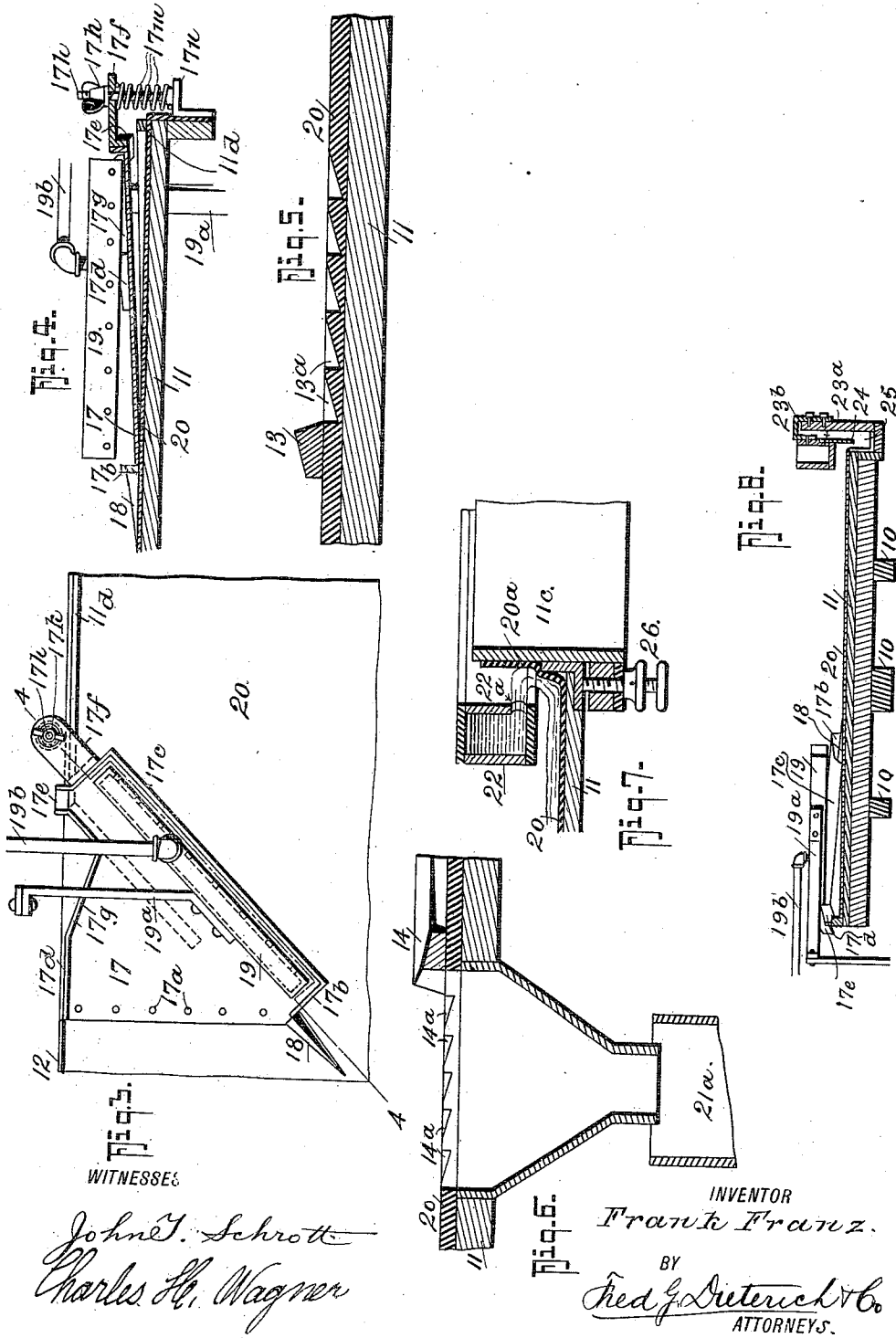


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DECK FOR CONCENTRATING TABLES.
APPLICATION FILED MAY 17, 1910.

