

D. E. Rose.  
Amalgamator.

N<sup>o</sup> 61262

Patented Jan. 15, 1867

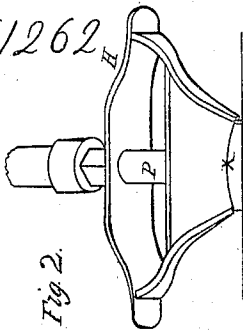


Fig. 2.

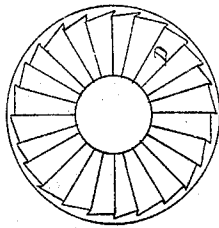


Fig. 3.

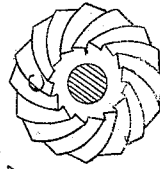


Fig. 4.

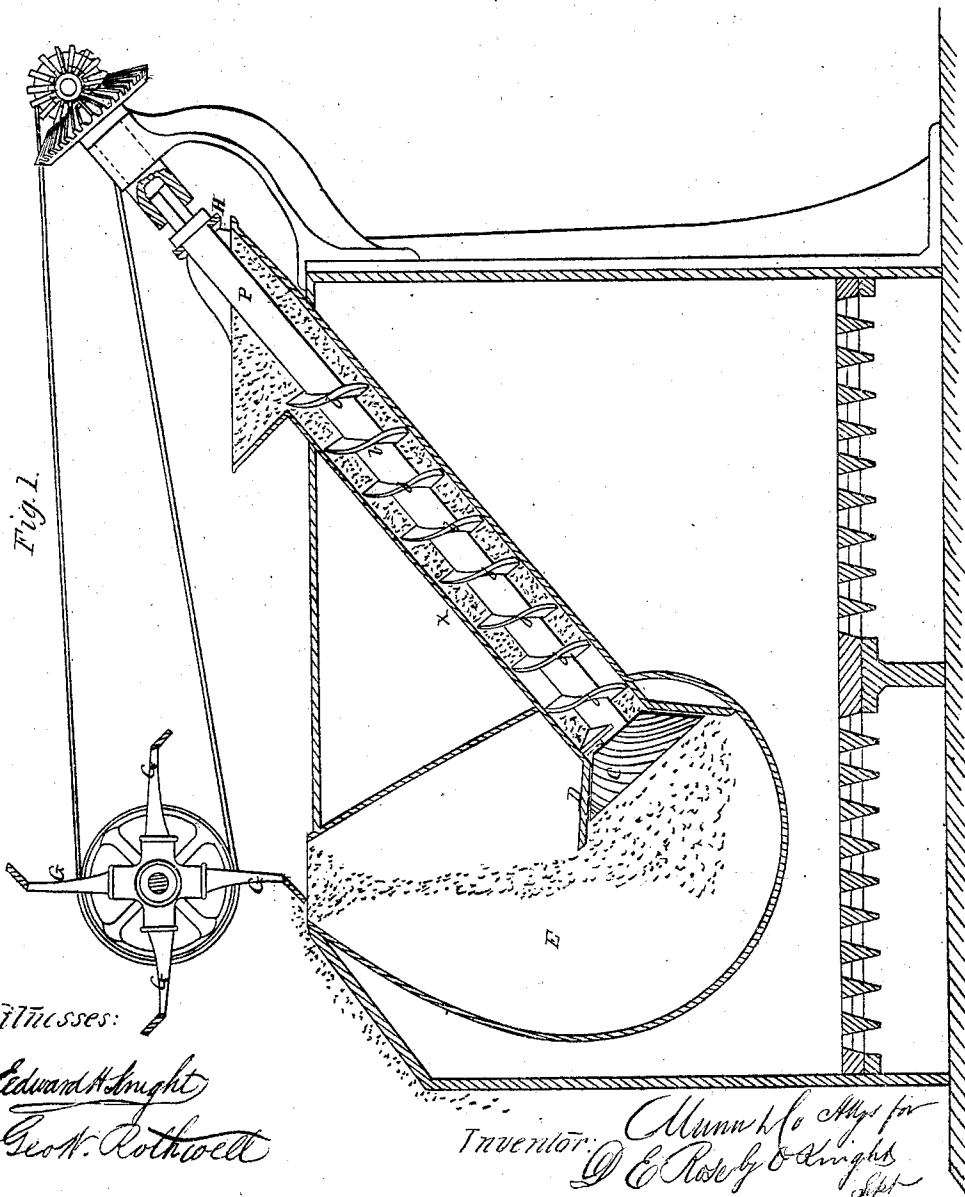


Fig. 1.

