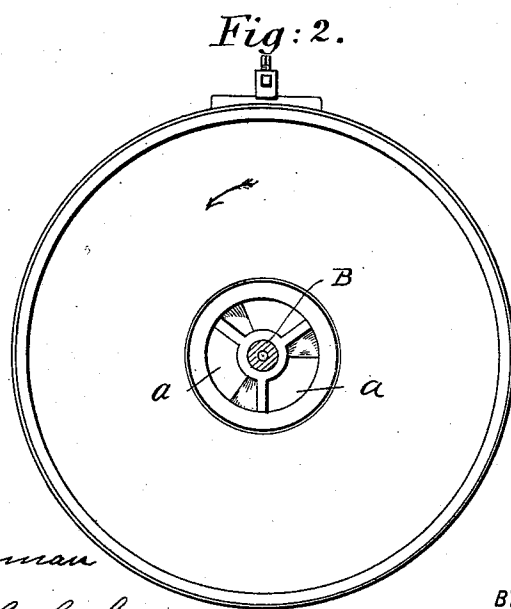
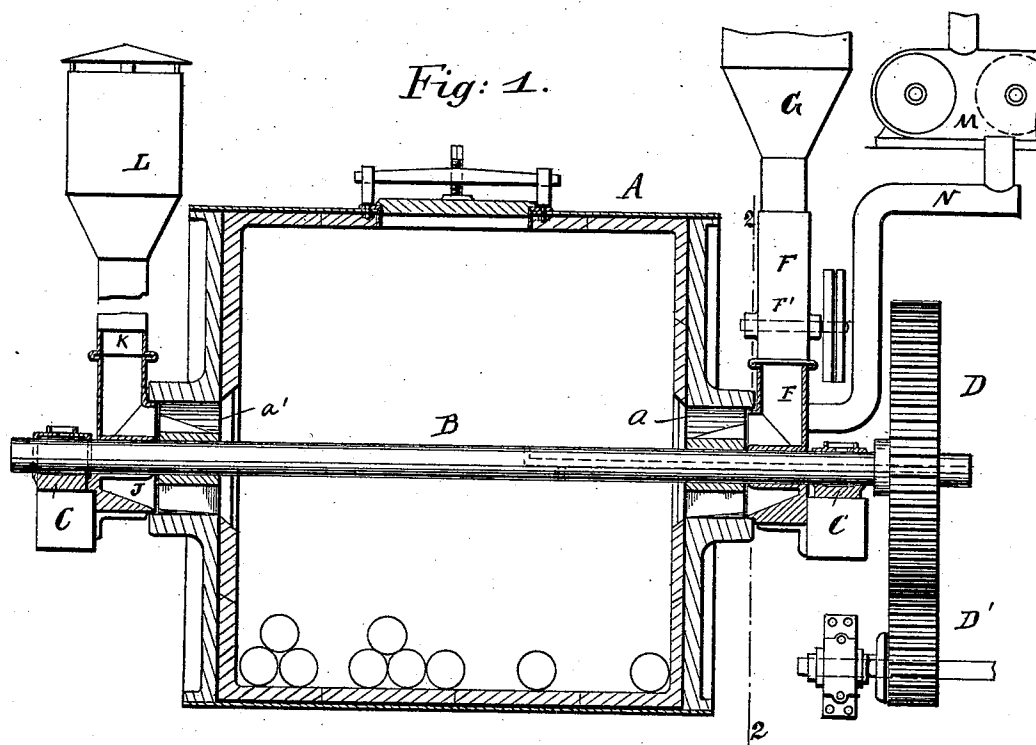


(No Model.)

R. F. ABBÉ.
GRINDING AND PULVERIZING CYLINDER.

No. 529,096.

Patented Nov. 13, 1894.



WITNESSES:

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RICHARD F. ABBÉ, OF BROOKLYN, ASSIGNOR TO THE J. R. ALSING COMPANY,
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GRINDING AND PULVERIZING CYLINDER.

SPECIFICATION forming part of Letters Patent No. 529,096, dated November 13, 1894.

Application filed November 21, 1893. Serial No. 491,545. (No model.)

To all whom it may concern:

Be it known that I, RICHARD F. ABBÉ, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Grinding and Pulverizing Cylinders, of which the following is a specification.

