

W. W. BONSON.
 DRY ORE SEPARATOR.

APPLICATION FILED OCT. 27, 1909.

Patented Jan. 3, 1911.

4 SHEETS—SHEET 1.

980,891.

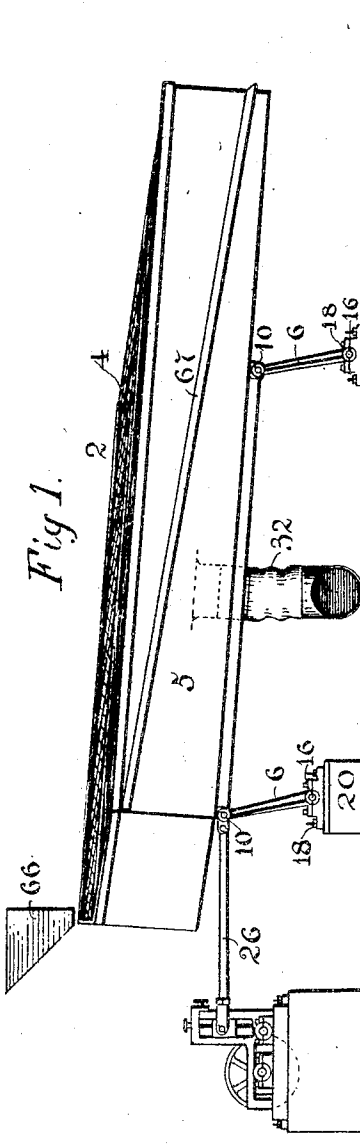


Fig. 1.

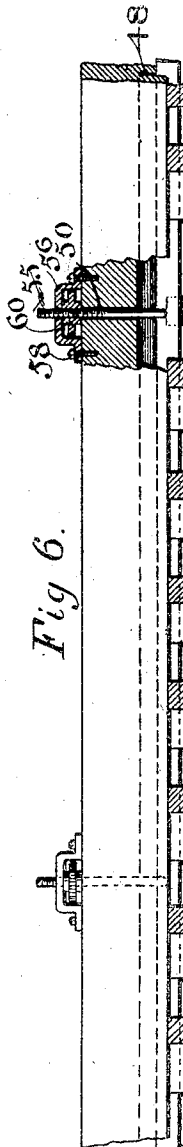


Fig. 6.

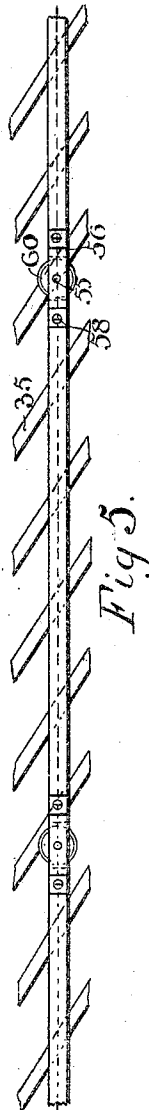


Fig. 5.

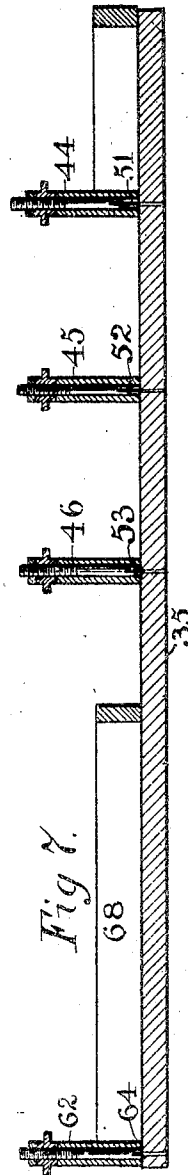


Fig. 7.

