

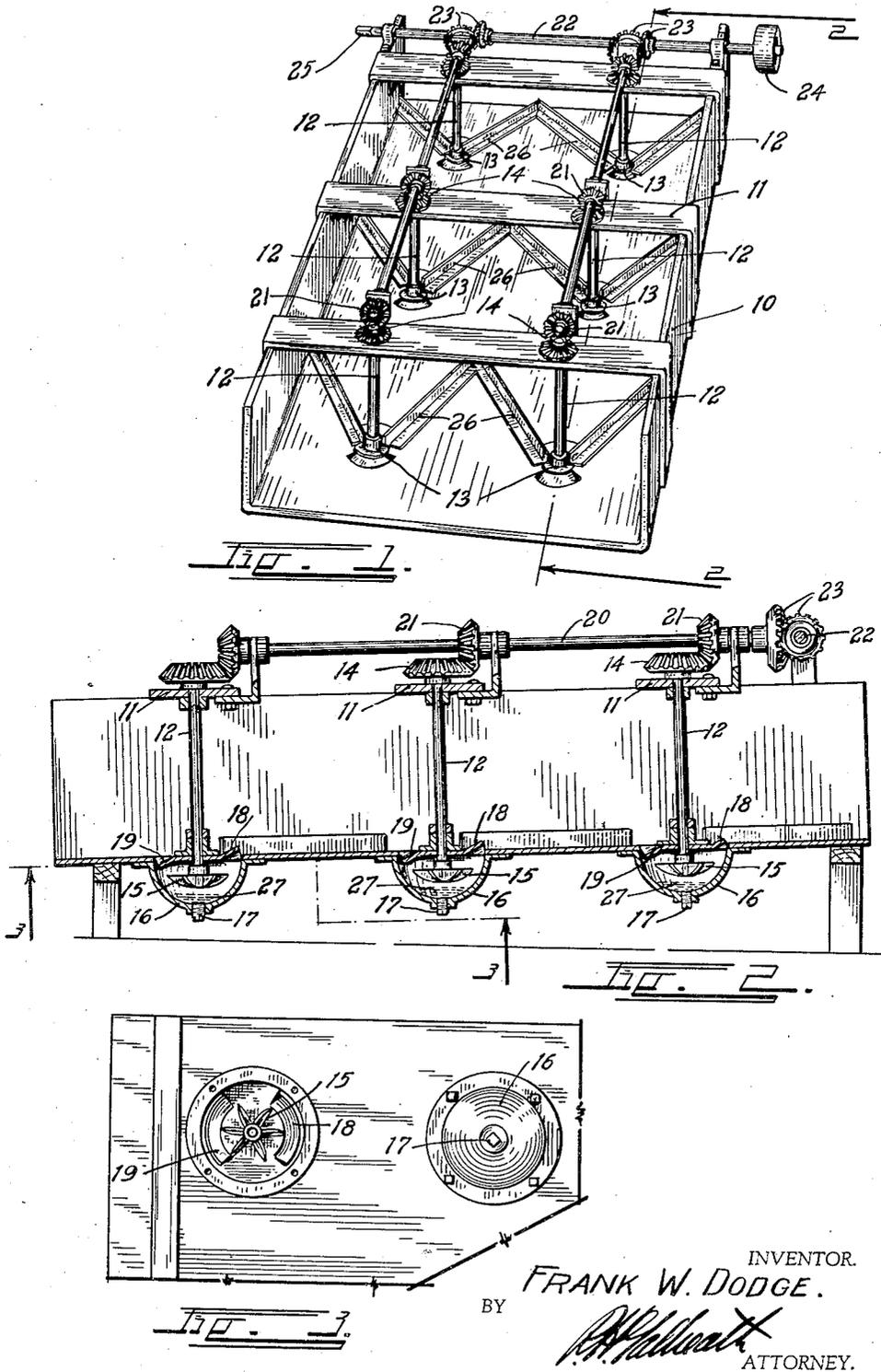
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GOLD RECOVERING MACHINE

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GOLD RECOVERING MACHINE

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3 Claims. (Cl. 209—43)

This invention relates to a machine for recovering gold from sand or crushed rock. Many machines have been designed for the separation of golds from sand, and all operate more or less successfully on the coarser gold particles. Very few, if any, however, can obtain a high percentage recovery of the fine flour or flake gold, whose shape and size makes it difficult to obtain an efficient settling action.

The principal object of this invention is to provide a device of this character which will operate very efficiently in the recovery of the fine flour or flake gold and which will also operate effectively on the recovery of "rusted" or corroded gold.

Another object of the invention is to provide a machine which will recover attached gold, that is, small gold particles attached to valueless rock, such as encountered with a crushed rock feed.

Other objects are to provide a gold recovering machine which will operate with a minimum of water and a minimum of power consumption, and yet will have a relatively high capacity; to provide a machine which will be easily portable so that it may be readily moved from one location to another as the sands become exhausted.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:—

Fig. 1 is a perspective view of one form of the invention.

Fig. 2 is a longitudinal section therethrough, taken on the line 2—2, Fig. 1.

Fig. 3 is a detail bottom view illustrating the mercury bowl removed from one agitator and in place on another.

