S. L. NEWBERRY.

Amalgamator.

No. 204,447. Patented June 4, 1878.

Fig: 1.

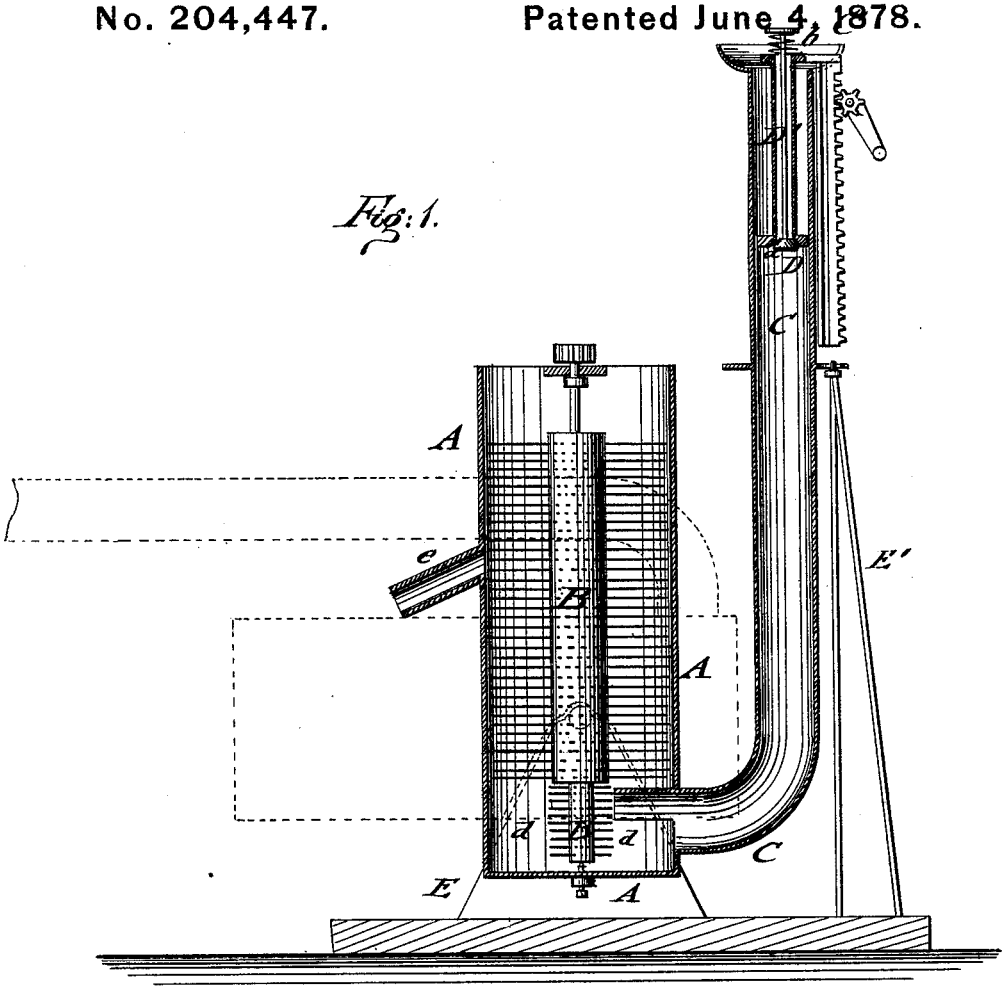
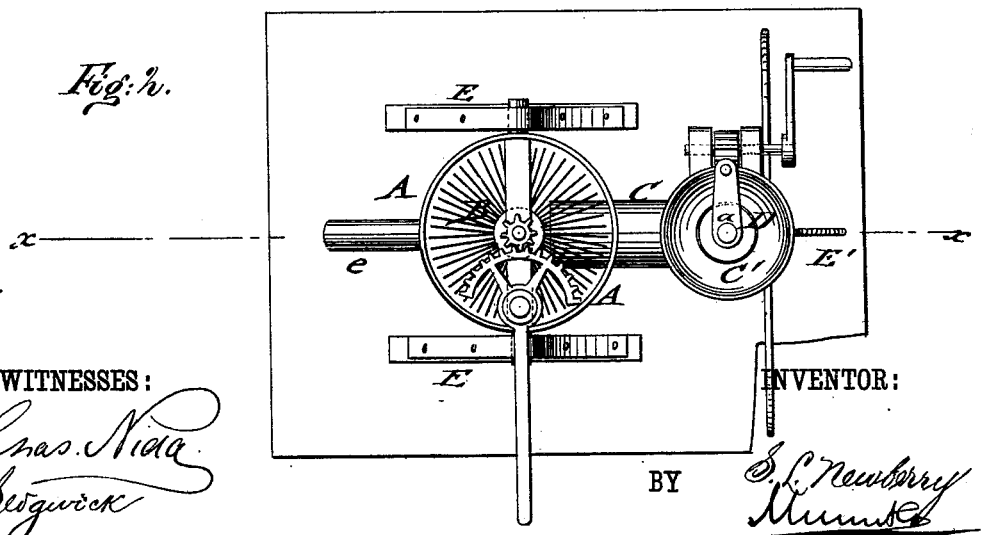


Fig: 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

SQUIERS L. NEWBERRY, OF NEW YORK, N. Y.

