W. BALL.

Ore Amalgamator.

No. 6,535. Patented June 19, 1849.

Fig. 2.

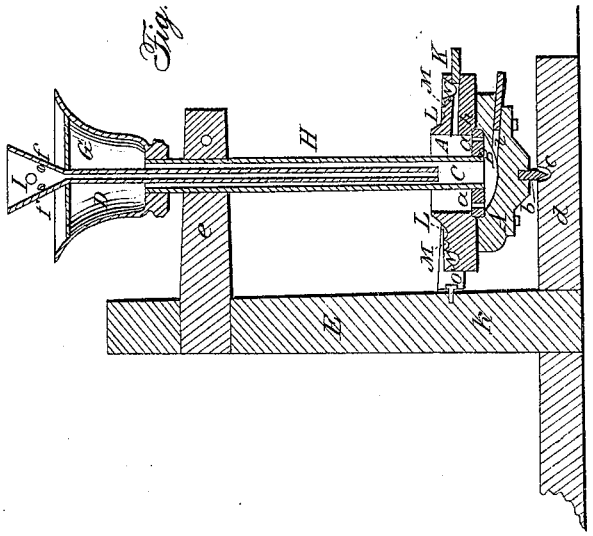


Fig. 3.

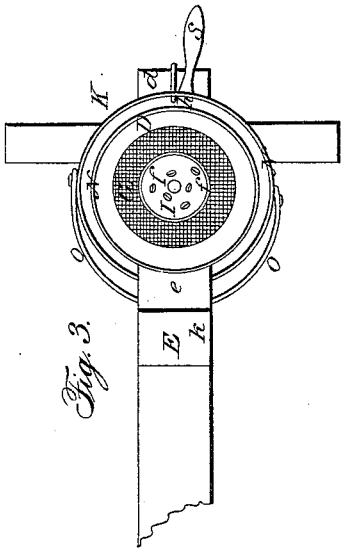
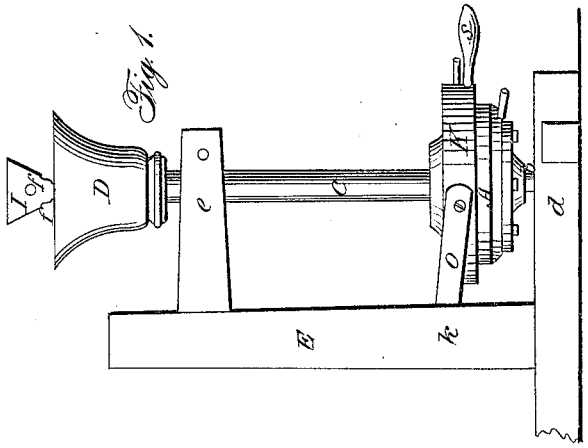


Fig. 1.



UNITED STATES PATENT OFFICE.

WILLIAM BALL, OF CHICOPEE, MASSACHUSETTS.

GOLD-WASHER.

Specification of Letters Patent No. 6,535, dated June 19, 1849.

To all whom it may concern:

Be it known that I, WILLIAM BALL, of Chicopee, in the county of Hampden and State of Massachusetts, and invented a new and useful Machine for Separating Gold from the Ore or Extraneous Matters by Means of Mercury and Water; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings Figure 1, denotes a side elevation of my machine. Fig. 2, a central longitudinal and vertical section of it, and Fig. 3, a top view of it.

A, in the said drawings represents a circular cistern or vessel, the bottom of which is made concave or inclining from the circumference or sides toward the central part of it. Within and across the said cistern, and just above the bottom of it, a horizontal partition or plate B, is fixed, the said plate being punctured with numerous holes *a*, *a*. From the middle part of said plate a hollow tube or shaft C, extends vertically upward, and has a tunnel or bell mouth vessel D, affixed on its upper end. A pivot *b*, is projected from the central part of the underside of the vessel or cistern A, and rests on a step or bearing *c*, made in or upon the bed beam *d*, of a supporting frame E. The upper part of the shaft C, is sustained by an arm *e*, of the frame E, and so as to turn or rotate in a suitable bearing made in or upon the said arm. At a short distance below the top of the vessel D, a strainer plate, or wire sieve G is made to extend within and across the vessel, and to support the upper end of a tube H, which is made to extend down through the middle part of the tube or hollow shaft C, and nearly to the bottom thereof as seen in Fig. 2. A small tunnel I, is attached to the upper end of the tube H, extends above the strainer plate G, opens into the tube H and has several openings *f*, *f*, &c., made through its sides, just above the bottom orifice or opening into the tube H. The object of the tube H, is to prevent packing of the auriferous earth within the tube C, in the column of water which flows down through it will undermine the packing should it ever take place. The lower end of the upright hollow shaft C, opens into the space below the plate B. The diffusion of water and several streams on the mass of earth in the sieve G, serves to prevent packing of the earth in or below said plate.

