F. G. BELKNAP.

Ore Amalgamator.

No. 52,015. Patented Jan 16, 1866.

Fig. 1.

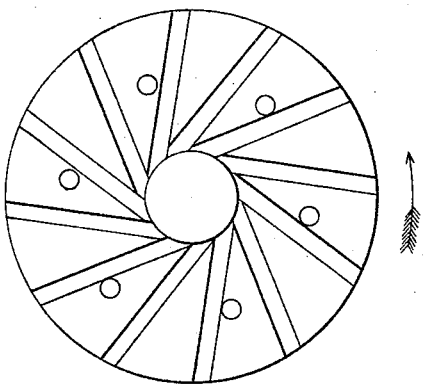


Fig. 2.

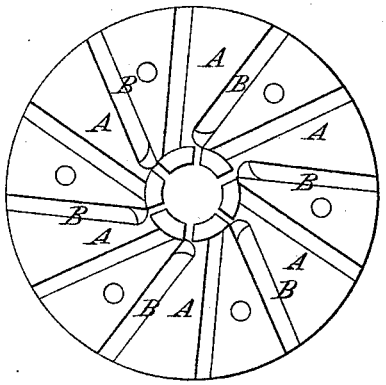


Fig. 3.

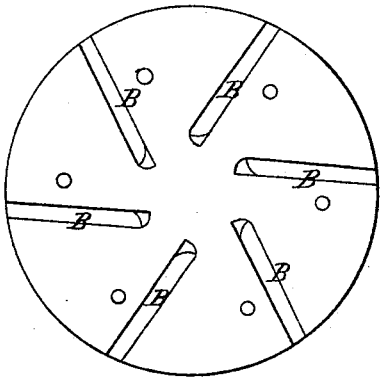


Fig. 4.

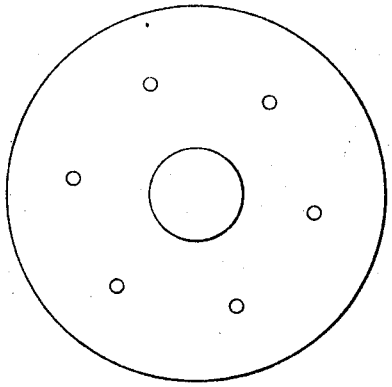


Fig. 5.

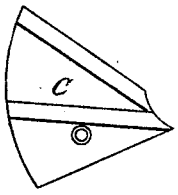
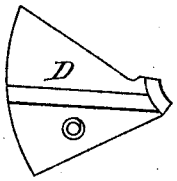


Fig. 6.



Witnesses:

Wm Smith

Wm. H. Bradshaw

Inventor:

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By Dewey & Co

Attys

UNITED STATES PATENT OFFICE.

F. G. BELKNAP, OF WASHOE, NEVADA.

IMPROVEMENT IN SHOES AND DIES FOR GRINDING AND AMALGAMATING MACHINES.

Specification forming part of Letters Patent No. **52,015**, dated January 16, 1866.

To all whom it may concern:

Be it known that I, F. G. BELKNAP, of the city of Washoe, county of Washoe, State of Nevada, have invented certain new and useful Improvements in Shoes and Dies for Grinding and Amalgamating the Precious Metals; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the drawings which accompany this specification, in which—

Figure 1 is a bottom plan of a complete muller. Fig. 2 is a bottom plan, showing the dies in place. Fig. 3 is a bottom of pan with dies removed. Fig. 4 is a plan of muller without shoes. Fig. 5 is a plan of a shoe. Fig. 6 is a plan of a die.

The nature of my invention consists in the arranging of shoes and dies having grooves or channels cut obliquely from the circumference to the center, terminating in a line of a radius to the center or axis.

My invention also relates to beveled bars placed between each die and partially filling the grooves, for the purpose of keeping the ore near the same as they pass each other.

To enable others skilled in the art to make and use my improvements in shoes and dies for grinding and amalgamating the precious metals, I will proceed to describe its construction and operation.

The muller is composed of six or more iron shoes bolted to an iron disk having grooves or channels placed obliquely toward the center or axis, (shown at C C, Figs. 1 and 5,) and are cut perpendicularly on one side and beveled on the other. (Represented at A A A A, &c.)

The dies are similar in form to the shoes, also beveled to the bottom of a disk or pan, having a groove cut obliquely from the circumference of the disk or pan-bottom to the center or axis, and are slightly curved on one side toward the point of axis. Spaces are left between these dies, in which are placed bars of iron or wood B B B, &c., Fig. 3, beveled to near the point of the axis and fitting closely into the curvature of the dies, leaving the grooves on one side perpendicular and beveled on the other, and when the muller is let down and in motion these sharp edges meet each other and cut the pulp, after the manner of a pair of scissors.

In order to insure a constant and rapid flow of the pulp with an even and constant supply of the coarser particles of ore to be drawn through the machine and be operated upon by the grinding surfaces, the grooves should run obliquely, thus throwing the pulp out in a rapid manner, causing a vacuum, when the atmospheric pressure will cause a flow to where the power of the machine can, in turn, exert its greatest influence, and a steady rotary motion of the ore still maintained as long as is needed.

Other arrangements of shoes and dies have been constructed for grinding and amalgamating ores passing each other at the outer ends or verge of the circle first, and as they pass around they close in the middle for the purpose of preventing the ore or pulp from running under the muller, which has been ascertained by actual experiment that the centrifugal force is more than sufficient to keep it supplied, and without the grooves, as represented by my plan, there would not be a sufficiency of ore or pulp under the muller to grind; but by the use of shoes and dies constructed and arranged according to my plan these obstacles are entirely obviated and the muller constantly supplied with pulp or ore.

Having thus described my invention so as to enable any one skilled in the art or science to which it most nearly appertains to make and use the same without further experiment or invention, I will now state what I claim and desire to secure by Letters Patent.

I do not claim, broadly, the use of shoes and dies for the purpose of reducing amalgamating ores, for these are well known and used.

What I do claim, however, and desire to secure by Letters Patent, is—

Constructing and placing the shoes and dies upon upper and nether disks obliquely at about the angle, as described, together with the beveled bars B B B, &c., substantially as described, and for the purposes set forth.

In witness whereof I have hereunto set my hand and seal this 3d day of June, A. D. 1865.

F. G. BELKNAP. [L. S.]

Witnesses:

JAS. BATTERSBY,

JONAS WESCOATT.