(No Model.)

A. E. ROE.

CRUSHING MILL.

No. 375,199. Patented Dec. 20, 1887.

Fig. 1.

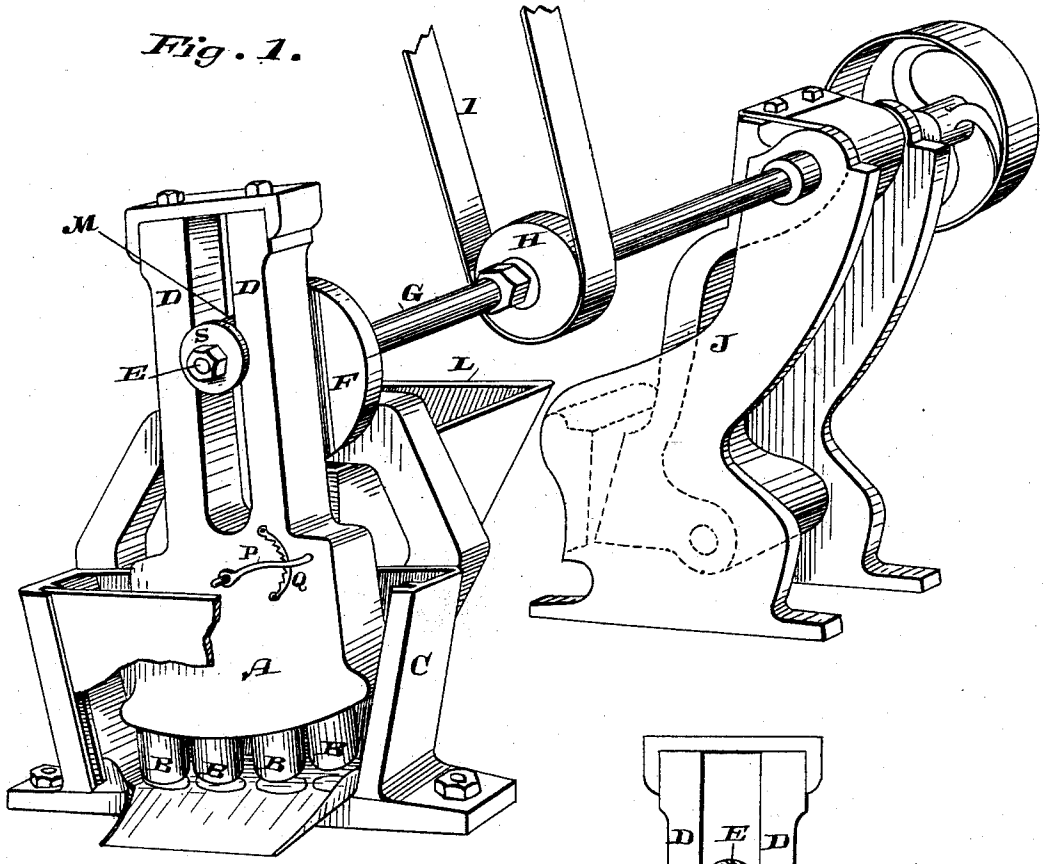


Fig. 2.

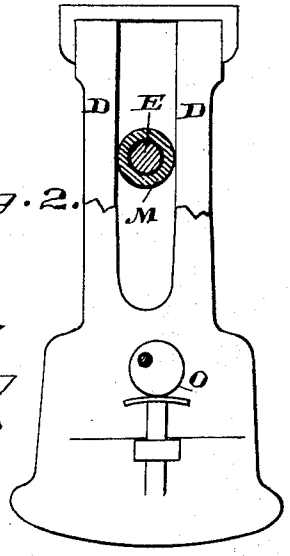
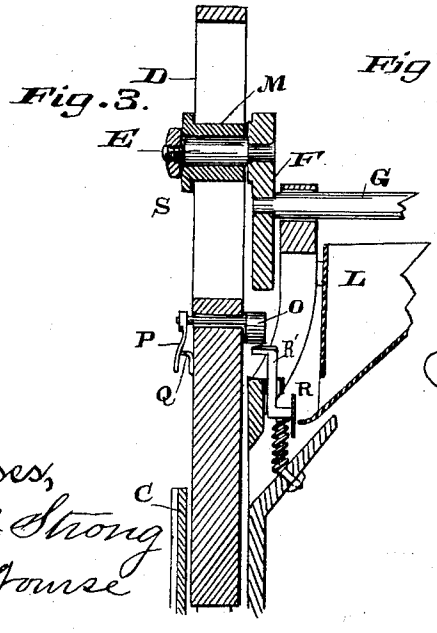


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALPHEUS E. ROE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO TATUM & BOWEN, OF SAME PLACE.

