No. 881,013. PATENTED MAR. 3, 1908.

R. H. MANLEY.

ORE CONCENTRATOR.

APPLICATION FILED APR. 26, 1907.

Fig. 1.

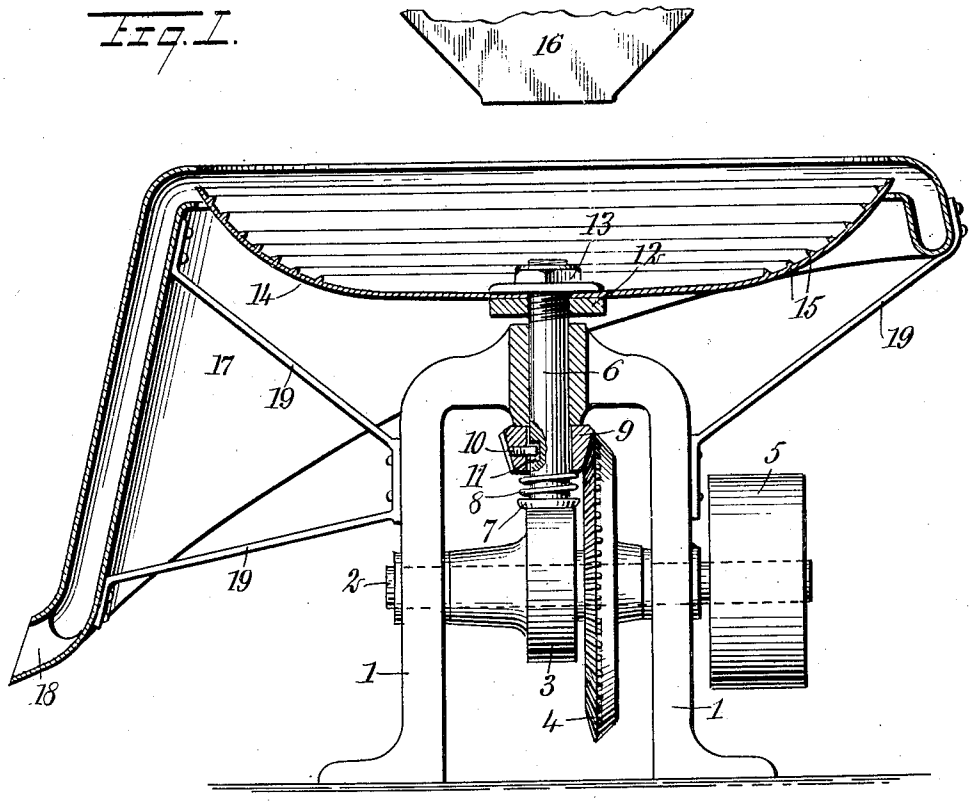



Fig. 2.

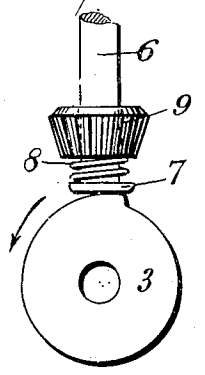
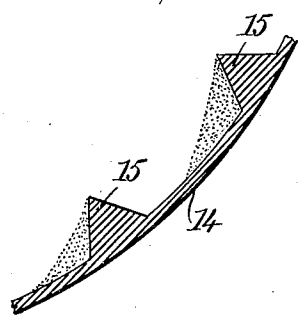



Fig. 3.




WITNESSES

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# UNITED STATES PATENT OFFICE.

RAY HALLIE MANLEY, OF SAN FRANCISCO, CALIFORNIA.

## ORE-CONCENTRATOR.

No. 881,013. Specification of Letters Patent. Patented March 3, 1908.

Application filed April 26, 1907. Serial No. 370,440.

*To all whom it may concern:*

Be it known that I, RAY HALLIE MANLEY, a citizen of the United States, and a resident of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Ore-Concentrator, of which the following is a full, clear, and exact description.

This invention has reference to an improved ore concentrator, more especially designed for separating and saving fine or flour gold from the tailings, which it does both thoroughly and rapidly when the material is either in the wet or dry state.

