(No Model.)

H. E. HENWOOD.

ORE SEPARATOR.

No. 259,982. Patented June 20, 1882.

Fig: 1.

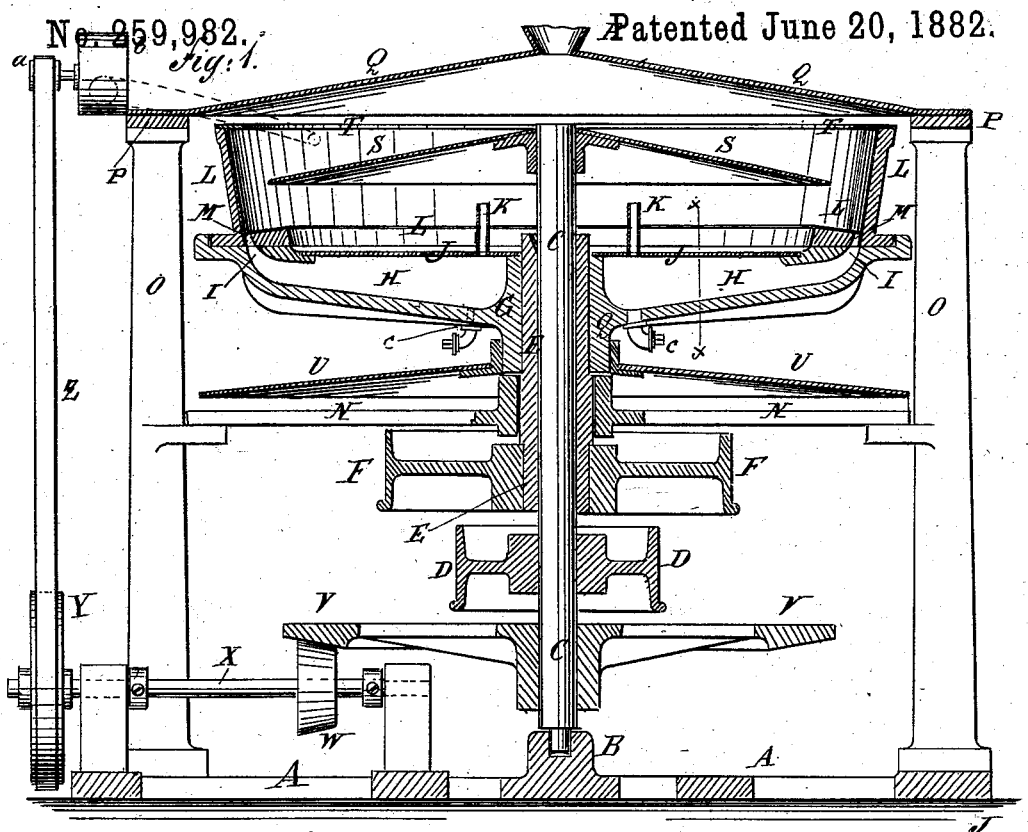


Fig: 2.

