

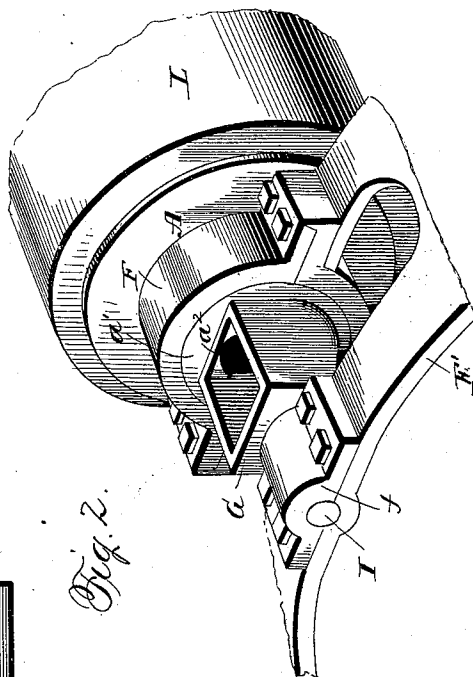
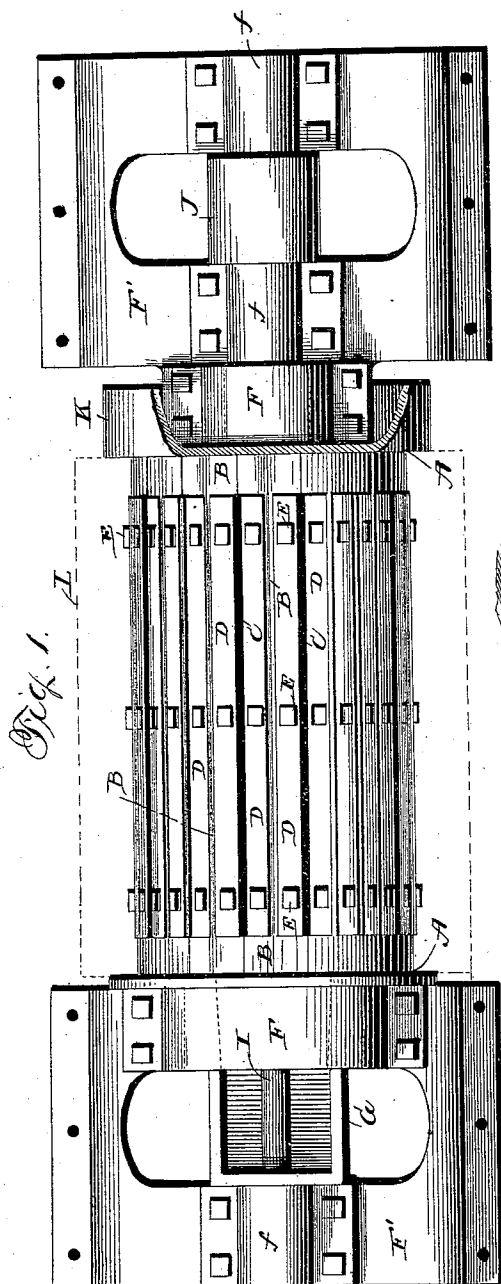
(No Model.)

2 Sheets—Sheet 1.

J. A. PEARCE.
ORE PULVERIZER.

No. 469,065.

Patented Feb. 16, 1892.