Witnesses

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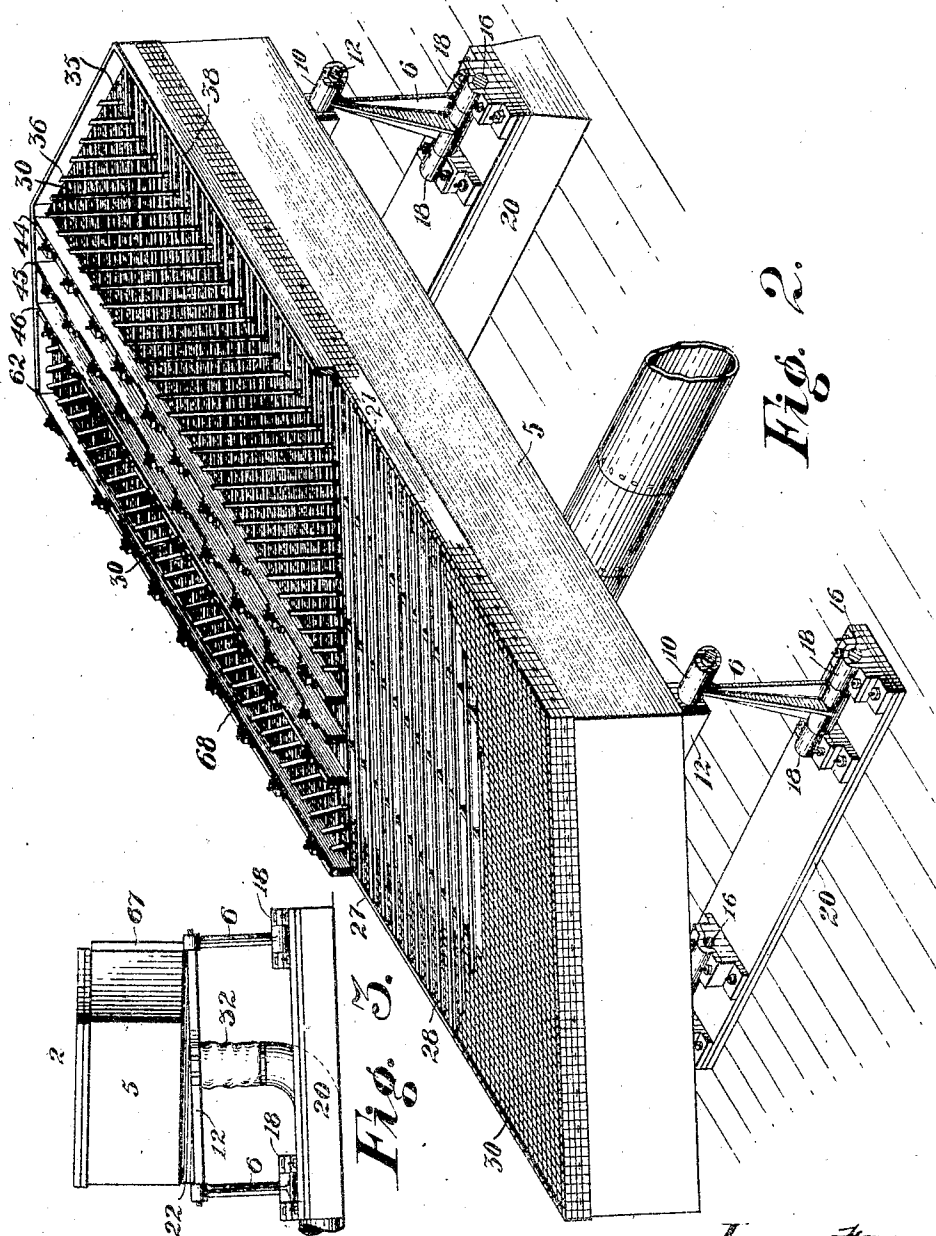


Fig. 2.

Fig. 3.

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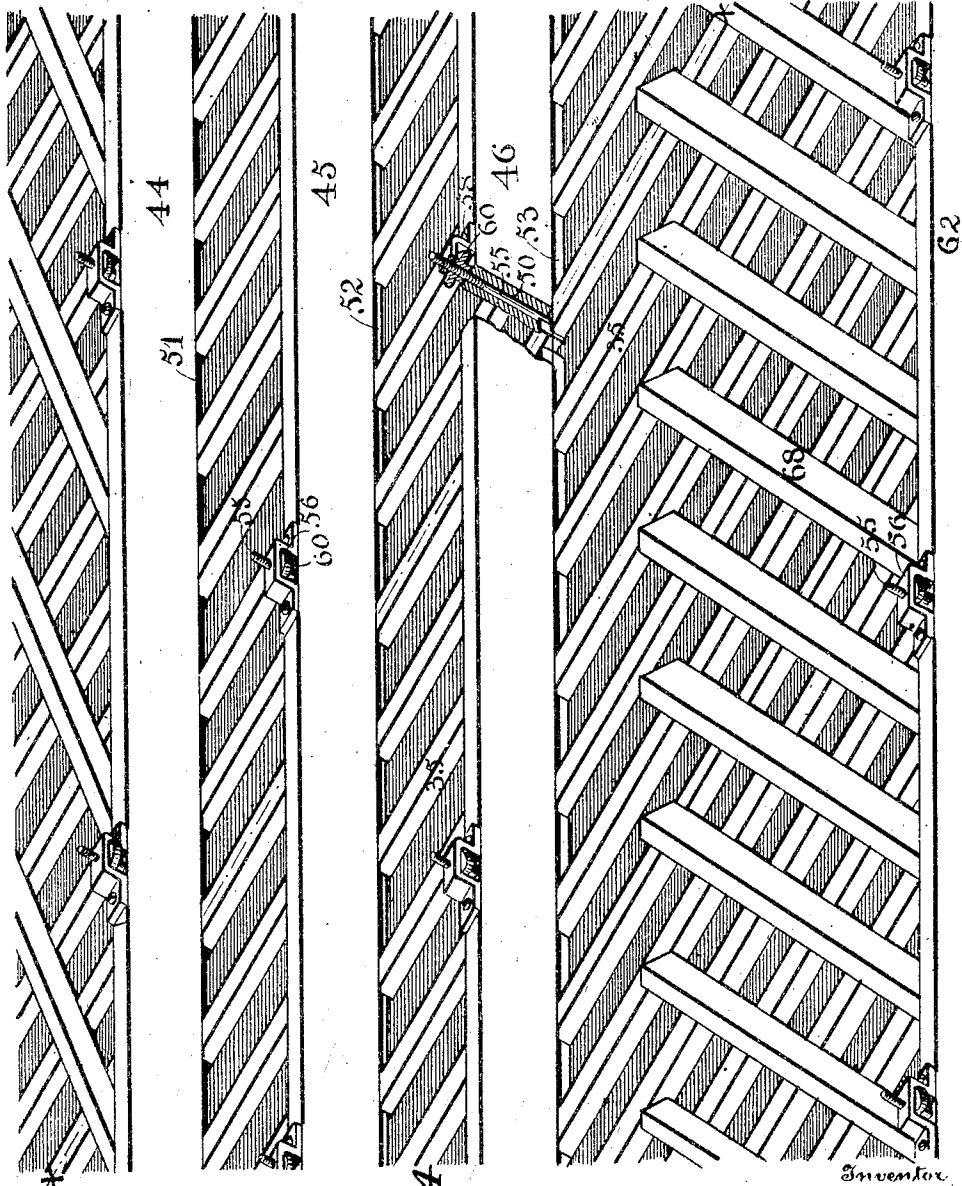


