

No. 762,174.

PATENTED JUNE 7, 1904.

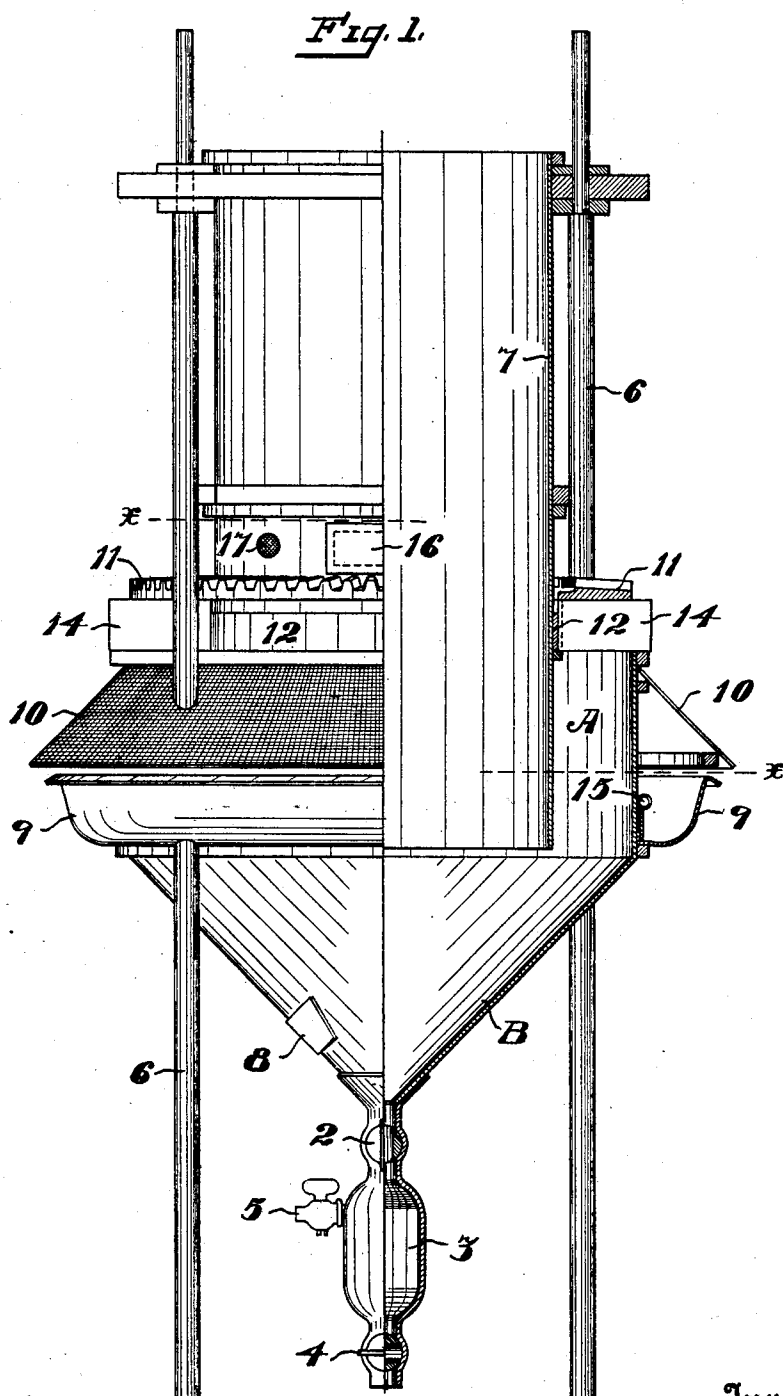
W. LAUDAHN.

GOLD SEPARATING AND RECOVERING APPARATUS.

APPLICATION FILED DEC. 17, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses,
J. H. Hourse
Dudley Moss.

Inventor,
William Laudahn
By Geo. H. Strong.

