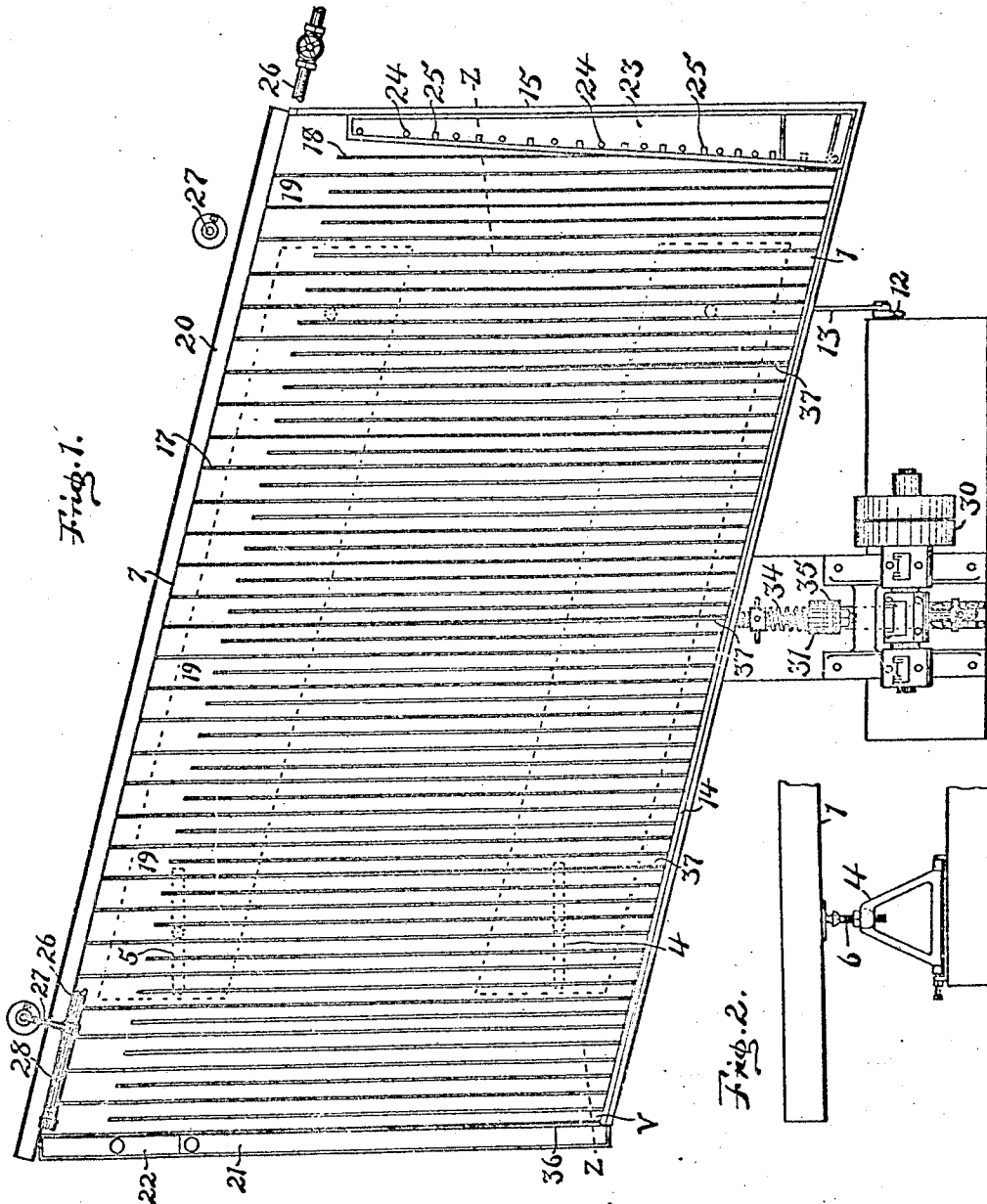


No. 895,167.

PATENTED AUG. 4, 1908.