Fig 4

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 4 SHEETS—SHEET 4.

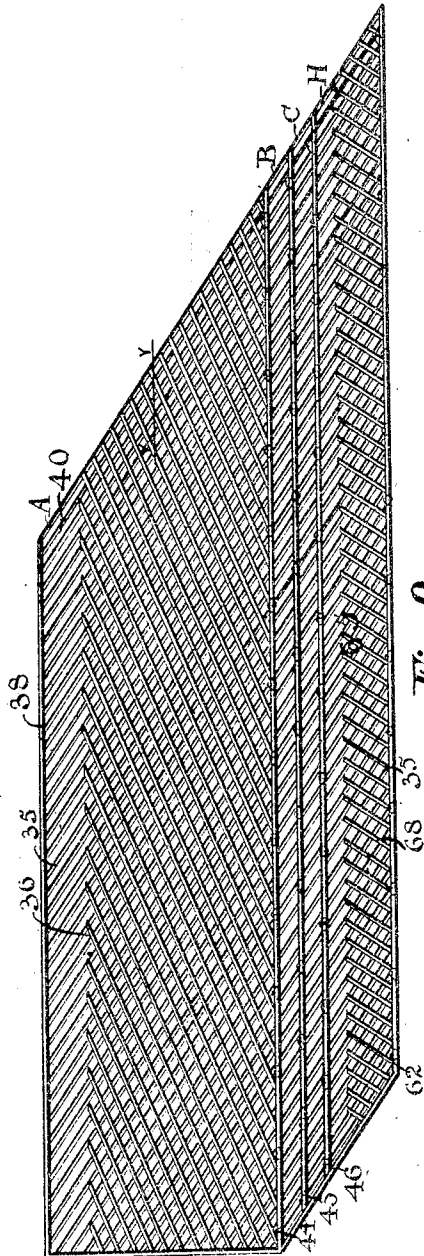


Fig. 9.

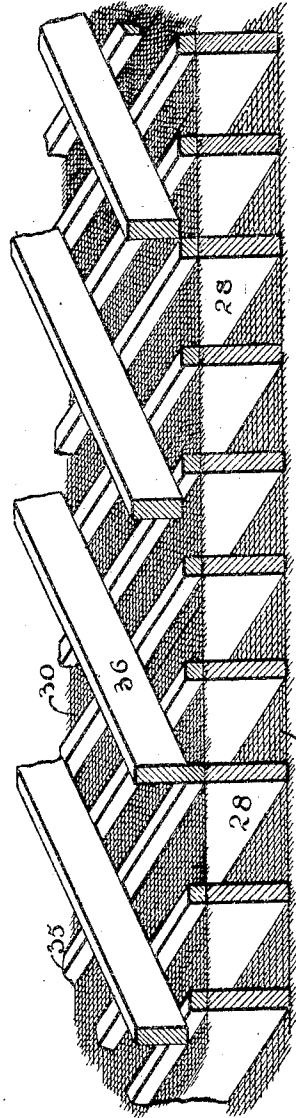


Fig. 8.

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UNITED STATES PATENT OFFICE.

WILLIAM W. BONSON, OF DUBUQUE, IOWA, ASSIGNOR TO BONSON DRY CONCENTRATOR CO., OF DUBUQUE, IOWA, A CORPORATION OF ARIZONA TERRITORY.

DRY ORE-SEPARATOR.

980,891.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed October 27, 1909. Serial No. 524,975.

