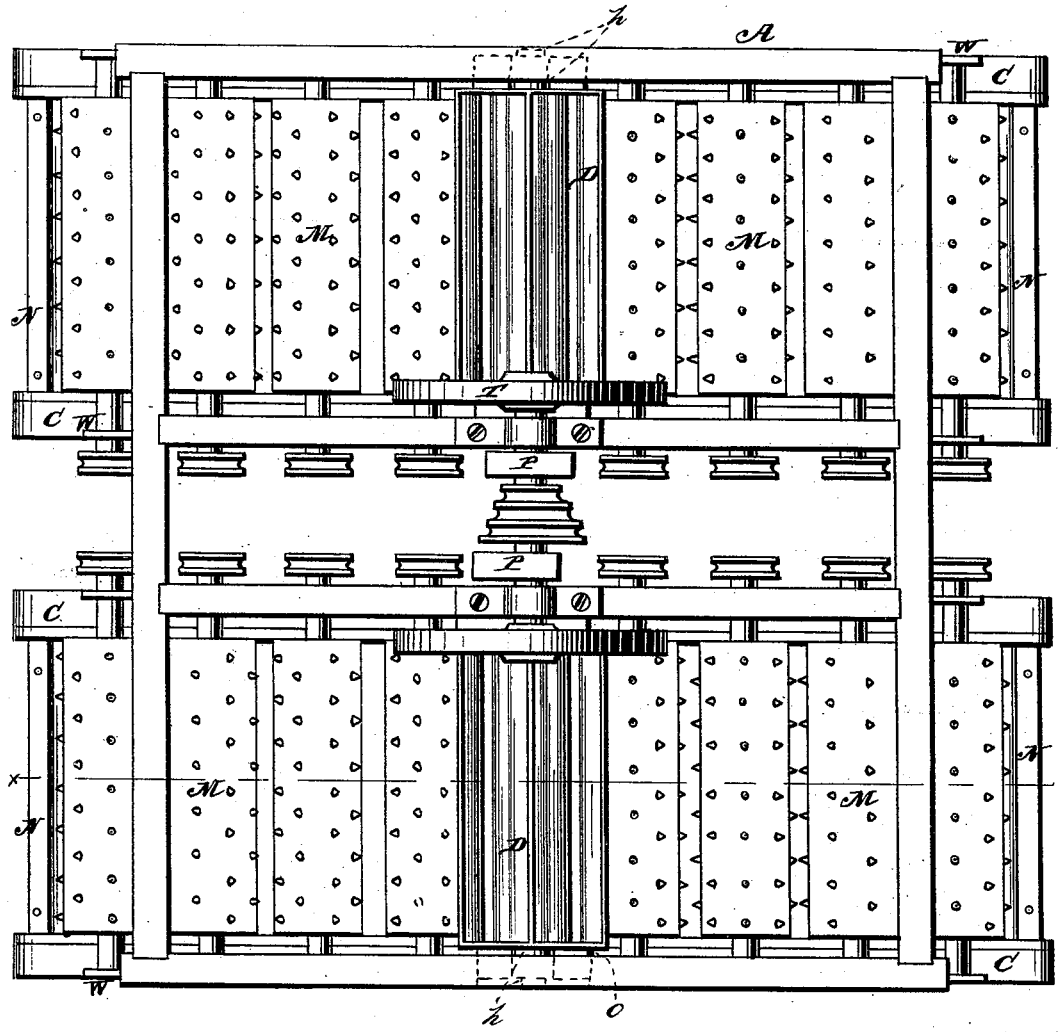
3 Sheets—Sheet 1.

F. R. BROWN.

Ore-Jigger.

No. 206,418. Patented July 30, 1878.

Fig. 1.



Witnesses:
Robt Everett
A M Sprague

Inventor.
Francis Randolph Brown
by
W H Babcock
Attorney.

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F. R. BROWN.

