E. & W. F. DEISTER.

CONCENTRATING TABLE.

APPLICATION FILED AUG. 13, 1912.

1,040,165. Patented Oct. 1, 1912.

FIG. 1.

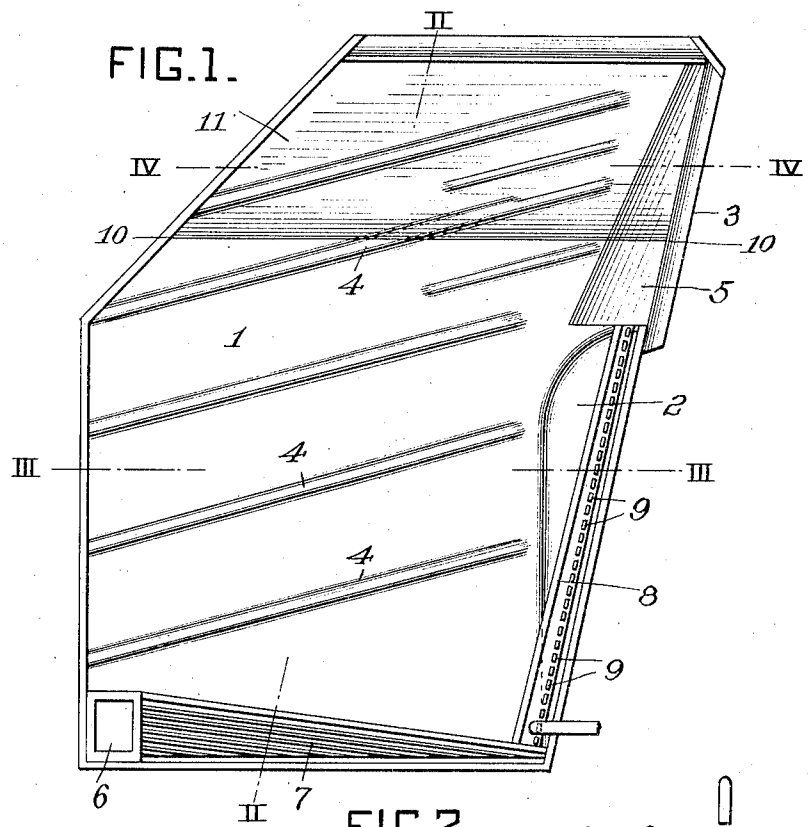


FIG. 2.

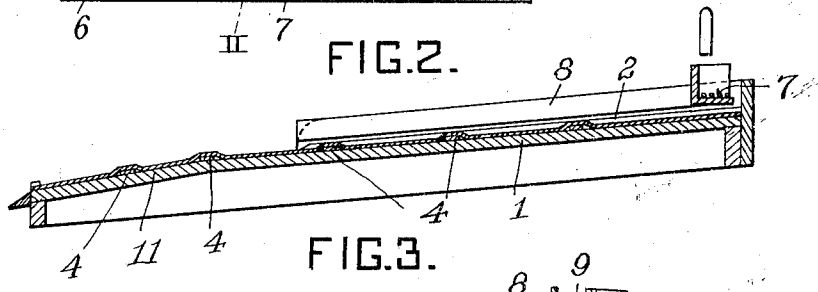


FIG. 3.

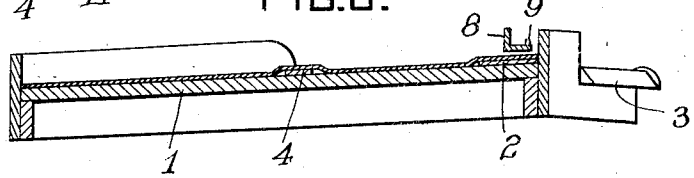
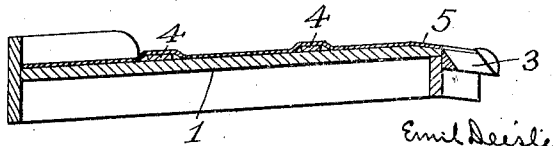


FIG. 4.



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CONCENTRATING-TABLE.

1,040,165. Specification of Letters Patent. Patented Oct. 1, 1912.

Application filed August 13, 1912. Serial No. 714,928.

To all whom it may concern:

Be it known that we, EMIL DEISTER and WILLIAM F. DEISTER, residing at Fort Wayne, in the county of Allen and State of Indiana, citizens of the United States, have invented or discovered certain new and useful Improvements in Concentrating-Tables, of which improvements the following is a specification.