To all whom it may concern:

Be it known that I, WILLIAM W. BONSON, citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented certain new and useful Improvements in Dry Ore-Separators, of which the following is a specification.

The object of my invention is to change, add to and make more effective and especially of greater capacity a certain device for dry ore separating machines, for which Letters Patent of the United States were granted and issued to William W. Bronson and William L. McLaughlin on the 7th day of September, 1909, and numbered 933,053.

In what it consists, its manner of construction, mode of operation and in what particulars it is differentiated from the aforesaid machine will be fully explained in the following specification and claims and illustrated in the drawings accompanying the same and made a part hereof.

Figure 1 is a side elevation of the jig table and mode of supporting it. Fig. 2 is a perspective view of Fig. 1 with part cut away showing the construction of the sustaining grate bars. Fig. 3 is a head end elevation of the jig and supporters. Fig. 4 is a perspective view of a portion of the table showing the gates and a part cut away showing the method of operating same, and the ore concentrating bed with the retarders thereon. Fig. 5 is a plan view of one of the girders that carry the gates, and a plan view of a portion of the ore deflectors. Fig. 6 is a side view of Fig. 5. Fig. 7 is a section on line $x-x$ of Fig. 4. Fig. 8 is a sectional view on line $y-y$ of Fig. 9. Fig. 9 is a plan view of the table.

Like characters of reference denote corresponding parts in each of the drawings.

Referring to the drawings 2 designates the jig which consists of a table 4, beneath which is an air box 5 and pivotally mounted on standards 6. The standards are formed into rings or cups 10 at their tops, which form bearings for the axles 12 to which the jig is attached. The lower end of the standards are similarly formed and are pivoted upon the shaft 16 which have their bearings 18 rigidly secured upon the foundation 20.

In order to provide for the inclination

lengthwise of the jig the standards at the foot are set on the foundations 20 at different heights and this inclination may be varied by raising or lowering either foundation, whereby it is adjusted to the required height to adapt it to different conditions of the mass to be separated thereon. It is often desirable to have the table also incline sidewise or laterally, and a convenient mode if making such inclination is given by inserting a wedge 22 between the axle 12 and the bottom of the jig 2. This inclination may be varied by the different thicknesses of wedges or in any convenient way to also adjust the jig for different conditions of the mass to be separated.

To the front end of the jig is coupled a shaft 26 which is connected with the power whereby the jig is given a short reciprocating motion. The means whereby it is reciprocated may be the same as set out in the aforesaid patent, but any other mode may be used. It is intended to impart to the jig a reciprocating motion upward in the arc of a circle, and as the jig is reciprocated only a short distance it will have a trembling or shaking motion whereby with the air that is forced through the mass to be separated, such mass will be immediately stratified.

The table which is secured on the top of the air box 5 is preferably formed of cast metal having the side bars 27 and grate bars 28. It is important, on account of what is placed over and upon this grate, that these bars 28 should be accurately made and that they should be exceedingly rigid and therefore they are cast and then the bars machined. Upon this grate is stretched a mesh 30 preferably of fine textile fabric which extends over the upper surface of the grate and through which a current of air is forced. Against the under side of the grate in the air chamber there may also be stretched a coarse mesh 31 through which the air is delivered to the mesh 30 by a more even distribution, but this is not a necessity only under certain conditions of the mass, usually when the mass is reduced to a fine powder. The air for aiding in the separation of the ore is introduced into the air box 5 in the base of the jig through a flexible pipe 32 which is connected with a blower in substantially the same manner as in the above mentioned application, and since any other convenient

mode may be used it is not minutely described herein.

Upon the mesh 30 are secured ore deflectors 35 which are set parallel to each other and above and parallel to the grate bars 28 and at an angle to the length of the table. It is of some importance that these ore deflectors be set parallel with and rest upon and be of practically the same width as the grate bars, not only to provide for the stability of the table and protect the mesh but also to prevent any interference of the air up between the grate bars through the mesh.

Upon the ore deflectors 35 are secured gangue deflectors 36 that are set at an angle to the deflectors 35 and also at an angle to the length of the jig. In order that there may be great rigidity to the table and uniformity in the runways both for the ore and gangue, and also more accurately parallel the ore deflectors 35 with the grate bars 28, the deflectors 35 and 36 are preferably cast together and machined.

The deflectors 36 on the first division of the table may be dispensed with and still there would be a separation of the ore but not as fast, as the deflectors 36 serve to force the gangue from off the ore after the mass has been stratified by the action of the air and motion of the jig. The deflectors 36 are preferably cut off at one end toward the side 38 of the table leaving a space 40 between the ends of the deflectors and the side 38 of the table as a runway for the gangue that is separated from the ore on this division of the table.

