

C. P. STANFORD.

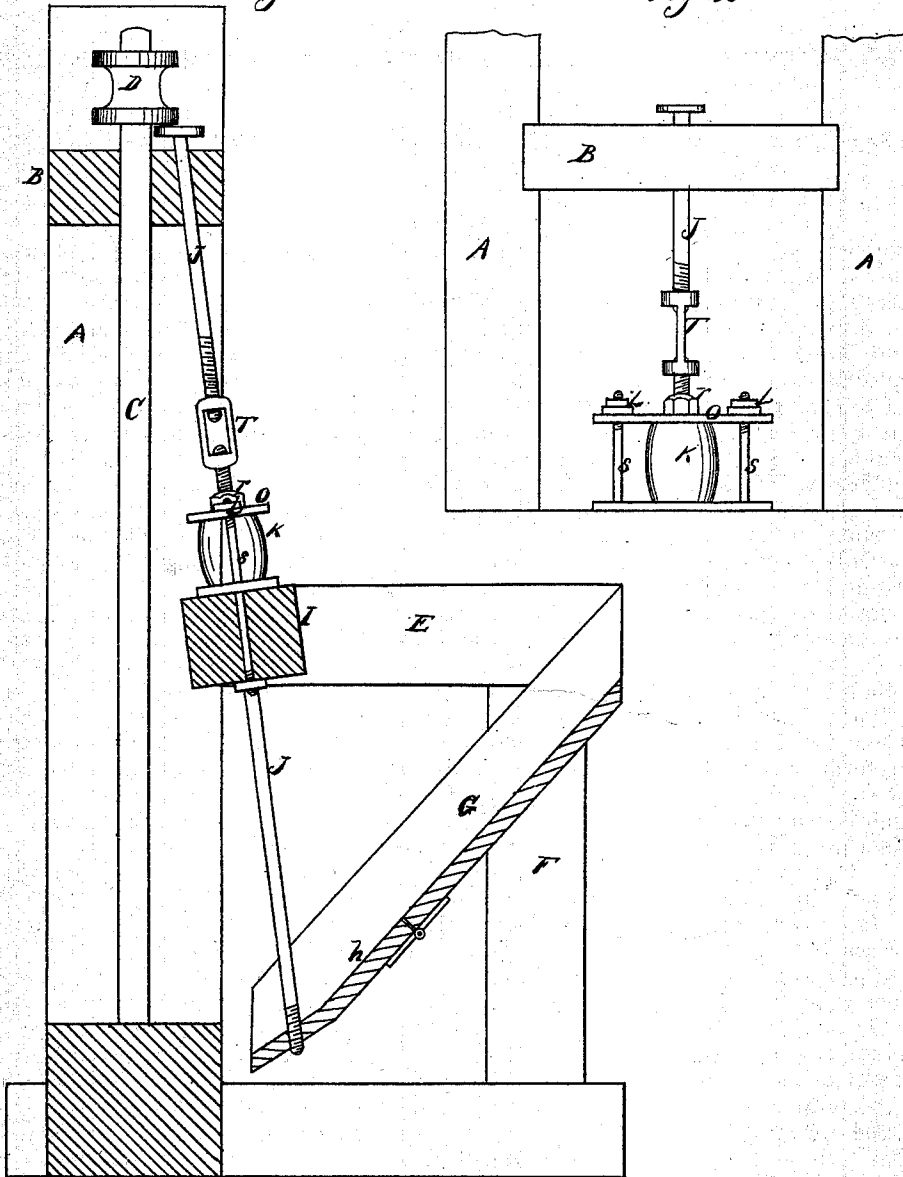
Ore-Feeders for Grinding and Crushing Mills.

No. 139,204.

Patented May 20, 1873.

Fig. 1.

Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES P. STANFORD, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN ORE-FEEDERS FOR GRINDING AND CRUSHING MILLS.

Specification forming part of Letters Patent No. **139,264**, dated May 20, 1873; application filed November 4, 1872.

To all whom it may concern:

Be it known that I, CHARLES P. STANFORD, of San Francisco city and county, State of California, have invented Improvements in Ore-Feeders; and I do hereby declare the following description and accompanying drawing 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 or improvement without further invention or experiment:

My invention relates to an improved apparatus for automatically feeding ore and other substances to grinding and crushing mills by the drop of the stamp or other suitably-moving part of the grinding or crushing machinery.

In order to explain my improved apparatus so that others will understand its construction and operation, reference is had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a side sectional elevation of my device. Fig. 2 is a front view of a portion of the machine.

Let A A represent the upright frame-timbers of a crushing or grinding mill, united by the cross-timbers B near the upper end. The stamp-stem C passes down through a hole in the cross-timber B, by which it is guided in the usual way. D is the tappet. E is the horizontal timbers of a supplementary frame, which are supported at one end by the upright timbers A A at the proper height, and by upright posts F at the opposite end. The chute G is supported between the two timbers of the supplementary frame at the proper angle to convey the ore beneath the stamp at the lower end of the stamp-stem. A portion of the bottom of the chute *h*, at the lower end, is made in a separate section, and this section is hinged or otherwise loosely attached to the fixed bottom, so as to form a continuation of it. A cross-timber, I, passes across the space between the two timbers E of the supplementary frame, midway between the hinged bottom section of the chute and the upper cross-timber B. A rod, J, has its lower end secured

to the lower or free end of the hinged bottom section *h* of the chute, and passes up at an angle through the middle cross-timber I, and thence up through the upper cross-timber B, so as to bring its upper end into the proper position to receive a stroke from the tappet at each drop of the stamp. A suitable spring is applied to support this rod, and through it the load of ore upon the hinged bottom of the chute, in the proper position to keep the hinged section *h* in line with the fixed bottom. In the present instance I have represented an India-rubber buffer or spring, K, through which the rod J passes, and which rests upon the cross-timbers I. An extended washer, O, passes down over the rod and rests upon the buffer or spring, and a nut, *r*, is screwed down upon the rod so as to rest upon the washer. The short upright rods *s s* at each side of the buffer pass through holes in the ends of the washer, and serve to guide it and steady its movements. A nut, *l*, is screwed down upon the upper end of each of the rods *s s*, by which the washer can be tightened down upon the buffer for the purpose of regulating the tension of the spring. A turn-buckle, T, is inserted in the length of the rod, by which it can be shortened or lengthened, in order to regulate the feed as desired. Now, it is evident that every time the tappet D drops sufficiently to strike the upper end of the rod J the hinged section of the bottom of the chute will be shaken or jarred so as to feed the ore or other substance under the stamp, and as the tappet is lifted the spring will retract the rod and hinged section to their original position. A hopper or tray can be substituted for the hinged section of the bottom of the chute, and the ore fed from them in the same manner as above described.

By this means I provide a simple and effective ore-feeder, which can be applied to various kinds of crushing and grinding mills, and be operated by the direct action of the working parts of the machinery.

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

1. The angular rod J, with its turn-buckle T and spring k, for the purpose of operating the ore-feeding device by the drop of the stamp, substantially as above described.

2. The angular rod J, with its turn-buckle T and spring k, in combination with the hinged section h of the bottom of the chute, substantially as and for the purpose above described.

3. The chute G, with its hinged bottom

section h, substantially as and for the purpose above described.

In witness whereof I hereunto set my hand and seal.

CHARLES P. STANFORD. [L. S.]

Witnesses:

JNO. L. BOONE,

C. M. RICHARDSON.