The invention described herein has for its object a construction of concentrating table, whereby when properly supported and operated, the general direction of flow of the pulp *i. e.*, the mixture of gangue and values, will be downward along the table toward the tailings discharge edge. During such flow the values will settle down through the gangue onto the surface of the table. The movement imparted to the table will divert or modify the general direction of movement, especially of the values in contact with the surface. This diversion or modification of the direction of movement of the values is not abrupt, nor will it cause such a change of direction of movement of the values that the directions of movement of the values and gangue will be at an angle greater than a right angle to each other. Hence at no time will the movement of the gangue materially retard the movement of the values from under the gangue. While a quite complete separation of the gangue and values is produced by the relative movements of the two, there will be a slight skim of gangue carried on the surface of the values, and to effect a separation of this skim, the table is provided with a raised portion or plateau, the inner edge of which is comparatively abrupt and extends across the line of flow of the values due to the movement of the table. When the values and the overlying skim of gangue encounter this abrupt edge or dam, a further separation is produced, as will be hereinafter described.

In the accompanying drawing forming a part of this specification, Figure 1 is a top plan view of our improved concentrating table; and Figs. 2, 3 and 4 are sectional views on planes indicated respectively by lines II—II, III—III, and IV—IV, Fig. 1.

In the practice of our invention, the main portion of the surface of the table 1 lies in a single plane. In addition to the main concentrating surface the table is provided with a plateau or cleaningup surface 2, substantially parallel with but raised somewhat above the main surface. This plateau is in the cleaning up zone of the table and extends with gradually increasing width from the head of the table to or nearly to the mineral discharge edge 3. The inner edge of the plateau forms a dam transverse of the direction of movement of the values but the abruptness of this dam is modified by the linoleum cover to facilitate the passage of the values onto the plateau, as will be hereinafter stated. Riffles 4 formed of strips of wood underlying the linoleum or covering of the table extend from the rear edge of the table toward the plateau and the downwardly inclined portion 5 in the rear of the mineral discharge edge 3. As the table is downwardly inclined from the head and upwardly inclined from the rear edge, the riffles are made highest adjacent to the rear edge, and each succeeding riffle is made a little higher adjacent to the low or rear edge of the table. These heights will be proportional to the inclination of the table, so that the depth of material will be equal or approximately so over all the riffles.

The working surface of the table is formed by linoleum or other suitable material. This covering will impart a curvature to the sides of the riffles and to the rear edges of the plateau without destroying their effectiveness and diverting the movement of the values.

As will be seen by reference to Figs. 2 and 3 the table is given a downward inclination from its upper toward its lower end, and an upward inclination from the rear to the front edge. The material to be treated is discharged onto the table adjacent to its head and will tend to flow toward the lower end by reason of the downward inclination. The flow down along the table is as regards the heavier portion of the material diverted in part by the riffles and in part by the vibration of the table, such vibrations causing the heavier materials to move up toward the front edge. The riffles are preferably arranged to coincide approximately with the resultant of these movements of the material. It will be understood that the gangue or lighter material will be affected much less than the heavier minerals by the jerks imparted to the table, and their line of flow from the head will be only slightly diverted. As the material moves toward the front edge it will strike against the relatively abrupt dam

formed by the edge of the plateau. By the time the materials reach this dam, there will be only a thin skim of gangue overlying the values, and when they strike the dam, this overlying skim will be thrown back, while the values being heavier will have sufficient momentum to move over the dam onto the plateau or cleaning up surface. So much of the values as do not pass onto the plateau will move down along the space between the ends of the riffles and the dam or rear edge of the plateau to the inclined surface 5 and thence to the mineral discharge edge.

The material to be treated is fed into the box 6, and flows through openings in its side wall into grooves in the distributing tray 7. As shown in Fig. 1 these grooves are arranged at an angle and terminals at different points along the upper edge of the tray. This construction will insure a uniform distribution of the material along the head of the table.

A trough 8 is arranged above the plateau for the feeding of water thereonto. This trough discharges the water along the front edge of the plateau and to insure even distribution spaced blocks 9 are arranged along the discharge edge and the trough is reduced in width toward its lower end. This constant flow of water on the plateau will facilitate the movement of the heavier materials, which move onto the plateau, down along the same into the cleaning up surface 5 which as before stated is downwardly inclined and extends from the line of separation of the gangue and values to the mineral discharge edge.

