F. Del V. Y MARTICORENA.

ORE WASHING AND AMALGAMATING APPARATUS.

No. 183,860. Patented Oct. 31, 1876.

Fig. 1

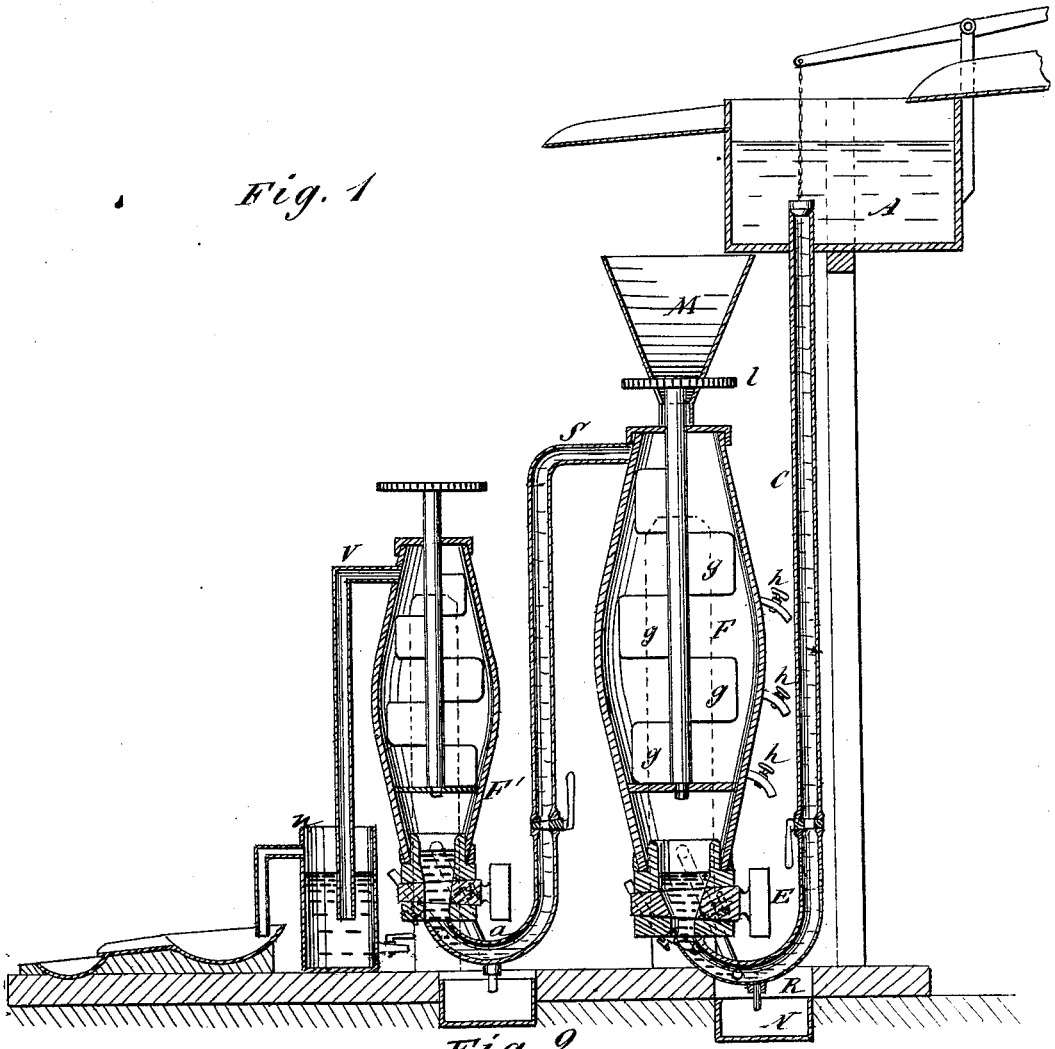
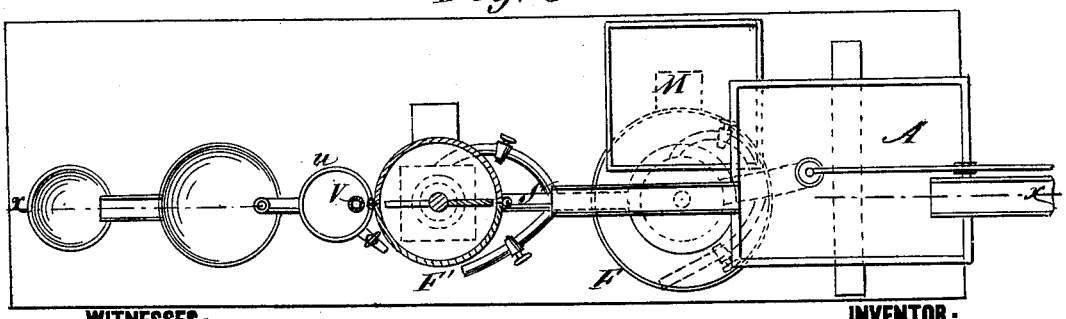


Fig. 2



WITNESSES:

C. Neveux

Alex. F. Roberts

INVENTOR:

F. del Villar y Marticorena

BY

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRANCISCO DEL VILLAR Y MARTICORENA, OF MEXICO, MEXICO.

