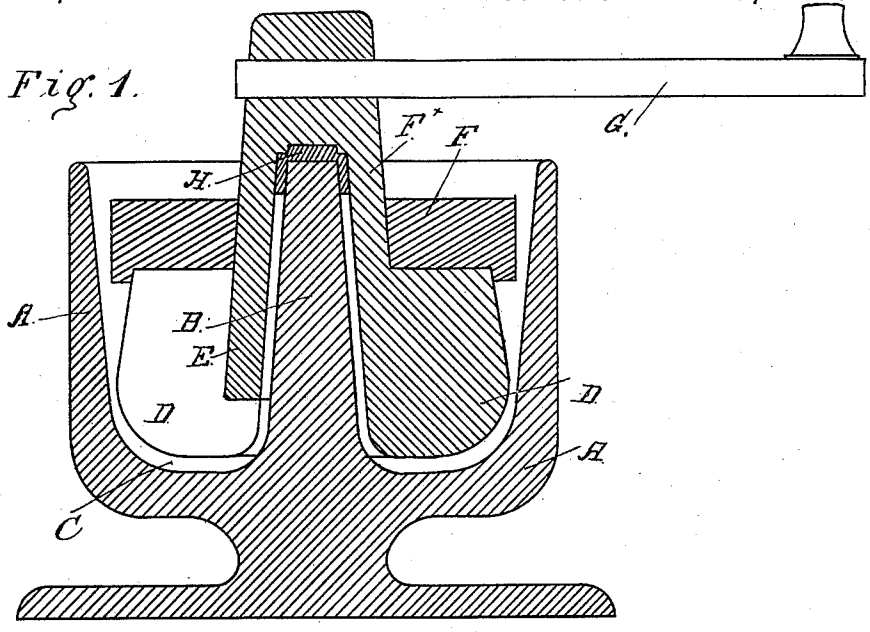
(No Model.)

G. W. WHITE.

GRINDING AND AMALGAMATING MORTAR.

No. 399,809. Patented Mar. 19, 1889.

Fig. 1.



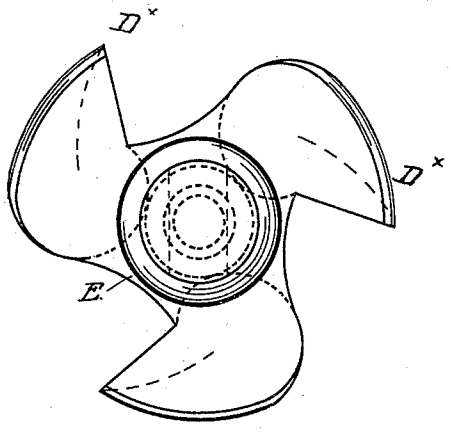


Fig. 2.

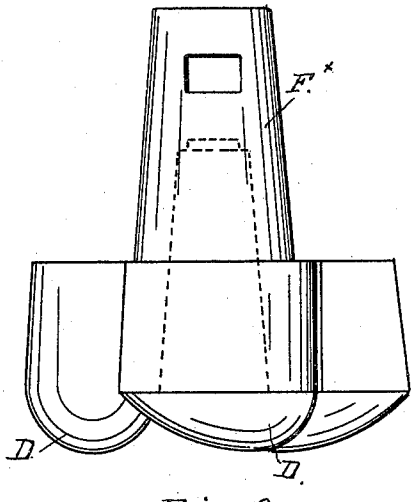


Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE W. WHITE, OF SAN FRANCISCO, CALIFORNIA.

GRINDING AND AMALGAMATING MORTAR.

SPECIFICATION forming part of Letters Patent No. 399,809, dated March 19, 1889.

Application filed April 16, 1888. Serial No. 270,856. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. WHITE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Grinding and Amalgamating Mortars, of which the following is a specification.

My invention relates especially to hand-mortars employed in laboratories and by prospectors in search of the precious metals, and has for its object the production of a device wherein the ore is caused to pass under the mullers or grinders of the mortar and be reduced and amalgamated in a much easier and more effective manner than by those devices heretofore employed.

The invention consists in the construction and combination of parts hereinafter described, and pointed out in the claims.

The drawings which form a part of this specification are referred to by figures and letters, and similar letters refer to similar parts throughout the several views.

Figure 1 is a transverse vertical section of my grinding and amalgamating mortar. Fig. 2 is a top view of muller. Fig. 3 is a side view of muller.

A represents the mortar, cast as a whole, with a conical upright center journal, B, around the face of which is formed an annular channel, C, for operation of the muller.

The muller is made hollow or with a hole or opening to fit down over the conical journal upon which it operates, and the lower end is cast spherical or pear shape, with two or more grinding projections, as at D D, with curved wings or flanges $D^{\times}$ $D^{\times}$; and in casting, these grinding-faces and wings are connected by webs E E, and when the muller is in position a channel is formed between the wings and side of the mortar for movement of the pulp down the channels between the wings as well as under the lower end of the connecting-webs, so that there will be a constant circulation of the pulp around the side of the mortar between it and the muller and down the channels under the openings of the webs to the grinding-faces of the muller. Thus it will be seen that the pulp is ground in the triturating-mortar in a continuous manner as the muller is rotated.

In practice the requisite amount of pulverized ore is fed to the mortar with the muller in position and the weighted cap F placed over the upper end or sleeve, $F^{\times}$, and the muller operated by the adjustable hand-lever G until the ore has received the necessary trituration or grinding, when the muller is lifted from the mortar and the thimble H placed over the end of the conical shaft or journal. By this means it will be seen that when the muller is replaced upon the conical journal the grinding-faces of the muller will be raised up from the ore in the annular channel, so that amalgamation with quicksilver of the ore may be made, which is accomplished in the usual way by the introduction of a sufficient quantity of quicksilver, when the muller is again operated until amalgamation is effected. The ore passing through the channels of the muller will be taken up without appreciably grinding or flouring the quicksilver.

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

1. In an ore grinder and amalgamator, the combination, with a mortar provided with an upright journal and an annular groove surrounding the base of said journal, of the triturating-muller having two or more pear-shaped grinding-faces with circulating channels or passages between them, journaled upon the journal of the mortar, and working in the groove thereof, as set forth.

2. In an ore grinder and amalgamator, the combination, with a suitable mortar, of a muller composed of two or more pear-shaped grinding-faces cast with wings or stirrers and connected by webs, whereby channels or ore-circulating passages are formed between the wings and underneath the webs, in the manner described.

3. In an ore grinder and amalgamator, the combination of a mortar provided with an upright shaft or journal, a grinding and amalgamating muller rotating thereon, and the adjustable thimble for raising or lowering the muller, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

GEORGE W. WHITE. [L. S.]

Witnesses:
C. W. M. SMITH,
ANDREW J. COFFEE.