Longitudinally of the table and a little to one side of the center are secured to the ends of the table, beams or girders, 44, 45 and 46 which rest upon the ore deflectors 35. The under edges of these girders are provided with a groove 48 and with vertical openings 50. In the grooves 48 there is adjustably secured gates 51, 52 and 53. To these gates are secured pins 55 which are adapted to project up through the opening 50 in the girders, and are provided with screw threads near their tops. For the purpose of adjusting these gates to different heights, there are provided keepers 56 secured to the upper edge of the girders by the screws 58, and in these keepers are located nuts 60 which are adapted to engage the threaded end of the pins 55 and adjust the gates vertically in the grooves of the girders. Underneath these girders 44, 45 and 46 the deflectors 35 are grooved or cut through or nearly through substantially the same width as the width of the gates, so that the gates may be adjusted vertically down to or nearly to the mesh. There may be one or more of the gates according to the kind and classification of ore to be separated. In the drawings I have shown three secured parallel to

each other and for ordinary separation this would be sufficient. It is not a necessity that these gates run exactly lengthwise of the bed but should be set at an angle to the deflectors and substantially dividing the table lengthwise. Between these gates there is no necessity for the gangue deflectors 36 and hence none are shown, though they may extend through this space between the gates. These gates serve to divide the table on which the largest part of the gangue is separated from the ore from the side on which is formed the concentrating ore bed from the bottom of which the ore is constantly drawn off while the ore is delivered on top of the bed from the other side of the division of the table.

The division of the table substantially lengthwise gives an enormous capacity to the machine. The mass is stratified almost immediately on being delivered onto the table, the gangue suspended by the action of the air and aided by the motion and pitch of the table, is forced by the gangue deflectors at a great rate of speed into the runway on one division of the table and down the end of the table at A. The ore travels much more slowly as the air pressure is not strong enough to suspend it and its movement is governed practically by the throw and pitch of the table. The friction of such a large amount of gangue is sufficient to carry with it some of the ore should the travel of the ore be retarded to such an extent that it will rise to the top of the ore deflectors on the gangue side of the division of the table. The first gate is therefore left sufficiently high that all the ore, the middlings and necessarily some of the gangue will pass under it. The succeeding gates are adjusted so as to allow a free passage of the ore and yet retard the flow of the gangue so that it will rise above the ore deflectors and be carried down between the gates over the end of the table at B and C.

One of the essential differences between this application and the before mentioned patent is the substantially longitudinal division of the table and the means for forming and maintaining an ore concentrating bed, which has been found by experiment to be of exceeding importance in the purity of the separation of ores, especially where the mass to be separated has in it various kinds of ores of different specific gravity. Along the outer longitudinal edge of the table is secured another girder 62 similarly supplied with a groove in its lower longitudinal edge in which is set another gate 64, adapted to be adjusted onto the mesh and form with the mesh a tight joint. This gate is adjusted vertically in the same manner as the other gates. Between the gate 53 and the outer gate 64 is located the concentrating bed 65. The ore deflectors 35 are continued over the

table at this division and help to provide means for forming the ore bed. Over the ore deflectors 35 are set at an angle thereto and at an angle to the length of the bed, retarders 68 which preferably extend from the
 5 girder 62 about two-thirds across the ore concentrating bed and are set at a different angle to the deflectors 35 from that of the deflectors 36.

10 The deflectors 36 hasten or crowd the separation by forcing the gangue from off the ore on the other division of the table, but the retarders 68 aid in forming the ore concentrating bed by retarding the ore and
 15 gangue upon the bed until there has been a complete concentration of the ore and all of the pure or heaviest values have settled and are ready to be drawn off from the bottom of the bed from under the gate 64.

20 The ore bed could not be formed on the gangue side of the division of the table as the ore is passing too rapidly down between the ore deflectors and too large a body of gangue is passing over the same so that the
 25 friction would carry with it the ore into the gangue. Therefore, to form the ore concentrating bed the ore and the gangue left must travel at a much slower rate of speed than it travels when stratified from the gangue at
 30 its delivery onto the table.

Along the side of the air box 5 and beneath the gate 64 is a chute 67 for collecting and disposing of the ore as it is delivered from beneath the gate 64.

35 At the front end above the table is a hopper 66 which extends across the table to near the first gate and through which the mass to be separated is delivered along the head of the table.

40 The manner of operating my device is substantially as follows. The mass to be separated is first surface dried and classified then delivered through the hopper 66 along the head of the first division of the table amid
 45 the deflectors 35 and 36 and at the same time the air is turned on into the air box 5 through the pipe 32 whereby it is forced up through the mesh and through the mass. At the same time the table is given a recip-
 50 roating motion which taken with the air immediately stratifies the mass, raising the gangue to the top and leaving the ore between the deflectors 35, and as the table is inclined both longitudinally and laterally
 55 the largest part of the gangue will be forced by the gangue deflectors 36 toward the side of the table and through the runway over the tops of the deflectors 35 and off at the end A of the table. This will dispose of most of
 60 the gangue, but the ore, the middlings and some of the gangue will be carried under the gate 51.

