Aug. 8, 1944. C. C. HERBERT 2,355,375

ORE CONCENTRATOR

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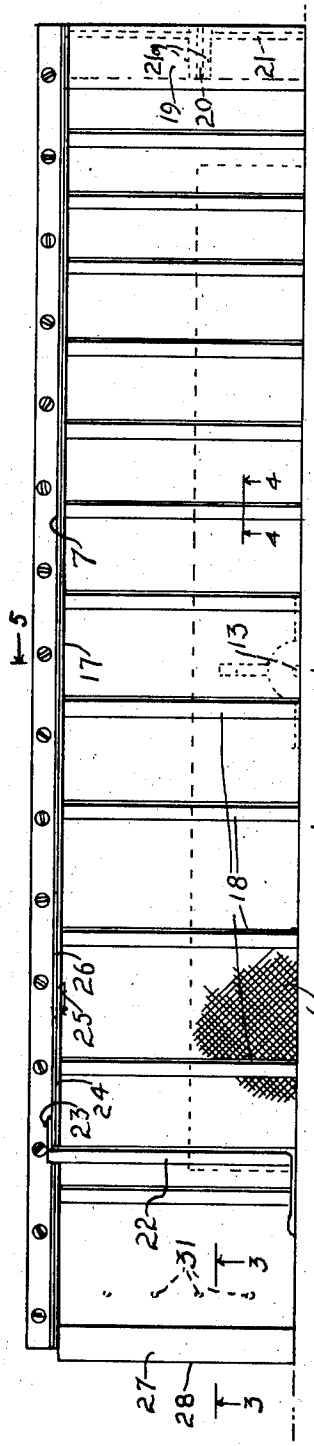


FIG. 1

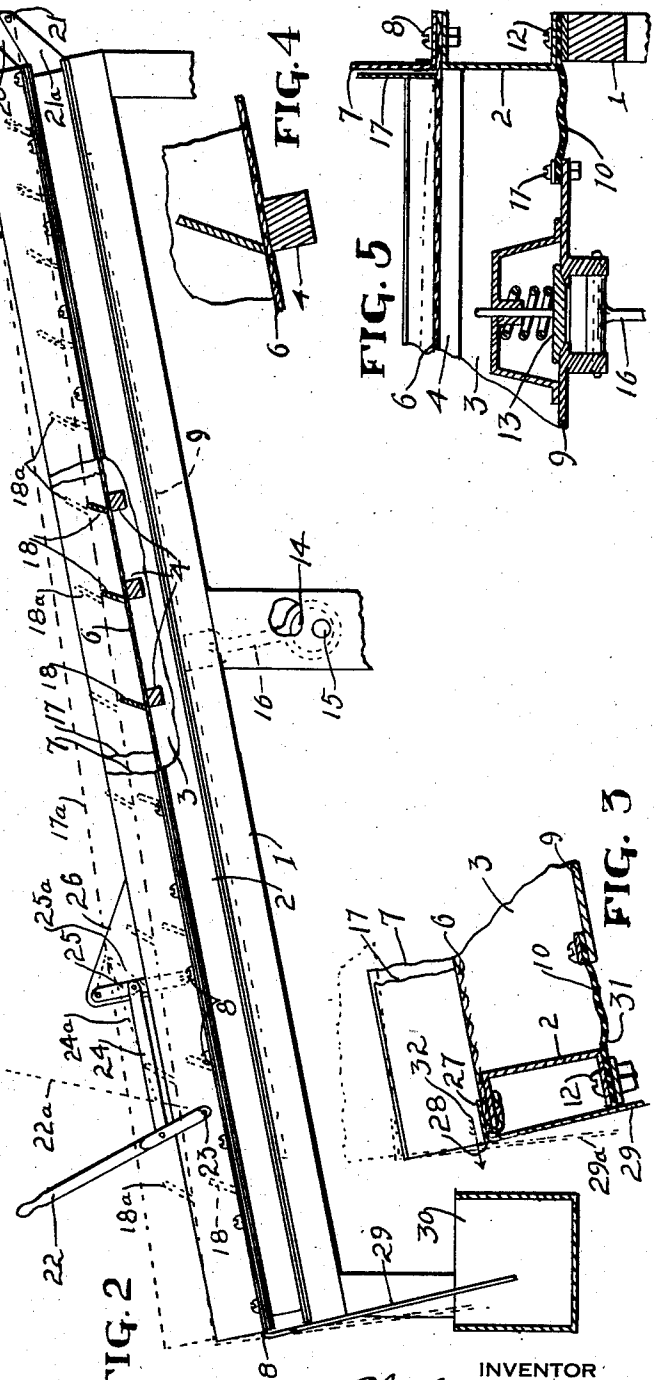


FIG. 2

FIG. 4

FIG. 5

FIG. 3

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ORE CONCENTRATOR

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3 Claims. (Cl. 209—475)

