

(No Model.)

2 Sheets—Sheet 1.

C. DANDURAND.  
QUARTZ CRUSHING MACHINE.

No. 305,055.

Patented Sept. 16, 1884.

Fig. 1

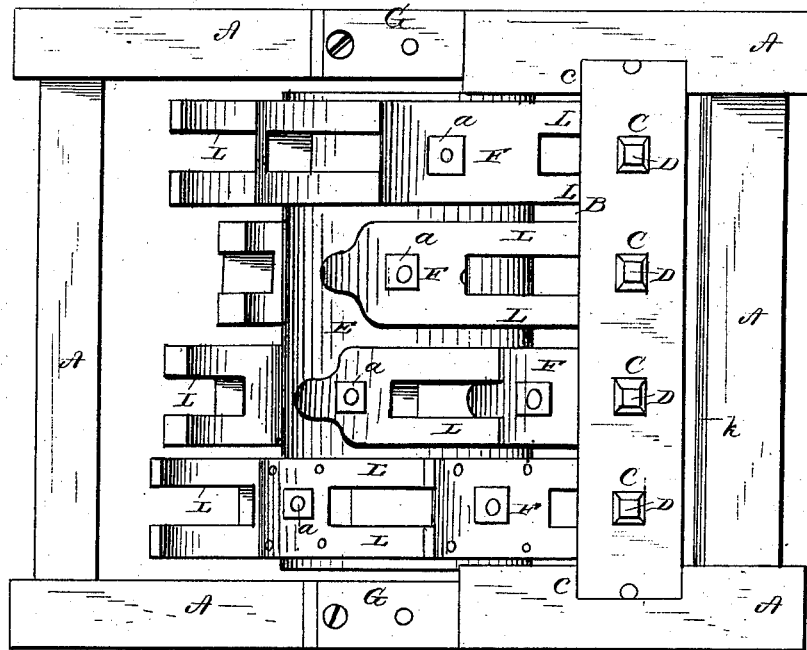


Fig. 4

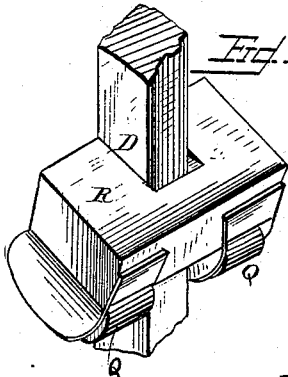
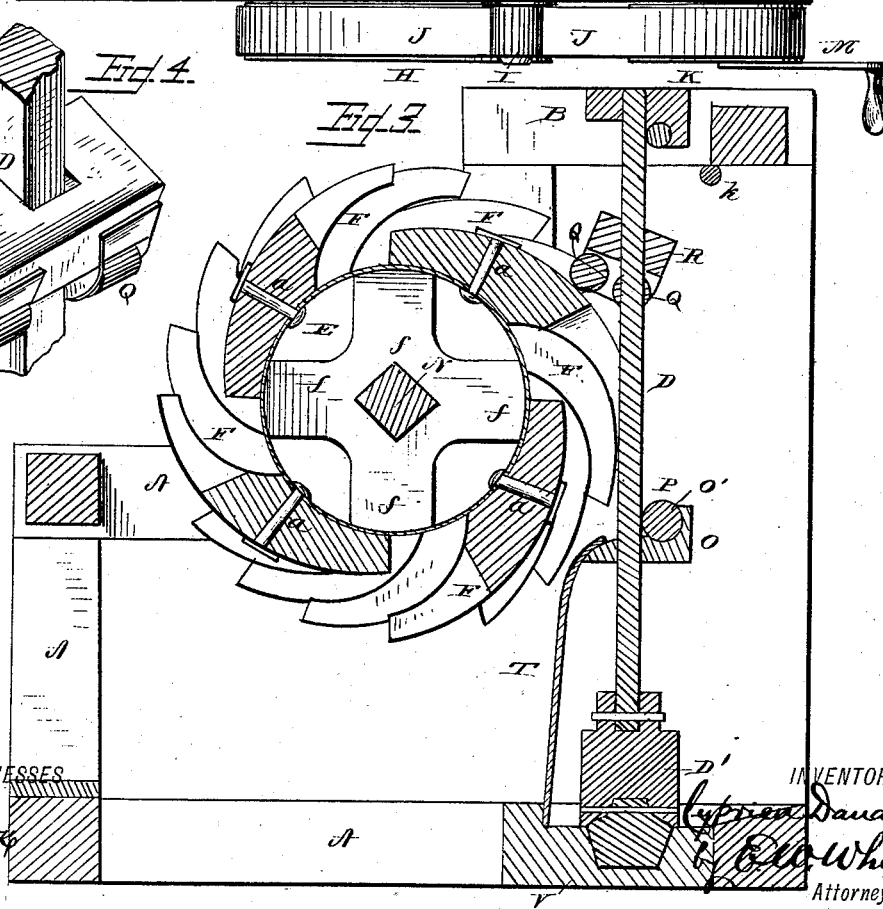


