Sheet 1-2 Sheets

T. J. Chubbs.

Amalgamator.

No. 49232 Patented Aug. 8, 1865

Fig. 1.

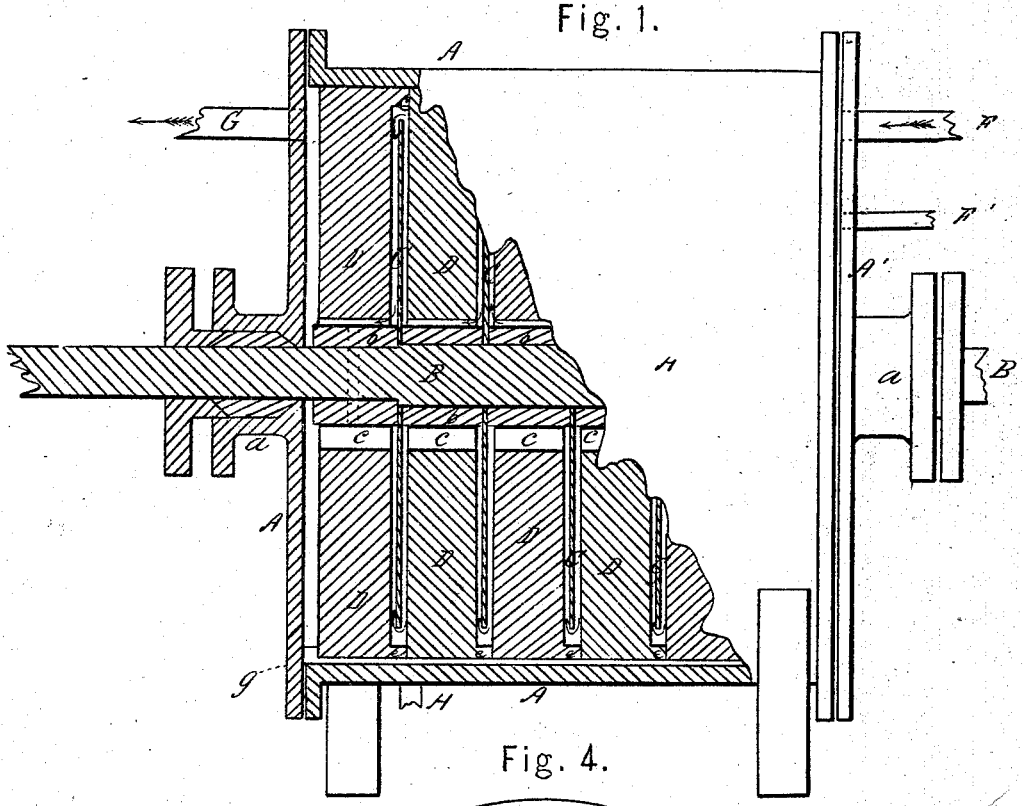
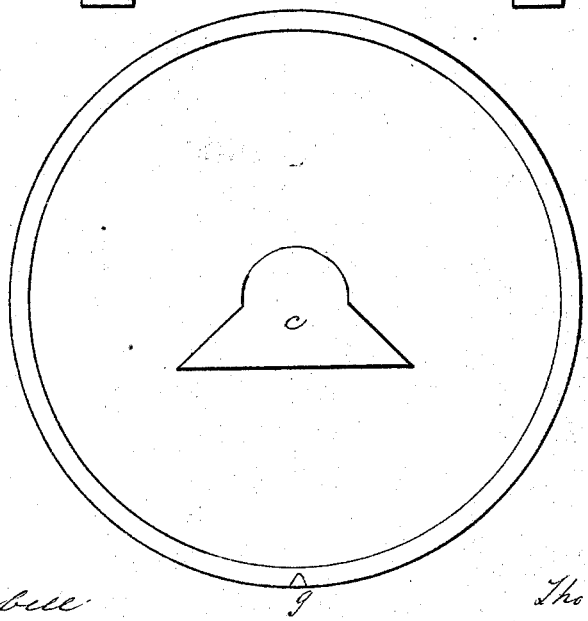


Fig. 4.



Witnesses.
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E. Schafer

Inventor.
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by his Attys
Munn, Pinnick & Hamm

Sheet 2 - 2 Sheets

T. J. Chubbs.

Amalgamator.

