D. C. DEMAREST.

GRINDING BARREL.

APPLICATION FILED NOV. 16, 1909.

970,020. Patented Sept. 13, 1910.

FIG. 1.

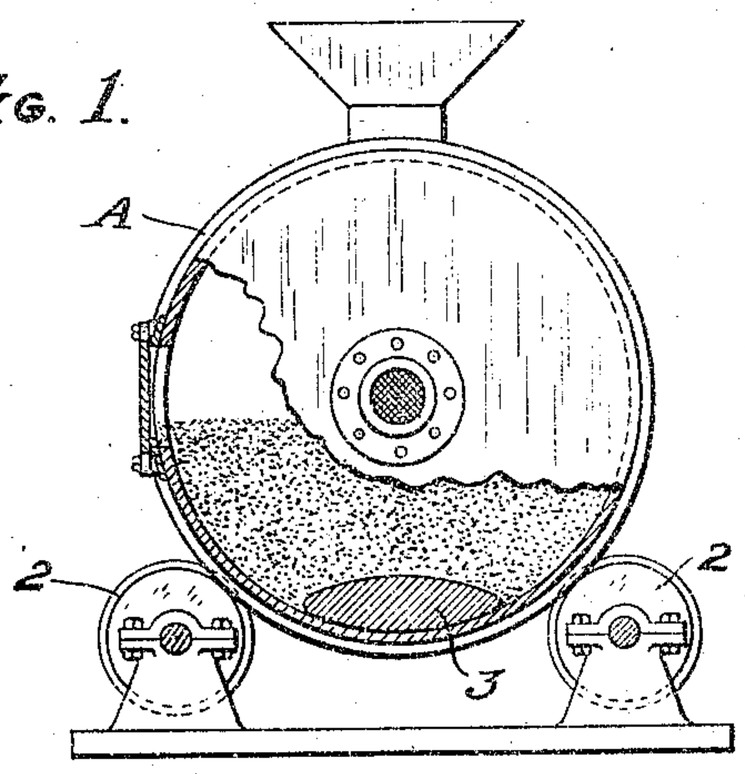


FIG. 2.

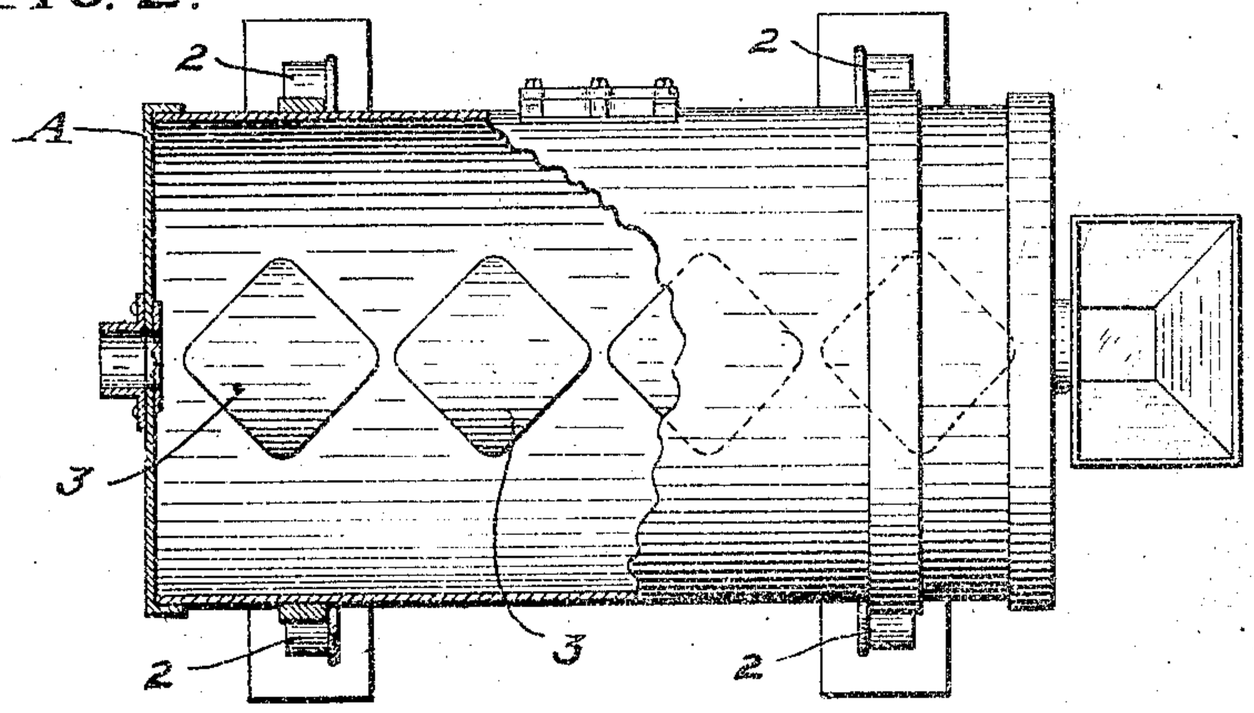


FIG. 3.