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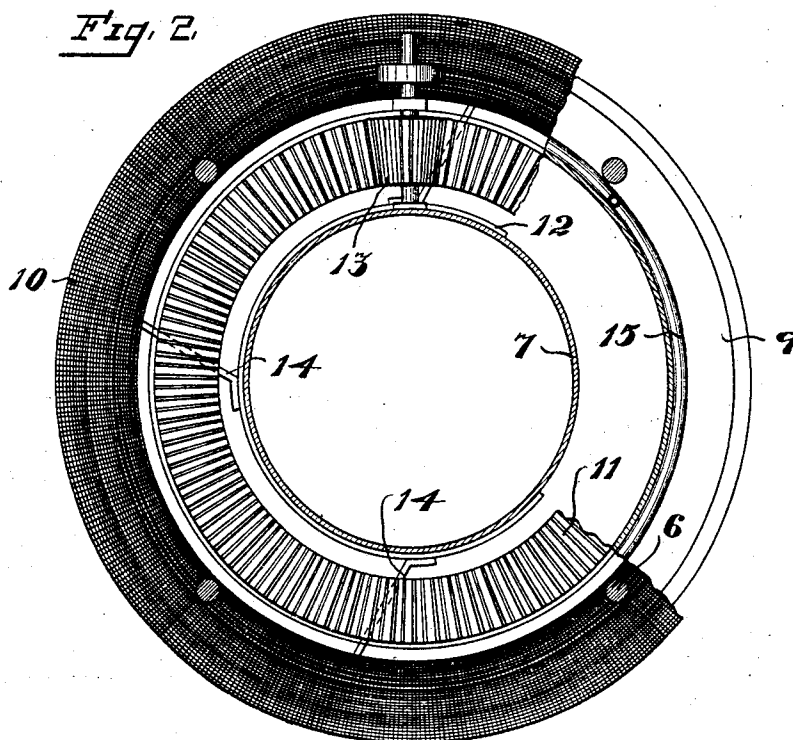
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UNITED STATES PATENT OFFICE.

WILLIAM LAUDAHN, OF SAN FRANCISCO, CALIFORNIA.

GOLD SEPARATING AND RECOVERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 762,174, dated June 7, 1904.

Application filed December 17, 1903. Serial No. 185,464. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LAUDAHN, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Gold Separating and Recovering Apparatus, of which the following is a specification.

My invention relates to an apparatus which is especially designed for working dry placer and other deposits containing gold and without the use of water, such deposits frequently occurring in desert regions, where water cannot be obtained for the work.

The invention is also designed for separating gold from auriferous beach-sands.

It consists in the employment of a chamber containing quicksilver, a mechanism by which the gold-bearing sand may be forcibly submerged and allowed to rise through the body of quicksilver, so that the gold carried thereby will be brought into intimate contact with the quicksilver and amalgamated and obtained, while the waste or worthless material will be discharged over the top.

It will be understood that any metal which is capable of amalgamation with quicksilver may be saved in the same manner; also, platinum, iridium, &c., by reason of their great specific gravity causing them to sink within the mercury.

Referring to the accompanying drawings, Figure 1 is an elevation of my invention in partial vertical central section. Fig. 2 is a transverse horizontal section on lines *x x*, Fig. 1.

Various devices may be employed for bringing the gold-bearing sand or like material into intimate contact with the mercury, and these may be either mechanical carriers adapted to take the sand in charges and force it below the surface of the mercury, separating it and allowing it to rise through the mercury after such submergence, or the sand may be similarly forced into the mercury by gravitation.

As shown in my present illustration, A is a cylindrical or other suitably-shaped tank having a conical bottom B, with an outlet at its lowest point, and a controlling cock or valve 2 of any suitable description. Below this

cock is a receptacle or chamber 3, having the aforesaid cock 2 and having a discharge-passage at the bottom and a controlling-cock, as at 4. Upon the side near the upper part of the chamber 3 is an air-cock 5.

The apparatus may be of any suitable height and size and supported by posts or standards in any convenient manner, as shown at 6.

7 is a cylinder open at both ends and extending downwardly into the chamber A, which chamber is filled with mercury to a considerable height above the lower edge of the cylinder 7.

The cylinder 7 is of such height that the gold-bearing sand or its equivalent being delivered into it by any suitable chute or mechanism above the weight of the sand will cause it to sink within the mercury until it passes below the bottom of the cylinder, when it will be separated and rise all around the periphery of this central cylinder to the surface of the mercury. The gold will thus be brought into contact with the mercury, and the waste material will overflow. The conical lower portion B of the mercury-containing tank has also a manhole or other large opening, as at 8, and this is secured with a suitable gasket, so as to make it mercury-tight. Through this manhole any heavy or large material may be removed, and the final clean-up can be made at any time after the mercury and such amalgam as it may carry has been drawn off through the faucets and chamber at the bottom of the cone, as previously described.

Around the outside of the cylindrical portion of the chamber or tank A is an annular chamber 9, so disposed that any overflow or loss of quicksilver passing over the upper edge of the tank will be received into this chamber. Above this tank is a divergent screen 10, which surrounds the upper edge of the chamber A, diverging outwardly above the annular collector 9, and this screen allows the mercury or any fine gold or amalgam to pass through into the annulus 9, while the sand and worthless material are diverted outwardly and discharged to any suitable or convenient receiver.