The gates 51, 52 and 53 have previously been adjusted in such a manner that the
 65 gate 51 is nearly to the top of the ore de-

flectors 35, the gate 52 down at about half of the width of the deflectors 35 and the gate 53 a slight distance lower down. As the ore and middlings together with some of the gangue pass in the runways between the
 70 ore deflectors 35 under the gate 51 between the gates 51 and 52 where there are no gangue deflectors the middlings and some of the gangue will pass down and be delivered over the end of the table at B. The ore
 75 will then pass on under the gate 52 and some more of the gangue and middlings will be delivered over the foot of the table between the gates 52 and 53 at C, and the ores of different values together with the middlings
 80 and some of the gangue will pass under the gate 53 and be delivered to form the ore concentrating bed, then the second division of the table by its construction including the retarders 68 and the important space be-
 85 tween the ends of the retarders and the gate 53, will rapidly dispose of the greatly reduced and concentrated mass thereon and send the remaining gangue and middlings off from the concentrating bed around the ends of the
 90 retarders into the space and down off from the end of the table at H, while the concentrated ore will be drawn off from the bottom of the bed under the gate 64 as fast as it is delivered upon the concentrating bed. It
 95 will be seen that though the separation is exceedingly rapid after the concentrating bed is once formed still the purity of the separation will always be preserved as long as the concentrating bed is maintained. At
 100 this time in order to form a concentrating bed of ore which is the great essential in the perfect separation of ore, the gate 64 is adjusted down to the mesh and will not allow anything to pass beneath it. When the ore
 and some of the middlings are delivered upon this bed from underneath the gate 53 into the space between the gates 53 and 64 their
 movement will be arrested by the gate 64 and retarded by the retarders 68 and will soon be filled nearly to the top of the de-
 flectors 35 and with certain kinds of ore to near the top of the retarders 68. Since the retarders 68 retard the movement of the mass and especially of the gangue and other
 lighter particles that are stratified on top of the pure ores, in a short time the ore concentrating bed will be formed, composed of the heavier ores like gold, silver and copper
 at the bottom with those of lighter specific gravity above and on top the middlings and gangue. When the concentrating bed is
 fully formed then the operator raises the gate 64 a short distance sufficient to allow the ore to pass out from beneath this gate
 into the chute 65 and the gangue and middlings that are on the surface of the ore bed
 will gradually pass around the ends of the retarders through the space and be delivered
 over the end of the table at H. The opera-

tor then watches the ore bed and varies the height of the gate 64 until it will deliver the pure ore into the chute as fast as it is delivered upon the bed from beneath the gate 53 and thus carefully maintain the bed of ore amid the deflectors 35 and retarders 68.

It will be seen that it is exceedingly necessary for the pure separation of the ore that the ore bed be formed and maintained at a predetermined depth according to the kind and quality of the ore to be separated, and at a place on the table where the ore is practically free from gangue so that the friction of a small amount of gangue passing over the ore will carry with it but very little if any ore over the end of the table. When the ore concentrating bed has been formed the heaviest particles of the concentrates will be always at the bottom of the ore bed, and the middlings together with whatever gangue is still left will remain on top or be delivered over the end H of the table.

It will be seen that it is of the utmost importance that the construction of the machine between the gates 53 and 64 shall be such that the operator can arrest and retard the movement of the mass and thus form an ore concentrating bed of the desired thickness according to the various kinds of ores in the mass to be separated and then maintain that concentrating bed while the ore of the highest values is drawn off from the bottom of the concentrating bed as fast as it is delivered thereon and further all the gangue and lighter product will be carried out around the ends of the retarders and delivered over the tail of the machine at H.

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

1. In a dry ore separator, a table provided with a mesh, means for imparting motion to the table, means for forcing air through the mesh, means for dividing the table longitudinally, means for forcing the gangue from off the stratified mass on one side of the division of the table, means comprising an adjustable gate for forming an ore concentrating bed on the other side of the division of the table and means for maintaining such bed while the pure ore is drawn off from the bottom of the bed and the mass of partially separated ores is delivered upon the bed.

2. In a dry ore separator, a table, a mesh upon the table, means for imparting motion to the table, means for forcing air through the table, ore deflectors set on the mesh at an angle to the length of the table, gangue deflectors set upon the ore deflectors at an angle thereto and at an angle to the length of the table, an adjustable gate set lengthwise of the table dividing the table, means comprising an adjustable gate for forming an ore concentrating bed on one division of the table, and means for maintaining said ore

bed at a given depth while the ore is drawn off from the bottom of the bed beneath the gate.

3. In a dry ore separator, a table, a mesh upon the table, means for forcing a constant current of air through the mesh, means for imparting motion to the table, a gate set substantially lengthwise of the table dividing the table, means for forming an ore concentrating bed on one side of the table consisting of ore deflectors, retarders, and a gate at the end of the ore deflectors adapted to be adjusted to aid in forming the bed and to draw off the ores of heaviest values from the bottom of the bed while the partially separated ore is delivered from underneath the divisional gate upon the ore concentrating bed.

