

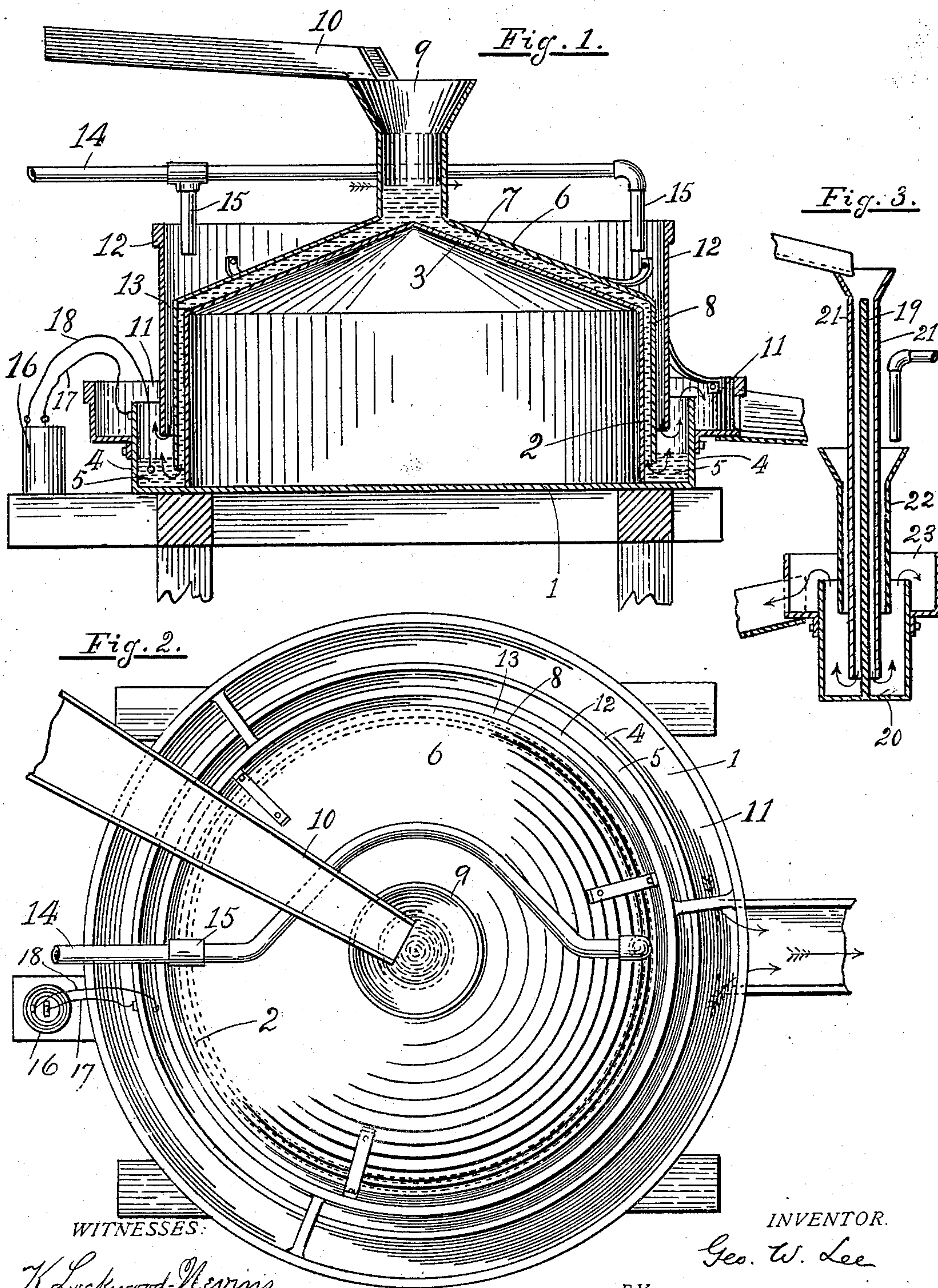
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G. W. LEE.
AMALGAMATOR.

(Application filed Mar. 13, 1901.)

(No Model.)



WITNESSES:

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AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 686,231, dated November 5, 1901.

Application filed March 13, 1901. Serial No. 51,039. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. LEE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Amalgamators, of which the following is a specification.

My invention relates to improvements in amalgamators for saving gold, the object of my invention being to provide an apparatus of this character which shall recover very fine or float gold either contained in sand in beaches or river-beds or when coming from stamp-mills in the form of pulp.

Gold is often found in such very fine particles that it is not possible to collect or gather the same by the use of an amalgamating-plate, for the reason that a stream of water which will wash away the base particles of the ore will also prevent the extremely fine particles of gold from settling onto an amalgamating-plate.

The object of my invention is to provide an apparatus which will successfully collect gold, however fine, from the pulp or sand in which it is contained.

My invention also comprises novel means for preventing the flouring of quicksilver, which is one of the greatest obstacles encountered in attempting to recover gold by passing it through quicksilver.

My invention therefore resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a central vertical section of my improved apparatus. Fig. 2 is a top plan view of the same, and Fig. 3 is a vertical section showing a modification of the apparatus.