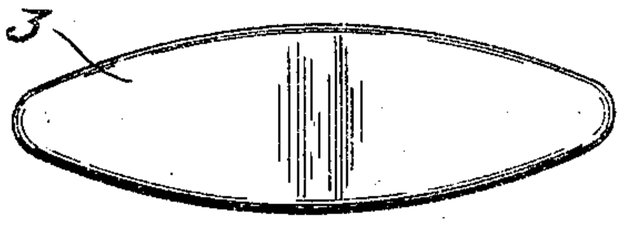
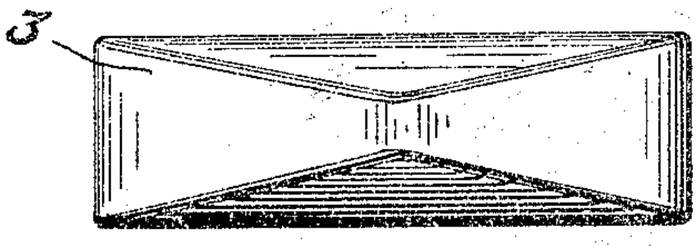


FIG. 4.



WITNESSES:

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GRINDING-BARREL.

970,020. Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed November 16, 1908. Serial No. 462,890.

To all whom it may concern:

Be it known that I, DAVID C. DEMAREST, citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Grinding-Barrels, of which the following is a specification.

My invention relates to improvements in that class of grinding mills which are designed for the fine pulverizing of ores containing valuable mineral, so that such ores will be in the best possible condition for cyaniding, or other processes by which the gold and valuable metal is eventually separated from the worthless material.

My invention consists in the combination of parts, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is an end elevation partly in section. Fig. 2 is a plan view partly in section. Fig. 3 is an end elevation of a grinding plate. Fig. 4 is a side elevation of a grinding plate.

In that class of grinding apparatus known as "grinding barrels," or technically as "tube mills," ore is delivered into the horizontally revolving cylinder, and by means of gravel, rock, or other material which is introduced with the pulp, the latter is pulverized to the desired degree of fineness, being delivered from the barrel through suitable screens. Such devices, where much gravel or metal ballast are used, provide only comparatively small points of contact, and it requires a much longer time to properly pulverize and reduce the ore than if larger surfaces of contact could be utilized. In my invention I form such surfaces by the use of plates having a curvature such that they will substantially fit the interior curvature of the barrel, and such length that they will practically cover the lower inner surface of the barrel from end to end.

A represents a tube or barrel of any suitable or desired material, such as is commonly used for this purpose. Such barrels may be journaled at the ends, or preferably mounted upon rollers 2, and suitable rings or tracks on the barrel which rest upon the rollers. Power is applied to the shaft of one of these rollers, or through a countershaft, so that the revolution of the rollers will slowly rotate the barrel. Any suitable or desired feeding mechanism may be employed so that the ore already pulverized by stamp batteries or mills used for the preliminary reduction, will be fed into the tube or barrel at any desired rate.

In my invention I employ plates 3, which are here shown as being rectangular in shape, and having the opposite surfaces curved, with a convexity which corresponds with the interior curvature, or concavity of the barrel. I prefer to make the axis of convexity diagonal from one angle to the other of the plates, the other two angles transverse thereto, and in the line of the circumference of the interior of the barrel. These plates thus present a large grinding surface which is presented toward the bottom of the barrel, and by their peculiar shape they provide for a very extensive grinding surface, and at the same time they will remain substantially in line with each other, and not become misplaced. The pulp passing between them and the interior of the cylinders, or the shoes with which it may be lined, will be rapidly reduced to a very fine pulp, such as is required for the proper treatment by what is known as the "cyaniding" process.

Screens are located at the discharge end of the apparatus, such screens having the desired fineness, and the operation need not be effected in charges, but may be made continuous, the pulp being supplied through the feed end of the apparatus in proportion to the rapidity of its discharge from the opposite end.

By making the shoes with double convex faces, it will be seen that they may be reversed so that either side may present the grinding surface; and by reason of the length of the cylindrical convexity, the shoes will maintain themselves in proper relation with each other, and will not be inclined to over-ride or get out of place.

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

An improved grinding barrel having in combination, a revolubly mounted barrel of cylindrical form and shoes operable within the barrel, said shoes being of substantially rectangular outline and having their opposite surfaces curved with a convexity which corresponds with the interior curvature or concavity of the barrel, the axis of convexity

being from one angle to the other of the shoes, and the other two angles being transverse thereto and in the line of the circumference of the interior of the barrel, said shoes being reversible to present either side as a grinding surface.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DAVID C. DEMAREST.

Witnesses:
FRANK L. OWEN,
CHARLES A. PENFIELD.