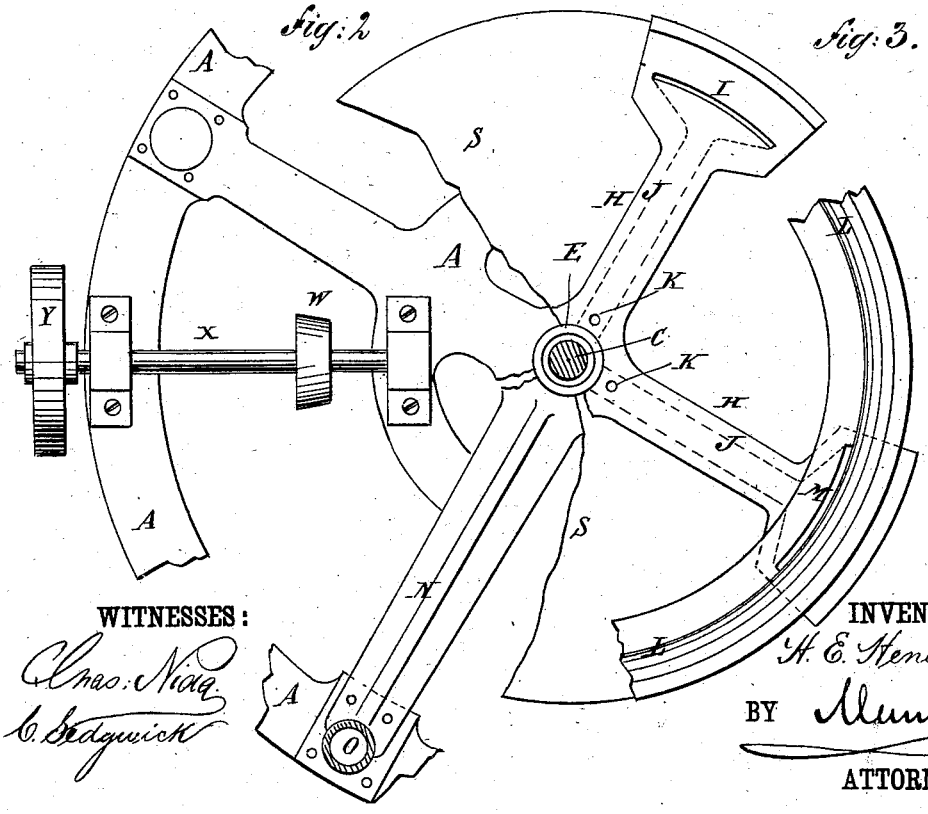
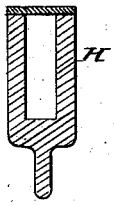


Fig: 3.



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HORACE E. HENWOOD, OF NEW YORK, N. Y.

ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 259,982, dated June 20, 1882.

Application filed February 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, HORACE EDWIN HENWOOD, of the city, county, and State of New York, have invented a new and useful Improvement in Ore-Separators, of which the following is a full, clear, and exact description.

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

Figure 1 is a vertical sectional view. Fig. 2 is a plan view of different parts of the same. Fig. 3 is a sectional elevation of one of the hollow arms, taken through the line *x x*, Fig. 1.

The object of this invention is to facilitate the separation of gold and other precious metals from powdered ores and fine sand.

The invention consists in the combination, with the sleeve rotating upon a vertical driving-shaft and the amalgamating-pan having slots in its bottom, of hollow arms connecting the said sleeve and pan and having slots in the upper sides of their outer ends, whereby quicksilver is projected from the interior of the said arms over the inner surface of the rim of the said pan to separate the metal from powdered ore or sand projected against the said surface; and, also, in the combination, with the shaft carrying the amalgamating-pan and the fan-blower, of friction-wheels, a horizontal shaft, and pulleys and a belt, whereby the fan-blower will be driven from the shaft carrying the amalgamating-pan, as will be hereinafter fully described.

A is the base-frame of the machine, to which is attached, or upon it is formed, a step or bearing, B, for the lower end of the vertical shaft C.

To the shaft C is attached a pulley, D, to receive a driving-belt for giving motion to the said shaft. Upon the shaft C, above the pulley D, is placed a sleeve, E, to the lower end of which is attached a pulley, F, to receive a belt for giving motion to the said sleeve. Upon the upper end of the sleeve E is placed and to it is attached a hub, G, with radial arms H. The arms H are made hollow, or have deep channels formed in their upper sides and extending from their inner ends nearly to their outer ends. The arms H rise outwardly and then curve upwardly at the ends, which are made wide and with flat upper sides, in which are formed long and narrow curved slots I, opening into the cavities or channels of the said arms H. The slots I are curved upon the arc of a circle having its center in the axis of the shaft C. The open upper sides of the arms H are covered and tightly closed by plates J, of sheet metal.

