WHELPLEY & STORER.

Quartz Crusher.

No. 50,975. Patented Nov. 14, 1865.

Fig. 1

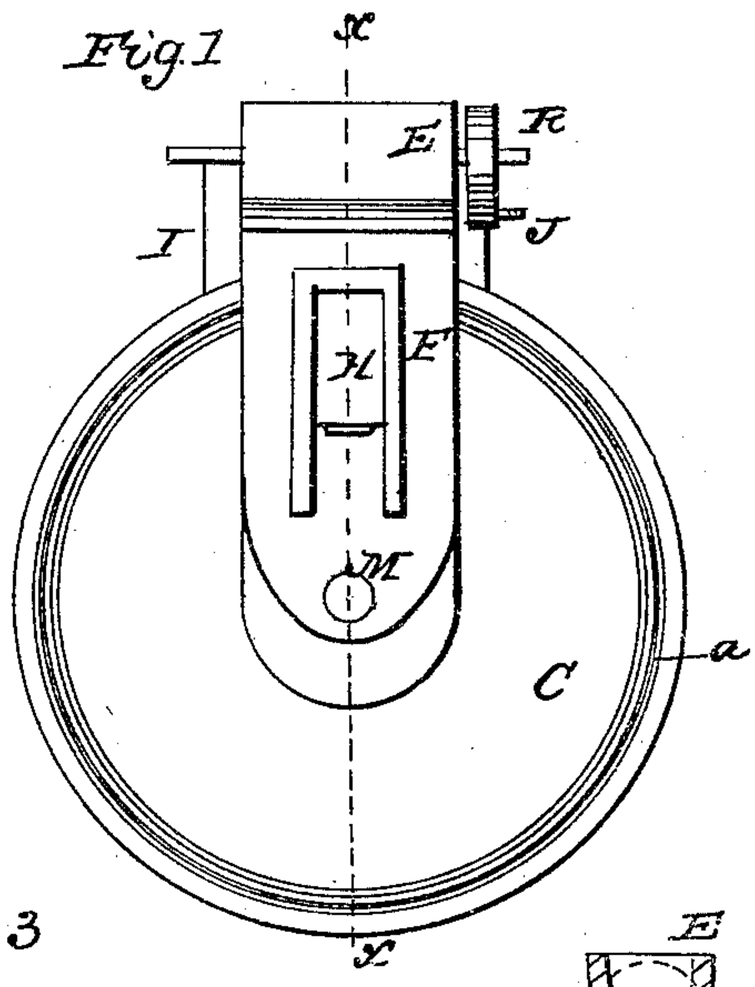


Fig. 3

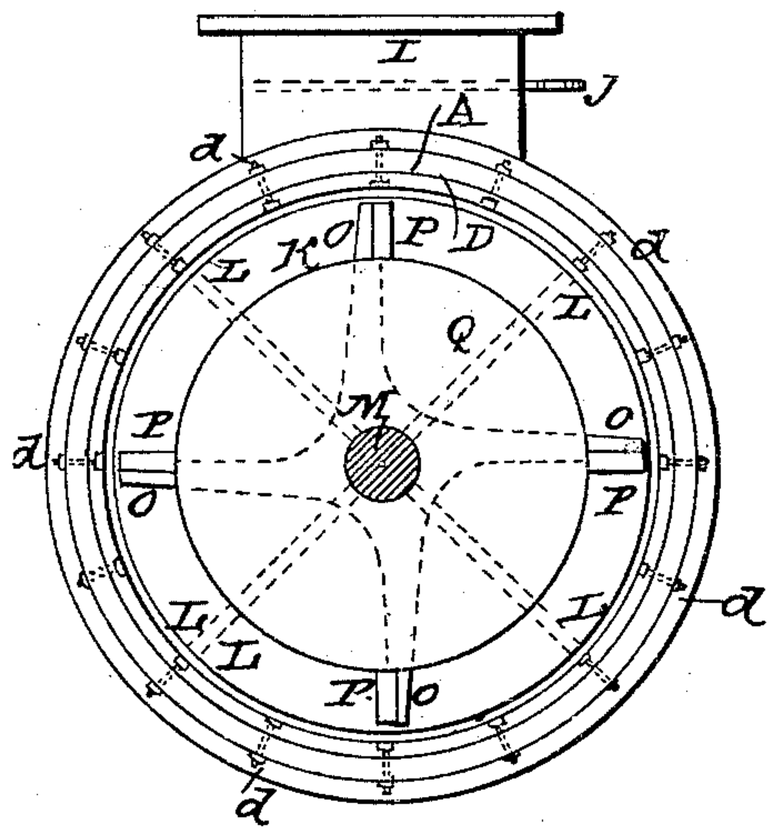
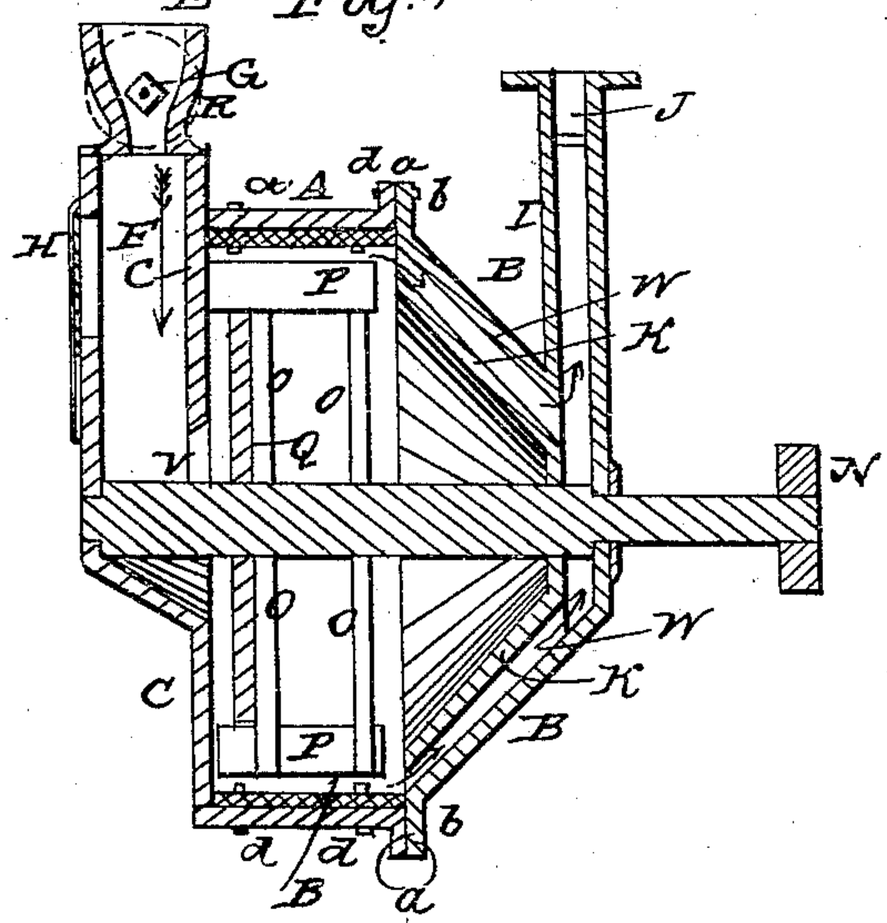


