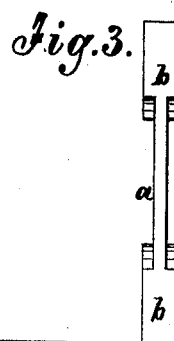
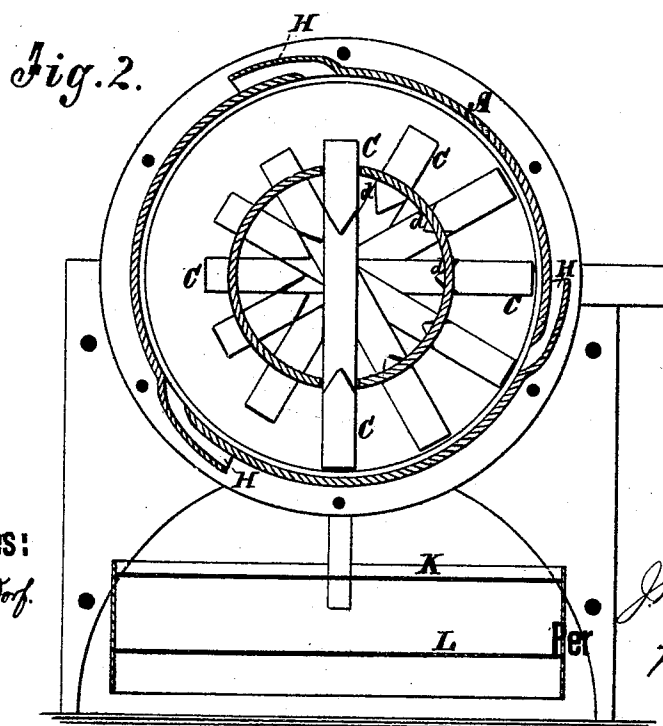
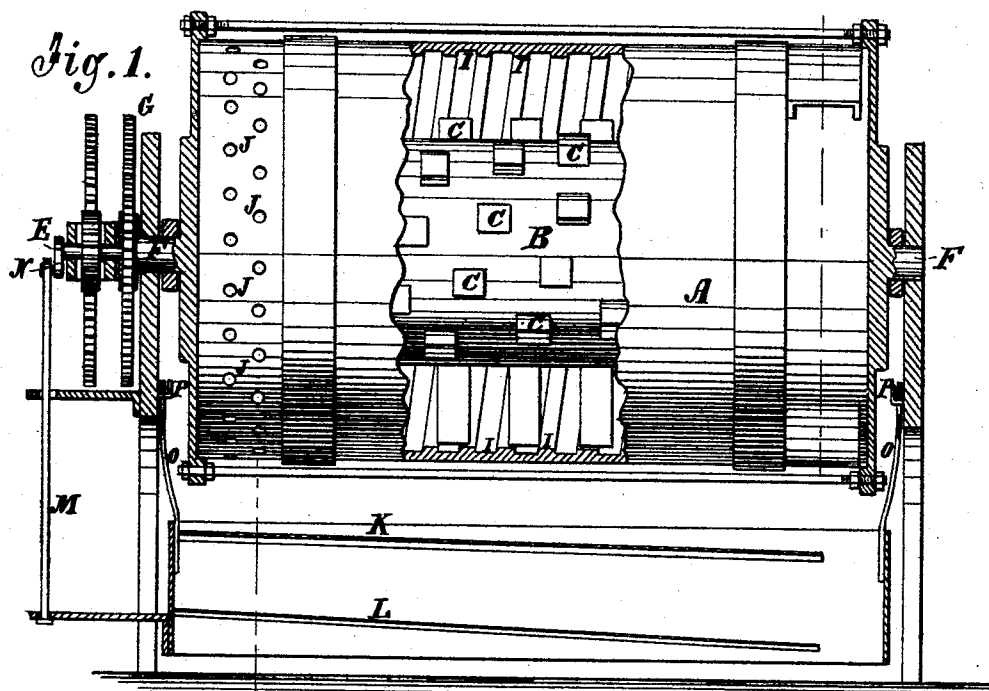


J. M. McFARLAND.
Stamps for Crushing Ores.

No. 140,425.

