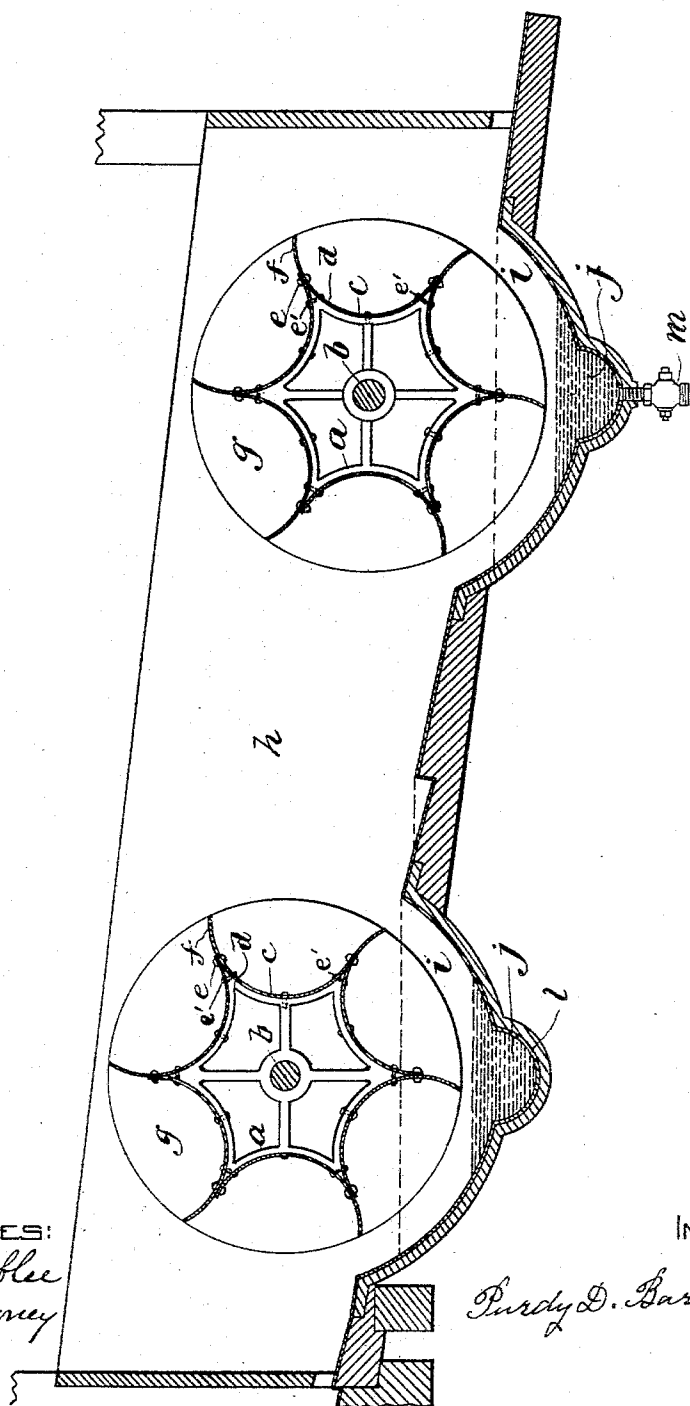


(No Model.)

P. D. BARNHART.
AMALGAMATOR.

No. 531,827.

Patented Jan. 1, 1895.



WITNESSES:

Chas Roblee
A. P. Moroney

INVENTOR:

Purdy D. Barnhart

UNITED STATES PATENT OFFICE.

PURDY D. BARNHART, OF DENVER, COLORADO, ASSIGNOR OF TWENTY-THREE THIRTY-SECONDS TO L. M. DRAKE, OF MILWAUKEE, WISCONSIN, AND F. D. UNDERWOOD, OF HARWICH, MASSACHUSETTS.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 531,827, dated January 1, 1895.

Application filed November 20, 1893. Serial No. 491,408. (No model.)

To all whom it may concern:

Be it known that I, PURDY D. BARNHART, of Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Amalgamators, of which the following is a specification.