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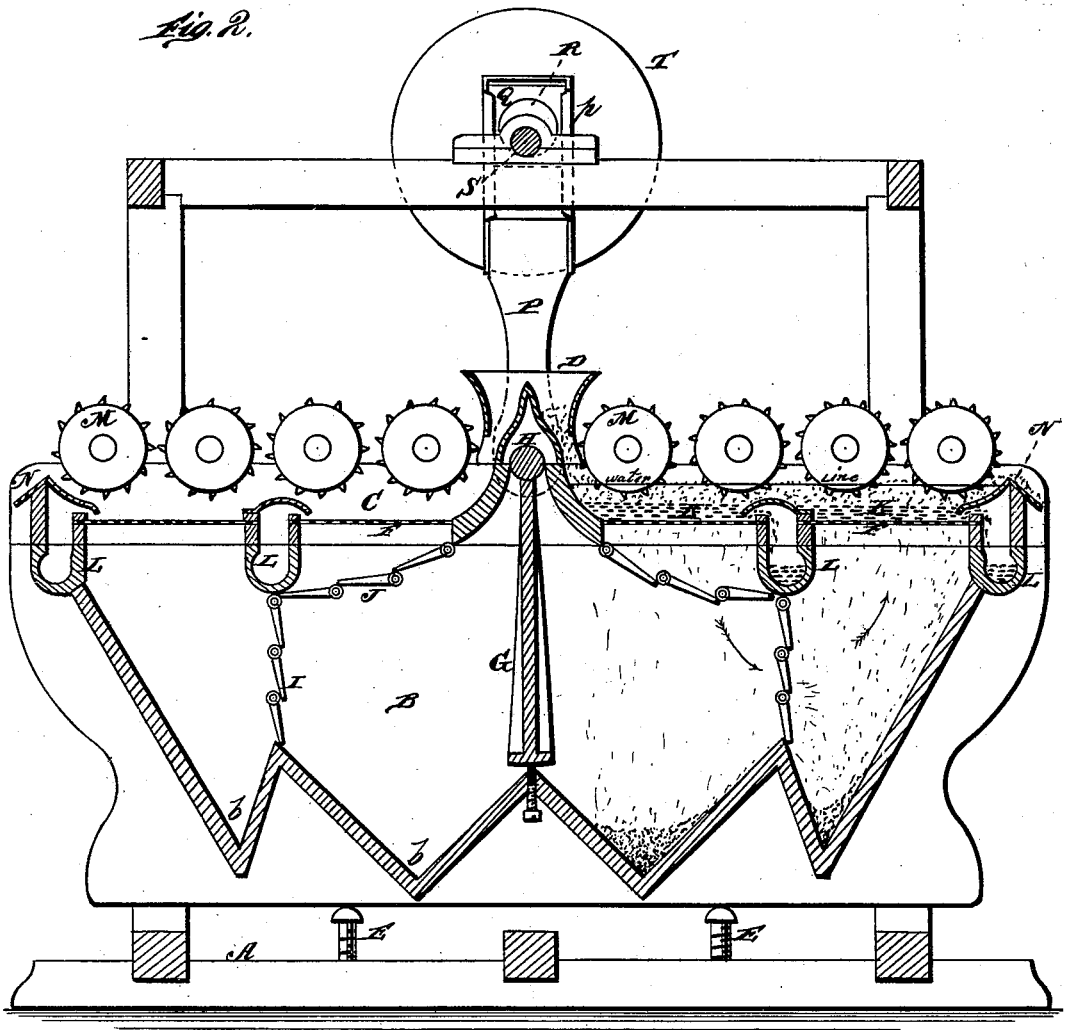
Fig. 2.



Witnesses:
Robt Ewell
W M Spangler

Inventor:
Francis Randolph Brown
by
Wm H Babcock
Attorney.