Patented July 1, 1873.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES M. McFARLAND, OF GOLDEN CITY, COLORADO TERRITORY.

IMPROVEMENT IN STAMPS FOR CRUSHING ORES.

Specification forming part of Letters Patent No. **140,425**, dated July 1, 1873; application filed May 31, 1873.

To all whom it may concern:

Be it known that I, JAMES MAXEY McFARLAND, of Golden City, in the county of Jefferson and Territory of Colorado, have invented a new and Improved Ore-Crusher, of which the following is a specification:

The most essential part of my invention consists of a novel mode of operating stamps for crushing and pulverizing ores, &c., by a horizontal revolving cylinder, through which a series of bars, with a stamp-head at each end, are arranged diametrically, so that they can slide endwise a short distance. The cylinder is arranged a suitable distance above the bottom of the bed containing the ore, and caused to revolve slowly; the stamps, as they approach the vertical line, slide in the cylinder and strike a blow on the ore, and are then forced around by the cylinder, and have a grinding or crushing effect. They strike two blows at each revolution. They are arranged as close together, both lengthwise and circumferentially, as they can be and work well, and they strike a great number of blows to each revolution.

Another part of my invention consists of a hollow cylindrical rotating ore-holder, into which the ore is fed at one end and caused to work along slowly to the other end during the progress of the work, and discharge through holes onto a screen, which is arranged to separate the fine particles and carry the coarse portion back to the head of the ore-holder to be delivered into it again for reworking it. Another part of the invention consists of spiral ribs in the hollow revolving ore-holder, to work the ore along the cylinder as it is gradually reduced by the stamps.

Figure 1 is partly a side elevation and partly a sectional elevation of my improved ore-crusher. Fig. 2 is a transverse section taken on the line *x x* of Fig. 1, and Fig. 3 is a side elevation of one of the stamps.

Similar letters of reference indicate corresponding parts.

A is the outside cylinder or case for holding the ore. B is the inside stamp-carrying cyl-

inder, and C represents the stamp. These stamps consist of bars *a* with steel heads *b*, the bars and heads being considerably longer than the diameter of cylinder B, and arranged in diametrical mortises or holes in it, so as to project from the surface as close together throughout the whole surface as they can and be free to slide for striking the blows. They slide endwise and fall onto the ore in the bottom of the holder whenever they approach the vertical line, so as to slide down on the walls of the holes in which they work. The end, sliding down and striking the ore, remains until it arrives near the top of the cylinder, when the bar slides again, and the other end falls on the ore, and so on. These stamps are arranged close together in the lengthwise direction of the cylinder, and, circumferentially, they are as close together as the shoulders *d* will allow, and, at the same time, let the stamp-heads fall to the bottom of the ore-holder. This cylinder B is turned by the shaft E. The outside cylinder A is mounted on the journals F, and is turned by the wheel G; it receives the ore through the spouts H at one end, conveys it along slowly to the other end, by the spiral ribs or corrugations I, at the same time that it is subject to the stamps, and delivers the crushed ore at the other end through the holes J upon a coarse screen, K, through which the fine portions pass onto the screens L to be again separated, and the coarse portions are carried by said screens back to the head of the crusher to be passed through it again. The screens are vibrated by the rod M and crank N; they are suspended by the rods O from hooks P in the frame, to allow them to be shaken.

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

1. The mode of operating stamps by a revolving cylinder, in which a series of stamps are arranged in radial mortises, substantially as specified.

2. The combination, with a series of stamps and an operating-cylinder, as described, of a

revolving case inclosing the stamps and holding the ore to be crushed, substantially as specified.

3. The said revolving ore-holder, having spiral ribs or corrugations, in combination with the stamps for passing the ore along toward the discharge as the crushing progresses, substantially as specified.

4. The combination, with the rotating case and ore-holder, of the screens K L, arranged substantially as specified.

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Witnesses:

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