The circular vessel A, is surrounded by a circular rim K, whose upper surface is formed into two concentric shallow grooves L, M, and a concentric and deeper groove or channel N, all of which are arranged with respect to each other and the vessel A, as seen in the drawings. A passage of communication *h*, is made from the outer groove or channel N, into the vessel A, the same being seen in Fig. 2. There is also a discharge passage *i*, made through the bottom of the vessel A, and opening out of the central part thereof; the said passage while the machine is in operation being kept closed by a cork or plug inserted in it.

A rope or strap of leather *o*, is fastened at its middle to the upright post *k*, of the frame E, the two ends of the rope being respectively fastened to the two opposite sides of the outer rim of the vessel A, the strap being of such length as will permit the vessel to have a reciprocating rotary motion imparted to it. The tension of strap serves to check or stop the motion in either direction, and besides this to so suddenly check the movement, as to facilitate the sifting of the ore through the sieves or perforated plates. It also serves to agitate the sand on the surface of the vessel A, in order to keep it in a liquid state, so that the little balls or particles of mercury cut up and carried off by the sand and water passing through the mercury in the bath may have a chance to settle and by friction against the mercurial rings be united to them and thereby returned to the main bath A. A handle S projects from the vessel A. In order to give to the vessel the proper horizontal reciprocating movement, the operative takes hold of the handle S, and thereby moves or rotates the vessel, its shaft C, and belt mouth D, back and forth in one direction, and next in the other against the strap.

In the use of the machine the vessel or bath A, and the shallow concentric grooves L, M, are to be filled or nearly filled with mercury. A stream of water is allowed to flow into the tunnel I, and thence not only out of the lateral orifices *f*, *f*, but down the pipe H, and into the vessel A, thence upward through the mercury therein and over the top of the vessel, and over the concentric rings of mercury in the grooves L, M; thence

over the groove N, and to escape over the edge of the rim K. The auriferous ore after being stamped or powdered to a fine powder or dust is strewn or thrown on the top of the sieve or perforated partition *g*, and in such manner that the streams of water flowing laterally out of the tunnel I, may fall or impinge directly upon it, and carry it down through the perforated plate, and into the hollow tube or shaft C, thence into and through the mercury and over the rim K.

During the passage of the auriferous earth through the mercury the latter abstracts the gold, or metallic portion of it. As more or less mercury will naturally be washed out of the vessel A, by the force of the current of water, such portion which may so escape will be caught by the concentric rings of mercury, which as they enlarge beyond what the grooves L, M, are capable of containing, will throw off the surplus into the surrounding channel N, that communicates directly with the vessel A, as before described. The auriferous earth is forced through the mercury bath by the superincumbent column or pressure of water in the hollow shaft. The mercury or any deposit in the vessel A, may be removed through the pipe or passage leading out from the bottom of the same.

I claim—

1. In combination with the mercury bath, a surrounding channel or groove N, made to communicate therewith by a passage *h*, and applied so as to intercept the mercury which may be thrown out from the bath, whereby the mercury thrown out is again returned to the central cistern without intervention on the part of the operator.

2. And in combination with the elements above described I claim one or more concentric mercurial rings arranged between it and the cistern or bath A; the same not being made to communicate with the main vessel or bath by any passage; the same being for the purpose of intercepting the small escaped particles of mercury, and retaining them until so washed by the water that they will coalesce with the mercury contained in said ring or rings.

3. And I claim the central tube H as well as its perforated water diffusor or tunnel I, in combination with the main hollow shaft, its bell mouth vessel or top, and perforated partition or separator G; the whole being made to diffuse and apply the water to the auriferous earth and mercury bath and prevent packing of it within the tube C essentially as described.

In testimony whereof I have hereto set my signature this tenth day of April A. D. 1849.

WM. BALL.

Witnesses:

GEORGE WALKER,

AUG. L. SOULE.