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UNITED STATES PATENT OFFICE.

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DECK FOR CONCENTRATING-TABLES.

995,448.

Specification of Letters Patent. Patented June 20, 1911.

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To all whom it may concern:

Be it known that I, FRANK FRANZ, residing at Burke, in the county of Shoshone and State of Idaho, have invented certain new and useful Improvements in Decks for Concentrating-Tables, of which the following is a specification.

My invention relates to that class of ore concentrators known as "slime concentrators" and it primarily has for its object to provide a concentrator table deck or a simple and effective construction whereby the ores may be graded while being separated from the gangue and in which the operation of ore concentrators of the type stated may be rendered more efficient.

In its generic nature my invention provides an improved construction of concentrating table or deck having a plurality of sets of parallel grooves and ribs, the grooves being directed toward suitably arranged outlet slots through which the coarser ores are delivered.

The deck also includes a pair of pans or receptacles and deflector ribs for directing the stream of finer material to the pans where the finer ores are separated.

The concentrates end of the deck is made adjustable and means are provided for flexing or inclining the concentrates end of the deck with respect to the remaining portion whereby to retard the discharge of the materials through the slots and adjust the movement thereof.

In its more detailed nature the invention also includes those novel details of construction, combination and arrangement of parts, all of which will be first fully described, then be specifically pointed out in the appended claims, and illustrated in the accompanying drawings, in which:

Figure 1, is a top plan view illustrating the invention. Fig. 2, is a vertical longitudinal section on the line 2—2 of Fig. 1. Fig. 3, is an enlarged detail view of a part of the invention. Fig. 4, is a section on the line 4—4 of Fig. 3. Fig. 5, is a section on the line 5—5 of Fig. 1. Fig. 6, is an enlarged detail sectional view on line 6—6 of Fig. 1. Fig. 7, is an enlarged sectional view on the line 7—7 of Fig. 1. Fig. 8, is a cross section on the line 8—8 of Fig. 1.

Referring now to the accompanying drawings in which like numerals and letters of

reference indicate like parts in all of the figures 1 is the supporting frame that carries the bearings 2 for the rock shaft 2^a on which the yoke members 3 that support the table 10 are carried. Adjustable links 4 hold the yoke members 3 from lateral movement, while longitudinal movement is imparted to the table from the drive shaft 5 through the eccentric link and spring mechanism 7—8—9 (see Fig. 2 of the drawings), the longitudinal movement being regulated by the adjustable member 9.

The mounting of the deck on the frame and the mechanism for imparting longitudinal motion thereto and for adjusting the table laterally to change its plane of location may be the same as that disclosed in my co-pending application filed October 27, 1909, Serial No. 524,854, or similar to that disclosed in the Lampert Patent #641,977 of Jan. 23, 1900, or that disclosed in the Wilfley Patent #719,403 of Jan. 27, 1903, as the mechanism for imparting such longitudinal movement to the deck of the table and for effecting the lateral adjustments *per se*, form no part of my present invention.

The frame 10 that supports the deck 11 is carried by the yokes 3, as before stated, and the deck 11 comprises a flat body having a pair of parallel edges 11^a—11^d and an edge 11^b at right angles thereto. At the end opposite the edge 11^b the table is bevel cut by an edge 11^c so that the infeed side 11^a of the deck will be of shorter length than the discharge side 11^d and that the bevel edge 11^c will be at the tail end of the table.

The concentrates end of the table is hinged along a line 27, as at 27^a, so that the tail end may be flexed or tilted upwardly on such hinge by a screw mechanism shown in detail in Fig. 7 of the drawings.

The deck 11 is covered by a yieldable covering 20 of leather or other suitable material. The bevel cut edge of the deck may be lapped up at 20^a against the end wall 11^c of the deck as best indicated in Fig. 2 of the drawings.

