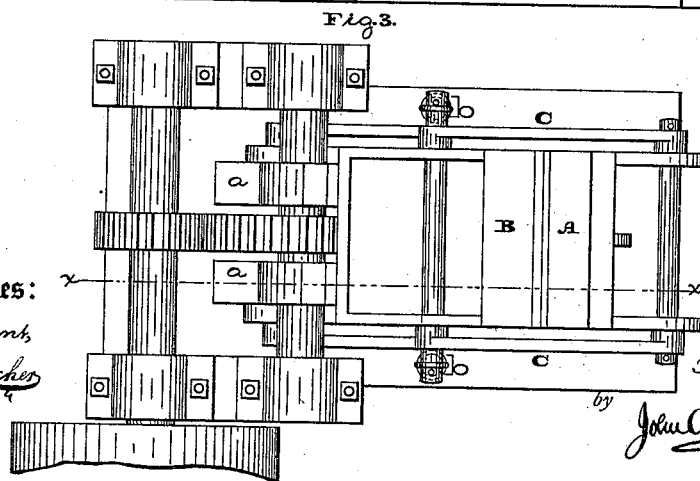
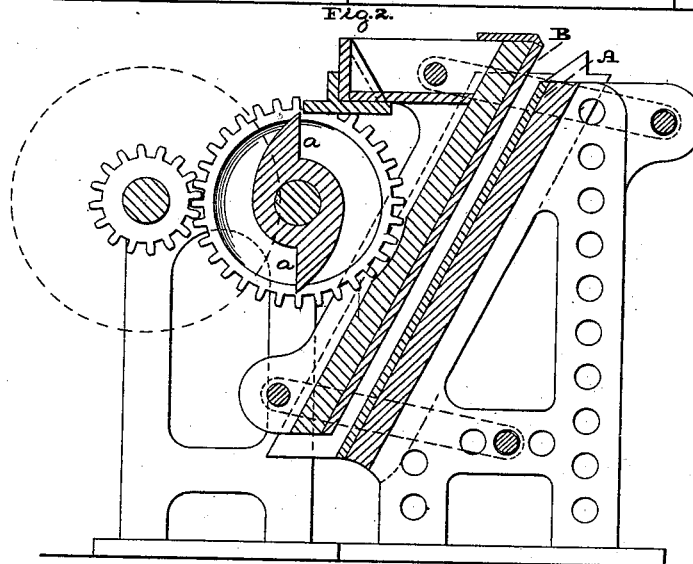
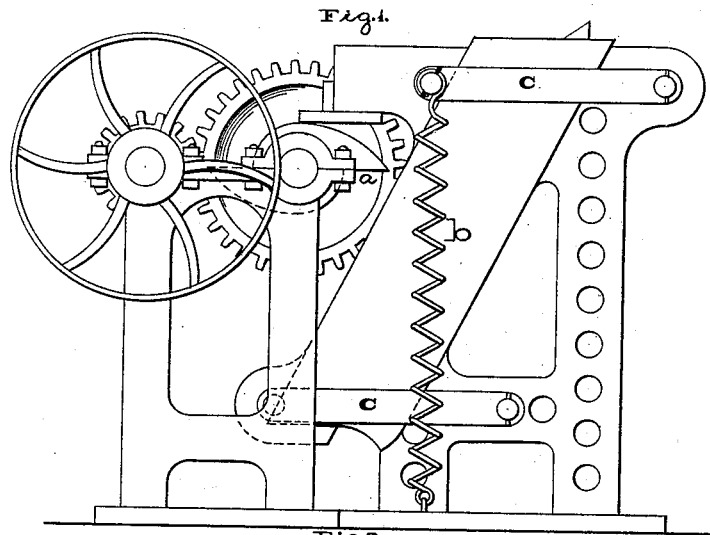


I. M. PHELPS.
Ore-Pulverizer.

No. 215,966.

Patented May 27, 1879.



Witnesses:

L. P. Grant,

H. P. Kircher

Inventor:

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ATTORNEY.

UNITED STATES PATENT OFFICE.

IRA M. PHELPS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN SHILLITO, JR., OF CINCINNATI, OHIO.

IMPROVEMENT IN ORE-PULVERIZERS.

Specification forming part of Letters Patent No. **215,966**, dated May 27, 1879; application filed April 3, 1879.

To all whom it may concern:

Be it known that I, IRA M. PHELPS, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Pulverizers, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation of the pulverizer embodying my invention. Fig. 2 is a longitudinal vertical section thereof in line *x x*, Fig. 3. Fig. 3 is a top or plan view thereof.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to that class of machines employed for pulverizing gold and silver bearing ores, and is adapted to allow the use of water or not, as circumstances may require.

It consists, essentially, of an inclined mortar and a beater or hammer having the same face area as said plane and parallel with it. Their arrangement and operation are such as to allow the ore, in the condition of coarse sand or fine gravel, to run down the incline by its own gravity, either dry or with water, and to be subjected to repeated blows by the hammer during its descent, by which operations it is reduced to any degree of fineness required for amalgamation.

Referring to the drawings, A represents an open-ended inclined mortar-plane or anvil-plate, which is firmly supported, and its face extends at an inclination of, say, not less than forty-five degrees, and B represents a beater or hammer having the same face area as the plane, and arranged parallel with and over it. To the upper and lower ends of the beater or

hammer are pivoted parallel bars C C, which are also pivoted to the upper and lower portions of the supports of the inclined plane A.

In order to lift the hammer, I employ, in the present case, cams *a a*, which are so constructed that when they have fully elevated the hammer they permit it to drop abruptly and forcibly, the power of the blows being increased by springs *b*, as shown, or weights suitably applied.

It will be seen that when the hammer is raised its face is kept parallel with that of the anvil-plate, and permits the ore to run down the latter by its own gravity. The hammer, descending vertically, strikes the inclined plate obliquely from above downward, the effect of which is to force the particles of ore downward at the instant of impact, and thus overcome the tendency to pack or clog—a difficulty frequently experienced in dry pulverization, and causing the positive discharge of the ore.

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

In a quartz or ore pulverizer, an open-ended inclined mortar and an inclined beater parallel therewith, in combination with operating mechanism whereby the ore is pulverized by repeated blows during its descent on said inclined mortar, and a positive discharge is produced, combined and operating substantially as set forth.

IRA M. PHELPS.

Witnesses:

JOHN A. WIEDERSHEIM,
SAML. M. GRICE.