

J. H. SWETT.
QUARTZ CRUSHER.

No. 8,727.

Patented Feb. 10, 1852.

Fig. 1

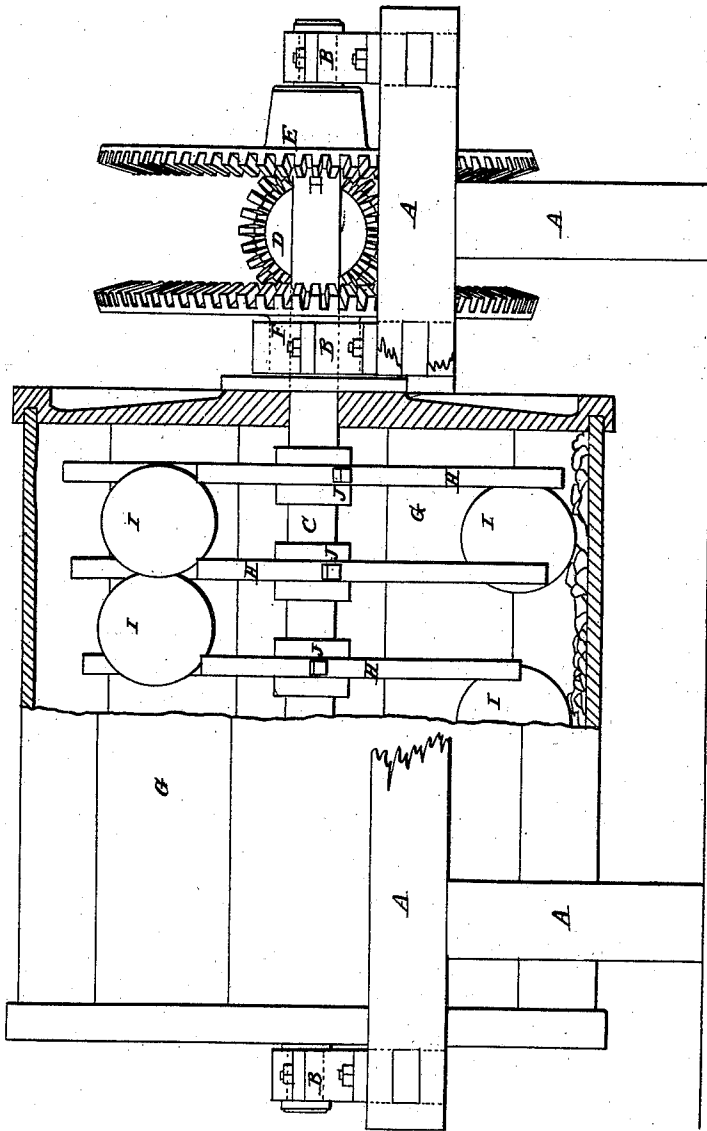
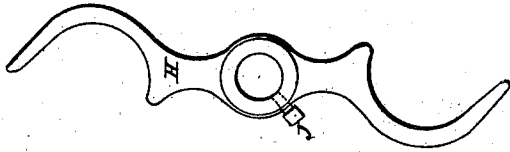


Fig. 2.



UNITED STATES PATENT OFFICE.

JAS. H. SWETT, OF BOSTON, MASSACHUSETTS.

QUARTZ-CRUSHER.

Specification of Letters Patent No. 8,727, dated February 10, 1852.

To all whom it may concern:

Be it known that I, JAMES H. SWETT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Crushing and Grinding Quartz, Glass, and other Material; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1, represents a side view of my crushing apparatus, with a portion of the cylinder broken away, to show the internal arrangement. Fig. 2, represents one of the curved arms for catching, carrying up, and throwing over the metallic balls, by which the material is broken, ground, or crushed in the cylinder.

Similar letters in both the figures represent the same parts.

The nature of my invention consists, in arranging a metallic cylinder, which may be round, or many-sided, into which the material to be operated upon is placed, and which has a rotary motion in one direction; and passing through said cylinder, a shaft carrying any suitable number of curved arms, which have a rotary motion, in a direction contrary to that of the cylinder, and which catch up, carry, and throw over a series of metallic balls, by which the material to be ground or crushed is operated upon.

To enable others skilled in the art to make and use my invention I will proceed to describe the same with reference to the drawings.

In crushing quartz rock, it has been found unless the material be shaken, or loosened up, after every few blows of the crushing apparatus, that it becomes so packed down and cemented, as to render all power machines practically inoperative for this purpose. To remedy this defect, I have devised the following described apparatus. On a suitable wood, or metallic frame A, I place the bearings B, for the shaft C, to turn freely in; and on the same frame I arrange another shaft at right angles to the shaft C, upon which is placed a bevel wheel D, which meshes into and turns in opposite directions the bevel gear

E, F. The bevel gear E, is secured to the shaft in any well known manner, and rotates said shaft. The bevel gear F, is attached to the end of the cylinder G, and rotates said cylinder in a direction contrary to said shaft. The shaft or axis on which the bevel gear F, is placed, is hollow, and the shaft C, passes through it, in the well known manner of arranging shafts which have contrary motions.

On the shaft C, I arrange any suitable number of arms H, which terminate in curves of such size as to catch up, carry around, and throw a suitable number of metallic balls I, which fall with sufficient force to gradually grind or crush the material in the cylinder. The arms H are provided with set screws J, by which they may be so set on the shaft, in a more direct or spiral line, as that they shall carry up one, two or more balls at a time, thus giving to the machine a regular or graduated motion, according to the power applied. While the balls are being thus operated, the material in the cylinder by the rotation thereof, is loosened up, by being carried up with the cylinder, and falling back by its own gravity, so that the balls are constantly falling on fresh material, which is as constantly changing place; the larger particles being by this motion, thrown to the surface where the balls strike them with the greatest force. The cylinder may be perforated with small holes, answering the purpose of a screen, through which the material that is sufficiently ground may pass as soon as it becomes fine enough, thus preventing it from being mixed up with the larger particles, and deadening the force of the balls.

One end of the cylinder, around the shaft, may be left sufficiently open to throw in material, or, a sliding door may be made therein through which the cylinder may be charged, and then closed. The machine may be operated, by horse, steam, water or any other power.

Having thus fully described the nature of my invention what I claim therein as new, and desire to secure by Letters Patent, is—

In combination with a cylinder containing the quartz, &c., and rotating in one direc-

tion for the purpose of loosening up the material to be ground or crushed,—the curved arms arranged upon a shaft therein, rotating in a contrary direction, for the
5 purpose of catching, carrying up, and throwing over the balls by which said material is ground or crushed, the whole being ar-

ranged and combined in the manner, and for the purpose, herein fully set forth.

JAMES H. SWETT.

Witnesses:

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T. C. DONN.