No. 804,466. PATENTED NOV. 14, 1905.

J. A. HAMILTON.

CONCENTRATING AND AMALGAMATING TABLE.

APPLICATION FILED APR. 3, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

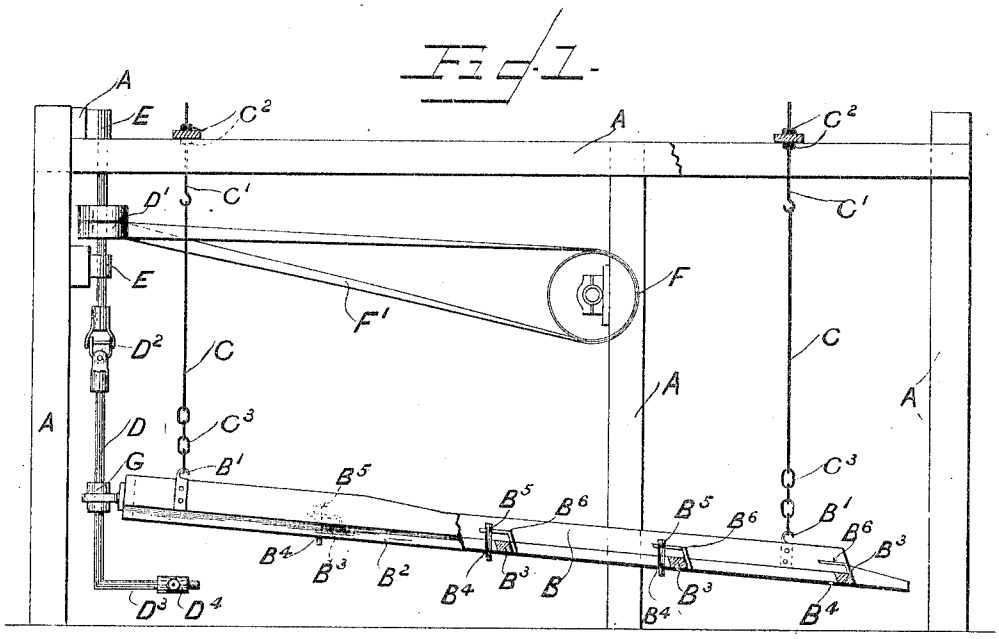
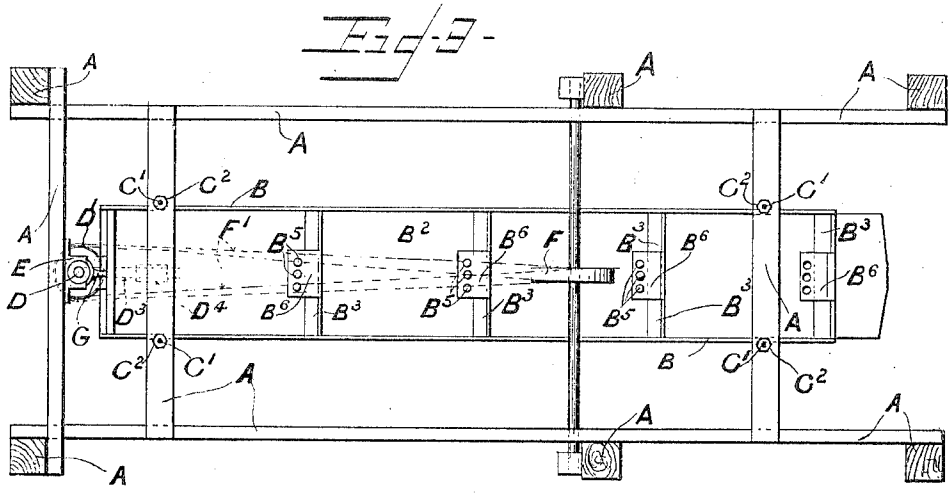


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 2.

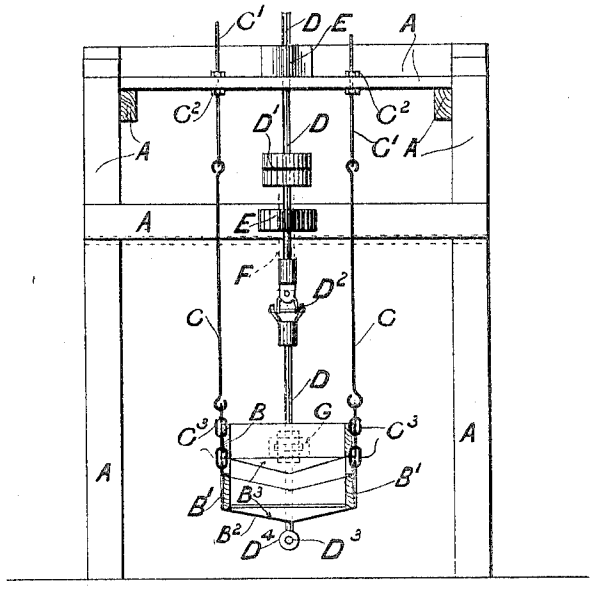


Fig. 4.

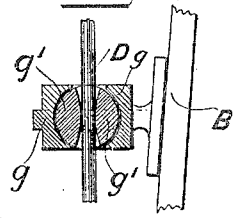


Fig. 5.

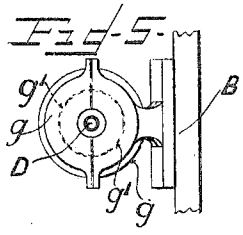


Fig. 6.

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UNITED STATES PATENT OFFICE.

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CONCENTRATING AND AMALGAMATING TABLE.

No. 804,466. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed April 3, 1903. Serial No. 150,974.

