

(No Model.)

E. J. POWELL.
AMALGAMATOR.

No. 522,488.

Patented July 3, 1894.

Fig. 1.

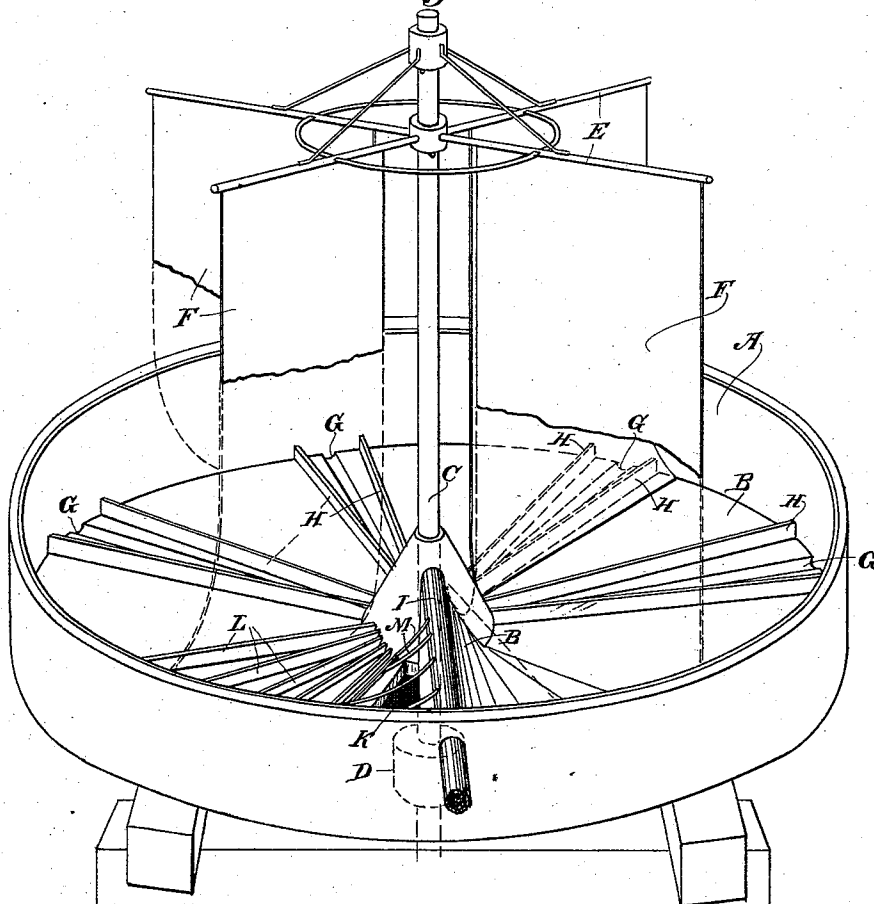
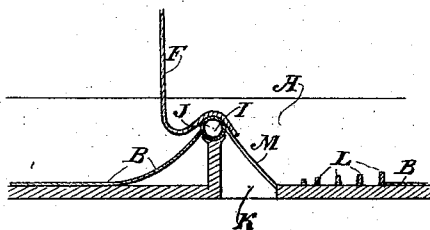


Fig. 2.



Witnesses,
B. House
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UNITED STATES PATENT OFFICE.

EDWARD J. POWELL, OF SUNNY SOUTH, CALIFORNIA, ASSIGNOR OF ONE-THIRD TO H. T. POWERS, OF SAME PLACE.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 522,488, dated July 3, 1894.

Application filed December 22, 1893. Serial No. 494,426. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. POWELL, a citizen of the United States, residing at Sunny South, county of Placer, State of California, have invented an Improvement in Amalgamators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improved device for amalgamating and saving precious metals and other valuable heavy substances.

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective view partially broken away of my apparatus. Fig. 2 is a detail cross section through the feed pipe and connections.

The object of my invention is to provide an apparatus in which the pulp is carried over suitable amalgamating and arresting surfaces in a thin sheet, and in a means by which the material is beaten or forced down into contact with the amalgamated surface to insure its arrest thereby.

