A. J. DOOLITTLE.

Ore Stamp.

No. 21,248. Patented Aug. 24, 1858.

Fig. 2.

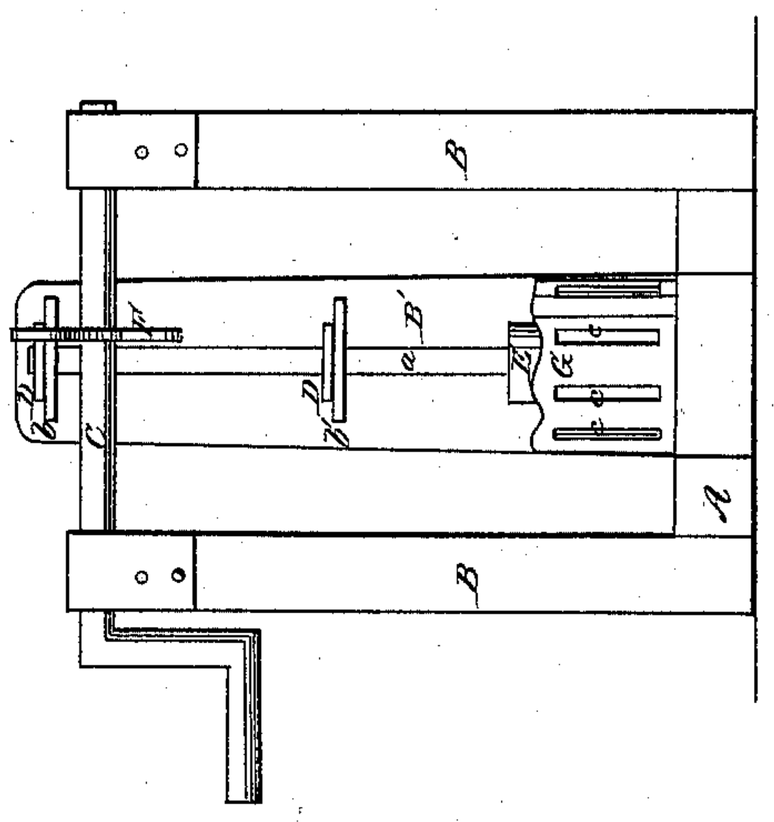
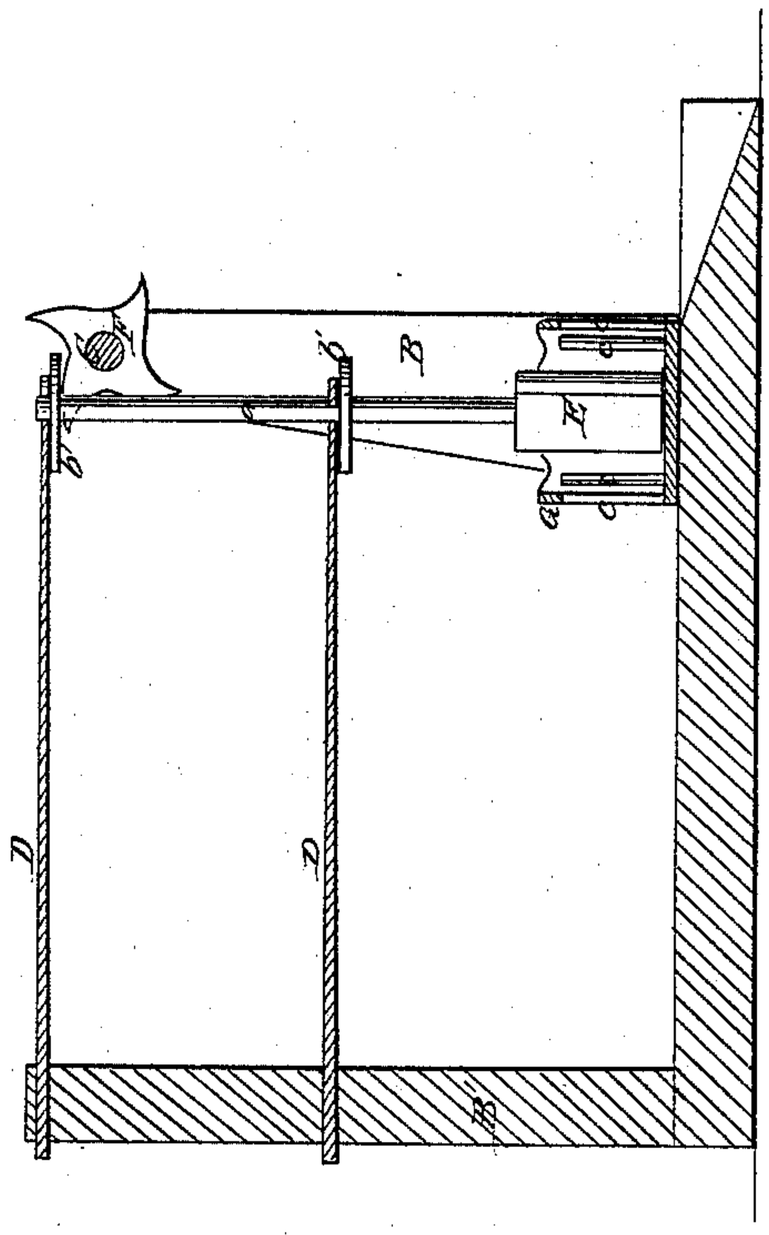