To all whom it may concern:

Be it known that I, JOHN ALEXANDER HAMILTON, mining engineer, a subject of the King of Great Britain, residing at Payneham Road, St. Peters, in the State of South Australia, in the Commonwealth of Australia, have invented certain new and useful Improvements in Concentrating and Amalgamating Tables, of which the following is a specification.

My invention relates to certain improvements in concentrating and amalgamating tables for the treatment of metalliferous materials, and refers more particularly to tables for the treatment of materials as delivered from the crusher, being also applicable to slimes and other products in a finely-divided state.

The object of my invention is to provide a table of cheap and inexpensive construction upon which ores or metalliferous materials are subjected to a peculiar motion whereby the heavier particles are separated from the gangue and a proper concentration effected. The motion of such table is further adjustable to suit the nature of the material under treatment, and the table is also adaptable for the amalgamation of gold and other precious metals.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of a table complete, while Figs. 2 and 3 are end views and plan of the same, respectively. Figs. 4 and 5 are detail sectional views of the bearing or journal for the vertical shaft. Fig. 6 is a detail view of a modified form of cranked arm upon the vertical shaft.

A is the main framework, being preferably constructed of wooden beams, within which a table B is suspended or otherwise suitably supported. This table B is preferably rectangular and oblong in shape and is suspended by rods C, arranged, preferably, about the corners of the said table. These rods C are attached to eyebolts C′, fixed within the framework A at the top and having adjusting-nuts C^2, and at the bottom to hooks B′ upon the table B, provided with links C^3, whereby the height and inclination of the table may be adjusted to suit the nature of the material under treatment.

The table B is preferably constructed with a copper floor or bottom B^2, having transverse riffles B^3 arranged at suitable intervals. These transverse riffles B^3 incline slightly toward the head of the table and are chamfered off at the top, as shown in Fig. 2, to allow of an easy passage of the gangue and other material which passes over the same. Immediately in front of the riffles B^3 discharge holes or openings B^4 are provided within the floor or bottom B^2 of the table B. These discharge holes or openings B^4 are provided with plugs B^5 for opening and closing them when required. These plugs B^5 are supported by standards B^6, attached to the riffles B^3, or if necessary any other means (such as valves) may be used for the purpose.

At one end of the table B, preferably the head, a vertical shaft D is provided, mounted in bearings E within the framework A. This vertical shaft D is driven by pulleys D′, actuated by belt F′, passing round the driving-pulley F. A short distance above the head of the table the vertical shaft D is provided with a universal joint D^2, whereby the lower portion of the said shaft D may adapt itself to the peculiar motion of the table and still rotate. The lower end of the vertical shaft D is provided with a weighted cranked arm. For this purpose the shaft D is bent or cranked at right angles, and the cranked arm D^3 thus formed is provided with a weight D^4, having a set-screw by which it may be adjusted in position, or, if necessary, the cranked arm D^3 may be itself adjustable by fitting loosely upon the vertical shaft D, being held in place by means of a set-screw D^5, as shown in Fig. 6. The lower portion of the vertical shaft D passes through a suitable bearing or journal G, attached to the table B. This bearing G is shown more particularly in Figs. 4 and 5 and consists of a casing *g*, constructed in halves capable of being bolted together and having bearing-pieces *g′*. These bearing-pieces *g′* are also constructed in halves and are made hemispherical in shape, whereby they may adjust themselves to the various positions of the table and the shaft as these move in accordance with the motion imparted.

In operation the vertical shaft D is driven by the belt F′ and pulleys D′ at a suitable rate of speed. As the weighted cranked arm D^3 swings round it imparts a peculiar motion to the table B through the medium of the

bearing G. This table B being suspended upon the rods C easily adapts itself to the motion imparted, and in practice it will be found that it moves in a series of elliptical paths having their axes in different directions at different portions of the table. Thus the head of the table moves in an elliptical path having a transverse axis, while the paths traversed by the middle and lower portions of the table are in the shape of an ellipse, with the axis in a more or less longitudinal direction. The material is fed onto the head of the table with a sufficient supply of water and flows down the face of the same by gravity. The peculiar motion imparted to it has a tendency to throw the heavier particles back, while the lighter or gangue are washed over the riffles B^3 and pass down the table. The concentrates and other products thus collect against the upper side of the riffles B^3 and may be discharged through the openings B^4 from time to time, as may be required. The bottom B^2 of the table B being of copper may be amalgamated for the collection of any free gold or other precious metals, and the amalgam may be removed from time to time, while the concentrates may be collected and subsequently treated according to their constituents.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a concentrator, the combination with a table, and means to freely suspend it, of a rotatable shaft, a shaft-section on the end thereof, a universal joint connecting the shaft and shaft-section, a weight connected to and eccentric to the shaft-section, and means fixed to the table and through which the shaft-section can freely move longitudinally, whereby the table is moved in elliptical paths when the shaft is rotated, substantially as described.

2. In a concentrator, the combination with a table and means to freely suspend it, of a rotatable shaft, a shaft-section on the end thereof, a universal joint connecting the shaft and shaft-section, a weight connected eccentrically to the shaft-section, and a bearing mounted on the table through which the shaft-section can freely move, whereby the table is moved in elliptical paths when the shaft is rotated.

3. In a concentrator, the combination with a table and means to freely suspend it, of a rotatable shaft, a shaft-section on the end thereof, a universal joint connecting the shaft-section, a weight connected eccentrically to the shaft-section, a casing fixed to the table and surrounding the shaft-section, and bearing-pieces mounted in the casing engaging the shaft-section and adapted to adjust themselves to the motion thereof.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN ALEXANDER HAMILTON.

Witnesses:

CHARLES ANDERSON MURPHY,

CHARLES STANLEY BURGESS.