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A. L. MALONE & H. TERWILLIGER.

AMALGAMATOR.

(Application filed Feb. 23, 1898. Renewed Mar. 12, 1900.)

(No Model.)

Fig. 1.

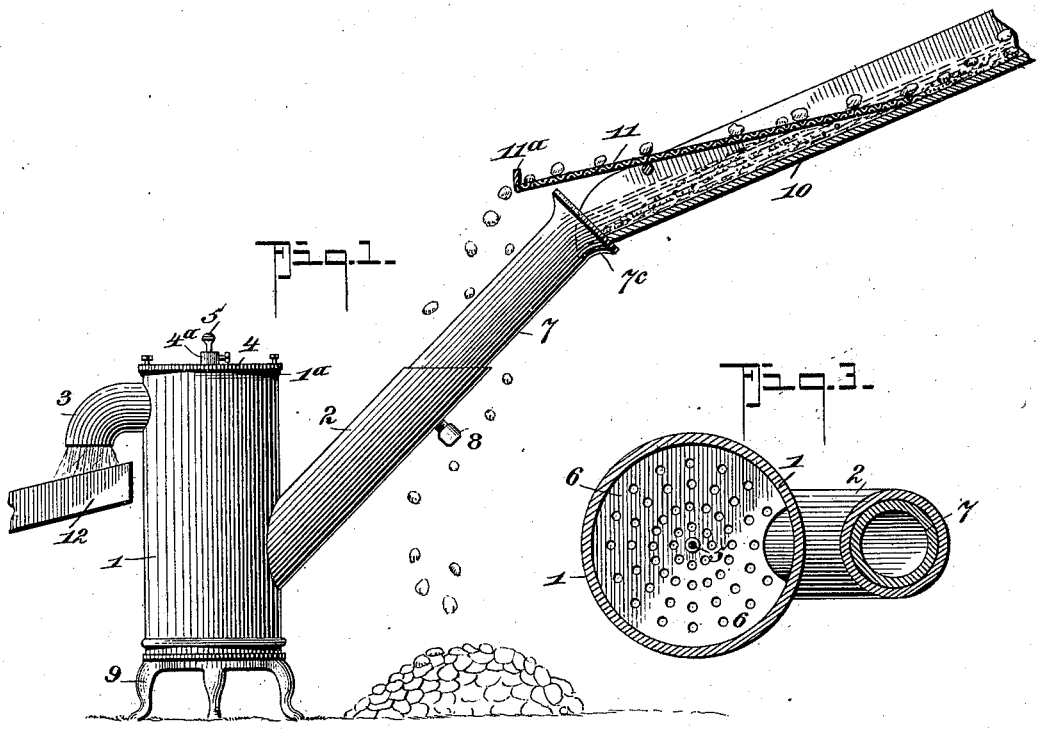


Fig. 3.

Fig. 2.

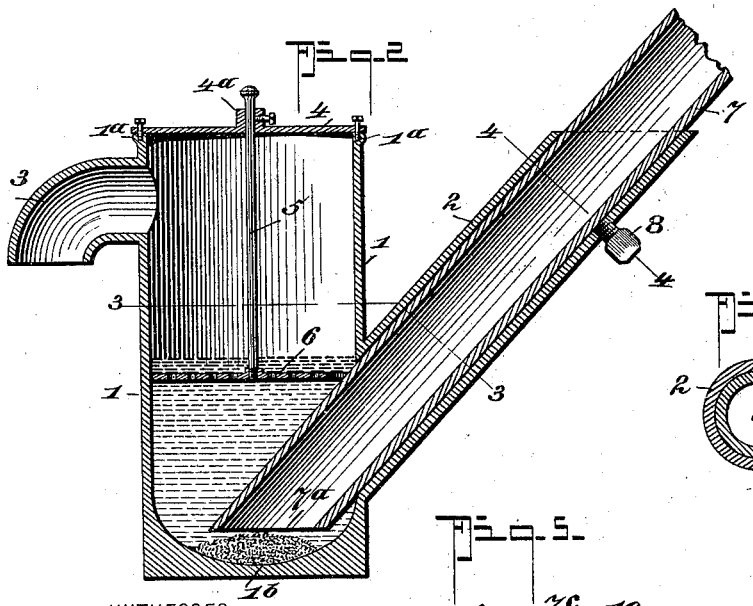


Fig. 4.

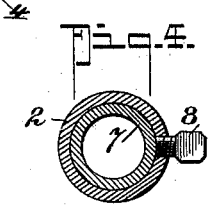
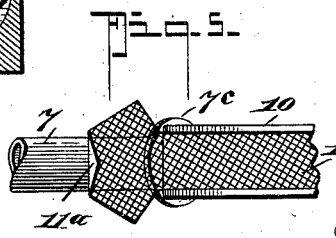


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALBERT L. MALONE AND HIRAM TERWILLIGER, OF PORTLAND, OREGON.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 647,011, dated April 10, 1900.

Application filed February 23, 1898. Renewed March 12, 1900. Serial No. 8,425. (No model.)

To all whom it may concern:

Be it known that we, ALBERT L. MALONE and HIRAM TERWILLIGER, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and Improved Amalgamator, of which the following is a specification.