IMPROVEMENT IN AMALGAMATORS.

Specification forming part of Letters Patent No. **204,447**, dated June 4, 1878; application filed March 14, 1878.

To all whom it may concern:

Be it known that I, SQUIERS L. NEWBERRY, of the city, county, and State of New York, have invented a new and Improved Amalgamator, of which the following is a specification:

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my improved amalgamator on line *x x*, Fig. 2; and Fig. 2, a plan view of the same.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish, for the purpose of working off gold-bearing sand in rapid, effective, and economical manner, an improved amalgamating apparatus, that separates the gold particles from the sand or dirt and amalgamates them, while the sand is worked off above the same.

The invention will first be described in connection with the drawing, and then pointed out in the claims.

Referring to the drawing, A represents a cylindrical receptacle of suitable size, that is closed at the bottom and open at the top. On a step-shaped bearing in the bottom, and in a bearing of a diametrical cross-piece at the top of the receptacle A, is supported the center shaft of the agitator B, to which a vibratory motion is imparted by a pinion-and-segment gear at the upper end, or by other equivalent mechanism.

The receptacle A is connected to a feed-tube, C, that enters into the receptacle near the bottom thereof, and which is charged at the top with the gold-bearing sand or dirt by means of a hopper, C′.

When the feed-tube is charged, a tightly-fitting plunger, D, at the lower end of a hollow plunger-rod, D′, is lowered by means of a rack and pinion or other device operated by a hand-crank.

The plunger D is provided with a central valve, *a*, whose stem or spindle extends through the hollow plunger-rod, and is supported at the upper end by a spiral or other spring, *b*.

The spring-cushioned valve serves for the purpose of admitting air to the feed-tube when the plunger is desired to be raised out of the same for the purpose of receiving a new charge.

The lower end of the feed-tube, inside of the receptacle, is cut off at the lower part, the upper part being extended to near the center of the receptacle, and brought into close proximity to shorter stirrer-arms *d* at the lower part of the agitator B.

The sand is taken up by the shorter arms at the lower part of the receptacle, and conducted from the same to the longer stirrer-arms at the upper part of the agitator. At or near the level of the upper end of the agitator the receptacle is arranged with a discharge-spout, *e*, through which the same is worked off to the outside.

The operation of the amalgamator is as follows: The plunger is first withdrawn from the feed-tube, and the gold-bearing sand or dirt then charged into the same. A small quantity of water is then placed in the tube to act as cushion, and the plunger lowered by means of the crank and gear, so as to force the sand gradually into the receptacle A. It is there taken up by the agitator in the receptacle, and mixed intimately with the quicksilver, first by the action of the shorter arms, and then by the action of the longer bristles. The vibratory action of the agitator beats up the sand, and causes the perfect amalgamating and settling of the gold particles. On the sand in the receptacle is placed a head of water, for the purpose of keeping the quicksilver at the lower part of the receptacle below the discharge-spout, and producing the working off of the sand without any loss of quicksilver, the sand floating on the quicksilver, and the water serving as a kind of partition for the quicksilver and sand.

The receptacle is pivoted by side trunnions to suitable side supports E, and the feed-tube also supported on a suitable standard, E′, so that the whole apparatus may be tilted for removing the amalgam and gold particles with great effectiveness to the retort, the apparatus producing the separation of almost all the gold particles contained in the sand or dirt.

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

1. The combination, with an amalgamator-receptacle, A, of a vibratory agitator, B, having short arms *d* below the long ones, and a feed-tube, C, extending into the receptacle to

the edge of said short arms, as and for the purpose described.

2. The combination, with receptacle A, agitator B, having short arms *d* below the long ones, and feed-tube C, extending into said receptacle to said short arms, of the close-fitting plunger D, having spring-valve, as and for the purpose set forth.

3. The combination, with receptacle A, agitator B, having short arms below the long ones, and a feed-tube, C, extending to said short arms, of the pinion on the upper end of agitator-shaft, and an arc-rack attached to an operating-arm, as and for the purpose specified.

SQUIERS L. NEWBERRY.

Witnesses:

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