As shown in Figs. 2 and 3 the portion of the table below a line indicated at 10 and intersecting the mineral discharge end a short distance from its upper end, is formed at an angle to the remainder of the table. In the operation of the table the gangue and values should separate along a line adjacent to the inner edge of the cleaning up surface 5, and in order to prevent the material from crowding up beyond such line, the portion of the table below the line 16 is given a downward pitch as stated, thereby facilitating the movement of the gangue toward its discharge edge. The water fed into the plateau will flow down onto the cleaning up surface 5 but if desired the trough 8 may extend over this surface.

As is well known to those skilled in the art the movement of the material along the surface of the table should be slow until the heavier materials have settled out of the gangue, and after such separation has occurred it is desirable that the values and gangue should flow in their respective directions with comparative rapidity in order to prevent any crowding together or heaping up of the materials on any portion of the table. These results are attained in the table set forth herein, by providing portions 5 and 11 having an inclination to the general surface of the table, said portions extending in the direction of movement of the values and gangue from lines along which complete separation takes place. By thus insuring a rapid movement of the values and gangue after separation, the portions of the table, where the heavier materials settle out of the lighter materials can be given comparatively slight inclinations, so that the flow of the material will not retard the settling movement.

It will be readily understood by those skilled in the art that certain features of our improvement can be employed in treating coarse and fine material. In the construction set forth herein the generic features of our invention, *i. e.*, the table having its main surface in or approximately in one plane and provided with a plateau or raised portion having its surface above but substantially parallel with the main surface, are so arranged relatively to each other and combined with other element, as to especially adapt the table for the treatment of slime. In an application filed June 14th, 1912, Serial No. 703,658, is set forth relative arrangements of the generic features of our improvement in combination with our parts or elements adapting such table more especially to the treatment of coarse material such as "sand." Hence as regards the broader claims our invention is not limited to the treatment to any specific grade of material. It will be also understood by those skilled in the art, that although our invention is shown as embodied in a rhomboidal table, the invention is not limited to such a table as the outline of the latter is not material.

We claim herein as our invention:

1. A concentrating table inclined downwardly from its head and upwardly from its rear side, in combination with means for uniformly distributing the material to be treated across the upper end, riffles arranged transverse of the main surface of the table, and a plateau having its surface above but substantially parallel with the main surface, and arranged to intersect the line of movement of the material due to the vibrations of the table.

2. A concentrating table inclined downwardly from its head, and upwardly from its rear side in combination with means for uniformly distributing the material to be treated across the upper end, riffles arranged transverse of the main surface of the table, and a plateau having its surface above but substantially parallel with the main surface and arranged to intersect the line of movement of the material due to the vibrations of the table, the inner edge of the plateau constructed to present a compara-

tive abrupt wall to the onward movement of the material.

3. A concentrating table downwardly inclined from its head and upwardly inclined from its rear side, in combination with means for uniformly distributing material across the upper end of the table, a plateau having its surface above but substantially parallel with the general surface of the table and arranged intermediate the mineral discharge of the table and the normal line of separation of the gangue and minerals.

4. In a concentrating apparatus, a table having a downward inclination from its head and an upward inclination from its rear side, in combination with a plateau substantially parallel with the surface of the table, and arranged intermediate the head of the table and the mineral discharge edge and adjacent to the front side of the table, riffles extending transverse of the table from the rear side toward the plateau and mineral discharge edge, means for feeding material uniformly along the upper end of the table, and means for feeding water onto the plateau adjacent to its upper end.

5. In a concentrating apparatus, a table having a downward inclination from its head and an upward inclination from its rear side and having its mineral discharge edge along its front side and adjacent to its lower end, in combination with a plateau substantially parallel with the surface of the table and arranged intermediate the head of the table and the mineral discharge edge, riffles extending transverse of the table from the rear side toward the plateau and mineral discharge edge, portions of the surface back of the mineral discharge and the lower end of the table having a downward inclination toward such edge and lower end respectively, means for feeding material uniformly along the upper end of the table and means for feeding water onto the platform adjacent to the upper end.

In testimony whereof, we have hereunto set our hands.

EMIL DEISTER.
WILLIAM F. DEISTER.

Witnesses:
FRED JEREMIAH ELLIOTT,
LYMAN E. WIGHTMAN.