The table edges 11^a—11^b—11^c may be bound by upwardly projected walls 11^d—11^e—11^f, best shown in Figs. 1 and 2 of the drawings. The outflow side of the table is provided with ribs 12, 16 along the edge.

At the concentrates side of the deck the

covering 20 is provided with a plurality of sets of longitudinal grooves 13^a—14^a—15^a—16^a respectively which are of rack shape in cross section, see Fig. 5, to retard the ore particles from passing toward the outflow side 11^d of the table and to further effect the retarding result the grooves 13^a—14^a—15^a—16^a of the respective sets farthest from the intake side of the deck are bound by a longitudinal rib 13—14—15—16 respectively, see Figs. 1 and 5 of the drawings, so as to form a break water, as it were.

17 designates the washing pans or receptacles for the fine ores. These pans are located adjacent to the outflow side of the table and are spaced apart, as shown. Each pan 17 has an open side that is secured at 17^a to the table deck, the remaining sides being bound by a rib 17^b—17^c—17^d, a part of which is formed into a spout 17^e through which the water passes.

Held parallel to the bevel cut edge 11^c of the deck are ribs 18—18^a respectively, one for each of the pans 17 the ribs extending from the mouth of the pan at the edge nearest the incoming side of the table toward said incoming side. These ribs 18—18^a respectively serve as divides for the slime as it flows over the table, causing a part of it to pass to one of the pans 17, another part to pass to the other pans 17 and the remaining part to pass over the ribs or grooves 13^a—14^a—15^a—16^a respectively.

Water boxes 19 are supported over the pans 17 to discharge their contents against the pans and they are supplied from any suitable source through pipes 19^b and are furthermore supported by suitable supports 19^a.

A water box 22 is located along the bevel cut side 11^c of the table and along a part of the intake side 11^a, such table being supported in a suitable manner from the frame of the table and supplied with water from a pipe 22^c, the boxes 22 having discharge outlets 22^a that direct the stream of water on the table in suitable places, as shown in Figs. 1 and 7 of the drawings.

23 designates the inlet box into which the ore carrying slimes are directed from any suitable source and from which they are discharged through apertures 23^a into a suitable trap formed by the depressed runway 25 into which the trap plate 24 projects, it being understood that the boxes 22 may be supported by suitable supports 23^b, as indicated in Fig. 8 of the drawings.

In order to adjust the position of the pans 17 to allow the outflow through the spout 17^e to be increased or decreased as desired, the pans 17 have arms 17^f through which a bolt 17^h that is carried by fixed brackets 17^g projects, and with which a thumb nut 17^k and springs 17^m cooperate. By tightening or loosening the thumb nut 17^k the pans 17 may be depressed or lifted accordingly.

Each set of riffles or grooves 13^a—14^a—15^a—16^a respectively discharge into slots 21 which extend from the tail end of the ribs 13, 14, 15, 16 toward the bevel cut side 11^c of the table and at right angles thereto, such slots 21 being of a length sufficient to receive the discharge from each of the grooves or riffles of the respective set.

In operation power being applied to the drive shaft 5, from a suitable source, through the belt and pulleys 6, the table 11 is reciprocated from left to right and vice versa, in Fig. 1. Upon admitting the ore bearing slimes to the boxes 23 they pass down through the trap 25 onto the deck of the table. Thus all of the mineral matter will be submerged in water before it passes onto the table deck. The table is slightly more elevated at the infeed side than at the outlet side so as to cause the slimes from the boxes 23 to flow toward the side 11^d, the longitudinal reciprocation of the table causing the slimes to spread out over the entire table surface. During this action the slimes are automatically graded into fine, medium and coarse streams, the fine stream carrying the light ores passing toward the outcoming side 11^b of the table more directly than the other streams so as to work toward the left hand pan in Fig. 1 of the drawings, while the medium grade ore carrying slime stream passes toward the other pan 17 at the right of Fig. 1, the heavier stream passing toward the concentrates end of the table over the grooves or riffles 13^a—14^a—15^a—16^a over ribs 13—14—15—16 in turn. As the stream of coarser material passes over the tailing end of the deck the ores will be separated from the fluids and work toward the respective slots 21 through which they are discharged. I find in practice that the first two sets of grooves or riffles 13^a—14^a will effect the separation of the greater part of the heavier mineral matters which are discharged through the respective slots 21 that cooperate with such sets of grooves. The lighter of the heavier stream of minerals will be taken up in turn by the grooves 15^a—16^a and discharged through their respective slots 21 so that by the time the outflow water reaches the outflow side 11^d of the table at the concentrates end adjacent to the rib 16, it will be practically freed of ore. The medium ore carrying stream passes toward the pan 17 where the ore particles of such stream are permitted to settle or precipitate, the pans being supplied with washing water from the water boxes 17, before described. The fine ore is then washed out through the spouts 17^e, while the fine mud and sand will accumulate at the places indicated in Fig. 1 of the drawings.

