(No Model.) 2 Sheets—Sheet 1.

J. H. YEATON.

CRUSHING MILL.

No. 455,677. Patented July 7, 1891.

Fig. 2.

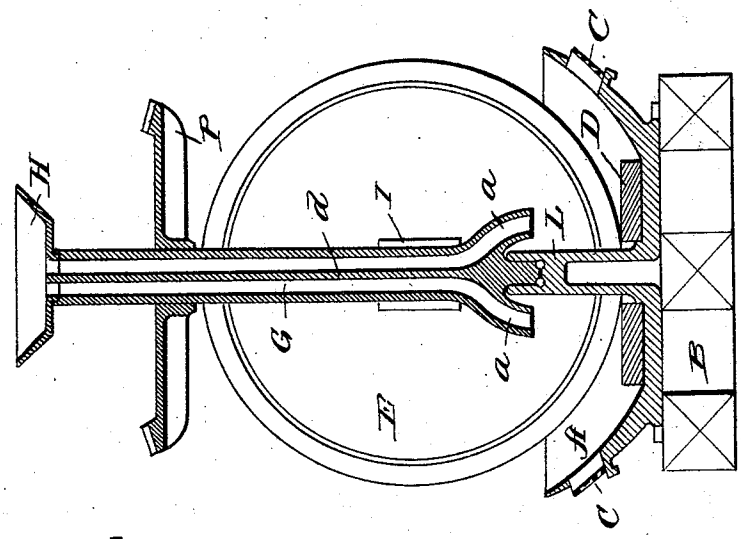
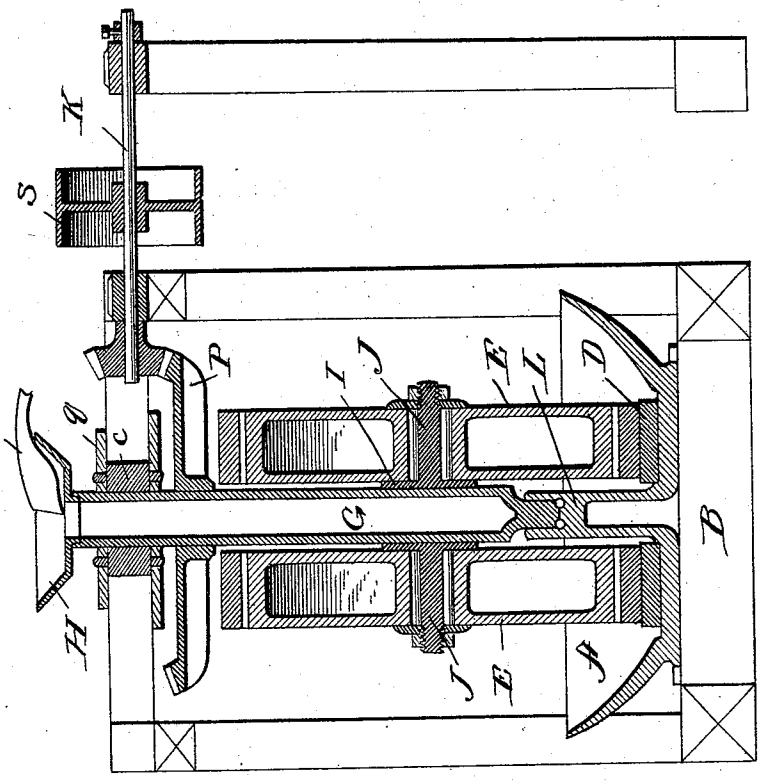


Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

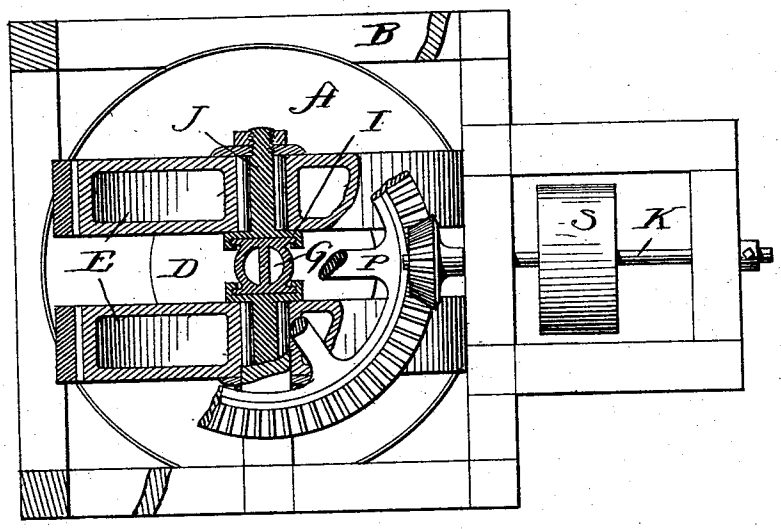
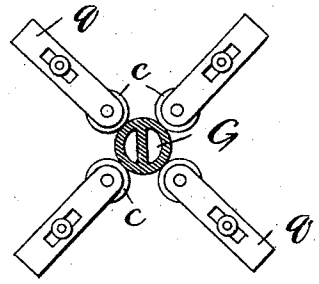


