

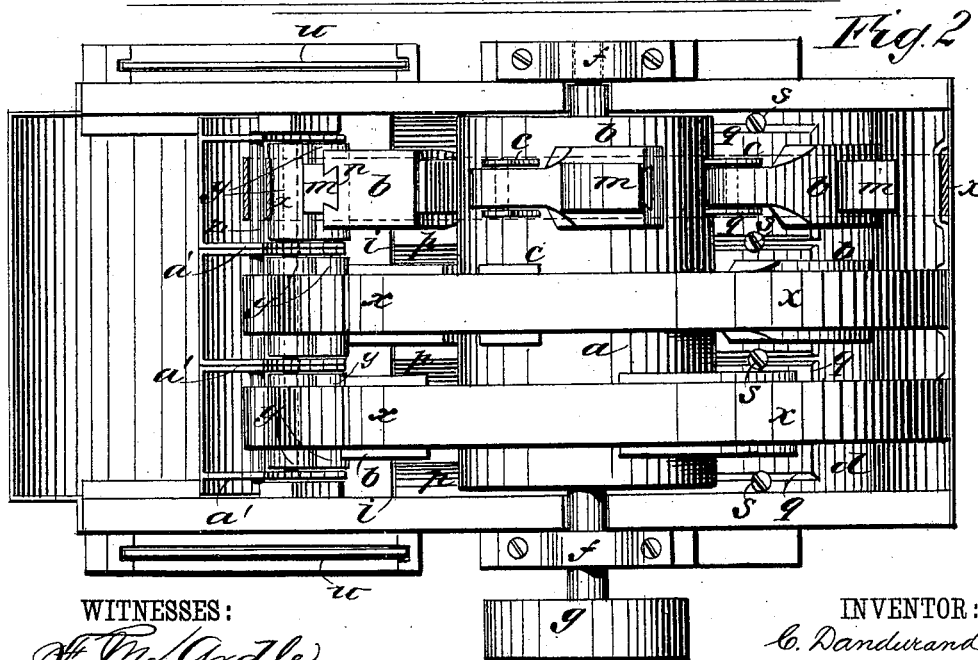
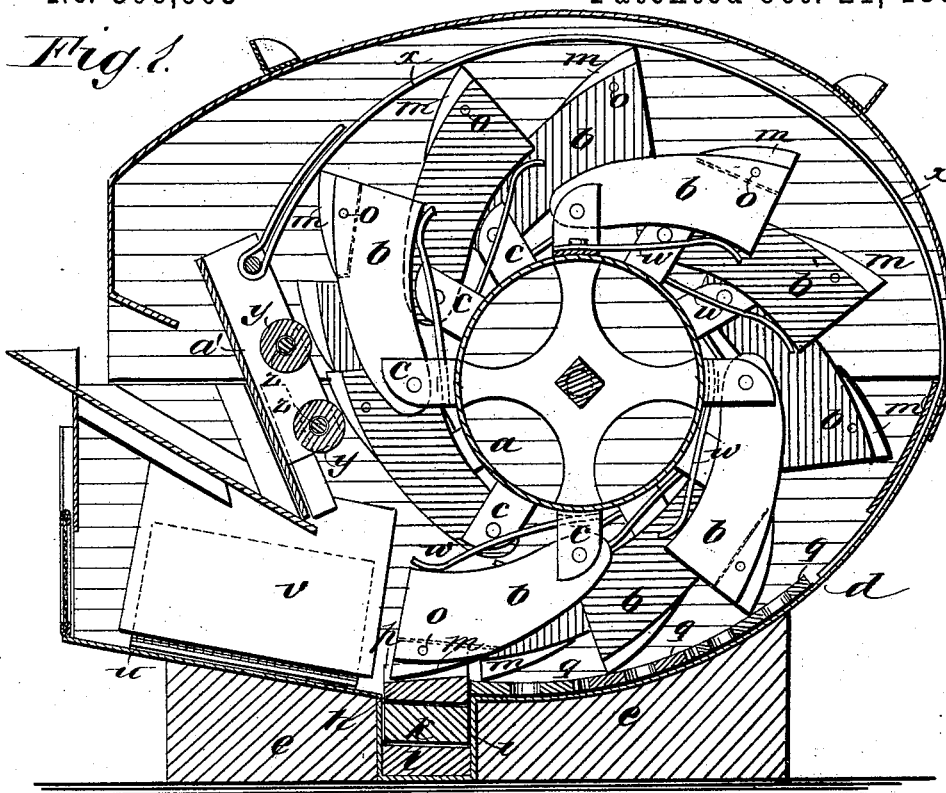
(No Model.)