Referring to the drawings, 1 represents a suitable base supporting a cylindrical wall 2, the top of which is surmounted by a cone-shaped distributing-plate 3. The base 1 extends beyond the cylindrical wall 2 and is formed at its periphery into an upwardly-extending annular flange 4, thereby forming a circular trough 5 between said flange and the cylindrical wall 2, in which trough is placed a bath of quicksilver. Above the conical

plate 3 is supported a cone-shaped cover-plate 6, inclined downward at a greater inclination than the cone-shaped plate 3, so as to provide a tapering or converging feedway 7 between said plates 3 and 6. The cover-plate 6 is provided with a downwardly-extending cylindrical wall or flange 8, which surrounds the wall 2 of the distributing-plate. This depending wall or flange is arranged at a slight inward inclination in order that the taper of the feedway may be continued downward. The downwardly-extending wall or flange 8 terminates a short distance above the bottom of the trough 5, so as to form an outlet for the ore or pulp delivered into the feedway 7. The cover-plate 6 is provided with an upwardly-extending feed-hopper 9, into which the ore or pulp is conveyed from the source of supply by means of the inclined sluice 10. As the pulverized pulp or ore is fed into the hopper in a semiliquid condition, it flows downward by gravity into the feedway and is discharged into the trough 5 below the surface of the bath of quicksilver contained therein, and is thus forced through said bath of quicksilver by the pressure of ore or pulp above it in the feedway 7, said ore or pulp usually standing within the feed-hopper to the height indicated by the arrow in Fig. 1 of the drawings, so that sufficient ore or pulp will be maintained to serve as a head to force the discharged ore or pulp down into the amalgamating-bath and past the lower edge of the wall 8 and then up through the bath of quicksilver. As the ore or pulp is forced through the quicksilver the fine gold or precious metal is amalgamated and retained within the trough in the form of amalgam, the base or worthless particles of ore or pulp being forced by the pressure of the retained ore or pulp into the discharge-way or overflow formed by the gutter 11 built or otherwise secured to the flange 4.

In order to separate the base or worthless particles of the ore or pulp from the quicksilver and amalgam, I provide in front or around the wall 8 the annular plate 12, which plate is supported a slight distance away from the wall 8 in order to form a waterway 13. This plate or wall extends downward into the trough 5 to within a short distance of the sur-

face of the bath of quicksilver, as shown. Above the amalgamator is run a water-pipe 14, having branch pipes 15, from which the water is discharged and falls into the water-way 13. The water descending said water-way is conveyed to the trough 5 and serves to wash away the comparatively light base or worthless particles of ore from the heavy quicksilver and amalgam.

One of the greatest obstacles to the saving of gold by amalgamation with quicksilver is the flouing of quicksilver, which not infrequently occurs. I have discovered that this may be prevented by passing an electric current through the bath of quicksilver. This part of the invention is illustrated in Fig. 1, where 16 represents an electric battery with wires 17 18 connected—one to the flange 4 and the other to a piece of iron immersed in the bath. This part of my invention I desire to claim in combination with any apparatus for extracting gold in which the flouing of quicksilver is likely to occur—as, for instance, in stamp-mills.

In Fig. 3 I have shown a modification of the apparatus, in which a vertical distributing-plate 19 is shown as extending to the bottom of an amalgamating-trough 20, the feedway being now formed by vertical cover-plates 21, arranged on each side of the distributing-plate 19, which plates extend nearly to the bottom of the amalgamating-trough. The top of each cover-plate is flared slightly outward, as shown, so as to conveniently receive the ore or pulp from the sluice. The waterway in this case is formed by vertical plates 22, and to the amalgamating-trough 20 is secured the gutter 23.

The operation and principle of the machine are the same in both modifications. It may also be remarked that in the first modification the wall 2 may be made conical instead of cylindrical.

I claim—

1. In an amalgamating apparatus, the combination with the distributing-plate, of the cover-plate therefor arranged to form a feedway through which the pulp or ore flows by gravity, an amalgam-trough arranged at the lower end of the distributing-plate and into which the cover-plate extends to near the bottom thereof, an ore-sluice which conveys the ore or pulp to the feedway, and a waterway formed by a plate or wall arranged a distance

beyond the cover-plate, the lower end of said plate or wall terminating at a height slightly above the surface of the bath contained within the amalgam-trough, substantially as described.

2. In an amalgamating apparatus, the combination with the base-plate, of an inclined distributing-plate connected thereto by a wall or plate, an amalgamating-trough, an inclined cover-plate terminating in a downward-projecting flange which extends to within a short distance of the bottom of the amalgamating-trough, a tapering feedway between the distributing-plate and the cover-plate through which the ore or pulp flows by gravity, an ore or feed hopper upwardly projecting from the cover-plate, which hopper communicates with the ore-feedway, an ore-sluice by means of which the ore or pulp is conveyed toward the feed-hopper, a wall or plate surrounding the depending flange of the cover-plate so as to form a waterway, said wall or plate terminating slightly above the surface of the bath contained within the amalgamating-trough, a water-supply pipe arranged above the cover-plate, and an overflow-gutter connected to the amalgamating-trough, into which the base material or tailings is forced, substantially as described.

3. The combination with a circular inclined distributing-plate, of a base to which the same is united, a circular amalgamating-trough surrounding said distributing-plate, a circular inclined cover-plate provided with a downwardly-projecting flange which extends into the amalgamating-trough to within a short distance of its bottom, an ore-feed hopper connected to the cover-plate, a sluice for conveying the ore or pulp to the feed-hopper, a circular overflow-gutter attached to the amalgamating-trough, and a water-supply for washing the base material or tailings forced from within the bath in the amalgamating-trough by the pressure of the ore or pulp within the tapering feedway, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE W. LEE.

Witnesses:

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