E. DEISTER.  
ORE CONCENTRATOR.  
APPLICATION FILED FEB. 19, 1908.

3 SHEETS—SHEET 1.



WITNESSES:

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Emil Deister INVENTOR

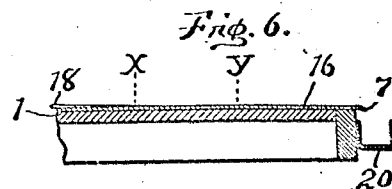
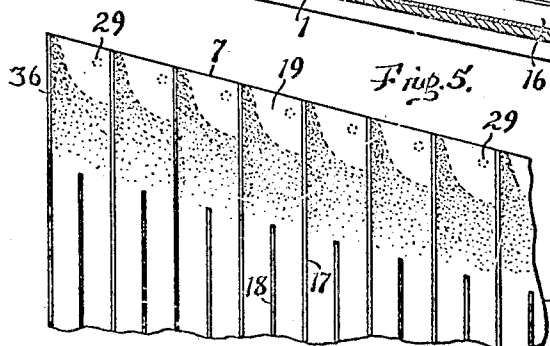
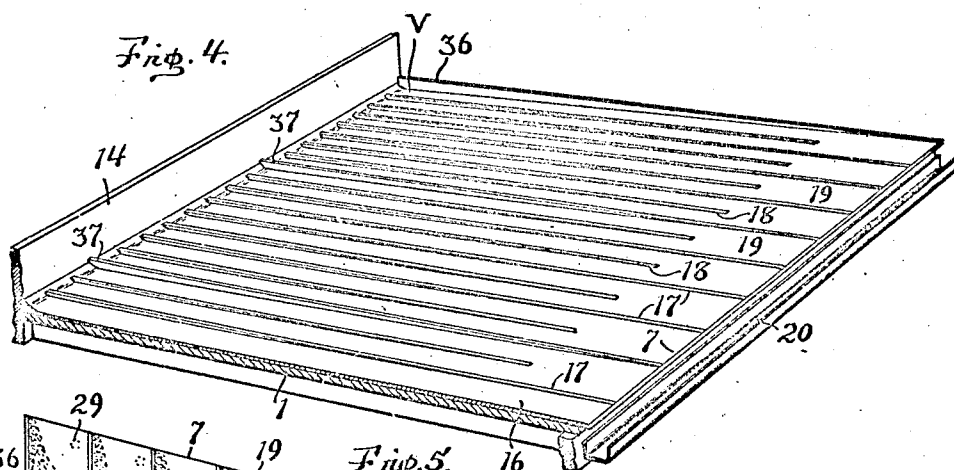
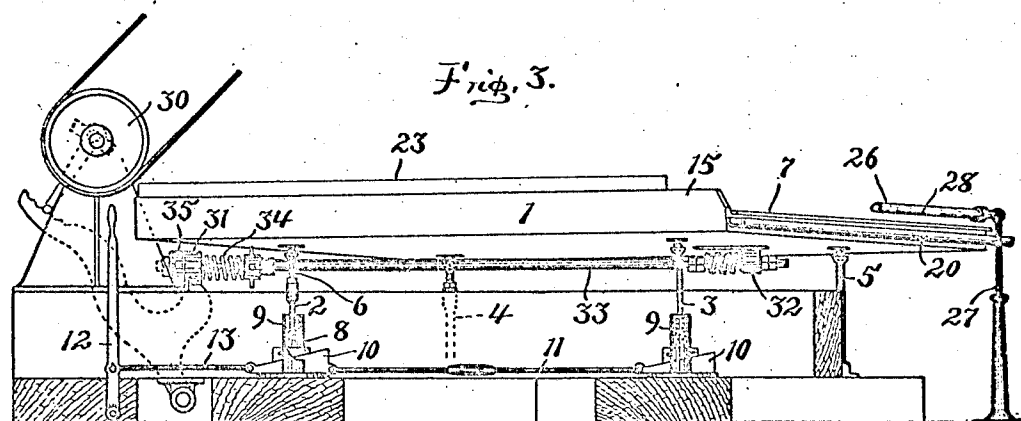
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APPLICATION FILED FEB. 19, 1908.

3 SHEETS—SHEET 2.



WITNESSES:

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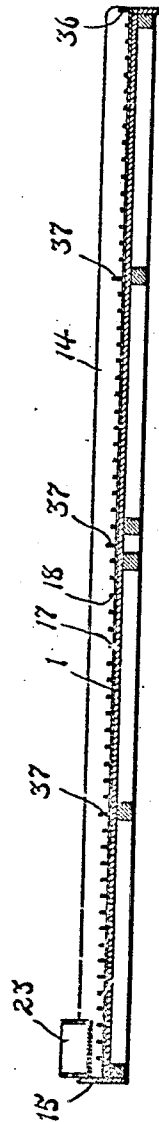
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3 SHEETS—SHEET 3.

Fig. 7.



WITNESSES:

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By *A. J. Burns*

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# UNITED STATES PATENT OFFICE.