4. In a dry ore separator, a table provided with a mesh, means for forcing air through the table, means for imparting motion to the table, means for dividing the table in substantially a longitudinal manner, means for removing part of the gangue from one division of the table, and means including diagonally disposed deflectors set upon the table with retarders upon the deflectors at an angle thereto, and a gate on one side of the bed for forming an ore concentrating bed upon the other division of the table and for maintaining said bed.

5. In a dry ore separator, a table, a mesh upon the table, means for forcing air through the mesh, means for imparting motion to the table, an adjustable gate for dividing the table substantially lengthwise, means for removing part of the gangue from one division of the table, and means for forming an ore concentrating bed upon the other division of the table.

6. In a dry ore separator, a table, a mesh upon the table, means for forcing air through the mesh, means for imparting motion to the table, a gate for dividing the table substantially lengthwise, means for adjusting the gate upward and downward, means for partially removing the gangue from off the ore on one side of the gate and means for forming an ore concentrating bed on the other division of the table by arresting the movement of the mass upon the mesh over a constant current of air.

7. In a dry ore separator, a table provided with a mesh, means for forcing a constant current of air through the mesh, means for imparting motion to the table, means for dividing the table lengthwise consisting of a girder provided with a groove and a gate adapted to be adjusted in the groove in the girder, means for removing part of the gangue from off the ore on one side of the division, and means for forming an ore concentrating bed on the other division of the table.

8. In a dry ore separator, a table provided

with a mesh, means for forcing a constant current of air through the mesh, means for imparting motion to the table, means for dividing the table substantially lengthwise consisting of a girder provided with a groove lengthwise therein and vertical openings therethrough, a gate provided with arms adapted to engage the openings in the girders, means attached to the arms for adjusting the gate in the groove in the girder, means for removing part of the gangue from off the ore on one division of the table, and means for forming an ore concentrating bed on the other division of the table.

9. In a dry ore separator, a table, a mesh upon the table, means for imparting motion to the table, a gate dividing the table substantially lengthwise, means for forming an ore concentrating bed on one division of the table by arresting the movement of the mass, and means for retarding the movement of the mass forming the ore bed while it is subject to a constant current of air up through the mass.

10. In a dry ore separator, a table, a mesh upon the table, means for imparting motion to the table, means for forcing a current of air through the table, a gate dividing the table substantially longitudinally, means including deflectors upon the mesh and retarders on the deflectors at an angle thereto for forming an ore concentrating bed upon one division of the table, means including a gate upon the outer side of the ore concentrating bed for arresting the movement of the mass while it is subject to the pressure of air therethrough until the bed is formed.

11. In a dry ore separator, a table provided with a mesh, means for imparting motion to the table, means for forcing air through the table, a gate dividing the table in substantially a longitudinal plane, means for forming an ore concentrating bed on one division of the table consisting of ore deflectors and a gate along the ends of the ore deflectors adapted to be adjusted to stay the movement of the mass until the concentrating bed is fully formed.

12. In a dry ore separator, a table provided with a mesh thereon, means for imparting motion to the table, means for forcing a constant current of air through the table, a gate dividing the table substantially in a longitudinal manner, and means for forming and maintaining an ore concentrating bed on one division of the table consisting of deflectors set at an angle to the length of the table retarders on the ore deflectors at an angle thereto together with an adjustable gate set along the ends of the ore deflectors and retarders.

13. In a dry ore separator, a table, a mesh upon the table, ore deflectors diagonally disposed on the mesh, gangue defec-

tors set upon the ore deflectors at an angle thereto and at an angle to the length of the table, means for forcing a constant current of air through the mesh, means for imparting motion to the table, a gate upon the deflectors at an angle thereto and dividing the table substantially lengthwise, and means for forming an ore concentrating bed consisting of an adjustable gate set along the ends of the ore deflectors and retarders secured upon the ore deflectors and extending part of the way between the gates for retarding the movement of the mass on the ore bed and directing the gangue into the space on the bed between the inner gate and the ends of the retarders while the ore is drawn off from the bottom of the bed beneath the outer gate.

14. In a dry ore separator, a table provided with a mesh, means for forcing a constant current of air through the mesh, means for imparting motion to the table, means for partially separating the greater part of the gangue from the ore on one side of the table, a plurality of gates adapted to be adjusted to near the mesh on the table to partially arrest the speed of the movement of the mass and divide the table substantially lengthwise under which the partially separated mass is delivered to the opposite side of the table, and means including a gate adapted to be adjusted to the mesh on the table and set at the end of the ore deflectors for forming and maintaining an ore concentrating bed from the partially separated ore as it is delivered from one division of the table under the dividing gates upon the concentrating bed.

15. In a dry ore separator, a table provided with a mesh, means for forcing a constant current of air through the mesh, diagonally disposed ore deflectors on the mesh, means for imparting a reciprocating motion to the table, a gate dividing the table substantially lengthwise, a gate at the end of the deflectors adapted to be adjusted to contact with the mesh, and retarders extending from the outer gate across the deflectors to near the inner gate to direct the movement of the gangue on the bed into the space between the ends of the retarders and the inner gate.

