

J. HAMILTON.
GOLD SAVING MACHINE.
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942,962.

Patented Dec. 14, 1909.

Fig. 1.

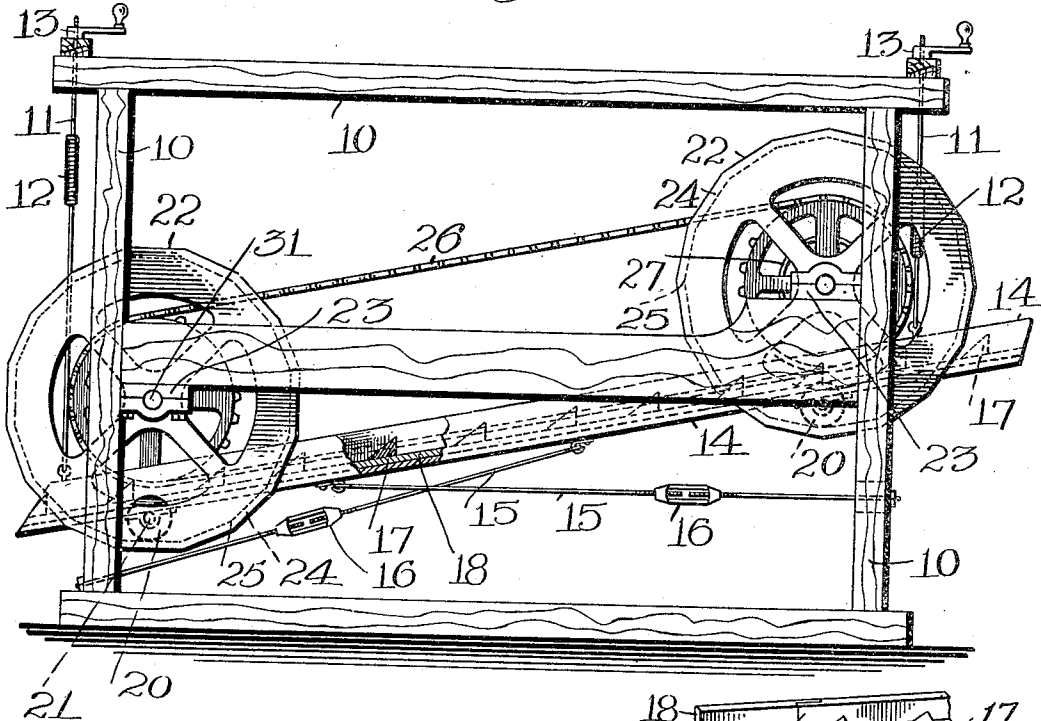


Fig. 2.

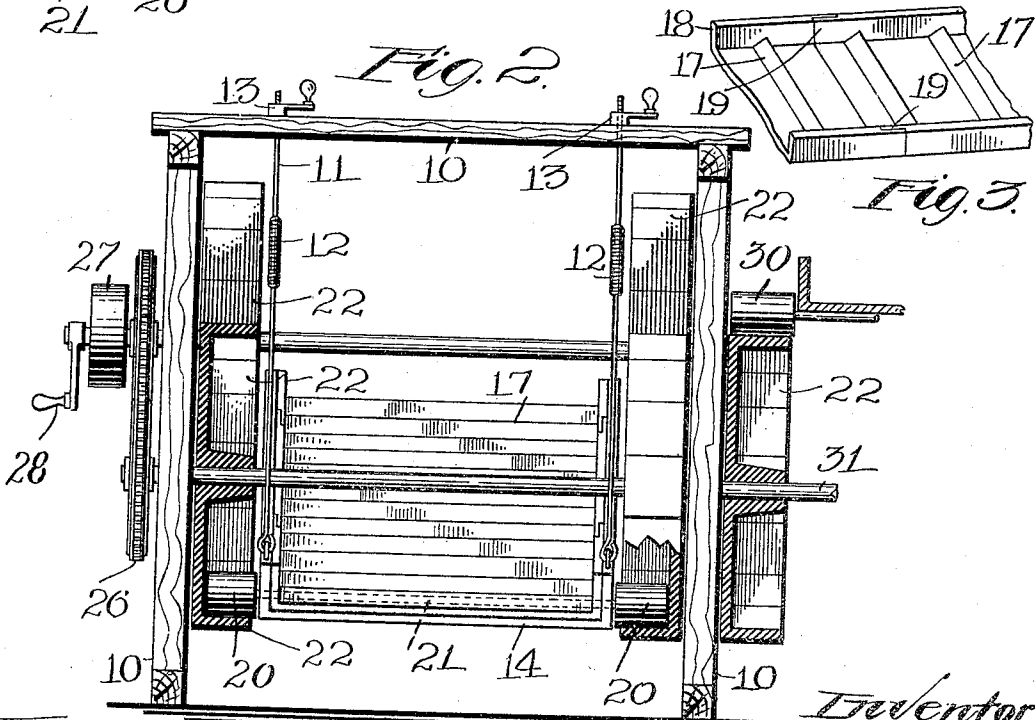


Fig. 3.

