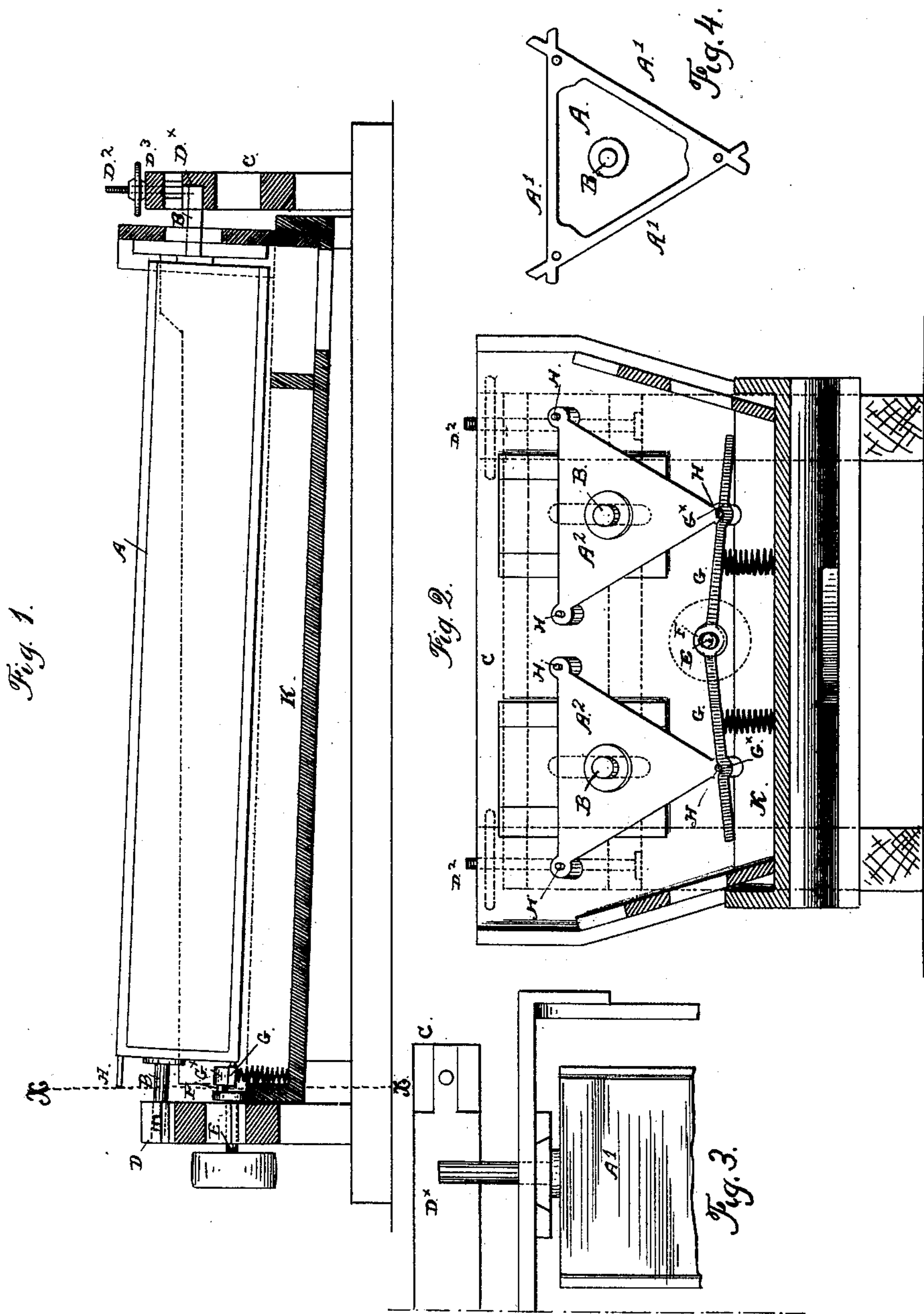


(No Model.)

A. B. PAUL.
ORE CONCENTRATOR.

No. 414,119.

Patented Oct. 29, 1889.



Witnesses:
R. B. Paul
E. Patten

Inventor:
Alman B. Paul
By *Smith & Son*
his Attorneys.

UNITED STATES PATENT OFFICE.

ALMARIN BROOKS PAUL, OF SAN FRANCISCO, CALIFORNIA.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 414,119, dated October 29, 1889.

Application filed February 23, 1888. Serial No. 265,040. (No model.)