CRUSHING-MILL.

SPECIFICATION forming part of Letters Patent No. 375,199, dated December 20, 1887.

Application filed March 30, 1887. Serial No. 233,060. (No model.)

To all whom it may concern:

Be it known that I, ALPHEUS E. ROE, of the city and county of San Francisco, State of California, have invented an Improvement in Crushing-Mills; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improved mill for crushing quartz, rock, or other ores containing valuable metals; and it consists in the improved machine hereinafter described and claimed.

Figure 1 is a perspective view of my apparatus with a portion of the mortar broken away to show the stamps. Fig. 2 is a rear view of the stamp-block, showing the operating-pin and sleeve and the feeder-cam. Fig. 3 is a section.

A is a heavy block of metal of considerable length, having its lower surface rounded or curved in an arc of a circle. In this curved face are fitted the stamps B in such a manner that their lower or crushing faces are in a similarly curved arc.

C is a mortar, within which this block stands, and in the bottom of the mortar are dies corresponding with the stamps, and upon which they fall when the machine is in operation, so as to crush any ore which may be between them.

The upper part of the block A has vertical extensions D, with a slot between them, and this slot forms a guide into which a crank-pin, E, extends from the crank-wheel F. This wheel is fixed upon the driving-shaft G, which is caused to rotate, by means of a belt-pulley, H, and belt I, from any suitable or convenient source of power. At the opposite end of the shaft G is fixed a rock-breaker of the usual pattern, as shown at J, and this serves as a preliminary breaker to reduce the rock to such sizes that it may be afterward crushed by the stamps.

L is the hopper of the ore-feeder, into which the broken rock is delivered after passing through the rock-breaker, and R is a reciprocating feed-board which supplies the stamps from this hopper, said feed-board being connected with a lever, R′, as shown in Fig. 3. This ore-feeder is moved at each oscillation of the block carrying the stamps by means of an eccentric projection, O, which is mounted upon a shaft passing through the block A, so that it may be easily adjusted from the front to regulate the feed. Upon the outer or front end of the shaft is an arm, P, and a rack, Q, which holds this arm at any desired point.

By this it will be seen that the cam or eccentric O may be turned and set higher or lower, so as to strike the projecting arm of an ore-feeder at any time, as the block oscillates and thus keep a constant supply of ore beneath the stamps, and the adjustment is easily made without stopping the machine.

The crank has a rotating sleeve, M, fitted upon it so as to turn loosely, and this sleeve fits in the space between the guides D D. As the crank or eccentric turns, it will be manifest that the pin E, while traveling in a circle, will also move up and down in the slotted guide, and thus cause the block A and the stamps to oscillate from side to side.

The sleeve M simply rolls against the side of the guide upon which pressure is brought, and the pin turns within this sleeve and the friction is reduced to the smallest amount. By this construction I have a very compact and effective crushing-mill, and am thus enabled to employ the single driving-shaft to operate both the crusher and rock-breaker without intermediate mechanism.

The sleeve M has a flange, S, upon its outer end, which serves to prevent the oscillating stamp-carrying block from tipping over sidewise.

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

1. An improved ore-crusher comprising the oscillating or rocking stamp-carrying block, the driving-shaft for operating the same, the hopper L, the reciprocating feed-board having the lever R′ carried by the board, and means for actuating the feed-board, comprising a shaft having an adjustable eccentric, O, the arm P, and holding-rack, substantially as described.

2. In an ore-crusher, the combination of the

stamp-carrying block, means for oscillating said block, a shaft passing through said block, having an adjustable eccentric on one end, a lever engaging said eccentric, a reciprocating feed-board carried by said lever, springs supporting said lever and board, and a hopper, substantially as specified.

In witness whereof I have hereunto set my hand.

ALPHEUS E. ROE.

Witnesses:
LINCOLN SONNTAG,
JOHN R. COGHLAN.