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GOLD-SAVING MACHINE.

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To all whom it may concern:

Be it known that I, JOHN HAMILTON, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a new and useful Gold-Saving Machine, of which the following is a specification.

This invention relates to a machine for saving gold by passing sand and water over an agitated sluice-box or table.

The principal objects of the invention are to provide for giving such a motion to the sluice-box that the sand will be kept more constantly in motion so that it will not be packed down hard in the riffles, thus allowing the gold to be more thoroughly separated from the sand than has been the case heretofore, and to provide agitating means of such construction that the mechanism will be greatly simplified. This preferably is accomplished according to this invention by agitating certain of the corners of the sluice box independently and alternately by the use of two pairs of wheels, each having a surface for supporting one corner of the sluice-box composed of a plurality of plates or sides meeting each other at an angle and placing them so that when one side of the sluice box is raised the other will be lowered with a positive upward jar at the end of its stroke.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which—

Figure 1 is an end view of a machine constructed in accordance with this invention. Fig. 2 is a side view of the same partly in section showing a slight modification; and Fig. 3 is a perspective view of some of the riffles and removable trap therefor.

The machine is shown as provided with a frame 10 from the upper part of which depend rods 11 having springs 12 thereon and adjustable by means of nuts 13. Any desired number of these rods may be employed and they support at the bottom thereof a table or sluice-box 14. The springs 12 are intended to be adjustable so as to give the proper tension and keep the sluice box in place. This reduces the weight on the wheels, thereby reducing the friction on the running parts of the machine. The sluice box is connected to the frame by guy rods adapted to be adjusted by turn-buckles or the like to keep it in place. The sluice-

box is shown as mounted on an incline as is usual and is provided with a plurality of riffles 17. These riffles may be made in any ordinary way, and they preferably are located on a series of removable sheet metal or wooden trays 18, each having a reduced end fitting into the end of the next one so as to form a telescopic joint. In this way any section can be taken out without loss of time when a clean-out is to be made.

Near its edges the sluice-box is shown as provided with pairs of rollers 20. These may be mounted on shafts 21 extending through the sluice-box and supported by the means which is employed for agitating the sluice-box. This means is shown as consisting of pairs of wheels 22, each mounted in bearings 23 on the frame. Each wheel has a surface for supporting one of the rollers made up of a plurality of plates or sides 24 meeting those next to it at an angle making a depression 25. The wheels shown are provided with a sprocket chain 26 so that they will be rotated in unison by a belt connection on a pulley 27 or a crank 28, or in any other way if desired. The two pairs of wheels are so set that when those on one shaft are in such position that the rollers supported by them are at one of the angles 25, the ones on the other shaft are set so that the rollers supported by them are at a point between two of the angles 25. In this way it will be seen that one side of the sluice box will rise with an upward jar as the other falls, and that a compound rocking and oscillating motion is secured at each side of the sluice box so that it keeps the mixture of sand and gold in a constant state of agitation.

In Fig. 1 and at the left of Fig. 2 rolls 20 are shown as supported on the inside of the rotating wheels. It will readily be understood that, as shown at the right in Fig. 2, rolls 30 may be employed resting on top of the wheel and also that the shaft 31 carrying the pair of wheels can be extended through the frame so that a plurality of sluice-boxes can be operated at the same time without a corresponding increase in the amount of mechanism employed. It will be seen that these results are secured in a most simple and inexpensive manner, and that the machine is one which will require very little repair and can be kept in order very easily. It has been found in practice that this results in the saving of

about 98% of the gold when operating on a certain kind of sand in which the gold is present in a very fine state.

The motion of the sluice-box is as follows.

- 5 Starting in the position shown at the left of Fig. 1, in which the lower side of the sluice box is raised to its highest point, it will be seen that when the wheel turns in either direction the surface on which the
- 10 roller rests becomes inclined, and that incline increases so that as the roller rolls down the incline it comes suddenly to the bottom of it in the position shown at the right of Fig. 1. As it comes to the bottom
- 15 of the incline at the angle 25 the next advancing side of the wheel strikes the roller at an opposite incline and gives it a sudden positive jar at the end of its stroke. On the rise however, there is no jar except that
- 20 from the opposite wheel, because the roller moves up the incline until it reaches a central position on the next side and then the inclination simply changes, so that it rolls down as described above. It will be seen
- 25 therefore that the drop is stopped at the bottom by the next advancing side, giving an upward jar, while the upward motion is without any such jar. Now when it is taken into consideration that one side of
- 30 the sluice-box is at its uppermost point when the sluice box is jarred from the other side, it will be seen that the mixture of sand and gold is kept in a constant turmoil all along the sluice-box, but that the motion at one
- 35 side at any instant is always different from the motion which is taking place at the same instant at the other side.

