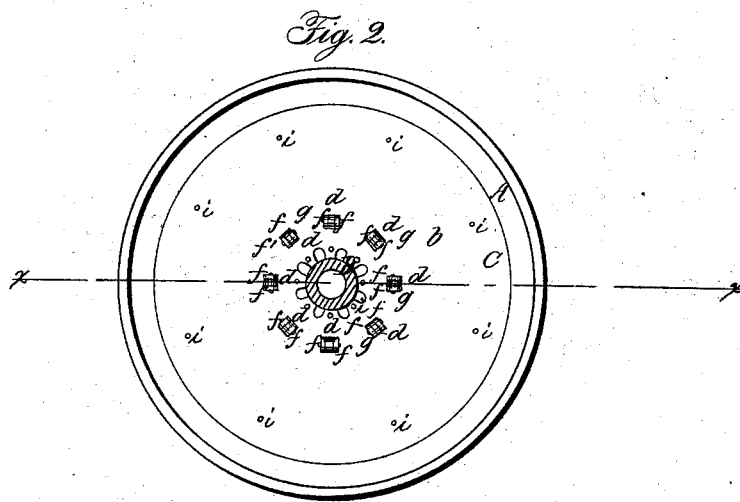
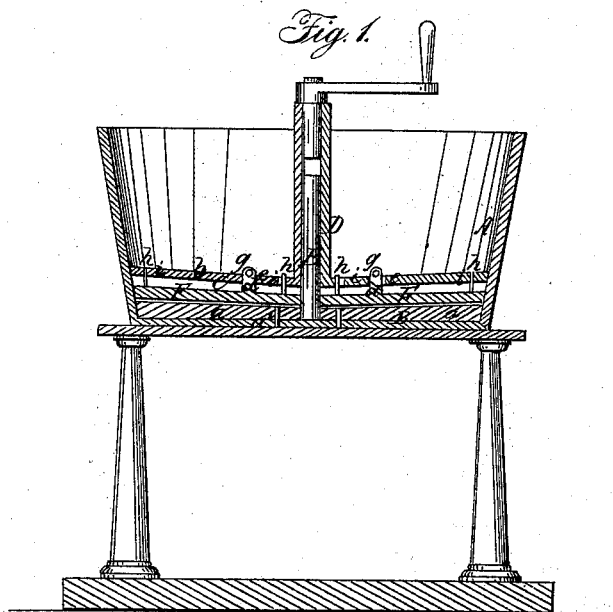


M. B. DODGE.
Ore Amalgamator.

2 Sheets—Sheet 1.

No. 47,808.

Patented May 23, 1865.



Witnesses:

*Wm. Brown
Fres. Lusch*

Inventor:

M. B. Dodge

M. B. DODGE.
Ore Amalgamator.

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Fig. 3.

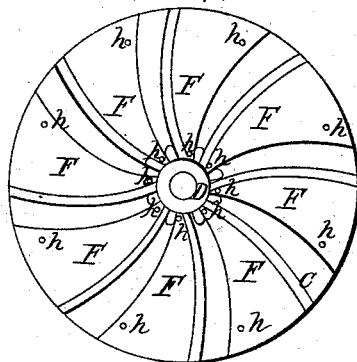


Fig. 4.

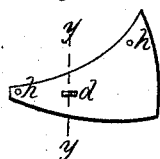
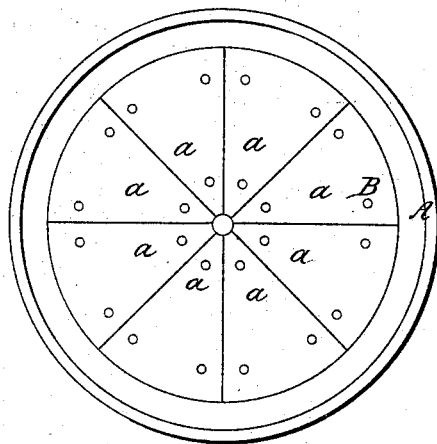


Fig. 5.



Fig. 6.



