J. TULLOCK.

COMBINED ORE CRUSHERS AND FEEDER.

No. 181,607. Patented Aug. 29, 1876.

Fig. 1.

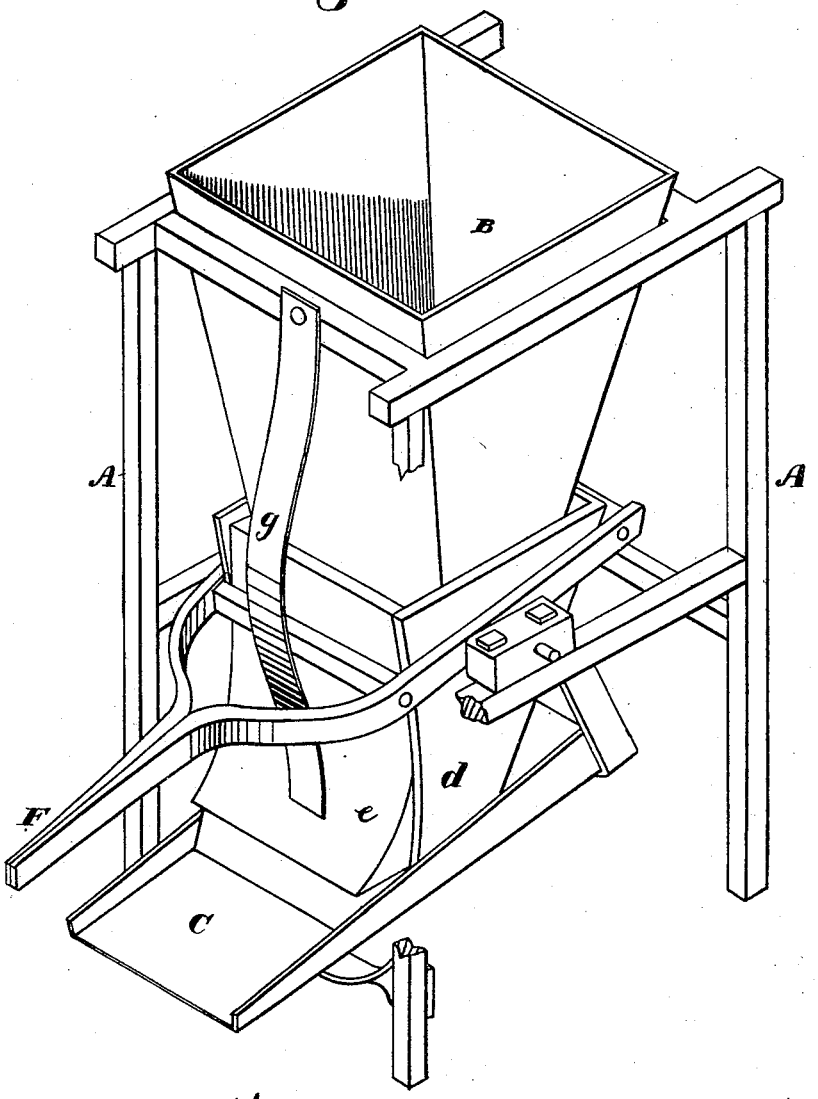
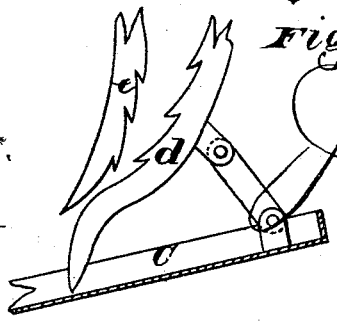


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES TULLOCK, OF OAKLAND, CALIFORNIA.

IMPROVEMENT IN COMBINED ORE CRUSHER AND FEEDER.

Specification forming part of Letters Patent No. **181,607**, dated August 29, 1876; application filed April 27, 1876.

To all whom it may concern:

Be it known that I, JAMES TULLOCK, of Oakland, Alameda county, State of California, have invented an Improved Combined Ore Feeder and Crusher; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

My invention relates to a combined machine for crushing and feeding ores to stamp-mills.

While the work done by ordinary rock-breakers or ore-crushers is sufficient to reduce the ore into pieces which can be fed to stamp-mills, the size of the pieces is by no means uniform, some of them being so large that they receive the blow of the stamp two, or even three, times before they are sufficiently reduced to allow the stamp to act upon any of the smaller pieces in the battery; and while a small piece of ore can be pulverized much more readily by the action of stampers, large pieces can be broken into smaller fragments more readily by reciprocating jaws; and when pieces of ore of a uniform size are fed to a battery the work of the stamp is greatly facilitated, and the wear and tear upon the machinery is reduced.

My invention provides a combined ore crusher and feeder, in which the large pieces of ore are reduced to a uniform size before they are fed to the stamps; and as I can utilize the drop of the stamps with better effect for reducing the large pieces of ore to a uniform size between reciprocating jaws than under the stamp, I save materially in the time required to crush a given quantity.

Referring to the accompanying drawings, Figure 1 is a perspective view of my device. Fig. 2 is an enlarged view of a part of the machine.

Let A represent the frame of the machine, and B the hopper, into which the unsized ore is placed just as it comes from the ordinary rock-breaker.

Surrounding the lower end of the hopper B, and projecting a short distance below it, I secure a combined rock breaker and feeder, which will receive the ore as it descends by gravity from the hopper, and which will reduce the large pieces to a medium size before dropping it into the stationary chute C. This combined crusher and feeder consists of two jaws, *d e*. It will be noticed that the jaw *d* encircles three sides of the lower end of the hopper, while the jaw *e* forms the front side. The upper portion of this crusher conforms to the hopper shape of the lower portion of the hopper, while the lower part of the rear jaw *d* curves forward, as represented. Both the rear and front jaws have transverse teeth formed on their inside face.

F is the operating-lever, which receives the blow or stroke from the tappet of the stamp. The rear end of the lever is formed into a square frame, which surrounds the crusher. The front jaw *e* is hinged to the front part of the frame, and the rear jaw *d* is hinged to the rear part, while the frame itself is suspended on journals midway between the jaws, so that the up-and-down motion which is imparted to the extremity of the lever will cause the jaws to reciprocate.

The opening through which the ore is delivered from the crusher to the stationary chute is regulated according to the size required to produce the desired size of ore.

A flat spring, *g*, has one end attached to the frame A, so that its opposite end will press against the forward jaw *e*.

It will thus be seen that the crusher receives the ore from the hopper, sizes and delivers it to the chute, which directs it into the battery.

Two plain reciprocating jaws, similar to the above-described crushing-jaws, could be used for simply feeding the ore from the hopper without crushing.

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

A combined ore-crusher and automatic ore-feeder, consisting of the hopper B, reciprocating jaws *d e*, and chute C, arranged to be operated by the drop of the stamp acting upon the lever F, substantially as and for the purposes set forth.

In witness whereof I hereunto set my hand and seal.

JAMES TULLOCK. [L. S.]

Witnesses:
GEO. H. STRONG,
CHAS. G. PAGE.