Around the cylinder 7 is a gear 11, having

a guiding-band 12, which surrounds the cylinder and serves to retain the gear in its proper position. This gear is engaged by a pinion 13, fixed upon a shaft journaled as shown and having any suitable means by which it may be turned so as to give motion to the gear 11. This gear 11 carries and gives motion to scraper-plates 14, which are fixed either to the gear or to the guide-band 12, extending outward and moving closely over the upper edge of the chamber A, so that as the sand rises through the mercury it is continually scraped off and delivered upon the screen 10 to be disposed of as previously described.

15 15 represents a pipe extending around the chamber A interior to and above the annular receiver 9. This pipe is provided with perforations and a suitable means for introducing air under pressure, so that any fine dust delivered into this part of the apparatus may be blown outwardly, and passing over the edge of the annulus 9 it will be discharged through the channel formed by this downwardly-turned edge and the lower edge of the divergent screen 10.

For convenience in cleaning out the cylinder 7 I have shown a manhole or opening with a tightly-closable cover and gasket 16, so that any remaining gravel or material within the cylinder can be withdrawn at this point before the final clean-up, and if there should be water carried into the cylinder, as in the case of auriferous beach-sand, which might be wet, this water can pass off through small screen-covered openings 17 above the surface of the quicksilver.

The screen 10 is preferably made in separable sections, so as to be conveniently removable, and in case of wear any section may be replaced without disturbing the others.

The screens, quicksilver-saving trough, and air-pipes and connections are all easily detachable and may be removed when auriferous beach-sand or material is being worked, for which these attachments are not needed.

The cylinder 7 may be extended upwardly if required by reason of different specific gravity of material which is being treated, such extension providing sufficient depth to enable the weight of the material to cause it to feed and submerge itself in the mercury as fast as it is displaced and discharged from the outside.

The receptacle 3 is important in this device, and normally the cocks 4 and 5 are closed and the upper cock 2 is open, so that the values deposited in the mercury and which are of greater specific gravity than the mercury may gradually be collected in the receptacle.

The inclined bottom of the tank B assists all amalgam to gravitate downward. To make a clean-up or test without stopping the machine or disturbing the main body of mercury, it is simply necessary to shut off the

cock 2 and open the cocks 4 and 5. As soon as the receptacle is emptied the cock 4 and air-cock 5 are closed and the cock 2 again opened, thereby allowing the receptacle to fill with mercury.

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

1. In an apparatus of the character described the combination of a mercury-containing chamber having a lower portion with steeply-inclined walls, and means for submerging the gold-bearing sand in said chamber, a receptacle secured to the lower end of the mercury-containing chamber, inlet and outlet cocks at opposite ends and an intermediate air-supply cock said conical end of the mercury-containing chamber having a manhole in its lower portion through which heavy material may be removed.

2. An apparatus for the separation of gold from sand and the like, said apparatus consisting of a cylindrical tank having a conoidal mercury-containing chamber in its lower portion, an open-ended vertical cylinder of smaller diameter having its lower end to extend below the surface of the mercury, a trough surrounding the lower end of the cylindrical portion of the tank, a screen surrounding the upper portion of said tank and diverging downwardly and overhanging said trough whereby mercury and fine gold or amalgam are separated from the sand and worthless material and delivered into the trough, and revoluble scrapers located at the upper edge of the tank and adapted to remove and deliver to the screen the sand which rises through the mercury in the tank.

3. An apparatus for the separation of gold from sand said apparatus including a tank having a conoidal mercury-containing chamber, an open-ended cylinder of smaller diameter than the tank and having its lower end to extend below the surface of the mercury therein, a trough surrounding the tank, a screen surrounding the upper edge of the tank and diverging downwardly and overhanging the trough, scrapers operating to remove the rising sand from the top edge of the tank and deliver said sand to the screen, and a perforated pipe within the trough adapted to deliver a blast of air to discharge fine material over the edge of the trough.

4. An apparatus for the separation of gold from sand and the like, said apparatus comprising a mercury-containing chamber having a conical bottom with discharge-passage, a receptacle fitted to and depending from said conical bottom and having oppositely-located controlling-cocks, an open-ended vertical cylinder of smaller diameter, through which material is delivered and submerged in the mercury, revoluble scrapers extending over the upper edge of the mercury-chamber, and

by which the same, after rising through the mercury, is discharged, an exterior annular receiving-trough, an air-tube located within and above the trough, and having jet-openings
5 through which an air-blast may be discharged outwardly.

In testimony whereof I have hereunto set

my hand in presence of two subscribing witnesses.

WILLIAM LAUDAHN.

Witnesses:

HENRY P. TRICOU,
S. H. NOURSE.