Witnesses
C. J. Williamson
John M. Walsh

Inventor
J. A. Pearce
By his Attorneys
Alexander & Davis

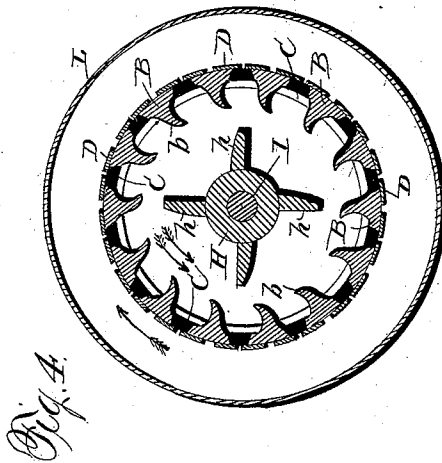
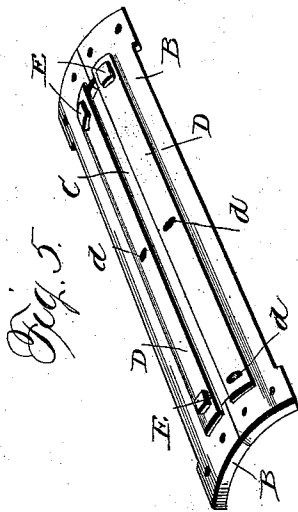
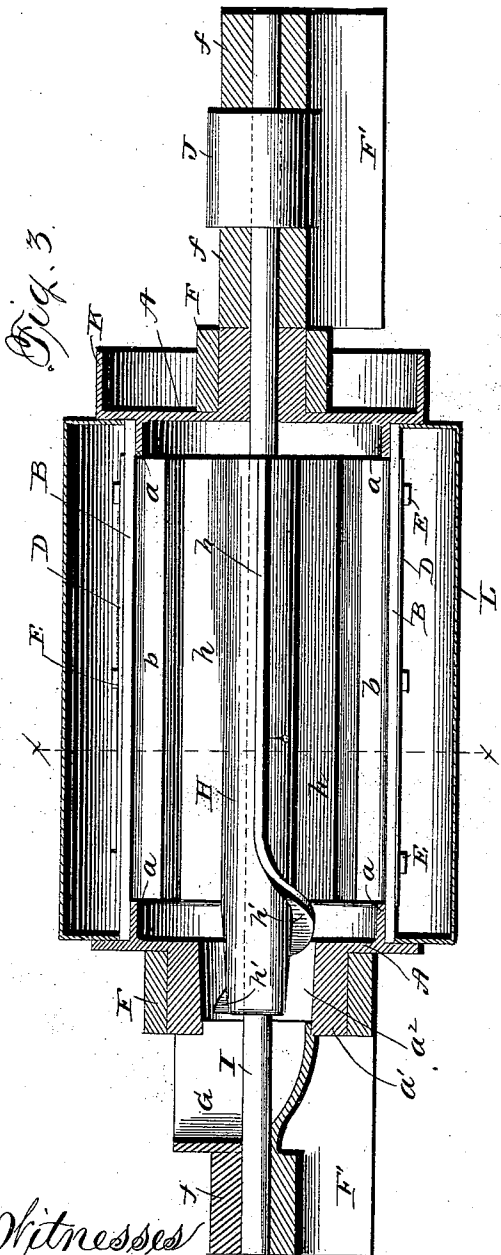
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UNITED STATES PATENT OFFICE.

JACOB A. PEARCE, OF DENVER, COLORADO, ASSIGNOR TO THE MECHANICS MILLING AND AMALGAMATING COMPANY, OF SAME PLACE.

ORE-PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 469,065, dated February 16, 1892.

Application filed April 27, 1891. Serial No. 390,540. (No model.)

To all whom it may concern:

Be it known that I, JACOB A. PEARCE, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Ore-Pulverizers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to machines for pulverizing or reducing to fine dust ores, mica, gypsum, carbons, or any brittle substance whose reduction may be desirable; and it has for its object to provide a simple, cheap, and yet most effective machine of this class.

To these ends said invention consists in the pulverizer having the construction and combination of parts as hereinafter specified.

In the accompanying drawings, Figure 1 shows my pulverizer in plan view, parts being broken away in order to more clearly illustrate the same. Fig. 2 is a perspective view of a portion of the machine, looking from the feeding end thereof. Fig. 3 is a central longitudinal section. Fig. 4 is a transverse section on line $x x$, Fig. 3; and Fig. 5 is a detail perspective view.

My invention contemplates the employment of a slowly-revolving hollow cylinder of peculiar construction, into which the material to be pulverized is fed, and a rapidly-revolving beater arranged concentrically within the cylinder. The latter, as shown, consists of two heads $A A$, to the horizontally-projecting portions $a a$ of which is bolted a series of comparatively narrow strips B . For a distance equal to the space between the portions $a a$ of the two heads these strips are reduced in width, so as to leave long narrow spaces or slots C between adjacent ones. To vary the size of these spaces, long and thin bars D are secured adjustably to the outer faces of the strips B , so as to be capable of projection to a greater or less degree over said spaces. The securing means consist of bolts E , passing through elongated openings or slots d in the bars into the strips B . Two of said bars are provided on each of the latter, and the opposite bars on adjacent strips control the spaces between the same. As shown clearly in Fig. 4, the edges of the strips B are beveled, so that

the spaces C flare or widen inwardly. Each strip also on its inner face carries an inwardly-projecting rib b of a length to extend from the portion a of one head A to the similar portion a of the other. In cross-section such rib has generally a triangular shape, with a concave and a convex face meeting in a sharp edge.