Witnesses:

Wm. Brewster
Geo. T. Smith

Inventor:

M. B. Dodge

UNITED STATES PATENT OFFICE.

M. B. DODGE, OF NEW YORK, N. Y.

IMPROVED APPARATUS FOR GRINDING AND AMALGAMATING ORES.

Specification forming part of Letters Patent No. 47,808, dated May 23, 1865.

To all whom it may concern:

Be it known that I, M. B. DODGE, of the city, county, and State of New York, have invented a new and Improved Ore-Grinder and Amalgamator; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet No. 1, is a vertical section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same; Fig. 3, a detached inverted plan or face view of the muller; Fig. 4, a detached plan or top view of one of the shoes of the muller; Fig. 5, a section of Fig. 4, taken in the line *y y*; Fig. 6, a plan or top view of the pan of the device, the muller being removed.

Similar letters of reference indicate corresponding parts.

This invention relates to a new and improved machine for grinding and amalgamating, for grinding ores in a dry state, and for amalgamating the precious metals contained therein to separate said metals from the foreign substances of the ore.

The invention consists in an improved manner of attaching the shoes to the muller, as hereinafter set forth, whereby said shoes are enabled to adjust themselves to the bed or bottom of the pan, thereby compensating for the wear of the shoes and causing the parallelism of the latter with the bed or pan bottom to be preserved at all times, which adds greatly to the efficiency of the machine, as will be presently shown.

A represents a pan, in which the ore to be ground or amalgamated is placed. This pan may be of cast-iron of circular form, slightly inclined at the side, and having a bottom, B, slightly concave at its upper surface. This bottom B is composed of a series of V-shaped plates, *a*, bolted to a plate, *a'*, as shown in Fig. 4. These plates *a* may be of cast-iron, and they compose the stationary bed at the bottom of the pan on which the muller works.

C is the muller, which consists of a circular

plate, *b*, slightly concave, corresponding to the upper surface of the bottom B of the pan, (see Fig. 1,) said muller being formed or cast with a central tube, D, which is fitted on a shaft, E, projecting vertically from the center of the pan-bottom. The plate *b* of the muller has a series of shoes, F, at its under or face side. These shoes are of curved taper form, as shown clearly in Figs. 3 and 4, and they extend from near the center of plate *b* to its periphery, and have their front convex sides rounded, as shown at *c*, Fig. 5, to admit of the ore to be ground or amalgamated passing readily underneath them. The shoes F are not in contact, spaces being allowed between them, as shown clearly in Fig. 3. The shoes F are attached to the plate *b* of the muller as follows: Each shoe is provided with an upright projection, *d*, and these projections extend up through slots *e* in the plate *b* and between lugs or ears *f* at the upper side of said plate, and have pins *g* passing through them. Each shoe, therefore, it will be seen, works on a center, its pin *g*, and hence is rendered capable of adjusting itself to compensate for wear. The outer parts of the shoes F, it will of course be seen, have much more work to perform than the inner parts, and hence are subjected to more wear, and if some means were not employed to compensate for this wear the parallelism of the shoes and the pan-bottom would not be preserved and the device would operate very imperfectly—a contingency fully obviated by my invention. Each shoe is provided with two guide-pins, *h*, which work in holes *i* in the plate *b*. This mode of pivoting the shoes to the plate *b* of the muller enables the latter to be made strong and durable and capable of being used for grinding dry ore. The feature of self-adjusting shoes is not new, the same may be seen in an amalgamator patented by me May 3, 1864. This patented machine answers a good purpose for amalgamating, but it cannot be made as strong and durable for grinding dry ores as would be desirable.

A spring may be applied to the shoes to assist in adjusting them; but I do not deem them strictly necessary.

I do not claim, broadly, the employment or use of self-adjusting shoes applied to a muller of an amalgamator and ore-grinder; but

I do claim as new and desire to secure by Letters Patent—

The attaching of the shoes to the muller by pivots, or in such a manner that they will

work or adjust themselves from a center or from a hinge or pivoted point with or without springs, substantially as set forth.

M. B. DODGE.

Witnesses:

M. M. LIVINGSTON,
C. L. TOPLIFF.