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH HARRISON YEATON, OF CORONADO BEACH, CALIFORNIA, ASSIGNOR OF ONE-HALF TO JOHN CAMPBELL, OF SAME PLACE.

CRUSHING-MILL.

SPECIFICATION forming part of Letters Patent No. 455,677, dated July 7, 1891.

Application filed November 12, 1890. Serial No. 371,217. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HARRISON YEATON, a native-born citizen of the United States of America, residing at Coronado Beach, in the county of San Diego and State of California, have invented certain new and useful Improvements in Crushing-Mills, of which the following is a specification.

My invention is an improved mill designed for the grinding of quartz, though of course it may be used for the grinding of other materials if found desirable; and the object of the invention is to provide a mill of few parts, effective in operation, economical to construct and operate, and of great durability; and these objects I attain by the use of a mortar, provided with a level circular die resting upon the bottom thereof, a pair of revolving wheels being mounted so as to bear with their peripheries upon the dies and to crush the material between the faces of the wheels and the said dies, the material being fed in advance of the wheels through the hollow spindle from any suitable source.

The invention consists in the general construction and arrangement of the parts and in the details thereof, all of which will be very fully described hereinafter.

I have illustrated in the accompanying drawings my invention in the best form known to me.

Figure 1 is a central vertical section through the mortar, the crushing-wheels, and the hollow spindle. Fig. 2 is a like section taken at right angles to the section of Fig. 1. Fig. 3 is a plan view, partly in section. Fig. 4 is a detail plan view.

In the drawings, the mortar in which the crushing is performed is shown at A of circular form and of any suitable size or capacity. It is provided with openings or screens C, through which the crushed material may pass when it reaches this point. The mill is properly supported by suitable framing-timbers, as shown at B. In the bottom of the mortar is located a chilled circular die D, preferably in a single piece, which sustains the crushing action. The material is crushed between the upper face of the die D and the peripheries of heavy cast-iron wheels, (shown at E.) These wheels are provided with chilled tires, so as to prevent excessive wear in action. These wheels are adapted to rotate, and as they rotate upon their own axles to travel around upon the die D, and in order to provide for this movement the wheels are mounted upon journals J, anti-friction rollers being interposed between the journals and the inner peripheries of the wheel-hubs. The journals of the wheels are each supported upon an independent sleeve I, which in turn is splined by means of guides to a tubular spindle. By this construction each wheel may have vertical movement in passing over a large piece of material independent of the movement of the other wheel, thus preventing strain on the parts. The spindle is stepped at its lower end in a socketed projection L, extending upward from the center of the mortar, the lower end of the spindle being grooved to correspond with a similar groove in the socket; and in this double groove are placed anti-friction balls. The spindle G is rotated by means of a gear-wheel P, secured thereto, and motion is imparted to the gear-wheel through a bevel-pinion upon a shaft K, to which movement is imparted by band-wheel S through any suitable source of power.

The material is fed to the crushing-wheels through the hollow spindle G, being fed previously to the shallow hopper H, secured to the upper part of the spindle. The amount of feed may be regulated by a stationary arm resting in the hopper, as shown at O. The ore as it is fed through the hollow spindle is discharged into the mortar through the discharge-spouts *a*, one passing to one side of the spindle and the other to the other side.

The spindle is divided vertically by a partition *d*, so that the feed to each side may be the same, and in order to sustain the upper end of the spindle G, I provide adjustable arms *q*, which are provided on their ends with rollers *c*, which bear directly against the spindle.

I claim as my invention—

1. In combination, the mortar, the revolving spindle, and the wheels E, carried and revolved thereby, the said wheels having journals J separately splined to the spindle to

have independent vertical movement, substantially as described.

2. In combination, the mortar, the hollow spindle having a partition, and the spouts *a* *a*, one on each side, and the wheels E, carried by the spindle on each side thereof, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH HARRISON YEATON.

Witnesses:
L. R. DARROUS,
A. E. DODSON.