To all whom it may concern:

Be it known that I, ALMARIN BROOKS PAUL, a citizen of the United States, residing in the city and county of San Francisco, and State of California, have invented certain new and useful Improvements in Ore-Concentrators; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the drawings that accompany and form a part of this specification.

My invention relates to improvements in wet-ore concentrators of the kind in which the concentrating-surface has vibrating or oscillating motion without progression; and my improvements embrace a novel construction of table having several independent surfaces arranged about a pivot or center of rotation, and with relation to pulp and water distributing apparatus, as hereinafter described, whereby one surface can be brought into position for operation and use to take the place of another surface as often as circumstances require.

The invention includes, also, an improved construction of wet-ore concentrator in which one concentrating-surface can be replaced by a fresh or clean surface and the "concentrates" removed from it by washing with a hose or spray-nozzle without retarding or interfering with the continuous operation of the machine.

The following description explains the nature of my said improvements and the manner in which I proceed to construct, apply, and carry out the same, the accompanying drawings being referred to by figures and letters.

Figure 1 is a side elevation of a machine constructed in accordance with my invention, the frame and the receiving-troughs for the concentrates and tailings being shown in section. Fig. 2 is a cross-section through the line X X, Fig. 1; and Figs. 3 and 4 are detail views to explain the construction of the table.

Similar letters of reference indicate like parts in all the figures of the drawings.

A is a table of triangular form in cross-section and of suitable length to provide plane surfaces A' A'.

B B are journals on the heads A², upon which the table is suspended and balanced.

On these journals as centers the table can be turned to bring one or the other of surfaces A' uppermost.

D D^x are the journal-boxes on the stationary frame C. By having one of these boxes adjustable, as shown in Figs. 1 and 2, a greater or less degree of pitch or inclination from the horizontal can be given to the concentrating. For this purpose the box D^x is set in guides in the frame, and a screw D², working through a fixed bearing D³, is provided.

The sides of the surfaces A' have ledges to confine the pulp, and the lower end is open to discharge the tailings.

Suitable pulp-supply trough and water-distributing pipes, with means for regulating the discharge of the material and the water upon the head of the table, are mounted on the stationary frame at the higher end; but as these are common to all machines of this character no particular or detailed description is required to enable my invention to be understood by persons skilled in constructing and running this improved machine.

Vibrating motion is given to the table either in a longitudinal direction or transversely. Such motions can be produced in any suitable manner from a continuously-rotating shaft and crank or eccentrics. The mechanism illustrated in Figs. 1 and 2 of the drawings is applied to produce oscillating or laterally-shaking motion. It consists of a rotating shaft E, with a crank or eccentric F, and a connecting-rod G, that is attached at H to a stud on one of the heads of the table. The rod G engages with the stud from below, and a spring I, applied beneath it, keeps the hook G^x up to the stud. One of these studs is fixed at each corner of the head or in such position that there is always one stud to engage the rod, whichever one of the surfaces of the table is brought uppermost for use.

In the machine illustrated in Figs. 1 and 2 I have arranged two tables side by side over a trough K, and by means of two rods G G, I operate both tables from the one shaft. The advantage of two tables is mainly to furnish a large area of surface in one machine to use with any battery that requires such area and still keep the length and breadth of the table within reasonable limits. A two-table machine suitable for a ten-stamp mill would

be about fourteen feet long and eighteen inches wide on the blanket surface of each table.

I do not limit myself, however, to any particular number or arrangement of tables, nor do I confine myself to the triangular form, for it is obvious that any other number of surfaces can be arranged about an axis to be used in successive order. I have shown and described the triangular form for the reason that it is the best for all general purposes, as when one surface is in position for operation the other surfaces stand at suitable inclination, so that the concentrates can be readily washed off while the uppermost surface is working. The surfaces are covered with blankets in the usual manner, or they can be used without blankets—as, for instance, to work over concentrates to any degree of concentration desired where a plain table-surface may be preferable.

The table can be framed of wood or formed of metal with board surfaces.

Fig. 4 shows a metal head with a socket for the shaft and radial arms. The studs to take

the rods G are fixed in the corners at the ends of the arms.

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

In an ore-concentrator, the combination of the table A, triangular in cross-section and having the plane surfaces A' A', provided with ledges, as shown, and having also the journals B B, the stationary frame C, the journal-boxes D and D^x in said frame for receiving said journals, and the mechanism for imparting oscillating motion to the table, consisting of rotating shaft E, having an eccentric F thereon, the connecting-rod G, attached to one of the heads of the table, and the trough K, arranged beneath the table, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

ALMARIN BROOKS PAUL. [L. S.]

Witnesses:

WM. STEPHENS,
R. E. STEPHENS.