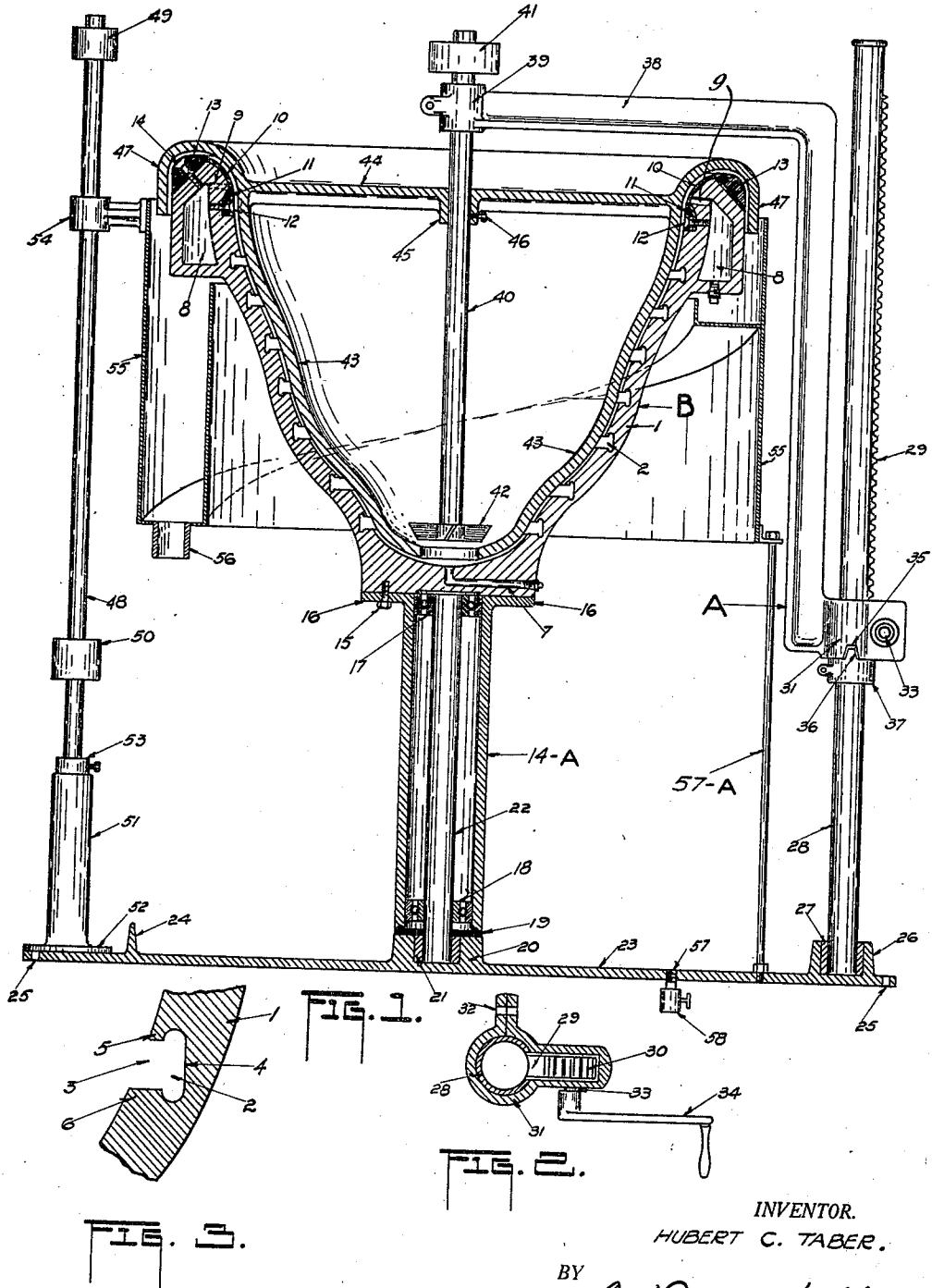


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CENTRIFUGAL AMALGAMATOR

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INVENTOR.

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CENTRIFUGAL AMALGAMATOR.

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To all whom it may concern:

Be it known that I, HUBERT C. TABER, a citizen of the United States, and resident of Los Angeles, California, have invented certain new and useful Improvements in Centrifugal Amalgamators, of which the following is a specification.