IMPROVEMENT IN ORE WASHING AND AMALGAMATING APPARATUS.

Specification forming part of Letters Patent No. **183,860**, dated October 31, 1876; application filed November 13, 1875.

To all whom it may concern:

Be it known that I, FRANCISCO DEL VILLAR Y MARTICORENA, of the city of Mexico, in the Republic of Mexico, have invented a new and useful Improvement in Extracting Metals from Ores, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The invention is an improvement in that class of apparatus for concentrating and amalgamating gold and silver in which a current of water is maintained through a tank, wherein the pulverized ores are subjected to agitation by mechanical means.

In my invention a quantity of mercury is placed in the tube, through which the water-current is made to pass, and the tube is connected directly with the bottom of the tank containing the ore-agitator, so that the surface of the mercury is washed or cleared by the constantly-ascending current, and the particles of metal freed from their ores in the tank above fall directly into, and are quickly and completely amalgamated with, the mercury.

The particular construction and arrangement of parts are as hereinafter described.

In carrying out my improved method I employ the apparatus shown in accompanying drawing, in which—

Figure 1 is a side elevation, and Fig. 2 a plan view.

A small column of quicksilver—either pure or mixed with a convenient quantity of Wurtz's sodium amalgam—is deposited in the feeding-pipe C, in the lower curved portion of which it rests. This pipe connects with the tub F, into which water is then fed, through the pipe, from the reservoir A. The tailings, slimes, or pulverized ores are fed into the tub from hopper M, and kept in rotary motion therein by means of a vertical shaft provided with lateral flanges or wings, the action produced bringing the quicksilver at the bottom of the feeding-pipe in contact with the particles of metal, the density of which carries them to the bottom of the tub F, where amalgamation takes place. A portion of the finest particles of the metal is carried by the water to the upper part of the tub, and thence to a second like tub, F′, by means of pipe S, which is similar to pipe C in form, and also contains a quantity of quicksilver, *a*, with which the metal escaping from the first tub must inevitably come in contact. When the second tub, F′, is full of water from the first, F, it overflows through a pipe, V, which takes its contents to one of Woolf's tubes, *u*, and whatever metal escapes from the first, F, and is not amalgamated in the second one, F′, necessarily comes in contact with that contained in the Woolf tube, and is retained therein.

After the operation has been carried on with a ton or more of ore, according to the size of the tub, the water-current from the reservoir is stopped, and the connection of the first tub and pipe is closed by means of the cock E. The amalgam is drawn from the feeding-pipe, through the opening R, into a kettle, N, disposed under it, and strained, cleaned, and retorted, as in previous methods.

When it is desired to concentrate ores without amalgamating the metal they may contain, no quicksilver is put in the feeding-pipe, and the water being fed through it, and the ore let into the tub from the hopper M, as above explained, the concentration is quickly effected, since the greater density of the metal as compared with the earthy matter in the pulp causes, by the washing and the motion of the beaters, the settling of the concentrated pulp at the bottom of the tub, wherefrom it may then be removed by disconnecting it from the feeding-pipe. The water, passing from reservoir A through pipe C, washes or clears the surface of the mercury in the bottom of the latter, and, passing thence upward in vessel F, washes the mass of pulverized ore being agitated therein, and carries off over the top of the vessel F the earthy matters, while the main portion of the particles of the precious metal sink, by their superior gravity, to the bottom of the vessel and amalgamate with the mercury.

The same apparatus can be employed for the chlorination of ores; but I propose to make such process the subject of a separate application.

What I claim as new is—

An amalgamating apparatus consisting of a tank or vessel, F, provided with revolving paddles *g*, a feeding-hopper, M, and an over-

flow-discharge, S, its bottom being open and in direct communication with a tube, C, bent in suitable curve to retain a mercury-bath, and of suitable height for the free inflow of the cleansing and separating water, both vessel and tube being provided with tap and regulation cocks for the proper operation of the apparatus, all substantially as and for the purpose set forth.

FRANCISCO DEL VILLAR Y MARTICORENA.

Witnesses:
JESUS FUENTES Y MUÑIS,
JORGE F. HENDERSON.