The present invention relates particularly to improvements in dry ore concentrating jigs.

It is one object of the present invention to provide a device of the character indicated wherein the concentrates that have accumulated behind the several riffles may be quickly, easily, and completely removed from the table at frequent intervals.

In the type of pneumatic jig referred to it has been found that after a period of operation the canvas forming the top of the table and through which air is blown, becomes clogged with the fine material passed thereover, and it is therefore another object of the invention to provide means whereby the said canvas may be quickly and easily cleaned of the clogging material.

Finally, it is an object of the invention to provide a device of the character indicated that will be simple in form and construction, economical to manufacture, strong, durable, and highly efficient in its practical application, and particularly one that will permit the recovery of practically all of the so-called "flour" gold, and the still finer and lighter particles that are commonly lost.

In the drawing:

Figure 1 is a top plan view of one-half of a jig embodying my invention.

Figure 2 is a side elevation of the jig, with parts broken away.

Figure 3 is an enlarged fragmental sectional view on line 3—3 of Figure 1.

Figure 4 is an enlarged detail section on line 4—4 on Figure 1.

Figure 5 is an enlarged detail section on line 5—5 on Figure 1.

My invention as herein disclosed is embodied in a framework 1 of any suitable nature, and on this frame-work is mounted an inclined frame 2 which, together with the top and bottom hereinafter described, encloses an air chamber 3.

Extending transversely across the top of the air chamber with their top edges lying flush with the top edge of frame 2, are a number of rigid bars as indicated at 4.

Stretched over the tops of bars 4 and the top edge of frame 2 is a suitable fabric, such as canvas, 6. This canvas is held in place by side rails as 7 bolted on the frame 2 as shown at 8. The canvas 6 is stretched tightly enough to support the material flowed thereover, but is entirely unattached except around the edges, and forms a complete top for the chamber 3.

The bottom of the chamber 3 is formed by a substantially rigid plate 9 of somewhat smaller dimensions than the chamber 3 in plan, and is suspended centrally from the chamber wall 2 by means of a rubber strip 10 bolted thereto as at 11 and to the top of frame 1 by any suitable means as at 12.

In the center of the bottom plate 9 is mounted a spring-pressed valve as 13 to control the admission of air to the chamber 3. As the plate 9 is pushed upwardly in any suitable manner as by means of an eccentric as 14 on a driving shaft 15 connected thereto as at 16, the valve 13 remains closed as shown. But when the plate is pulled downwardly by the eccentric 14 and its connection 16, the spring holds the valve closed sufficiently long to create a suction in the chamber 3, but opens to let air into the chamber 3 before the completion of its downward movement.

Placed immediately inside of side rails 7, and paralleling the same are side members 17 of approximately the same dimensions. These side members 17 are spaced and held by riffles 18 which have their lower edges flush with the lower edges of the members. The top ends of the members 17 are connected by an inclined plate 19 over which ore is discharged onto canvas 6, and this end plate is fitted with downwardly extending hinge portions 20 engaging a laterally extending bar 21 seated in lugs 21a extending upwardly and rearwardly from frame 2. This construction permits the swinging of parts 17—18 upwardly about the bar 21 as a pivot.

To effect the swinging movement of parts 17—18 as described I provide a hand lever 22 pivoted on rails 7 as at 23. On each side of the lever 22 is pivotally mounted a link as 24 connected to a toggle 25. The top end of the toggle 25 is pivoted on a plate 26 fixedly positioned on the top edge of side rail 7, and its lower end is pivoted on the adjacent member 17, so that when the lever 22 is thrown forwardly into the position 22a the members 17 and the riffles thereon are swung upwardly into some such position as indicated in dotted lines, thereby leaving the surface of canvas 6 unobstructed.