16. In a dry ore separator, a table provided with a mesh, ore deflectors upon the table diagonally disposed to the length of the table, gangue deflectors set upon the ore deflectors at an angle thereto and at an angle to the length of the table, means for imparting motion to the table, means for forcing a current of air through the mesh on the table, a plurality of gates set upon the ore deflectors at an angle thereto, a gate set at an end of the ore deflectors and at an angle thereto for forming an ore concentrating

bed between the gates, and retarders extending from the end gate to within a short distance of the first of the other gates for retarding the mass upon the ore bed and directing the gangue into the space at the end of the retarders while the ore is drawn off from the bottom of the bed beneath the outer gate.

17. In a dry ore separator, an air box, grate bars upon the air box, a mesh upon the grate bars, ore deflectors upon the mesh above the grate bars and parallel therewith, gangue deflectors upon the ore deflectors and at an angle thereto and at an angle to the length of the table, a gate upon the ore deflectors at an angle thereto and disposed lengthwise of the table, means for adjusting the gate upward and downward, a gate at the end of the ore deflectors, and means for adjusting the gate to contact with the mesh on the bed for retarding and arresting the movement of the mass to be separated between the gates to form an ore concentrating bed.

18. In a dry ore separator, a table provided with a mesh, means for forcing a constant current of air through the mesh, means for imparting a reciprocating motion to the table, ore deflectors upon the mesh set at an angle to the length of the table, a gate dividing the table substantially lengthwise near the middle, gangue deflectors set upon the ore deflectors and at an angle thereto and at an angle to the length of the bed on one side of the dividing gate, means for forming an independent ore concentrating bed on the opposite side of the gate, and means for decreasing the rate of speed of the upper portion of the mass over the ore concentrating bed.

19. In a dry ore separator, a table provided with a mesh, means for forcing a constant current of air up through the mesh, means for imparting motion to the table, ore deflectors upon the mesh set at an angle to the length of the table, gangue deflectors set upon the ore deflectors at an angle thereto and at an angle to the length of the table adapted to force the greater part of the gangue from off the ore upon one division of the table, a gate dividing the table substantially lengthwise and adapted to be adjusted vertically, means for arresting the movement of the mass to form a concentrating bed on another division of the table, and means for directing the movement of the gangue from off the separated ore.

20. In a dry ore separator, a table suspended at an incline both laterally and longitudinally and provided with a mesh thereon, means for imparting motion to the table, means for forcing air through the mesh, a plurality of gates adapted to be adjusted upward and downward dividing the table

substantially lengthwise near the center, means including ore and gangue deflectors set at an angle to the motion of the table and at an angle to each other for forcing part of the gangue from off the ore on one division of the table, means for forming an ore concentrating bed on the other division of the table including a gate at the end of the ore deflectors and retarders set over the ore deflectors and at an angle thereto.

21. In a dry ore separator, an air box, grate bars above the air box, a mesh upon the grate bars, a mesh beneath the grate bars in the air box, means for forcing the air through the mesh above and below the grate bars, means for imparting motion to the table, a gate for dividing the table longitudinally, means for removing part of the gangue on one division of the table, and means for forming an ore concentrating bed on the other division of the table.

22. In a dry ore separator, an air box, a table formed of grate bars upon the air box, a mesh upon the grate bars, means for forcing air through the mesh, means for imparting motion to the table, a gate dividing the table substantially lengthwise, means for adjusting the gate, means including ore and gangue deflectors set at an angle to each other and to the motion of the table upon one division of the table for partially separating the gangue from off the ore, and means including an adjustable gate, ore deflectors and retarders for forming and maintaining an ore concentrating bed at a predetermined thickness on the other division of the table.

23. In a dry ore separator, a table provided with a mesh, means for forcing a constant current of air through the mesh, means for imparting motion to the table, an adjustable gate dividing the table longitudinally, means for forming an ore concentrating bed on one division of the table including a gate at the outer side of the ore concentrating bed and means for forming a runway at one side of said bed for conveying the gangue from off the ore concentrating bed.

24. In a dry ore separator, a table provided with a mesh, means for forcing a constant current of air through the mesh, means for imparting motion to the table, an adjustable gate for dividing the table longitudinally, means including a gate at one side of the table for forming an ore bed, means forming a runway at the opposite side of the ore concentrating bed.

25. In a dry ore separator, a table provided with a mesh, means for forcing air through the mesh, means for imparting motion to the table, ore deflectors running diagonally across the table and providing diagonally disposed runways across the table

for the ore, an adjustable gate disposed lengthwise across the table dividing the table, gangue deflectors on one division of the table for partially separating the gangue from off the ore, and means on the other division of the table including said ore deflectors and an adjustable gate at the end of the ore deflectors for forming and maintain-

ing an ore concentrating bed on the other division of the table.

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

WILLIAM W. BONSON.

Witnesses:

M. M. Cady,

E. M. Noonan.