Witnesses:

Edward Abright  
Geo. W. Rothwell

Inventor: D. E. Rose by Abright & Co. Attys for

# United States Patent Office.

D. E. ROSE, OF CINCINNATI, OHIO.

Letters Patent No. 61,262, dated January 15, 1867.

## IMPROVED AMALGAMATOR.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, D. E. ROSE, of Cincinnati, in the county of Hamilton, and State of Ohio, have invented a new and improved Amalgamator; and I do hereby declare the following to be a full, clear, and exact description of the same, sufficient to enable one skilled in the art to which the invention appertains to make use of it, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a vertical section.

Figure 2 is a detached view of the sectional crank connection and the spring beams.

Figures 3 and 4 are views of the grinding surfaces detached.

This apparatus consists of a kettle to contain melted lead, and a feeding arrangement which carries the auriferous quartz to the bottom of the kettle and delivers it between grinding surfaces into the molten lead through which it rises, the gold becoming amalgamated with the lead and the quartz being scraped from the top by a paddle.

In the drawings, E is a kettle supported in a furnace by the heat of which the lead in the kettle is kept in a molten state. B is an inclined shaft, which is revolved by gearing at its upper end and provided with a serrated plate, C, at the lower end, shown in the detached view; the plate *c* works in connection with the annular plate D, at the lower end of the casing X, which proceeds from the hopper A, to the kettle E, entering the kettle so low down that the crushed quartz discharged from between the surfaces C D is compelled to ascend through the lead, being brought into such intimate contact therewith as to part with its gold, which becomes amalgamated with the lead and sinks to the bottom of the kettle. The shaft B has spiral flanges, *b*, around it, which carry down the quartz forcing it out at the bottom between the grinding surfaces as described, and it is supported above the hopper by a spring-plate, H, which permits such an amount of longitudinal motion as will enable the contents of the tubular casing to pass out between the surfaces C D. The kettle E is preferably constructed of cast iron, and may be from two to three feet deep. The cylinder X, and screw B *b*, will be of the same material, the latter from four to eight inches in diameter. The plates C D are shown in two detached views, each serrated on the face, one obliquely and the other radially. By the arrangement of the grinding plates C D, the quartz is regularly discharged in fine particles into the melted lead, and not in such quantity as to chill the lead, or in masses which do not expose all their metallic matter to the action of the lead bath in their upward passage. The quartz deprived of its metal rises to the surface of the lead and is scraped off by the revolving paddle K. The shaft B is made in two sections so as to give the described longitudinal motion to the lower portion, to admit the passage of the auriferous quartz between the plates C D, and at the same time keep the upper end in proper relation to the gearing which revolves it. The lower portion is supported by a shoulder on the spring-plate H, and the upper is socketed into it in any suitable way to admit the extension of the lower portion as the quartz passing the plates C D draws it downward, springing the bearing-plate H, on which it is supported and journalled. This adjustability prevents the clogging of the quartz while bringing such a grinding pressure upon it as to comminute it and mix it with the lead. The upper section of the shaft is set in boxes. The kettle I prefer to make bulging at the bottom, but an oblong square at the top to enable the paddle G to remove the quartz; its contracted area at the top exposes less surface of lead to oxidization. The exposure of the quartz in the case X to the action of the fire dries it, and as the case enters the kettle from the outside and near the bottom, the quartz has the whole height of the lead through which to ascend. No impediment is offered by the machinery to the rise of the quartz, nor does the machinery which enters the kettle tend to cool and congeal the lead. The upper surface is free and the removal of the spent quartz unimpeded. I can operate upon auriferous or gold-bearing sand by this apparatus.

Having described my improvement, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the spring bearing H, and inclined sectional shaft B, provided with spiral flange revolving in the case X, which enters the kettle E near the bottom, substantially as described.
2. I claim the combination of the inclined casing X, provided at its lower end with stationary grinding flange D, and the shaft B, provided with a grinding disk C, introduced through the side of the kettle and operating near its bottom, substantially as described.
3. In combination with the kettle, arranged as described, I claim the revolving paddle G, as described and represented.

Witnesses:

G. A. CORNÉ,  
E. Z. STONE.

D. E. ROSE.