No. 49232 Patented Aug 8, 1865

Fig. 2.

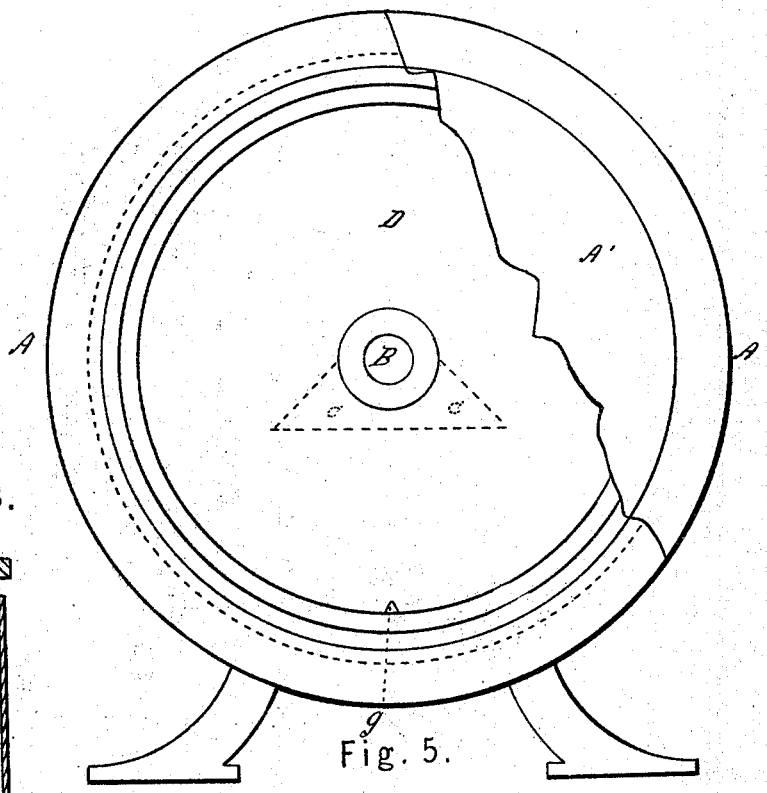


Fig. 3.

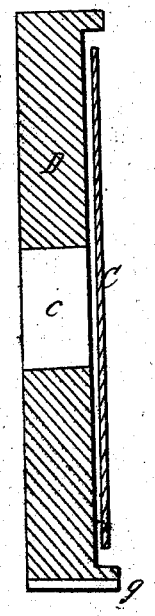
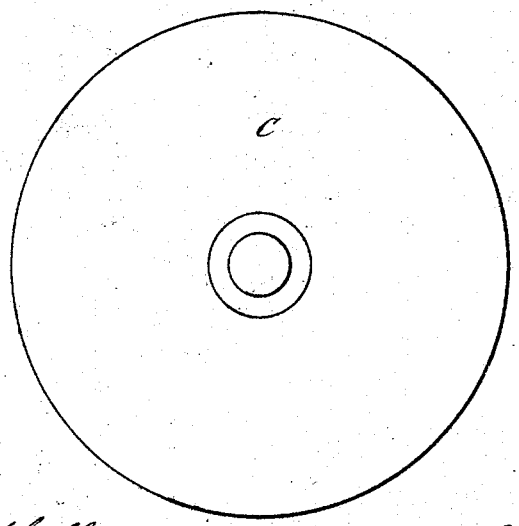


Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS J. CHUBB, OF BROOKLYN, NEW YORK.

IMPROVED AMALGAMATOR.

Specification forming part of Letters Patent No. **49,232**, dated August 8, 1865.