In practice the deck is maintained almost level, it being only more slightly elevated at the intake side than at the outflow side so

that the water stands in a sheet over the entire surface of the deck from the outflow side to the feed box so as to produce but a very sluggish current and give the minerals a considerable opportunity to settle, and the motion of the table will thereby cause the ore to move toward the respective pans 17 which may be raised or lowered, as desired, the grade of mineral obtained being governed by the adjustment of the pans 17. Similarly, the grade of mineral separated may be varied by using more or less wash water. The mineral which is separated at the pan 17 is of a very fine or mud-like grade, while that separated at the concentrates end of the table is of a heavier variety.

Suitable off-takes 21^a may be provided from the slots 21, as desired.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation and many advantages of my invention will be readily understood by those skilled in the art to which the same appertains.

What I claim is:

1. In an ore concentrating machine, a deck or table, means dividing said table into a plurality of successively arranged settling and grading areas, said table being provided beyond said settling and grading areas with a concentrating area having a transverse series of longitudinally disposed riffles.

2. In an ore concentrating machine, a deck or table, means dividing said table into a plurality of successively arranged settling and grading areas, said table being provided beyond said settling and grading areas with a concentrating area having a transverse series of longitudinally disposed riffles, said table including a common intake for all of said settling areas and further including individual outlets for the respectively settling areas.

3. In an ore concentrating machine, a deck or table, means for admitting ore carrying slimes to said table at one side, means for adjusting the plane of said table to cause said slimes to move toward the opposite side of said table, means for dividing said table into a plurality of successively arranged settling areas, said means including concentrates receptacles carried on said table within the boundaries of the table top, said table also having a concentrating area provided with a transverse series of longitudinally disposed riffles.

4. In an ore concentrating machine, a deck or table, means for admitting ore carrying slimes to said table at the intake side, means for adjusting the plane of said table to cause said slimes to gravitate toward the outlet side, longitudinally spaced separating pans formed in the tailings discharge side of said table adjacent to the outlet side thereof,

means for directing the ores to said pans, and means for directing wash water onto said pans.

5. In an ore concentrating machine, a deck or table, means for admitting ore carrying slimes to said table at the intake side, means for adjusting the plane of said table to cause said slimes to gravitate toward the outlet side, longitudinally spaced separating pans formed in the tailings discharge side of said table adjacent to the outlet side thereof, means for directing the ores to said pans, said pans having outlet spouts, means for adjusting the height of said outlet spouts, and means for directing wash water onto said pans.

6. In an ore concentrating machine, a deck or table, means for admitting ore carrying slimes to said table at the intake side, means for adjusting the plane of said table to cause said slimes to gravitate toward the outlet side, longitudinally spaced separating pans formed in the tailings discharge side of said table adjacent to the outlet side thereof, means for directing the ores to said pans, said table having a flexible concentrates end, and having longitudinal grooves or riffles at said concentrates end, said table having discharge slots into which said riffles discharge their contents, and means for directing wash water onto said concentrates end of said table.