In the inner part of each plate J is formed a small hole, to allow the air in the interior of the arms H to escape when quicksilver is being poured into the said arms, and in the said air-holes are secured the lower ends of small pipes K, to prevent sand from entering the said air-holes, the said pipes being of such a length that their upper ends will be above the bottom of the amalgamating-pan L. The pan L is secured to the upper sides of the arms H, and is made in the form of an annular plate having a flaring rim, and having its upper surface inclined downward toward the flaring rim. In the bottom of the pan L, at the inner side of its flaring rim, are formed curved slots M, corresponding in shape, size, and position with the slots I of the radial arms H. The pan L is designed to be lined with amalgamated copper plates in the ordinary manner. With this construction, the machine is charged by pouring quicksilver into the pan L, so that it will flow through the slots M I into the interior of the hollow arms H, the air within the said arms escaping through the pipes K. The separator is supported in an upright position by the spider N, in the hub of which the sleeve E revolves, and the outer ends of its arms are secured to posts O, attached to the base-frame A.

To the upper ends of the posts O, or to an annular plate, P, attached to the said posts, is secured the edge of a conical cover, Q, in an opening in the apex of which is secured a hopper, R, through which the powdered ore or sand is introduced into the machine.

To the upper end of the shaft C is attached the apex of a conical plate, S, which receives the powdered ore or sand from the hopper R and distributes it against the flaring rim of the pan L. The powdered ore or sand is kept from passing over the upper edge of the flaring rim of the pan L by an inwardly-projecting flange, T, formed upon or attached to the upper edge of the said rim.

To the middle part of the sleeve E is attached

the apex of a conical plate, U, which receives the sand as it drops from the inner edge of the pan L and discharges the said sand beyond the frame of the machine.

To the lower part of the shaft C is attached a large beveled friction-wheel, V, the face of which engages with the face of a small beveled friction-wheel, W, attached to the horizontal shaft X. The shaft X revolves in bearings attached to the base-frame A, or to supports attached to the said frame, and to its outer end is attached a pulley, Y, around which passes a belt, Z. The belt Z also passes around the pulley *a* of the fan-blower *b*, so that the said fan-blower will be driven from the shaft C. One or more fan-blowers, *b*, can be used, and their discharge-spouts are so arranged as to direct the air-blast against the inner surface of the flaring rim of the pan L in a downwardly-inclined direction, so that the said blast will blow off the sand that may adhere to the surface of the quicksilver spread over the inner surface of the rim of the pan L. With this construction, when the machine is being used the centrifugal force engendered by the revolution of the pan L will cause the quicksilver in the hollow arms H to rise through the slots I M and spread itself over the flaring inner surface of the rim of the pan L, so as to take up any gold or silver in the powdered ore or sand projected against the said surface from the distributing-plate S. The refuse sand falls from the inner edge of the pan L upon the discharge-plate U, and is projected beyond the frame of the machine. As the motion of the pan L is checked or stopped the quicksilver and amalgam flow back through the slots M I into the arms H, and can be drawn off, when desired, through discharge pipes or faucets *c* in the lower part of the said arms H.

If desired, the friction-wheels V W may be replaced by beveled-gear wheels, as will be readily understood.

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

1. In an ore-separator, the combination, with the shaft C, rotating sleeve E, and the amalgamating-pan L, having slots M in its bottom, of the hollow arms H, having slots I, substantially as herein shown and described, whereby quicksilver is projected from the interior of the said arms over the inner surface of the rim of the said pan, as set forth.

2. In an ore-separator, the combination, with the shaft C, carrying the amalgamating-pan, and the fan-blower *b*, of the friction-wheels V W, the horizontal shaft X, and the pulleys and belt Y *a* Z, substantially as herein shown and described, whereby the fan-blower will be driven from the shaft carrying the amalgamating-pan, as set forth.

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Witnesses:
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