Fig. 4



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JAMES D. WHELPLEY AND JACOB J. STORER, OF BOSTON, MASS.

IMPROVEMENT IN QUARTZ-CRUSHERS.

Specification forming part of Letters Patent No. **50,975**, dated November 14, 1865.

To all whom it may concern:

Be it known that we, J. D. WHELPLEY and J. J. STORER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Pulverizing-Mills; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is a central vertical section in the line *x x* of Fig. 1. Fig. 3 is a side elevation with the side C of the case removed.

Like parts are indicated by the same letters in all the drawings.

The nature of our improvement consists, first, in the employment of a fixed disk, K, between the side of the case B and the revolving part of the mill, for the purpose of separating the revolving air within the mill from the air which has already left it on its way to a central exit, whereas, if the air continued to revolve after leaving the mill, its escape from a central opening would be prevented by its own centrifugal force; second, in the employment of radial bars or partitions L to divide the space W between the fixed disk K and the side B of the mill into segments to prevent a circular motion of the air in the aforesaid interspaces.

To enable others skilled in the art to make and use our invention, we will now proceed to describe the construction and operation of the same.

A is the periphery or cylindrical case, of common cast-iron or other appropriate metal, resting on a suitable foundation or frame; and B and C are the two sides of the case, of the same material, shaped as clearly shown in the drawings, and united to the said periphery by means of the fingers *a a* and screw-bolts *b*.

E is the hopper, into which the materials to be pulverized are placed, and G is a square-cornered feed-bar arranged in the hopper, as shown in Fig. 1, and turning in suitable bearings in the ends of the same, being rotated by means of a belt running over the pulley R.

F is a conductor, or a continuation of the hopper, leading to the central opening, V, in the side C of the case.

H is a slide-valve in the conductor F to regulate the amount of air admitted into the mill.

K is a fixed conical disk placed between the rotating part of the mill and the conical side B, being connected to the latter by means of the radial bars or partitions L L L L, (see Fig. 3,) so as to leave segmental spaces W between the two, as represented in Fig. 2, the diameter of the said disk being somewhat less than the inside diameter of the mill, so as to allow a free passage from the body of the mill to the interspaces W, which latter open into the exit-pipe or conductor I.

We have represented the disk K and the side B as conical, considering that the preferable shape. It is obvious, however, that both of them might be flat or otherwise and answer the purpose. We have also represented four radial partitions, L. More or less of them, however, would accomplish the purpose required.

J is a sliding valve in the pipe I to regulate the current of air from the mill, and the consequent fineness of the yield.

The grinding or friction surfaces of mills of this description have hitherto been made of the same material and piece as the shell or case itself—usually of common cast-iron—to which construction there are serious practical objections: First, they are too soft to work to the best advantage; and, second, they soon wear out or become fractured, in which case the whole mill has to be taken to pieces and a new case or shell, with all its appendages, bolt-holes, and nice adjustments, must be procured, or the whole mill be cast aside. To obviate these objections we line the shell or the cylindrical portion of it with a removable plate or plates, D, of chilled or hardened cast-iron, or what is known as "franklinite" iron, constructed of the same curvature as the periphery A. This lining D may consist of a single cylinder or of a number of sections of a cylinder, in the latter case the sections being confined to the case A by means of screw bolts and nuts *d*, the bolts being cast in the sections and passed through corresponding holes in the said case, as represented in Figs. 2 and 3. Plates thus constructed are exceeding hard and durable, and can readily be removed or inserted when it is required, and constitute, we think, a very valuable improvement in the art.

M is the axis of the pulverizing-beaters P, which are attached to the extremities of the radial arms O, as in other pulverizing-mills where rotating paddles or beaters are employed.

Q is a rotating disk attached to one side of the beater-wheel, as represented in Figs. 2 and 3.

The novel features in the operation of our mill have been sufficiently described in setting forth the nature of our invention.

What we claim as new, and desire to secure by Letters Patent, is—

1. The fixed disk K between the revolving part of the mill and the exit side of the case, substantially as set forth, and for the purpose described.

2. The radial partitions L in the space W between the disk K and the side of the mill, substantially as and for the purpose described, with or without the plate or disk named in the first claim.

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Witnesses:
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