To all whom it may concern:

Be it known that I, THOMAS J. CHUBB, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Amalgamator; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side sectional view of the amalgamator, showing the interior construction of the same. Fig. 2 is an elevation of one end of the machine, having a portion of the head broken away. Fig. 3 is a diametrical section through one of the partitions and one of the copper disks. Fig. 4 is a front view of one of the partitions. Fig. 5 is a face or front view of one of the copper disks.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improved mode of exposing amalgamated plates to a stream of water and pulverized ore, or sands containing precious metals, for the purpose of separating such metals from their gangue, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents a cylinder, within which the process of amalgamation is conducted. It consists of two semi-cylindrical sections bolted tightly together, and closed at its ends by means of heads A′ A′, which are provided with stuffing-boxes *a a*, through which a shaft, B, passes. This cylinder may be constructed of wood or metal, and it should be sufficiently tight at the joints to contain mercury. The central shaft, B, has a number of copper disks, C C, secured to it, and arranged at suitable intervals apart. These disks are prevented from moving in a direction with the length of their shaft by means of interposed collars or washers *b b*, and these disks are somewhat smaller in diameter than the interior diameter of the cylinders within which they are arranged.

Between the disks C C C are partitions D, having central openings, *c c*, through them, as shown in Figs. 1, 3, and 4. These partitions fit snugly within their cylinder, and are so arranged that they leave spaces on each side and at the circumference of each one of the copper disks, which spaces, together with the openings through the partitions D D, form a communication for the passage of the auriferous sand through the machine.

If desirable, the partitions D D may be spaced by forming flanges *e e* on their sides, at or near their circumference, as shown in Fig. 1, so as to inclose the copper disks C C.

At the lowest point of the cylinder A a channel, *g*, is formed for the escape from each one of the chambers between the partitions of the amalgam, which may be drawn off by means of the pipe H. This pipe should be provided with a stop-cock, which is closed during the amalgamating process.

The pulverized ore, or sand containing precious metal, is introduced into the cylinder through the opening F, and, after passing through the several chambers, the gangue is allowed to escape from the opening G.

The operation of my machine is as follows: A suitable quantity of mercury is introduced into the cylinder A and the shaft B revolved by means of belts or gearing communicating with an engine. This causes the surfaces of the copper plates to become thoroughly coated with mercury. The finely-pulverized ore mixed with water is forced through the cylinder, and in its passage the ore is brought into close contact with both surfaces of each one of the revolving plates C C, which carry the fine atoms of the metal beneath the mercury bath and leave them there, while the sand or mineral dust is carried off by the current of water.

The passage of the ore and water through my machine may be facilitated by pressure and by making the spaces between the copper plates C C sufficiently large to prevent the ore from clogging. The spaces between the copper plates should be made so narrow that the ore will be compelled to flow through them in a thin sheet, so that every atom of the precious metal will be taken up by the coating of mercury on the surfaces of said plates and carried beneath the mercury-bath. As the surfaces of the plates revolve in a bath of mercury they will be continually washed therein, and bright surfaces of mercury will be presented to the stream of ore as long as the operation is continued.

By my invention it will be seen that the stream of ore and water passes alternately toward and from the center of the cylinder through chambers which are so narrow that the particles of ore are all caused to impinge upon the surfaces of the plates C. By this means I expose the ore to a very large surface of mercury in a very compact space.

If desirable, steam may be forced into the cylinder A through pipe F′ during the amalgamating process, for the purpose of keeping the mercury warm and assisting in bringing the atoms of ore in contact with the mercurialized surfaces of the revolving disks.

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

1. Subjecting the ores of precious metals in a disintegrated state to the action of revolving or oscillating plates which are coated with mercury, when such plates are arranged within chambers that are formed in such manner that the ore is subjected to both sides of the plates and caused to flow over a bath of mercury in a continuous stream, substantially as described.

2. The arrangement of the fixed partitions D on each side of the movable disks C in such manner as to form a continuous passage through the cylinder A for the flow of the ore, substantially as described.

3. The use of steam, in combination with a series of disks, C, moving in a bath of mercury, for the purpose of bringing the atoms of ore in closer contact with the surfaces of said disks, substantially as described.

4. Subjecting the ores of precious metals in a disintegrated state to the action of revolving or oscillating plates which are coated with mercury, when such plates are arranged in such manner that the ore is subjected to both sides thereof and caused to flow past or over the same and over a mercury bath, the plates dipping into said bath for the purpose of removing the precious metals collected thereon and depositing them in the bath, the plates themselves becoming cleaned and freshly coated with mercury of the bath thereby, substantially as described.

Witness my hand in the matter of my application for a patent for an improved amalgamator.

THOS. J. CHUBB.

Witnesses:

HENRY A. MOORE,

WALTER PARKER.