7. In an ore concentrating machine, a deck or table, means for admitting ore carrying slimes to said table at the intake side, means for adjusting the plane of said table to cause said slimes to gravitate toward the outlet side, longitudinally spaced separating pans formed in the tailings discharge side of said table adjacent to the outlet side thereof, means for directing the ores to said pans, said pans having outlet spouts, means for adjusting the height of said outlet spouts, said table having a flexible concentrates end, and having longitudinal grooves or riffles at said concentrates end, said table having discharge slots into which said riffles discharge their contents, and means for directing wash water onto said concentrates end of said table.

8. In an ore concentrating machine, a deck or table, means for admitting ore carrying slimes to said table at the intake side, means for adjusting the plane of said table to cause said slimes to gravitate toward the outlet side, longitudinally spaced separating pans formed in the tailings discharge side of said table adjacent to the outlet side thereof, means for directing the ores to said pans, said pans having outlet spouts, means for adjusting the height of said outlet spouts, said table having a flexible concentrates end, and having longitudinal grooves or riffles at said concentrates end, said table having discharge slots into which

said riffles discharge their contents, and means for directing wash water onto said pans and onto said concentrates end of said table.

5 9. In an ore concentrating machine, a deck or table, comprising a body having a diagonal concentrates end, means for flexing or adjusting the plane of said concentrates end, means for admitting slimes to
10 said table at the intake side to flow toward the outlet side thereof, said table having a plurality of sets of longitudinal grooves or riffles, said table having a discharge slot for each set at the concentrates ends of said
15 riffles, said slot of each set extending across the riffles of the respective set, whereby each riffle of a set will discharge into the respective slot of said set, and a longitudinal rib for each set of grooves or riffles located
20 at the outflow side of the respective set.

10. In an ore concentrating machine, a deck or table comprising a body, means for admitting slimes to said table at the intake side to flow toward the outlet side thereof,
25 means for separating the flowing material into a plurality of successive graded streams, means for separating the ore selectively from said streams, said means including a separating pan for each stream located on
30 the table top adjacent to the discharge side thereof and within the boundaries of the table top, a rib for each stream at the discharge side of the table for directing the concentrates into said separating pan of the
35 respective stream.

11. In an ore concentrating machine, a deck or table comprising a body, means for admitting slimes to said table at the intake side to flow toward the outlet side thereof,
40 means for separating the flowing material into a plurality of successive graded streams, means for separating the ore selectively from said streams, said means including a separating pan for each stream located on
45 the table top adjacent to the discharge side thereof and within the boundaries of the table top, a rib for each stream at the discharge side of the table for directing the

concentrates into said separating pan of the respective stream and means for washing 50 the ore in said separating pans.

12. In an ore concentrating machine, a deck or table comprising a body having a concentrates discharge end, said body having an intake side and an outlet side, means 55 for admitting slimes to said table at the intake side to flow toward the outlet side, means dividing said table into a plurality of successive settling areas, and causing the flowing material to flow in a plurality of 60 streams, each of said settling areas including a concentrates receptacle located on the table top adjacent to the discharge side thereof and within the boundaries of the table top. 65

13. In an ore concentrating machine, a deck or table comprising a body having a concentrates discharge end, said body having an intake side and an outlet side, means 70 for admitting slimes to said table at the intake side to flow toward the outlet side, means dividing said tube into a plurality of successive settling areas to cause the flowing material to flow in a plurality of 75 streams, each of said settling areas including a concentrates receptacle located on the table top adjacent to the discharge side thereof and within the boundaries of the table top, said table being provided beyond said settling areas with a riffled concentrates 80 area.

14. In an ore concentrating machine, a deck or table, means dividing said table into a plurality of settling areas in longitudinal succession, said table being provided beyond 85 said settling areas with a concentrating area having riffles, a common intake for all of said settling areas, the heavier concentrates passing over said settling areas successively, and means in each of said areas for sub-di- 90 viding the lateral discharge of the settling areas into gangue and concentrates.

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Witnesses:

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