Fig. 3



WITNESSES  
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INVENTOR  
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Attorney

2 Sheets—Sheet 2.

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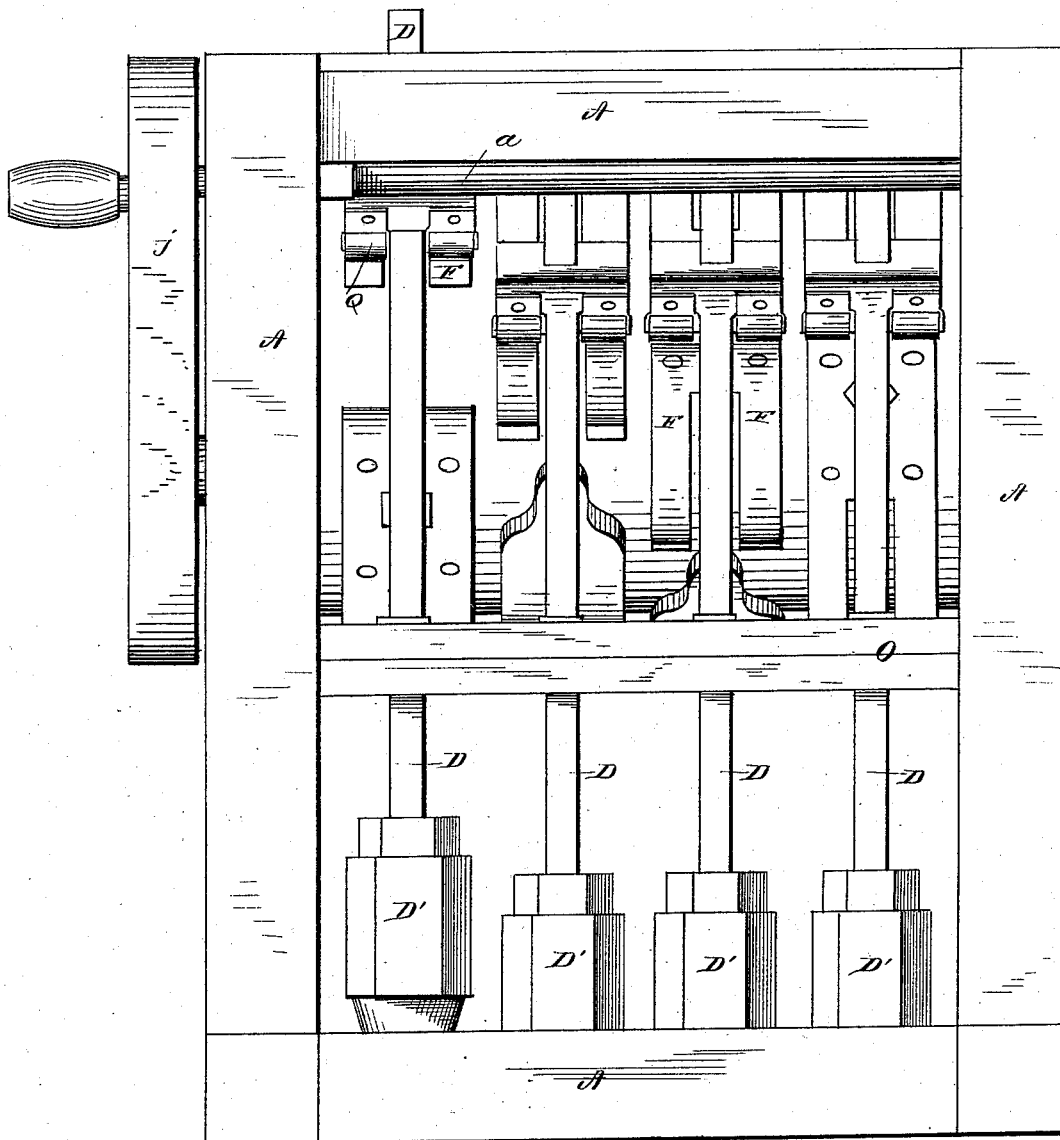


Fig 2

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# UNITED STATES PATENT OFFICE.

CYPRIEN DANDURAND, OF VIRGINIA CITY, NEVADA.