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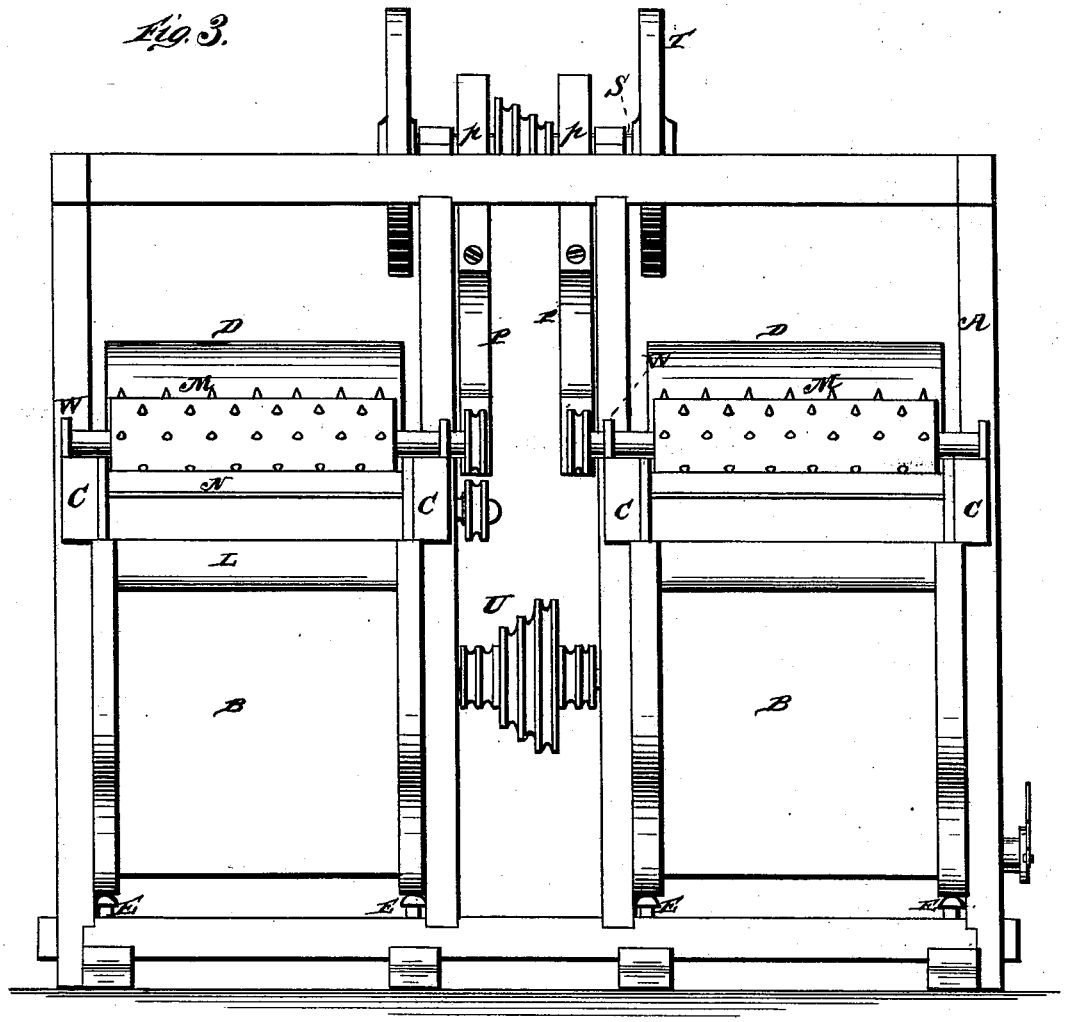
F. R. BROWN.
Ore-Jigger.

No. 206,418. **Patented July 30, 1878.**

Fig. 3.



Witnesses:
Robert Everett
O M Sprague

Inventor.
Francis Randolph Brown
by
W. H. Babcock.
Attorney.

UNITED STATES PATENT OFFICE.

FRANCIS R. BROWN, OF DENVER, COLORADO.

IMPROVEMENT IN ORE-JIGGERS.

Specification forming part of Letters Patent No. **206,418**, dated July 30, 1878; application filed May 27, 1878.

To all whom it may concern:

Be it known that I, FRANCIS RANDOLPH BROWN, of Denver, in the State of Colorado, have invented certain new and useful Improvements in Jigging-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form part of this specification.

This invention relates to that class of machines for separating ores according to their weight and density which operate by agitation upon a screen, through which pulsations of water are directed from a tank below.

The said invention consists in a horizontal series of valves and a vertical series of valves in each department of each tank, for directing the current of water.

It also consists in certain pendent pulsating blades dividing each tank into two departments, and operated by devices hereinafter set forth.

It also consists in the peculiar construction of the pocket-covers, in combination with the pockets and agitators, and in other peculiarities of construction and combination hereinafter set forth.

In the accompanying drawings, Figure 1 represents a plan view of my improved jigging-machine. Fig. 2 represents a vertical longitudinal section through one of the boxes or tanks of the same; and Fig. 3 represents an end view of the machine.