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

## ORE-CONCENTRATOR.

No. 895,167.

Specification of Letters Patent.

Patented Aug. 4, 1908.

Application filed February 19, 1906. Serial No. 301,722.

*To all whom it may concern:*

Be it known that I, EMIL DEISTER, 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 object thereof is to effect the removal of mineral from the concentrating table as rapidly as the same becomes clean, and this is done by providing local washing surfaces adjacent the mineral discharge side of the table, and suitably supplying the same with dressing water; and also by the particular form of the concentrating table.

My object is accomplished by the construction illustrated in the accompanying drawing, in which:

Figure 1 is a plan view of my invention, a portion of the dressing water supply pipe being shown cut away; Fig. 2 is a detail view showing an elevation of one of the adjustable supporting struts for the table; Fig. 3 is an end elevation of Fig. 1; Fig. 4 is a detail in perspective showing the lower portion of the concentrating table, and particularly showing the arrangement of riffles; Fig. 5 is a detail plan view showing part of the mineral discharge side of the table, and approximately showing the course of ore matter where dressing water is applied; Fig. 6 is a detail view showing a central cross-section through a portion of the concentrating table; Fig. 7 is a sectional view of the table in a vertical plane adjacent to and parallel with the breast-board, showing the relative heights of the riffles.

Similar numerals of reference indicate corresponding parts throughout the several views, and referring now to the same: 1 is a concentrating table of rhomboidal form and suitably supported upon swinging struts 2, 3, 4, and 5 respectively. The struts 4 and 5 are made wide at the base to prevent the table from moving longitudinally, and the struts 2 and 4 are made vertically adjustable by means of screw-threaded shanks 6 so that the table may be adjusted to have proper incline toward the mineral discharge side 7 thereof. The struts 2 and 3 are supported at their lower ends respectively upon blocks 8 which are contained in corresponding cyl-

inders 9, and said blocks are adapted to be adjusted vertically by means of corresponding wedges 10 which extend through said cylinders. These wedges are connected together by a rod 11, and are adapted to be moved in unity by means of the lever 12 which is connected with one of the wedges by the rod 13. When the struts 2 and 3 are thus moved vertically the table will thereby be adjusted accordingly with more or less longitudinal decline. A breast-board 14 extends along the lower side of the table, and a head-board 15 is similarly arranged across the upper end of the table. The table has a covering 16 of suitable material, such as linoleum, upon which are arranged numerous riffles 17 and 18. The riffles 17 extend from the breast 14 across the table to the mineral discharge edge 7 thereof, and the riffles 18 intervene between the riffles 17 and extend from the breast, parallel with the former riffles, and terminate upon the surface of the table a suitable distance from the mineral discharge edge 7 thereof. All of said riffles are highest at the breast side of the table, and taper therefrom to a feather-edge at their outer ends. Thus it will appear that a uniform series of local washing surfaces 19 is provided between the ends of the short riffles 18 and the mineral discharge edge of the table.

A feed box 23 is secured to the head board 15, and overhangs the upper end of the table. The feed box is provided with openings 24 in its bottom, and vertically disposed ribs 25 are secured to the inner side of the feed box at points intervening between the openings 24 and serve to prevent pulp from banking toward the outer end of the feed box.

A feed pipe 26, for dressing water, is suitably supported upon standards 27 and ranges over the mineral discharge portion of the table. This feed pipe has suitable perforations 28 located respectively so that dressing water from the feed pipe will be discharged upon the local washing surfaces approximately at points indicated by the dotted circles 29 in Fig. 5.

A suitable driving mechanism 30, having a reciprocating driving head 31, is connected to a fixed lug 32 which depends from the table, the connection being made by means of a driving rod 33 which has in connection therewith a spring 34 and a buffer 35, the spring acting against one side of the driving head 31,

and the buffer acting against the opposite side thereof so that a differential reciprocating motion will be imparted to the table. The driving mechanism is so located in relation to the table that the motion of the latter will be transverse, or directly in line with the length of the riffles.