## QUARTZ-CRUSHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 305,055, dated September 16, 1884.

Application filed April 26, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, CYPRIEN DANDURAND, a citizen of the United States, residing in Virginia City, in the county of Storey, in the State of Nevada, have invented certain new and useful Improvements in Quartz-Crushing Machines, of which the following is a specification.

My invention relates to improvements in quartz-crushing machines in which the stamps are raised by cams firmly attached to a cylinder and acting upon rollers attached to the stems of the stamps, the stems of the stamps being square.

The objects of my invention are, first, by the use of square stems of the stamps to afford a convenient mode of firmly attaching rollers thereto; second, by the use of cams each of which is so divided as to cause the cam to strike the rollers on each side of the stems, to give a steady motion to the machine and allow the use of four rollers to each stem without unnecessarily encumbering the machine; third, by the use of rollers, in combination with the cams, to reduce the friction and increase the working power of the machine. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top view of the machine. Fig. 2 is a front or end view of the machine, showing the stamps in position. Fig. 3 is a vertical section and a side view of the machine; and Fig. 4 is a view of a section of the stem of one stamp with the rollers and the block to which they are attached, the block being firmly attached to the stem.

Similar letters refer to similar parts throughout the several views.

The timber-pieces A A A constitute the frame-work of the machine. A heavy cross-piece, B, is firmly attached to the frame, and such cross-piece B is pierced with square holes C C, through which the stems of the stamps D D move. On the sides of the frame of the machine are the bearings G G, in which rests and revolves the axle N, which runs through the cylinder E and through the frame-work of the machine, and is connected on the outside of the frame with and is the axle of the pulley H.

The smaller pulley K is attached to the axle k, which is attached to the crank M, and to the crank M is attached the motive power. The smaller pulley, K, revolves the larger pulley, H, with which it is connected by the belt J J. The small roller I, fastened to the frame A A, serves to keep the belt J J in place by means of a flange on the edge of the roller I. Upon the outer surface of the cylinder E is fastened by means of bolts a a a series of cams, F F, the number and size of such cams being regulated by the size of the cylinder E and the corresponding size of the machine. The cams F F are longitudinally of concave form on their inner and convex form on their outer surfaces, those parts of the outer surfaces which touch the rollers being nearly parallel with the outer surface of the cylinder, and the sides of such cams are plain parallel surfaces. The end of each cam F farthest from the attachment to the cylinder is divided into two equal prongs, L L, with a sufficient opening between the prongs to allow the prongs in revolution to strike the rollers Q Q on each side of the stems D D at the same time. The axle N, which runs through the cylinder E and the pulley H, is fastened to the cylinder E by spokes f f in the inside of the cylinder, the cylinder being otherwise hollow. To each stem D is firmly attached a block, R, and to each block R are attached four rollers—two rollers on each side of the stem, as in Fig. 4—upon which rollers the cams F F, in revolving, come in contact and raise the stamps, and upon the continued revolving of the cylinder E and the cams F F, attached thereto, the stamps are released and fall upon the material to be reduced in the receptacle V. The cams are so adjusted on the cylinder E that no two of the stamps fall at the same time. The shapes of the cams F with the prongs L L and the square stems D D differ from the shapes of the cams or levers and shapes of the stems now in use, and the rollers Q Q, attached to the blocks R R, and the attachment of the blocks R R to the stems D D are new.

The front of the frame-work of the machine, as appears in Fig. 2, and the top of the machine, as appears in Fig. 1, are entirely open, and back of the stamps D D is a metal parti-

tion, T, attached to the bottom of the frame and to the cross-piece O. The object of the partition T is to keep the ore in the front of the machine under the stamps and convenient  
5 for removal when reduced.

The receptacle V may be made in any convenient form for the working of the stamps and for the removal of the ore. The cross-piece O runs across the machine, and is attached thereto, as in Fig. 2. It strengthens  
10 the frame of the machine. To its inner surface is attached the metal partition T, and through the inner part of this cross-piece O are square holes, through which the stems D D  
15 move. An iron rod runs through the length of this beam, and serves as the axle of the rollers P P. Such rollers P P are for the purpose

of guiding the stems D D and keeping them in place and reducing friction.

I claim as my invention—

The frame of the machine, the square stamp-stems D D, the blocks R R, provided with rollers Q Q, the cross-piece O, and the rollers P P, in combination with the cylinder E and the  
20 cams F F, for reducing the friction and increasing the speed and working power of the machine, as hereinbefore set forth. 25

CYPRIEN <sup>his</sup> × DANDURAND.  
mark.

Witnesses:

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A. O. LAVIGNE.