2 Sheets—Sheet 1.

C. DANDURAND.
QUARTZ CRUSHING MACHINE.

No. 306,903

Patented Oct. 21, 1884.



WITNESSES:

H. M. Ardle.
C. Sedgwick

INVENTOR:

C. Dandurand

BY

Munn & Co.
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(No Model.)

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Fig. 3.

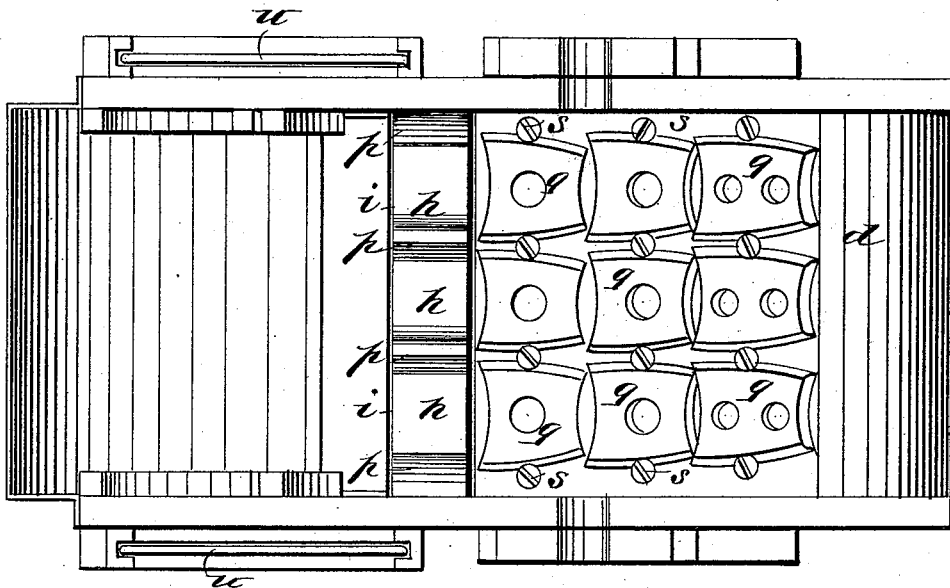
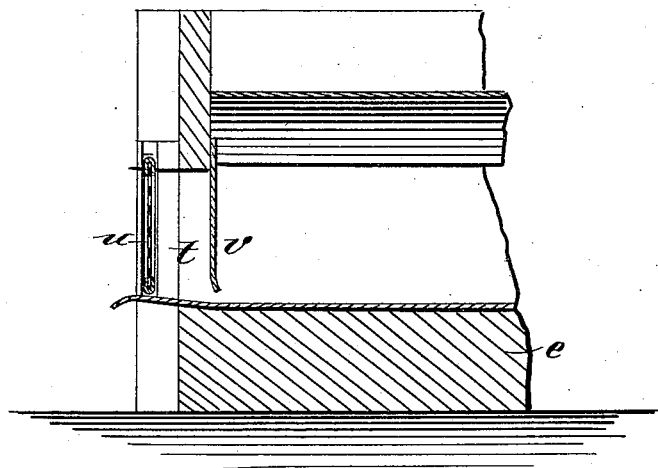


Fig. 4



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UNITED STATES PATENT OFFICE.

CYPRIEN DANDURAND, OF VIRGINIA CITY, NEVADA.

QUARTZ-CRUSHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 306,903, dated October 21, 1884.

Application filed April 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, CYPRIEN DANDURAND, of Virginia City, in the county of Storey and State of Nevada, have invented a new and Improved Quartz-Crushing Machine, of which the following is a full, clear, and exact description.