Fig. 1.



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UNITED STATES PATENT OFFICE.

A. J. DOOLITTLE, OF NEVADA TOWNSHIP, CALIFORNIA.

QUARTZ-CRUSHER.

Specification of Letters Patent No. 21,248, dated August 24, 1858.

To all whom it may concern:

Be it known that I, A. J. DOOLITTLE, of Nevada township, in the county of Nevada and State of California, have invented certain new and useful Improvements in Machinery for Crushing Quartz and other Substances; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, represents a vertical, longitudinal central section of my improvements, and Fig. 2, is a front elevation of the same.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in employing flat springs to which the stampers are connected for the double purpose of guiding the stampers in their up and down motion and of increasing the force of the blow, and it further consists in so arranging the pans or mortars, that the finer parts of the quartz or other substance to be crushed can escape by openings made into the sides of the pans, so that the larger lumps are always exposed to the full force of the blow, these openings in different pans to be gradually decreasing in size so as to effect the required degree of fineness by the time the substance has passed through several of these pans, which are placed loosely under the stampers.

To enable others skilled in the art to fully understand and construct my improvement I will proceed to describe it.

On a suitable platform A, several upright standards B, B, and B′, are rigidly attached in such a position that the two standards B, B, serve for bearings to the horizontal shaft C. The standard B′, forms the support for two flat steel springs D, D, which are rigidly fastened to said standard one near its top and the other near to its center. The stem *a*, of the stamper E, passes through the front ends of these springs and two collars *b*, *b′*, are rigidly attached to the stem *a*, which prevent the springs from slipping down on the stem of the stamper.

F, represents a wiper which is attached to the shaft C, in such a position, that it strikes against the under side of the collar *b*, and the cams of this wiper are so shaped that they lift the stamper to the required height and let it drop quite suddenly. During this up and down motion the stems of the stampers are guided by the springs D, D, no other guides being required to secure a perpendicular motion of the stampers and the force of the blow is increased at the same time by the action of these springs.

G, is one of the pans or mortars, which I employ, and which I consider different from those heretofore used and superior to the same in greatly facilitating the operation of crushing. Long narrow openings *c*, are cut into the sides of the pan all around, which allow the finer parts of the substance in the pan to drop out and expose the coarser parts to the full force of the blow. Without these openings the coarser parts being the heaviest accumulate near to the bottom of the pan, while the fine parts cover the same over and the stampers can not operate with their full power on the coarse parts as these are to some extent protected by the dust and fine parts with which they are covered.

The openings *c*, in my pans are graduated according to the state of fineness in which the substance to be crushed is put into said pans, and those parts which escape from one pan are put into another one with finer openings until all the parts are reduced to the required fineness. These pans are placed loosely under the stampers, so that they are free to revolve under the force of the blows, whereby the operation of crushsing is facilitated and the face of the stampers saved.

I do not claim the employment of springs for the purpose of increasing the force of the blow as this can be seen with many similar machines, neither do I claim broadly the openings in the pans. But

What I claim as my invention and want to secure by Letters Patent, is—

Arranging the stampers of a quartz crusher in such a manner that they are guided in their up and down motion by two springs which at the same time serve to increase the force of the blow, in combination with pans which are placed loosely under

the stampers, so that they are free to rotate under the action of the blows and which have openings in their sides the size of which is different for different pans and depends upon the relative coarseness of the quartz, so that the finer parts of the quartz escape and the coarser ones are continually exposed to the full force of the blows, the whole being arranged substantially as herein set forth.

A. J. DOOLITTLE.

Witnesses:
N. F. SCOTT,
LEWIS SHRANCKSON.