A designates the supporting-frame of the machine, which sustains two or more long water-tight boxes or tanks, B, having V-shaped depressions *b* in their bottoms for the reception of the product from above. Under said boxes are placed tightening-screws E, which operate so as to raise said boxes and press them against longitudinal timbers C, holding the joints water-tight. On the inside of each box B, at the top, a bead or rabbet is formed to receive and support screens F.

D designates a double hopper, one compartment of which discharges upon each of said screens, and G designates a pendent blade arranged between said screens, extending from side to side of the box, and dividing the same into two distinct apartments. The construction of each box, with the parts operating therein, is substantially the same, and each is filled with water. Each blade G is suspended from a rock-shaft, H, so that the rocking of said shaft will cause said blade to make alternate pulsations in the water of said apartments, thereby sending currents of the same alternately through the screens.

The screens of different boxes are preferably of different degrees of fineness, so that they may work different sizes of material. Thus, in a machine having two boxes or tanks, like the one shown, two sizes of material may be operated on. These screens are preferably constructed of perforated metal or wire-cloth.

Each department is provided with a vertical series of valves, I, and a horizontal series of valves, J, the latter being a little below and parallel to the screen F.

Fig. 2 shows the valves of one compartment arranged so that the horizontal series of valves open to outward pressure only, and those of the vertical series open to inward pressure only, while the horizontal series of valves of the other compartment open inward, and those of the vertical series open outward. According as the former or the latter of these arrangements is adopted, the current will be first up, then outward, then down and backward, or first outward, then upward, then downward and backward.

K designates a layer of mineral known as "the ore-bed," having about the same density and gravity as the product to be obtained and too large to pass through the screen. One of said ore-beds is formed upon or spread over each screen F. When the material of said ore-bed is excessive it empties into receptacles or pockets L, which extend from end to end of the boxes at suitable intervals, and are supported thereby. The ore is fed over this bed toward the sides of the boxes by toothed or spurred rollers or cylinders M, and finally discharged at each side over a plate, N, having the shape of an inverted V. The upward incline of this discharge-plate causes the ore to pass out of the water. In this way a very great saving of valuable material is effected, the same being ordinarily lost in water. Of course only

the lighter particles are thus discharged, the finer and denser particles, containing the most valuable mineral, being carried through the ore-beds and screens by the currents of water, and deposited in the receptacles *b* at the bottom of the boxes. The coarser and heavier particles which do not pass through the screen are discharged into receptacles L, already described.

Both the horizontal valves J and the vertical series of valves I of each apartment may be arranged to open inwardly by suction, in which case there will be a strong drawing or filching movement downward. This will draw through the ore-bed the particles having the greatest density, while the gangue, being lighter, will not pass through the bed, but will be removed, as described.

By means of the above-described devices particles may be separated which are too fine to be separated from grosser material under ordinary conditions by their relative gravity alone.

A forward current of water may be used to advantage where gold or silver is to be separated from quartz.

It is obvious that various forms of machinery may be used for actuating the above devices.

The journals *h* of blades G turn in bearings or journal-boxes O, and are attached to levers P, which have slides or guides *p* at the other end thereof. In these guides or slides *p* move sliding boxes or blocks Q, which are actuated by cams R on a revolving shaft, S, supplied with the necessary wheels and pulleys. On the shaft S is a band-wheel, T, which transmits motion through counter-shaft U and suitable gearing to the spurred rolls or cylinders hereinbefore described. These rolls or cylinders are supplied with adjustable bearings W, permitting them to be raised or lowered at will.

The receptacles for the products are provided with suitable faucets, whereby they may be emptied from time to time. Sufficient water should be drawn off with said products to keep that which remains in the tank pure enough for performing its functions properly.

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

1. In a jigging-machine, rocking shaft H and swinging blade G, in combination with levers P and cam-shaft S, for producing pulsation, substantially as set forth.

2. In a jigging-machine or concentrator, the combination, with a tank, screen, and pulsating device, of a horizontal series of valves and a vertical series of valves, substantially as and for the purposes set forth.

3. In a jigging-machine, an angular discharge-plate, in combination with a pocket and agitating devices, said discharge-plate serving both to raise the upper particles of ore out of the water before discharge, and to exclude them from the pocket, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

FRANCIS RANDOLPH BROWN.

Witnesses:
EMANUEL W. HERSHE,
JAMES W. SPRAGUE.