My invention consists of improvements in the beaters and dies of a quartz-crushing machine in which beater-arms are pivoted to the periphery of a horizontal rotating drum, to be thrust down the descending side of the drum on the quartz lying on a die-bed in the bottom of the case; and it also consists of a novel combination of screens to facilitate the discharge of the pulverized ore, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of my improved machine transversely of the drum. Fig. 2 is a plan view with the cover removed. Fig. 3 is a plan view of the lower part of the case, the drum and beaters being removed; and Fig. 4 is a detail of the case in sectional elevation.

The revolving drum *a*, having beater-arms *b*, pivoted to the lugs *c* on its periphery, is arranged transversely in an inclosing-case having a concave bottom, *d*, arranged on a substantial bed-plate, *e*, said drum being journaled in suitable bearings, *f*, and provided with a driving-pulley, *g*, for the application of a belt for revolving the drum by power. At the points where the beaters strike, dies *h* are arranged in a recess, *i*, of the bottom of the case, and on strong metal plates or bars *k l*, placed in said recess, so that they can be removed readily to be packed, to enable them to retain their normal height. The beater-arms *b* have dies *m*, of hardened steel, to strike on the ore resting on the bed-dies *h*, which dies *m*, I connect to the beater-arms by dovetailing them into the faces of the arms, as shown at *n*, and fastening them with pins or keys *o*, to enable the dies to be readily removed for repairs and renewal; and in order to concentrate the ore on the bed-dies *h*, so as to be confined within the field of action of the dies *m*, I dispose transversely and at the required intervals along the bed-dies

h vertically - projecting partitions or guard-plates *p* of substantial quality, and having curved sides, which crowd the ore within the range of the dies and prevent the ore from being crowded out of the scope of the dies, as would be the case were these guards not used. These guards *p* are to be set removably in the die-recess *i* for ready removal. It may be by inserting them through vertical sockets made in said bed-dies *h* and allowing their lower ends to rest upon the bed-plate or bar *k* in said recess.

Back of the bed-dies *h*, on which the beaters strike, I arrange other dies, *q*, a suitable distance along that portion of the concave bottom over which the beaters drag, so as to have a grinding effect on the ore after striking on the dies *h*, said dies *q* consisting of flat plates having cavities at the ends, and also being perforated to provide cells and angles, which facilitate the crushing of the ore as the beaters drag over them, the ore being retained in the cells, and also in the cavities at the ends of the dies, so as to resist the drag of the beaters over it, which thus have a crushing effect. These dies *q* may be secured on the bottom of the case by the taper-headed screws *s* and bevel-edges of the dies, or by any other approved means.

To facilitate the ready discharge of the crushed ore I form the passages *t* through the sides of the case at one end near the bottom, and secure therein close-fitting fine screens *u*, to retain the grades not sufficiently reduced, while the finer grades will be carried out in the water, said passages *t* having guards *v* in front, to prevent injury to the screens by the large pieces of ore flying off under the blows of the beaters. The beater-arms have strong springs *w*, by which to add power to their blows, and guards *x* are arranged over the top and part of the descending course, with rollers *y* below the guards to hold the beaters in check until they arrive at the right point of release for the most effective blows.

Instead of an endless chain of such check-rollers, as heretofore employed, I dispose them in fixed positions independently of each other and on pivot-rods *z*, fixed in the supporting-plates *a'*, said rods being rigidly fixed and the rollers turning loosely on them, which is

equally as efficient as the chain arrangement and much simpler, cheaper, and more durable.

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

1. The dies *h*, in combination with and arranged removably on a bed *k*, and the case having a recess, *i*, in the bottom, substantially as described.
2. The combination of the guards *p* with the bed-dies *h* and the beaters *b m*, said beaters *m* being removable and having convexed faces, substantially as and for the purpose set forth.
3. The guards *p* and the dies *h*, in combination with and both arranged removably on the removable bed *k*, and the case having recess *i*, substantially as described.
4. The crushing-dies *q*, in combination with

and arranged back of the beating dies *h*, and the beaters *b m*, said dies *q* having cells or perforations and intermediate cavities, substantially as described.

5. The combination, with the beaters, of the crushing-dies *q*, having perforations forming cells and arranged with cavities at the front ends for retaining the ores to be crushed by the action of the beaters, substantially as described.

CYPRIEN ^{his} × DANDURAND.
mark.

Witnesses:

P. R. PLANK,
GEORGE BROWN,
F. M. CONN.