The invention comprises a sluice box 10. This may be a single box, that is, having a single row of recovering devices or a double box as illustrated. The box may have any desired length, and any desired number of recovering devices. As illustrated, the device is a double box having two rows with three devices in each row. It could, however, be constructed with just a single row with three or more devices therein.

The box is preferably formed of sheet metal with cross members 11 extending across the top thereof at spaced-apart intervals. The members

11 support upper bearings for a series of vertical agitator shafts 12. The lower bearings for the agitator shafts, illustrated at 13 are secured directly to the bottom of the box 10. A bevel gear 14 is fixed to the upper extremity of each shaft and a bladed impeller or agitator 15 is secured to the lower extremity thereof. This places the agitator immediately below the bottom of the box 10.

A mercury bowl 16 is bolted to the bottom of the box 10 around each of the impellers 15. The bowls 16 are provided with suitable drain plugs 17. Above and below each shaft, the bottom of the box is slotted. The metal separated by the slots is turned upwardly above each shaft 16 to form an inlet lip 18 and turned downwardly below each shaft to form an outlet lip 19.

The shafts are rotated from a line shaft 20 extending longitudinally of the box 10 and carrying bevel pinions 21 in mesh with the gears 14. In a double box, as illustrated, a counter-shaft 22 will be placed at any convenient point to rotate both of the shafts 20 simultaneously through gears 23. The shaft 22 can be rotated in any desired manner. If rotated from power, a belt pulley 24 may be used. If rotated by hand, a crank may be placed on the other extremity of the shaft which is squared for this purpose, as shown at 25.

A series of inclined fences 26, preferably formed of angle iron, are riveted on the bottom of the box. These fences are arranged in V-shaped pairs to direct material toward the inlet lips 18 of each bowl.

In the usual machine, each bowl is designed to hold approximately 1 pound of mercury, as indicated at 27, and the shafts are rotated slowly, say at about 40 to 60 revolutions per minute.

In use, the box 10 is inclined as shown in Fig. 2 and the sand is fed into the upper extremity thereof combined with sufficient water to flow the sand easily through the box. It is preferred to screen the sand to remove gravel and boulders before it enters the machine, as is usual in placer work.

The gold and heavier particles such as the black sand travels along the bottom of the box and is guided by the fences 26 to the intake lips 18 of the bowls 16. The lighter sands and rock wash over the top of the fences and discharge from the lower extremity of the box. The gold entering the bowls 16 immediately goes into contact with the mercury and becomes amalgamated. The black sand and other valueless materials are constantly agitated by the agitators 15 and under

the influence of the pressure of the incoming flow force themselves past the retarding outlet lips 19 back onto the floor of the box 10 where they flow to the next successive bowl.

5 It can be readily seen that after a passage through several of the bowls, any gold in the feed will have been amalgamated, while the black sands are discharged over the lower lip of the box. The agitators prevent packing of sand in the 10 bowls, and also act to clean the rusty and attached gold so that it can be readily picked up by the mercury. The machines can be assembled for any capacity by simply adding more of the units above described.

15 It has been found that average capacity for a double six element unit, such as shown in Fig. 1, having a width of 24 inches will be approximately 50 cubic yards per day.

20 While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

25 Having thus described the invention, what is claimed and desired secured by Letters Patent is:—

1. A gold recovering machine comprising: a relatively long, inclined sluice box; shafts extending through the bottom of said box at spaced-apart intervals throughout its length; means for supporting said shafts perpendicular to said box; flaring guide strips on the bottom having their apexes directed toward said shafts, there being an intake opening above each shaft and a discharge 30 opening below each shaft through said bottom; a recovery bowl about each impeller below each pair of openings; and means for rotating said shafts.

2. A gold recovering machine comprising: a 40 sluiceway having two sides and a bottom; means for supporting said sluiceway on an incline; cross members extending from side to side over said sluiceway at spaced intervals; upper shaft bear-

ings secured to said cross members; lower shaft bearing secured to the bottom of said sluiceway below said upper bearings; an agitator shaft mounted in each pair of upper and lower bearings; an agitator on each shaft immediately below the bottom of said sluiceway; a bowl secured to said bottom about each agitator, there being openings in said bottom above and below said shaft to allow material to by-pass from said bottom through said bowls; a pair of inclined riffles 10 secured to said bottom above each shaft, said riffles being lower than sides and being flared outwardly from each other at their upper extremities and approaching each other at said shafts to direct settled material to the upper opening of 15 each bowl.

3. A gold recovering machine comprising: a sluiceway having two sides and a bottom; means for supporting said sluiceway on an incline; cross members extending from side to side over said sluiceway at spaced intervals; upper shaft bearings secured to said cross members; lower shaft bearing secured to the bottom of said sluiceway below said upper bearings; an agitator shaft mounted in each pair of upper and lower bearings; an agitator on each shaft immediately below the bottom of said sluiceway; a bowl secured to said bottom about each agitator, there being openings in said bottom above and below said shaft to allow material to by-pass from said bottom through said bowls; a pair of inclined riffles 30 secured to said bottom above each shaft, said riffles being lower than sides and being flared outwardly from each other at their upper extremities and approaching each other at said 35 shafts to direct settled material to the upper opening of each bowl; a lip secured along the lower edge of each upper opening and inclined upwardly of said opening; and a second lip secured along the upper edge of each lower opening 40 and inclined downwardly beneath said latter opening.

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