This invention relates to that class of amalgamators employing inclined tables or sluices over which the pulp or crushed ore and water pass, which sluice or table is provided with pockets or receptacles containing mercury for the collection of the gold from the ore, and in connection with which rotating cylinders with blades are employed in such manner that the blades will insure the immersion of the pulp in the mercury.

It is the purpose of my invention to provide such improvements, on the sluice ways and the cylinders and their wings, as will insure the perfection of their operation, and the best possible results from their use.

To these ends my invention consists of an amalgamating cylinder having a core composed of suitable material and of peculiar form, as hereinafter explained, covered with copper and with blades consisting of copper.

The invention also consists of a continuously copper lined sluiceway and troughs, as hereinafter described, in combination with a copper winged cylinder.

The drawing represents in sectional side elevation my improvements, two troughs and cylinders being shown by way of mere example.

In the drawing *a* designates what may be called a cylinder which may consist of a frame or series of frames, adapted to be secured to a shaft *b* or it may be a solid core of any suitable material adapted to the purpose. The surface of the cylinder is made up of a series of regular longitudinal concaved depressions so that in cross section the form is star like, as shown. A cylinder so formed I cover and provide with blades by taking sheets of copper *c*, and securing one edge of each to the edge of one of the frames *a*, between the concaved depressions, as at *d*, and bend said sheet into the concaved depression so that its free edge may extend in curve like form beyond the edge of the next adjacent edge *e*, so as to form a blade

or wing *f*. I then proceed to cover the next longitudinal concavity with a sheet *c*, of copper, and form another blade or wing *f* in a similar manner to that just hereinbefore described. At the point *e'*, I not only rivet the edge of the sheet of copper to the edge of the rib, as described, but also to the sheet *c*, on the opposite side of the rib as shown. On the ends of the core, and to the ends of the blades I secure, in any suitable way, disks of copper, *g*, the peripheries of which are coincident with the outer edges of the blades or wings *f*. In this way I secure a cylinder which presents copper working surfaces throughout, which is an important matter in devices of this kind, and at the same time the construction is of the most economical and simple character.

In the construction of the sluice-way *h*, I line the same as also the troughs *i*, with sheets of copper throughout so that the surfaces of said sluice-way and trough may present a continuous copper surface.

In arranging the cylinders in the machine they will be so placed as that their blades may operate in the troughs *i*, but not dip into or touch the quick-silver *j*.

In operation the pulp or washing as it flows through the sluice-way will flow upon the curved blade or wings *f*, and be carried thereby down into the mercury, in the bottom of the troughs without the blades touching or disturbing the mercury in the trough, so that every particle of gold in the mass may become amalgamated and settle in the pockets *l*, of the troughs, from which the amalgam may be drawn off through stop-cocks *m*, or other suitable means.

In addition to the momentum imparted to the cylinders by the flow of the washings or pulp they may be rotated by other power suitably applied thereto.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. An amalgamator comprising in its construction a sluiceway provided with troughs, rotary cylinders arranged to operate in said

- troughs and above the mercury in said troughs, said cylinders comprising cores or supports with a series of intersecting longitudinal concavities or depressions on their surfaces, sheets of copper covering said cylinders, each of said sheets projecting at one edge between the concavities beyond the edge of the next sheet to form a wing or blade, as set forth.
2. An amalgamator comprising in its construction a sluiceway provided with a trough, a continuous copper lining for said sluiceway and trough, and a cylinder mounted to rotate above and partially in said trough and above the mercury in said trough, said cylinder having its periphery composed of a series of concave copper sheets each of which has one edge projecting beyond the edge of the next sheet to form a wing or blade, the curve or concavity of each sheet being substantially uniform from edge to edge, as set forth and shown.

3. An amalgamator comprising in its construction a sluiceway provided with a trough, a continuous copper lining for said sluiceway and trough, and a cylinder mounted to rotate above and partially in said trough and above the mercury in said trough, said cylinder being composed of a frame having concave ribs, a series of copper plates secured to the concavities of the ribs with one edge of each plate projecting beyond the edge of the next plate, and copper disks inclosing the ends of the concave plates, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 4th day of October, A. D. 1893.

PURDY D. BARNHART.

Witnesses:

A. P. MORONEY,
CHAS. ROBLER.