This invention relates to portable amalgamators; and it has primarily for its object to provide an apparatus of this character of a very inexpensive and compact nature which can be easily manipulated and will effectively serve for its intended purposes.

With other objects in view, which hereinafter will be made clear, the invention consists in such novel features of construction and peculiar combination of parts as will be first described in detail and then claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of our invention as arranged for use. Fig. 2 is a longitudinal section of the amalgamator apparatus proper. Fig. 3 is a horizontal section on the line 3 3 of Fig. 2, and Fig. 4 is a detail section on the line 4 4 of Fig. 2. Fig. 5 is a detail view of the feed-pipe and the griddle of the sluice-box.

In its practical construction our invention is in the nature of a separating means which in its peculiar and novel construction forms a natural trap for effecting an accumulation of gold or other heavy mineral substances in the absence of mercury and with the use of mercury forms a combined trap and an amalgamator, it being also of such construction as to hold the mercury in such relation to the feed of the auriferous material that it will act as a bouyant force to expel all material other than gold that is led into the separating-compartment.

Referring now to the accompanying drawings, in which like numerals indicate like parts in all the figures, 1 indicates a tank or holder, preferably circular in horizontal section, having at one side an upwardly-projecting feed-pipe 2, which is permanently secured thereto and discharges into the lower end thereof. Such holder at the upper end, preferably opposite the feed-pipe, also has a discharge-pipe 3 in the nature of a downwardly-turned elbow.

The top of the holder 1 is held closed by a cap-plate 4, securely bolted on the flange 1^a, which plate has a central apertured boss 4^a, through which passes a vertically-adjustable shank or rod 5, which carries at the lower end a horizontal diaphragm or sieve-plate 6, the purpose of which will presently appear.

7 indicates an adjustable feed-pipe which telescopes the pipe 2 and has its lower end 7^a cut at a horizontal plane, whereby it can be projected flatly over the bottom of the holder 1, which bottom 1^b, as will be seen from Fig. 2, is bowl-shaped, the object of which is to cause a more perfect separation of the sand and gravel and impart a circulating motion to such sand and water in the mercury.

By providing an adjustable feed-pipe, as shown, it is manifest that the lower edge 7^a can be adjusted to set close or away from the bottom of the holder. Thus by setting it close down the sand and gold will receive a greater mercury-bath, as they are forced to pass through more mercury than would be the case were the feed end 7^a of the pipe 7 farther away from the bottom 1^b. In practice when the ore being worked shows fine or rusty gold the pipe end 7^a is placed near the bottom of the holder and when the ore shows coarse gold it is raised from such bottom. The pipe 7 is held to its adjusted positions by a suitable set-screw 8.

The adjustable diaphragm can be set high or low in the holder and preferably slightly in the mercury, its point of adjustment depending on the character of ore being worked. The perforated diaphragm serves as a strainer to break up any clay or other substance.

The holder in practice is mounted on a suitable leg-support 9, and to provide for a convenient reception of the ore the upper end of the pipe 7 has a funnel-mouth 7^c, which when the apparatus is in operation is held under the discharge end of the sluice-box 10, which is also provided with the usual griddle 11 for carrying off the large rock or boulders, and to prevent its discharging directly onto the pipe 7 it has its discharge end deflected laterally, as shown at 11^a in Fig. 5.

The manner in which our invention operates is as follows: The auriferous ore is fed to the sluice-box and travels down with the water into the pipe 7, the large rocks and

boulders being deflected by the griddle. The stream of sand and water, with the ore, is discharged down near the bottom of the holder, the gold being caught and settled by the mercury as the mixed water, sand, and ore passes in a circulating manner through the mercury-bath, it being understood that as the stream of sand and water is thus forced against the mercury body such body will serve by its buoyant force, augmented by continuous circulation of the water and sand through the holder, to expel the sand and water, which passes up through the strainer and out through discharge-opening 3 onto a suitable offtake-box 12. It will thus be seen that our holder forms a practical substitute for a natural trap of a very simple and economical structure and so arranged as to effectively serve for its intended purposes, it being of such nature as to be freely movable out of position with the sluiceway when it is desired to empty and place another in position.

It will be understood that the sluiceway in practice has its head high enough to give ample force to drive the sand and water through the mercury and out of the holder, the buoyant force of the mercury aiding such course of the water and sand.

While we prefer to construct the holder and its connections substantially as illustrated in the drawings, we desire it understood that the said details of construction may readily be modified without departing from the scope of the appended claim.

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

In an apparatus of the class described, the combination with a mercury-holder having a closed and internally-concaved bottom, and provided with a detachable cap-plate having a boss, of a horizontal flat sieve extending entirely across the interior of said mercury-holder; a vertically-movable rod secured to said sieve and projecting upward therefrom and through said boss, and provided with a handle; a holding device carried by said boss and located to engage the rod to thereby hold the same and the sieve in adjusted vertical positions; a feed-pipe the lower end of which is disposed below said sieve; a second and similarly-inclined pipe telescopic in said first-mentioned pipe, and having its lower end disposed below the sieve, and its lower edge being horizontally disposed; and a set-screw carried by the first-mentioned pipe and serving to engage and hold the telescopic pipe, substantially as described.

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