The cylinder is journaled so as to be capable of revolution by means of a cylindrical projection or gudgeon extending outwardly from each head A into bearings or boxes $F F$, provided on suitable castings $F' F'$, which serve as frames or supports for the apparatus. One of the projections or gudgeons (designated by a') is larger than the other and contains rather a large inwardly-flaring cylindrical opening a^2 , through which the material to be pulverized may be fed into the cylinder from a suitable hopper G , which discharges into said opening.

Within the cylinder and concentric therewith is a revolving beater consisting of a long hub H and four radially-extending wings h . The latter are of such radial extent as not to touch the ribs b on the strips B , and their length in an axial direction, with one exception, is the same as that of said ribs. One of said wings is extended into the opening in the gudgeon a' , where it is formed into a spiral conveyer h' to pass the material as it is discharged into said opening from the hopper into the cylinder. The hub H also extends into said openings, but is given a tapering form therein in order to afford ample space for the reception of the material to be operated on. The beater is mounted on or carried by a shaft I , journaled in suitable boxes or bearings $f f f$, provided on the castings F' . On the shaft I , near the end farthest from the hopper, and in a space left in the casting F' between the boxes f , is a band-pulley J , by means of which the beater may be revolved, while to revolve the cylinder the head A near the pulley J carries a band-wheel K , which may be, as shown, a portion projected or extended outward from said head. Extending between circumferential flanges on the cylinder-heads and inclosing the cylinder is a cylindrical housing L .

Briefly, the operation of my invention is as

follows: With the cylinder revolving slowly in the direction of the arrow, Fig. 4, and the beater revolving rapidly in the reverse or the same direction, the material to be pulverized is fed from the hopper into the opening a^2 in the gudgeon a' . Here it is engaged by the spiral or screw conveyer on the beater and forced thereby into the cylinder. The internally-projecting ribs b will there catch it, the concave faces thereof facilitating this, and carry it upward to fall upon the beater and by the wings of the same be pounded or beaten against the ribs b on the cylinder. When beaten or pounded to the required fineness, to be determined by the area of the slots or spaces C, the material will be discharged from the cylinder through the latter into the casing or housing K, from which it can be removed in any suitable manner, as by a suction-pipe or screw conveyer.

I desire to call attention to the fact that the wings of the beater not only serve to pound the material, but by reason of their rapid rotation operate as fans to drive or blow the powdered material through the spaces or slots C, so that its lodgment or packing in the cylinder is obviated. The passage through the latter is aided by reason of the beveling of the edges of the strips B which form such spaces.

Having thus described my invention, what I claim is—

1. The combination of a shaft and bearings therefor, a revolving beater on said shaft, provided with radial longitudinal wings h , cylinder-heads A A, provided with outwardly-

projecting hollow gudgeons, through which the said shaft passes, said gudgeons being journaled upon the said bearings and adapted to revolve independently of the shaft, a cylinder carried by the heads A A and inclosing the revolving beater, said cylinder being provided with longitudinal slots and inwardly-projecting longitudinal ribs, a stationary hopper mounted on one side of the bearings and extending into one of the hollow gudgeons on the cylinder-heads, and a housing, substantially as and for the purpose described.

2. The combination of a revolving beater, a cylinder inclosing the beater and provided with longitudinal slots, adjustable strips secured to this cylinder to vary the size of the slots, and a housing inclosing this cylinder, as and for the purpose set forth.

3. In combination, the revolving cylinder, two cylinder-heads having a journaling-gudgeon each, suitable boxes for the gudgeons, the series of separated strips having inwardly-projecting triangular-shaped ribs secured to said heads, the radially-winged hub forming a beater within said cylinder, one of the wings being at one end formed into a spiral or screw conveyer and projecting into an opening in one of said gudgeons, and suitable means to rotate the cylinder and beater independently, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB A. PEARCE.

Witnesses:

ANTHONY ROY,
JAY SCHERMERHORN.