This invention relates to improvements in that class of grinding and pulverizing machines, in which the material to be treated is placed into a rotary cylinder partially filled with porcelain balls or other hard spherical bodies, the material being crushed and broken by said balls as the cylinder rotates.

The object of my invention is to provide a new and improved machine of this kind in which the material to be treated is drawn into one end of the cylinder. The fine material is carried off by a current of air at the opposite end of the cylinder into an outlet duct and the material accumulating in said duct and which is too heavy to be carried off by the current of air, is drawn back into the cylinder to be reground.

In the accompanying drawings, Figure 1 is a central vertical longitudinal sectional view of my improved grinding and pulverizing cylinder. Fig. 2 is a vertical transverse sectional view on the line 2, 2, Fig. 1.

Similar letters of reference indicate corresponding parts.

The cylinder A which is preferably lined with porcelain is fixed on the shaft B, extending centrally and longitudinally through the cylinder, said shaft being mounted on suitable bearings C. A cog-wheel D is fixed on the shaft B and engages a pinion D' by means of which it is driven. The cylinder is provided at one end with a series of helical or screw openings *a* arranged around the shaft B, which helical openings are so arranged and shaped as to have a pitch from the inside to the outside in the same direction in which the cylinder is rotated and serve to draw and feed the material from a fixed inlet-box E into one end of the cylinder. The inlet-box rests against the outer surface of that head or end of the cylinder, in which said openings *a* are formed, the openings establishing communication between the inlet-box and the cylinder.

The material passes into the chute F on the inlet-box from a hopper G and said chute is provided with an intermittent rotary feeding device F' of any well known construction. In the opposite head or end of the cylinder A, similar helical openings *a'* are formed around the center, but which have a pitch that is the reverse of the pitch of the openings *a* as the said openings also serve to draw material into the cylinder while at the same time serving to permit the blast of air to carry the fine ground material into an outlet-box J connected with an outlet duct K provided with a suitable collector or receiver L. An air compressing device M is connected by a pipe N with the inlet-box E.

In place of connecting the pipe N with the inlet-box E it may be connected with the end of the shaft B, which in this case is provided with a longitudinal bore and with radial bores at the inner end of said longitudinal bore as shown in Fig. 1, in dotted lines.

The operation is as follows: The cylinder is filled to about half its height with porcelain balls or pebbles of which some are shown in Fig. 1, and the cylinder is rotated, the material being fed through the hopper G, the chute F and inlet-box E. As the helical openings *a* have a pitch from the interior side of the end of the cylinder to the exterior, in the direction in which the cylinder rotates, they act as conveyer-screws and draw the material from the outlet-box into the cylinder where the material is crushed, disintegrated and pulverized by the balls or pebbles. The compressed air passing into the cylinder through the openings *a* at one end of the cylinder and out through the openings *a'* at the opposite end, carries the finely ground particles of material and conveys them through the outlet-box and duct K into the collector, from where they can be conveyed into suitable receptacles. The pressure of the current of air admitted into the cylinder is regulated according to the degree of fineness at which the material is to be removed from the cylinder. For example, when the material is light or is to be removed when it has reached a high degree of fineness, a slight current of air will suffice; but when the material is heavy or is to be removed when still comparatively coarse, a

greater air pressure is required. Some of the particles carried by the current of air drop back to the bottom of the outlet-box J and would eventually prevent the passage of the current of air and particles or at least materially retard the same. As the openings a' are also made helical and have the reverse pitch of the openings a , they also serve to draw the material accumulating in the bottom of the outlet-box J, back into the cylinder, where it is reground until it has the desired degree of fineness, and can be carried into the collector L by the current of air.

I claim—

15 The combination, with a cylinder mounted to rotate on a horizontal axis and having helical openings in each end around the center, the openings in the two ends having the reverse pitch, and said openings in both ends

serving to draw material into the cylinder, 20 boxes placed against the ends of the rotating cylinder to which boxes the openings in the ends of the cylinder lead, a feed chute connected with the box at one end of the cylinder, an outlet duct connected with the box at 25 the opposite end of the cylinder and means for conducting air under pressure into the cylinder, at that end of the cylinder at which the feed chute is located, substantially as set forth. 30

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

RICHARD F. ABBÉ.

Witnesses:

OSCAR F. GUNZ,
K. R. BRENNAN.