My invention relates to the recovery of gold, silver, platinum, iridium and other precious metals from their ores or sand or gangue, by the use of amalgamation with quicksilver, and the object, first, is to provide a machine that will retain the quicksilver or mercury, together with amalgam, besides the heavy particles of precious metals that separate out and do not amalgamate; second, to provide a machine that is a self-contained, complete amalgamating unit; third, to provide a machine in which the clean up of amalgam is easily and quickly made; fourth, to provide a machine in which the running parts, such as bearings, are protected from grit and dust.

Other objects will appear from the following specification, and while I have shown a particularly constructed machine as to shape and material, I do not limit myself to such, because changes may be made without departing from the essential elements constituting my invention.

Referring to the drawings:

Figure 1 is an elevation view in part cross section of my invention, and

Figure 2 is a partial cross-section of Figure 1 on the line A.

Figure 3 is an enlarged cross section of a pocket at B on Figure 1.

Similar letters of reference refer to similar parts in the different views.

In the drawings numeral 1 refers to an irregular shaped cone. I purposely make this cone in waves as shown and may have any number of waves, but I purposely use three, as shown. In order to obtain the effect desired, I provide a smooth flowing surface on the inner side of the cone, that is, there is no abrupt step or indentation. The pockets 2 extend around the inner side of the cone and are practically horizontal in position. I may use any suitable number. The pocket 2 has an opening 3 as shown, with lips or extensions 5 and 6. The back of the pocket 4 and the pocket itself are made practically parallel to the vertical. The reason for this will be later set forth.

The cone 1 is provided at its base with an outlet 7, which is threaded for any suitable plug or valve connection. The cone 1 is also provided with a large pocket 8. This pocket 8 has a number of openings, rectangular in shape, leading from the inner side of the cone to the pocket represented by numeral 9. Over these openings 9 I stretch a strip of canvas or fine screen 10, which is held in place by the metal strip 11 at the lower edge, together with the screws 12. At its upper edge, it is held in place by the metal strip 13 and the screws 14. All of these parts are put together to form a smooth flowing surface. The pocket 8 is provided with a plug at its base for clean up purposes.

The cone 1 sets on the base 14^A, which is fastened to the cone at the flange 16 by means of studs 15. The base member 14^A is provided with upper ball bearing 17 and lower ball bearing 18. At the base of 14^A is a felt washer 19, which rests on the top of the hub or boss 20. This felt washer retains the oil in the bearings and keeps the dust and dirt out. The boss 20 is provided with a bearing metal 21 on which the shaft 22 is set.

The base plate 23, which is circular in shape, is provided with a rim 24, which extends around the plate. The base plate 23 has openings 25 for hold down bolts or lag screws. An extension or boss 26 with bearing 27 supports and holds the standard 28.

The base plate 23 is slightly cup shaped and has an outlet 57 with valve 58 used in cleaning up the mercury or amalgam that is caught by means of the rim 24.

The standard 28 is preferably made of hollow shafting or pipe and has a rack gear 29 set in its side as shown. This rack gear 29 connects up to a pinion gear 30, which is surrounded and held in place by the housing 31. The housing 31 has a hole 32, as shown, for a bolt in clamping same to the standard 28. A suitable shaft 33 extends through the housing 31 and a crank 34 is attached to said shaft. The housing 31 is provided with an indentation or slot 35, wedge shaped, into which the horn or boss 36 moves. The horn 36 is simply an extension of the set collar or stop 37, which is made fast to the standard 28 by means of a bolt.

The housing 31 extends up and over to

form the arm 38 and the bearing 39. The bearing 39 supports the shaft 40. At the upper end of the shaft 40 is a suitable pulley 41, and at the lower end is an agitating propeller 42. An inner cone 43 is positioned in the cone 1. This inner cone 43 has two or more ribs 44 that extend from the upper edge of the cone to the shaft to form the hub 45. A set screw 46 is provided in the hub 45, so that the inner cone may be fastened to the shaft 40. The inner cone 43 has a curved lip or edge 47, as shown, which extends down on the side of the cone 1.