Mounted upon the lower ends of members 17 to move as a unit therewith and to lie flat upon the canvas 6 when the members 17 are in their normal working position, is a plate or guide 27 that is bent at right angles at 28 to form a deflector portion 29 that extends downwardly and into a receptacle 30.

In the lowermost portion of the rubber strip 10 are formed a number of orifices as 31 for the purpose hereinafter described.

To illustrate the operation of the jig it may

be assumed that a suitable gold-bearing aggregate is discharged upon the upper end of the device and allowed to flow by gravity downwardly over the canvas **6** and riffles **18**, and at the same time the operation of eccentric **14** causes a flow of air through the canvas **6**, agitating the material thereon enabling the heavier gold particles to sink down to the canvas and lodge, in large part, behind the working faces of the riffles and assisting the progress of the gangue until it discharges as indicated by the arrow at **32**.

A bar **4** is placed directly beneath the working face of each riffle so that the air cannot be forced through the canvas at this point and a dead pocket will be provided in which the heavier values may accumulate undisturbed. The flow of air above referred to not only agitates the gangue as described but also sucks at least some of the finer values through the canvas into the chamber **3**, and here these values are automatically moved to the bottom of the chamber and blown out of its lower end into receptacle **30** through orifices **31**.

Whenever the operator of the jig judges that the canvas **6** should be cleaned he has merely to shift the lever **22** into the position indicated in dotted lines at **22***a*, whereupon all of the riffles **18** are raised above the level of the canvas **6** and the guide **27—29** is raised into the position shown in dotted lines at **29***a*. When this is done all of the ore and the values therein flows freely downwardly and over the lower end of the canvas and is deflected into the container or receptacle **30** by the guide **29**. The seating of the riffles **18** on the canvas **6** serves to hold the said canvas flat on the bars **4** and prevents its displacement by the forcing of air therethrough. But when the riffles are raised as above set forth the sudden upsurge of air will raise the entire exposed area of the canvas as indicated at **33**. When the downward movement of air begins and is effected by the downward movement of the suction plate **9**, the spring holds the valve **13** closed for an instant thereby causing the canvas to be suddenly sucked back into sudden contact with the bars **4**. This sudden whipping of the canvas on the bars **4**, together with the forced passage downwardly through the canvas of the air sucked in by the downward movement of plate **9**, effectually cleans the said canvas of all particles of gold or other matter that may be lodged in its meshes.

By means of the mechanism described, not only are all values of appreciable size quickly and easily collected in receptacle **30**, but even those values in the form of impalpable powder are recovered in chamber **3** and blown into the receptacle **30**. One reason for the satisfactory working of the device is the fact that the plate **9** parallels the fabric **6** and the flow of air is substantially equal over the whole surface of the fabric.

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

1. A dry ore concentrating table of the character described comprising, an inclined oblong frame, a textile fabric stretched over the same and attached thereto at its edges only, supporting bars for the unattached portion of the fabric disposed laterally of the frame, means operative to force air to flow alternately in opposite directions through the fabric to raise and lower the same on the supporting bars, riffles and supporting means therefor disposed on the top of said fabric to prevent the fabric being raised by the air forced therethrough, and means operative to simultaneously raise all of the riffles with respect to said fabric to permit raising of the fabric by the air passing therethrough.

2. A dry ore concentrating table of the character described comprising, an inclined oblong frame, a textile fabric stretched over the same, riffles and supporting means therefor disposed on the top of said fabric, means operative to simultaneously raise and lower all of the riffles with respect to said canvas, said means being provided with a deflector guide depending from its lower end to permit the discharge of tailings from the fabric when the riffles are in a normal position, but movable therewith when the riffles are raised to intercept the flow of concentrates and discharge the same into a receptacle.

3. A dry ore concentrating table of the character described comprising, an inclined oblong frame, a textile fabric stretched over the same, supporting bars for the fabric disposed laterally of the frame, means operative to force air to flow alternately in opposite directions through said fabric, riffles and supporting means therefor disposed on the top of said fabric, means operative to simultaneously raise and lower all of the riffles with respect to the canvas, said means being provided with a deflector guide depending from its lower end to permit the discharge of tailings from the fabric when the riffles are in a normal position, but movable therewith when the riffles are raised to intercept the flow of concentrates and discharge the same into a receptacle.

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