C. H. AARON.

Amalgamator.

No. 167,486. Patented Sept. 7, 1875.

Fig. 1.

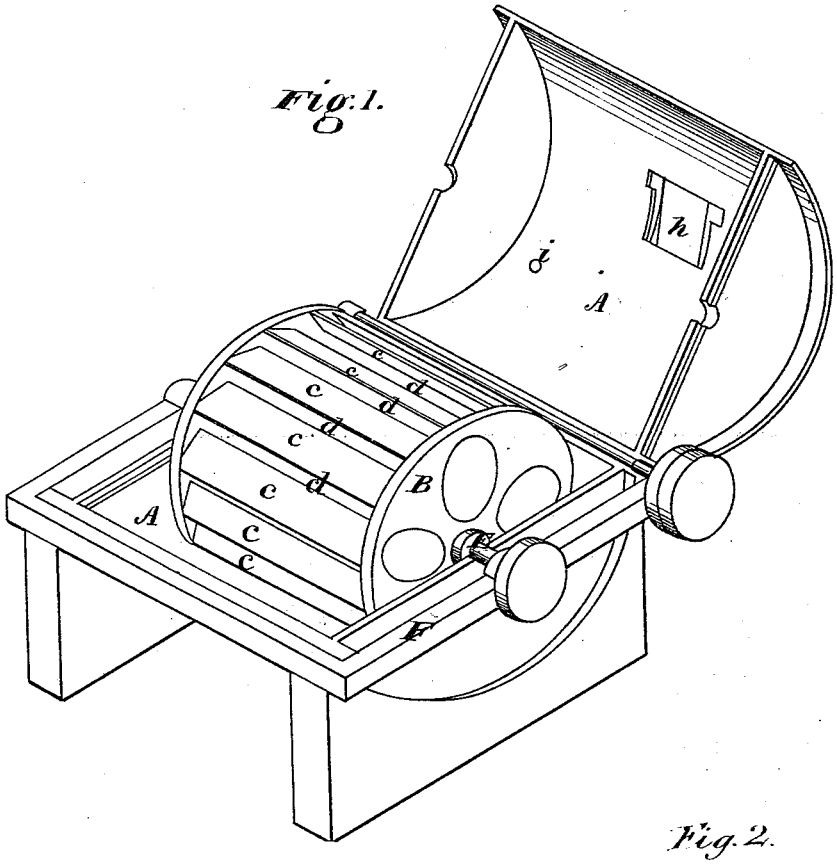
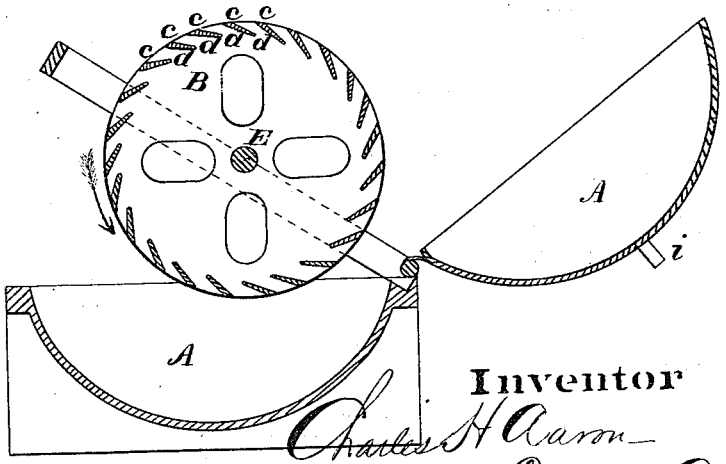


Fig. 2.



Witnesses
Geo. H. Strong.
Jno. L. Byrne

Inventor
Charles H Aaron
by Dewey & Co
Attys

UNITED STATES PATENT OFFICE.

CHARLES H. AARON, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN AMALGAMATORS.

Specification forming part of Letters Patent No. **167,486**, dated September 7, 1875; application filed February 25, 1875.

