular feature of this invention resides in the arrangement and character of the riffles: The movement of the table is reciprocal and in end-wise direction as indicated by the arrow, and the riffles are arranged parallel to the line of motion. These riffles are arranged in groups 6, 7, 8, 9 and 10, each group being separated from the adjacent group by a high riffle 11 which is tapered, its greatest height being at the breast-board 2. The riffles of each group as well as the high riffles each has an off-set 12, where it decreases suddenly in height, the respective

off-sets being located approximately on the line $z-z$ of Fig. 1, and from said off-sets the riffles each extend to the forward edge of the concentrating surface of the table, except the alternate riffles of some of the groups nearest the tailings discharge edge 13. The said alternate riffles terminate upon the surface of the table approximately on the line $z-z$.

Another feature of the invention lies in the particular manner in which the riffles of one group are spaced relative to those of another group, and also in the relative heights of the riffles of the various groups. For instance: The riffles of the group 6 are of greater height and are spaced wider apart than the riffles of the group 7, and it should be noted particularly that the higher the riffle, the broader the space, and the highest riffles are located in the groups nearest the head-board or feed side of the table, while the lowest riffles are located in the groups nearest the tailings discharge side thereof.

I have discovered that high riffles spaced far apart are most suitable for catching coarse and heavy mineral particles, while riffles of less height placed closer together are more effective in catching finer and lighter mineral particles. Therefore since the heavier and coarser particles settle more quickly than the finer and lighter particles, the groups of high riffles are located nearest the head-board, while the groups of riffles of least height are located nearest the tailings discharge side of the table. The high riffles project above the riffles of the respective adjacent groups and cause the respective preceding groups to become flooded. Thus each flooded group forms a settling bed, in which the mineral particles more readily settle than would occur if the pulp was permitted to rush freely from riffle to riffle and form eddies which keep the mineral in a constant state of agitation.

In the operation of this invention, the table is slanted downward toward the tailings discharge side and upward toward the front end, and the pulp is fed onto the surface of the table in a suitable manner adjacent the head-board. Owing to the transverse slant of the table the pulp moves thereon toward the tailings side, and the heavier and coarser mineral particles are caught by the riffles of the first groups and become directed forward to the shoal-board 5 along which they accumulate

somewhat and displace the gangue, and gradually pass to the mineral launder 14 at the forward end of the table. The finer and lighter mineral particles settle subsequently in the settling beds nearer the tailings discharge side after having been freed of the coarser particles of mineral, and therefore more readily settle than would be if disturbed by the coarser particles.

- 10 Dressing water is applied along the forward end of the table adjacent the mineral launder and upon the shoal-board, which has the effect of washing the overlying gangue back into the settling beds, and the riffles 15 which extend to the forward end of the table direct the settled mineral so that it passes into the mineral launder. The dressing water is supplied by means of a launder 15 having spouts 16 leading therefrom which extend above the forward end of the table.

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

1. In an ore concentrator, a reciprocating 25 table having thereon a series of riffles which lie lengthwise in the line of reciprocation and all of which are parallel respecting one another, occasional of said riffles being of greater height than the riffles adjacent thereto, the 30 riffles intervening between said occasional high riffles at the feed side of the table being spaced farther apart than the similar riffles at the tailing discharge side thereof, said riffles being alternately of different lengths the 35 longer of which extend to the concentrates discharge edge of the table while the shorter riffles terminate at points suitably distant therefrom.

2. In an ore concentrator, a reciprocating 40 table having thereon a series of riffles which lie lengthwise in the line of reciprocation and all of which are parallel respecting one another, some of said riffles extending from the rear end of the table entirely to the concentrates discharge end thereof, and others of

which intervene between the former riffles and extend from the breast-board to a point suitably distant from the concentrates discharge end, the riffles nearest the feed side of the table having a steeper taper and being 50 spaced farther apart than those at the tailing discharge side thereof.

3. In an ore concentrator, a rhomboidal reciprocating table having parallel sides and oblique ends respecting the line of reciprocation; a series of riffles all of which are parallel 55 respecting one another and the sides of the table, and all of which extend from the rear end of the table to a line suitably distant from the concentrates discharge edge at the 60 forward end thereof, some of said riffles having extensions which reach the concentrates discharge edge, the riffles nearest the feed side of the table having a steeper taper and being placed farther apart than those at the 65 tailing discharge side thereof.

4. In an ore concentrator, a rhomboidal reciprocating table the sides of which are parallel to the line of reciprocation and the ends of which are oblique thereto; a series of 70 riffles all of which are parallel with respect to the line of motion and sides of the table, and all of which extend from the rear end of the table to a line suitably distant from the concentrates discharge end thereof, there being 75 a substantial uniformity in the lengths of said riffles, the riffles at the feed side of the table having a steeper taper and being spaced farther apart than those at the tailing discharge side thereof, occasional of said riffles 80 being higher than the riffles adjacent thereto and some of said riffles extending forward beyond the other riffles to the concentrates discharge end of the table.

In testimony whereof I affix my signature, 85 in presence of two witnesses.

EMIL DEISTER.

Witnesses:

M. METTLER,
W. G. BURNS.