In the present case I have shown my invention as carried out by the use of a shallow circular pan A made of any suitable material and having the bottom covered with copper amalgamated or silvered plates B. Through the center of the pan arises a vertical shaft C having suitable driving gears or pulley D by which it is rotated, and from a hub upon this shaft project radial arms E which rotate with the shaft and have suspended from them the flexible sheets F, the action of which will be hereinafter described.

The bottom plates B are formed with grooves or channels G at intervals. These grooves or channels radiate from the center of the pan toward the exterior, and between these grooves or channels are the raised riffles H.

I is a supply feed pipe which extends horizontally above the bottom of the pan and radially from the exterior to the center. This pipe has an open slot J upon one side, through which the thin pulp or material is delivered into the pan in a sheet extending from the center to the side.

The metallic bottom B is curved upwardly at this point to receive the pulp which thus flows down upon the horizontal portion, and it is moved over the surface of the riffle bars which radiate from the center to the outside by means of the flexible aprons F previously described as depending from the arms E which are driven by the rotating central shaft. The lower edges of these aprons drag over the surface and create a little wave and current of the material, dragging constantly along and beating or forcing the particles into intimate contact with the amalgamated surface, and any quicksilver or amalgam which may be contained in the grooves or behind the riffles. The lighter portions of the pulp will be dragged over the riffles and eventually carried to the discharge opening, with the heavier sulphurets and particles which will not amalgamate, and the valuable metal will be beaten into masses against the riffles. The amalgamated plates extend around to a point near the discharge opening K which is made in the bottom of the pan at a point extending radially from the center to the outside at a point just behind the feed pipe I. From the termination of the amalgamated plate to this discharge opening a series of radial riffles L are placed, the highest ones being at the termination of the copper plate and the others decreasing in height to a point just at the edge of the discharge opening K, and these riffles serve to check and retain any valuable heavy material which may be passed beyond the copper plates.

In order to lift the lower edges of the flexible aprons over the feed pipe I, I employ a series of inclined bars or fingers M which extend from the edge of the discharge opening K up to the feed pipe I, thus forming a gentle incline over which the aprons are directed without splashing or dragging any of the material into the discharge opening. By this construction I am enabled to force the particles into intimate contact with the amalgam surface or quicksilver and produce a peculiar rubbing and beating action which will cause the fine floatable particles to amalgamate and remain in the body of quicksilver and amalgam.

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

1. In an amalgamator, an amalgamated surface having riffles and channels containing quicksilver, a device by which the pulp to be treated is fed upon the plates in a thin sheet, a series of flexible aprons, the lower edges of which are adapted to drag over the surface of the plates in the direction of travel of the material, and carriers by which said aprons are moved, substantially as herein described.
2. In an amalgamator, a pan having the bottom covered with amalgamated or silvered plates, radial grooves or channels formed in the surfaces of said plates and intermediate radial riffles projecting above the surface, a central vertical rotating shaft and radial arms projecting therefrom, flexible aprons depending from said arms with the lower edges adapted to drag over the surface of the amalgamated plates, a feed device through which the pulp to be treated is delivered over the surface of the plates from the center to the side so that the pulp is carried around over the plates by the action of the aprons, and a discharge passage through which the

residue is delivered, substantially as herein described.

3. In an amalgamator, a circular pan having a central vertical rotating shaft, radial arms projecting therefrom and flexible aprons suspended from the arms and adapted to drag upon the bottom of the pan, amalgamated or silvered plates covering the bottom of the pan having radial alternate grooves and riffles extending around the pan to the point where the amalgamated plates terminate, and a supplemental series of riffles decreasing in height from this point to the discharge opening, a radial feed pipe raised above the surface of the plates having a discharge opening delivering upon an inclined surface over which the pulp flows to the plates, and inclined arms upon the opposite side of the feed pipe over which the aprons drag and by which they are lifted to pass over the feed pipe, substantially as herein described.

In witness whereof I have hereunto set my hand.

EDWARD J. POWELL.

Witnesses:

S. H. NOURSE,
J. A. BAYLESS.