To all whom it may concern:

Be it known that I, CHARLES H. AARON, of San Francisco city and county, State of California, have invented an Improved Amalgamator; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention relates to an improved apparatus for extracting by amalgamation the precious metals which are contained in ores; and it consists in a revolving wheel peculiarly constructed, revolving on journals located in a swinging frame and inclosed in a covering, as more specifically hereinafter set forth.

In order to describe my improved amalgamator, reference is had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of my device. Fig. 2 is a transverse vertical section.

A is a vessel of a cylindrical or nearly cylindrical form, of which the lower portion is fixed and the upper portion is movable as a lid or cover, and within which is mounted a paddle-wheel, B, with oblique floats *c c c*, and which is provided with openings *d d* in each end, as shown. The wheel rotates in close proximity to the bottom of the vessel A, so as to pass through a mass of pulp and dip in a bath of mercury contained therein.

I prefer to construct the vessel in an oval form, with its longest diameter in a horizontal plane, so that a space will be left in front and rear of the wheel, while it moves close to the bottom and top of the vessel in its rotation.

The floats *c c c* of the paddle-wheel may be made of any suitable material, but preferably of wood, faced with copper on the inner surfaces, and the wheel is secured upon a shaft, E, which bears upon opposite sides of a hinged frame, F. This frame F is so connected with the vessel A by means of its hinges as to admit of its being lifted at one end so as to raise the paddle-wheel out of the lower half of the vessel. The upper half or lid of the vessel A is also hinged concentrically with the frame F, and may be raised together therewith, or separately. The vessel A may be constructed of iron, or in cases where the pressure of metallic iron is objectionable, of enameled iron, or of wood, or other suitable substance.

Motion is given to the paddle-wheel B by means of a belt and pulleys revolving concentrically with the frame, so that the rotation of the paddle-wheel is not interfered with by raising it together with the frame.

The vessel A is provided with an opening, *h*, in the upper part or cover, and has a plug, *i*, on the lower part, to facilitate the introduction and discharge of the ore to be treated.

The machine is operated substantially as follows: The paddle-wheel being put in motion by any convenient power by means of the belt and pulleys described, or by means of gear-wheels in place thereof, the vessel is charged with a proper quantity of pulverized ore and water, together with quicksilver and such other material as may be required, the whole thing heated, if necessary, by means of a steam-jet, properly introduced. As the paddle-wheel revolves in the direction shown by the arrows in the drawing, the oblique position of the floats tends to draw the pulp toward the axis of the machine, whereby it is caused to flow through the opening *d d* in the ends of the paddle-wheel, so that a constant circulation of the pulp is maintained in the vessel and through the wheel, while at the same time the floats pass through the mass, dipping at each revolution into the mercury at the bottom of the vessel. After a sufficient lapse of time, when the amalgamation of the precious metals is completed, the contents of the vessel are discharged through the plug-hole, and the process is repeated with a new quantity of ore. Should it happen that the motion of the machine should be stopped during the continuance of the process, so that there is danger of the packing or resetting of the ore in the machine, the paddle-wheel is raised by means of this frame F sufficiently to enable it to revolve freely, when it is again put in motion, and lowered gradually to its proper position.

The utility of this machine consists in the following points: First, it has, in a great degree, the mechanical convenience of an ordinary amalgamating-pan, in that it is charged and discharged while in motion, and the in-

terior is readily accessible for any purpose, while at the same time the mercury is not ground; second, when made of wood, or of enameled iron, it has chemical advantages, admitting of such treatment of ore as is incompatible with the presence of iron. It also allows the use of metallic copper as an agent in the reduction of chloride of silver, without exposing the copper to frictional wear to such extent as to contaminate the amalgam.

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

1. A closed case or vessel, A, containing hollow rotating wheel B, with its oblique floats or buckets *c c c* and end openings *d d*, substantially as and for the purpose above described.

2. In combination with the horizontally-divided vessel A, the hinged frame F for supporting and raising the wheel B without interfering with its continued rotation, substantially as and for the purpose described.

CHARLES H. AARON. [L. S.]

Witnesses:
JNO. L. BOONE,
GEO. H. STRONG.