In order to propel the shaft 40 and the attached mechanism, I provide a shafting 48, which has a suitable pulley 49 above and pulley 50 below. The shafting 48 is supported at its base by the bearing 51, the flange 52 of which, sets on and is fastened to the base plate 23. A set collar 53 is provided as shown. At the upper end of the shaft 48 I provide a bearing 54, which is bolted or riveted to the launder 55. The launder 55 is made circular in shape and extends around the lip or upper edge of the cone. At its lower end I provide a nipple 56. The circular launder 55 has supporting legs 57^A, four in number, which I preferably make of iron rods fastened by means of angle brackets to the launder and screwed to the base plate 23.

A belt is provided for the pulleys 41 and 49 and another one for the pulley 50 and the base 14^A. The cylinder base 14^A serves the purpose of a pulley. The inner ring of bearings 17 and 18 is fastened to the stub shaft 22 and the outer ring to the cylinder base 14^A. The stub shaft 22 is stationary in the bearing 21. The bearings 17 and 18 serve both radial and thrust purposes, and when the cone is revolved, the action is similar to the spinning of a top, the cone tends to assume the vertical position. Consequently, an upper bearing above the machine is not necessary.

In the operation of my invention, the driving belt is put on the cylinder base 14^A, another belt from 14^A to pulley 50, and a belt from pulley 49 to pulley 41. The belt from 49 to 41 may be either direct or half turned, so that the cone 43 may be driven in either direction; that is, the same direction as cone 1 or opposite.

A suitable amount of mercury is fed into the cone 1 sufficient to fill the pockets 2. The cone 1 is then revolved of sufficient speed to cause the mercury to rise and flow upward on the inside of the cone 1 and fill the pockets 2.

The surface then of the mercury is practically in line with the inner surface of the cone. Any excess of mercury passes on up and through the canvas 10 and the openings 9 into the pocket 8.

With mercury in the pockets 2, I feed the gold or other metal bearing ore into the cone

43. The propeller 42 keeps the feed in perfect mix and while it passes through the cone 43 and out and between the cones 1 and 43. As the ore pulp passes between the two cones, centrifugal action forces the heavier particles of gold, platinum and the like into the mercury and they are either amalgamated and held or, if not amalgamated, they are embedded in the quick in the pockets. The ore pulp passes on and out and is discharged into the launder 55 and through the discharge 56.

In order to obtain the best results on an ore, I may revolve the inner cone 43 in either direction.

By the use of pockets 2, as shown, when these are filled with mercury, I have a smooth surface for the ore pulp to pass over. All abrupt riffles or steps are eliminated in passing the ore pulp between the cones. Consequently, there is no counter force of agitation to overcome the centrifugal action. It is evident that all centrifugal action might be destroyed by agitation produced from sharp riffles or steps.

In the construction of the inner surface of cone 1, I give the lower end a greater slope because centrifugal action is less than at the top of the cone where the diameter is greater. It is evident that the action of centrifugal forces as here used is perpendicular to the axis of the cone. Therefore, centrifugal force must overcome gravity, and in so doing, cause the ore pulp to flow upward and outward.

In order to prevent banking of sand, I purposely use a cone, no part of which is cylindrical. The top of the cone 1, as shown, may be one degree or more from the vertical.

After the machine has been in operation some time and the mercury has become heavy with other metals, I make the clean up as follows:

The power is shut off, the belt is thrown off pulley 41, and the crank 34 is operated, causing the rack and pinion to raise the arm 38, together with the shaft 40 and the cone 43. When the point of the cone 43 is clear of the cone 1, the standard 28 is turned in the bearing 27 and the cone 43 is swung to one side. The plug is removed from the opening 7 and the contents, including the heavy metals and amalgam, are swept out of the pockets 2 and drawn into any suitable container.

I claim:

1. A centrifugal amalgamator, comprising a cone-shaped body, having a plurality of amalgam pockets, said pockets practically vertical in position; said cone-shaped body having an outlet at bottom, a large amalgam trap or pocket at top, inlets to amalgam trap, and inlets covered with a screen, said cone body having an outwardly and continuously

extending inner surface, an inner cone in said cone body and means for revolving said inner cone, means for revolving cone body substantially as described. body, an amalgam pocket at top of cone body, together with inlets, said inlets covered with a screen, means for revolving cone body, substantially as described. 10

5 2. A centrifugal amalgamator, comprising an irregular cone-shaped body, having an outwardly extending inner surface, a plurality of vertically positioned pockets in cone

Witness my name this 10th day of April, 1922.

HUBERT C. TABER.