The invention broadly stated, comprises a revoluble and vibratory bowl in which the tailings containing gold or other metal is placed. As the tailings are lighter than the gold, they are worked to the surface by the vibratory motion and thence carried over the top edge of the bowl under the action of the centrifugal force developed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a central, vertical section through the preferred form of my improved ore separator; Fig. 2 is a fragmentary view of the vibrating mechanism, and Fig. 3 is a fragmentary section through the bowl, on an enlarged scale, illustrating the manner in which the particles of metal collect behind the ribs thereof.

More specifically stated, the invention comprises suitable supporting standards 1, 1 which are connected together at their upper ends and provide bearings for a cross-shaft 2 intermediate their height, said shaft carrying between the standards a centrally-arranged cam 3 and at one side thereof a bevel gear 4. A pulley 5 is fixed to the shaft 2 at the outside of the standards, by which the shaft may be driven from a suitable source of power.

Journaled in the connecting portion of the standards 1 is a vertical shaft 6, having a head 7 at its lower end normally pressed to the periphery of the cam 3 by a spring 8, surrounding said shaft and interposed between the head and a small bevel gear 9. The gear 9 is in mesh with the gear 4, and is slidably splined on the vertical shaft 6 by a pin or screw 10, projecting into a slot 11 cut in the shaft for this purpose. The upper end of the shaft 6 above the standards 1 is screw-threaded for receiving nuts 12 and 13, preferably having extended opposed faces between which a bowl 14 is clamped. This bowl receives the crushed ore or other material containing the particles of gold or other metal, and is constructed on its inner face with a series of concentric ribs 15 preferably V-shaped in cross section and arranged radially of the bowl, the bowl being fed with the crushed ore at its center in the space inclosed by the inner rib, as through a hopper 16.

Surrounding the upper edge of the bowl 14, into which the latter discharges when in operation, is a doubled apron 17, which droops about the bowl and has an inclined bottom discharging through a suitable orifice 18 arranged at one side of the machine. This apron is preferably supported from the standards 1 by brace-bars 19 located at suitable points.

In the operation of the machine, the crushed ore or other powdered material containing particles of gold or other metal, is fed, a small quantity at a time, to the center of the bowl through the hopper 16, the material being either in the wet or dry state. If in the wet state, the interior of the bowl is amalgamated. As the bowl is rapidly revolved under the action of the driving mechanism, it is also vibrated by the bumping action given to the shaft 6 by the cam 3, this operating to work the lighter material to the top. As this material comes to the surface it is, under the influence of the centrifugal force developed by the revolution of the bowl, successively worked over the ribs 15 and discharged into the doubled apron, where it passes through the orifice 18. The gold or other metal will lodge behind the ribs as the tailings float over, as illustrated in Fig. 3. The machine is found in actual practice to perform the separating operation thoroughly and rapidly, in fact more so than the ordinary plates or tables.

It is apparent that various changes in the construction from that described may be resorted to, without departing from the nature of my invention, as set forth in the claims annexed.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. An ore separator, comprising standards connected together at their upper ends, a cross-shaft journaled in the standards, hav-

ing a cam and a bevel wheel fixed thereto, a vertical shaft journaled in the connecting portion of said standards, having a head, a bevel wheel in engagement with the first-named wheel, slidably splined to the vertical shaft, a spring interposed between the last-named wheel and the head of the shaft, normally forcing said head in contact with said cam, a bowl fixed to the upper end of said shaft, and an apron surrounding the upper edge of said bowl and fixed to said standards.

2. An ore concentrator, comprising a vertical shaft carrying a bowl, a cross shaft having a cam on which the lower end of the vertical shaft bears, a bevel gear slidably splined to the vertical shaft near its lower end, a bevel gear fixed to said cross shaft in mesh with the first-named bevel gear, and a spring interposed between the first-named bevel gear and the lower end of said vertical shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RAY HALLIE MANLEY.

Witnesses:

CHAS. A. MARRINER,

LEONA MADELINE MERCHANT.