In the operation of this invention the table is set in rapid differential oscillating motion laterally, and is adjusted to range upon an incline from the breast toward the mineral discharge edge, and upon a decline from the head board toward the lower, or tailings discharge, end thereof. Ore pulp is then fed into the feed box, from whence it passes through the openings 24 onto the surface of the table. Because of the longitudinal decline of the table, the pulp will move toward the lower end thereof, and because of the differential motion and lateral incline of the table, together with the riffles, the mineral portion of the pulp will be directed from beneath the pulp out upon the local washing surfaces 19 where it is subjected to treatment by dressing water. The extending riffles 17 conserve the mineral upon the adjacent local washing surfaces and further serve to direct the mineral to the edge 7 of the table from whence it is discharged into the concentrates launder. By this arrangement the partially concentrated mineral is treated locally in masses to the action of dressing water, in contradistinction to the common practice of applying dressing water to the partially concentrated mineral in general.

A feature of this invention is that the table is so shaped, proportioned, and arranged that the gangue moves lengthwise over the table and becomes discharged from its lower end, and the mineral is conveyed to and discharged from the upper side of the table, and it should be particularly noted that the mineral discharge side of the table is proportionately of much greater length as compared with the tailings discharge end thereof. Thus the gangue is made to travel the full length of the table while the mineral moves the breadth of the table, which arrangement facilitates settlement of values contained in the pulp and the final treatment by dressing water.

I have found that by placing a high riffle 36 at the lower end of the table, and occasional high riffles 37 among the other riffles upon the table, the flow of pulp along the breast side of the table will be retarded somewhat, and the ore-matter will thereby become suspended in the bodies of water occasioned by the high riffles, and this has the effect of facilitating settlement of mineral contained therein.

All of the high riffles taper from their inner ends at the breast to their outer ends, and are successively of increased height from the surface of the table, the highest riffle 36 of

which is located at the low or discharge end thereof. All the riffles, 17 and 18, other than the former high riffles taper from their inner ends at the breast to their outer ends and are successively of less height toward the low end of the table. That is, the taper of the riffles decreases successively toward the low end of the table, so that all of the latter riffles will have an equal projection from the surface of the table approximately along the line Z—Z. This arrangement of riffles has the effect of relieving the overlying ore-matter so that it will move toward the lowest corner of the table (indicated at V) and away from the washing surfaces 19; while the high riffles maintain bodies of water which flood the low riffles and thereby prevent the latter from causing eddies.

In Fig. 6 is shown a transverse central section through the mineral discharge side of the table. In this view the table is shown to have an incline of slightly less degree from the point Y to the discharge edge 7 as compared with the incline from the breast to the point Y. The point Y is located between the outer ends of the short riffles 18 (indicated at X) and the discharge edge 7. The decrease in the incline of the table is coincident with the local washing surfaces and is made to facilitate the discharge of mineral.

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

1. In an ore-concentrator, a rhomboidal table having in connection therewith driving mechanism to actuate the same laterally and being arranged with longitudinal decline and lateral incline; a series of riffles arranged laterally upon the table, some of which extend from the breast at the low side of the table to its edge at the high side thereof, the other riffles of the series being shorter and which intervene between the former riffles and extend from the breast and terminate respectively at points suitably distant from the edge of the table at its high side and afford a corresponding series of local washing surfaces adjacent said edge of the table; and suitable means to supply dressing water to said washing surfaces.

2. In an ore-concentrator, a rhomboidal table having in connection therewith suitable driving mechanism to actuate the same laterally, and being arranged with longitudinal decline and lateral incline; a series of lateral riffles arranged upon the table, some of said riffles extending entirely across the table, and the riffles which intervene between the former riffles being short and terminating at their outer ends at points suitably distant from the edge of the table at its high side, and occasional high riffles dividing the table into several low riffled sections; a series of local washing surfaces adjacent the edge of the table along the high side thereof; and

suitable means to supply dressing water to said washing surfaces.

3. In an ore-concentrator, a rhomboidal table having in connection therewith suitable  
5 driving mechanism to actuate the same laterally, and being arranged with longitudinal decline and lateral incline, and having thereon a series of lateral riffles which taper to a  
10 feather-edge at their outer ends, the riffles being alternately of different length, the long riffles of which extend to the edge of the table at its high side, those portions of the table between the outer ends of the long riffles  
15 affording local washing surfaces.

4. In an ore-concentrator, a rhomboidal table having in connection therewith suitable  
15 driving mechanism to actuate the same lat-

erally, and being arranged with longitudinal decline and lateral incline; a series of low riffles arranged laterally upon the table, each  
20 tapering from its inner end at the breast to its outer end, the riffles of said series being successively of less height toward the low end of the table; and occasional tapering high  
25 riffles located among the low riffles, and each being successively higher toward the low end of the table.

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

EMIL DEISTER.

Witnesses:

M. METTLER,  
W. G. BURNS.