The alternate up and down motion of the two sides of the sluice-box keeps the sand agitated in the riffles thereby keeping the sand loose, which makes it easier for the gold to settle. This is an improvement over those gold saving machines in which the motion is such that the sand can pack down

45 hard in the riffles, as in that type of machines it is almost impossible to save the finest gold, while in this machine the quick changing vibrating motion keeps the sand loose all the time and causes the fine gold to settle readily, so that even the fine flaky

50 gold in black sand can be saved in this machine.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications can be made therein without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction shown,

60 but

What I do claim is:—

1. In a device of the character described, the combination of a movably mounted box, a plurality of rollers on each side thereof,
- 65 and a plurality of rotatable hollow wheels

on each side of the box, each having an axis above the bottom of the box and having a surface composed of plates meeting each other at an obtuse angle, said plates being in position to support the respective rollers upon their upper surfaces inside the wheel.

2. In a gold saving machine, the combination of a movably mounted sluice box, rollers at opposite edges thereof, and two pairs of wheels journaled above the bottom of the sluice box and projecting below it, each having a bottom inside surface below the sluice box for supporting one of said rollers, said surface being made up of a plurality of plates meeting each other at an angle.

3. In a gold saving machine, the combination of a movably mounted sluice-box, rollers at each end thereof, a pair of wheels journaled above each end of the sluice-box, each having a surface extending below the sluice box for supporting one of said rollers made up of a plurality of plates meeting each other at an angle and forming a circumferential flange, and means for connecting said wheels to cause them to rotate together, said means being so arranged that when the rollers at one side of the sluice-box are at an angle between two of the plates on the wheels supporting them, those at the other side are at points between two angles on their wheels, whereby a vibrating and oscillating motion will be given to each side of the sluice-box.

4. In a gold saving machine, the combination of a movably mounted sluice-box, and a pair of wheels journaled above the bottom thereof for operating it, said wheels being connected to rotate in unison, and each having a surface formed of a plurality of plates perpendicular to the plane of the wheel, each making an angle with the next one, and each adapted to support one side of the sluice-box when below it, the two wheels being in such position that when one side of the sluice-box is supported at an angle on one wheel, the other is supported at a point between two angles.

5. In a gold saving machine, the combination of a frame, a sluice-box therein, yielding adjustable means for supporting the sides of the sluice-box in said frame, rollers mounted on the bottom of the sluice-box and projecting therefrom, hollow wheels journaled on said frame above the sides of the sluice-box, extending down below the sluice-box, and supporting said rollers on its inside surface, each wheel being of polygonal shape and of the same number of sides, the wheels being so placed with relation to each other that when the side of one at one end of the sluice box is in any certain position, an angle of one at the other end is in a corresponding position, and means for rotating said wheels in unison and maintaining said relative arrangement between them.

6. In a gold saving machine, the combination of a movably mounted inclined sluice-box, a pair of transverse shafts arranged above the opposite edges of said sluice-box, a pair of wheels mounted on each of said shafts, each of said wheels having an inwardly extending circumferential flange made up of a plurality of flat plates or sides meeting each other at an obtuse angle, rollers located on said sluice-box at its ends projecting into said wheels and resting on the top of the lower sides of said projecting flanges, and means for simultaneously rotating said wheels.

7. In a gold saving machine, the combination of a movably mounted inclined sluice-box, a pair of transverse shafts arranged above the opposite edges of said sluice-box, a pair of wheels mounted on each of said shafts, each of said wheels having an inwardly extending circumferential flange made up of a plurality of flat plates or sides meeting each other at an obtuse angle, rollers located on said sluice-box at its edges projecting into said wheels and resting on the top of the lower sides of said projecting flanges, and means for simultaneously rotating said wheels, said wheels being so located that when the rollers at the upper edge of the sluice-box are at one of the angles between two of the sides of the wheels, the rollers at the lower edge will be intermediate between two such angles, whereby the upper edge of the sluice-box will have

an oscillating motion alternate with that of the lower edge, and whereby there will be a sudden upward positive jar at the bottom of the stroke of each edge of the sluice-box.

8. In a gold saving machine, the combination of a frame, a sluice-box, adjustable yielding means depending from the frame for supporting the sluice-box, means near the opposite sides of the frame for giving the two edges of the sluice-box a vibrating and oscillating motion and for elevating one edge when the other is lowered, and adjustable guy-rods extending in opposite directions from the middle part of the sluice-box and connected with the frame.

9. In a device of the character described, the combination of a movably mounted box, rotary wheels of large diameter mounted near two of the edges of the box on opposite sides thereof on axes above the bottom of the box and each provided with an inwardly projecting supporting surface made up of a number of plates or sections at an angle to each other, and means on the box between the center and bottom of each wheel by which the said box is supported on the inner sides of said surfaces.

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

JOHN HAMILTON.

Witnesses:

ROBERT I. BLAKNEY,
CHARLES SCHLAG.