



# UNITED STATES PATENT OFFICE.

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## QUARTZ-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 480,647, dated August 9, 1892.

Application filed September 8, 1891. Serial No. 405,132. (No model.)

*To all whom it may concern:*

Be it known that I, ANDEREAS PHERSON ANDERSON, a citizen of the United States, residing at Oriental, Esmeralda county, State of Nevada, have invented an Improvement in Quartz-Crushers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improved apparatus for pulverizing quartz and other rock; and my invention consists of the constructions and combinations of devices which I shall hereinafter fully describe and claim.

Figure 1 is a front elevation of my crusher, the pulp-bonnet being partially removed. Fig. 2 is a vertical cross-section of the same.

A A are two rollers journaled upon the supporting-frame B, of any suitable construction, so as to stand parallel with each other and near together. Upon these rollers and supported between them is a short cylinder C, the length of which is approximately the same as its diameter. Upon each end of the exterior of this cylinder are flanges D, which serve as guides traveling against the ends of the rollers A to keep the cylinder in place upon the rollers. A belt E passes around this cylinder and any suitable driving pulley or device, from which power is applied to rotate the cylinder.

The roller A, which is nearest the source of power, has its central portion *a* cut away sufficiently to allow the lower portion of the belt to pass out freely between the two sides of the roller, and the rear roller has a channel or depression *a'* cut in its face corresponding with the channel in the front roller, so as to allow the belt to pass freely between the roller and the drum. By this means the drum is caused to rotate as rapidly as may be desired by the movement of the belt which passes about it, and the supporting-rollers turn freely, so as to allow it to rotate easily. The drum is made of iron or other suitable material, and has in the center, projecting inwardly, a ring or flange G, which serves to divide its interior into two parts. Within this drum are fixed the dies H, which are made in the form of rings, the central portion of which is thicker than the ends. The inner ends of the rings abut against the central

ring and the outer ends against a ring I, which extends entirely around the inside of the drum at each end, said rings being separate from the cylinder C and fitted into its ends against the ends of the dies H in any appropriate manner. The thicker portion of these dies form the surface upon which the crusher-rollers F travel.

This crusher consists of two separate rollers, one of which is adapted to travel in each of the compartments formed by the central ring G of the cylinder. These rollers have square tapering holes through their centers and are connected together by a square shaft *f*, (which is also slightly tapering,) which is screwed fast in place by a nut *f'*, fitting onto the screw-threaded smaller end of the shaft and seated in the depression made for it in that end of the roller. A round each of these rollers is fitted a shoe Q, which consists of a cylindrical drum open at one end and having a head at the other. These drums fit over the cylindrical rollers, being put on from the inside, so that the closed ends or heads are adjacent to each other.

Square holes are made through the inner ends of the shoes to fit over the shaft and a square sleeve *q* fits the shaft between the two rollers, this sleeve abutting against the ends of the shoes, and thus holding them to their place on the cylinders. By this construction it will be seen that the dies within the cylinder and the shoes upon the rollers may be removed and replaced at any time without much difficulty.

At each end of the cylinder is fitted a screen K. The peripheries of these screens abut against the flanges D upon the outer ends of the drum and are clamped in place by rings L, which fit outside of the screens and hold them against these flanges, being secured by suitable bolts I'.

M is a bar bolted or otherwise secured to the rings L and extending across the end of the cylinder, having an enlargement at the center with a hole through it. Through this hole is fitted a feed-funnel N, the inner end of which is of larger diameter than the outer, and it is held in place by a nut *n*, which screws onto the outer end. A ring I extends around the inside of each end of the cylinder

between the periphery of the screen and the inner ends of the dies within the cylinder, as previously stated.

A feed-pipe O extends from the supply-hopper down to a point above the cylinder, where it divides, and one branch passing around each end of the cylinder delivers the material through the central feed-funnel N.

When the apparatus is set in motion, the drum or cylinder is rotated with great rapidity and the two-part roller is caused to travel around its interior, while the material to be crushed is fed in through the feed-hopper and chutes. As fast as the material is pulverized it escapes through the screens and is discharged over amalgamating-plates or in any usual or desired manner.

Over each end of the cylinder are fitted what I term "pulp-bonnets" P, which are slightly funnel-shaped and serve to prevent the pulp from being splashed out to a great distance from the cylinder by its rapid rotation. These pulp-bonnets fit closely to the ends of the cylinders, and are supported from any convenient point outside of them, so as to be just out of contact with the cylinder ends. This allows the cylinder or drum to revolve freely while the bonnets prevent the escape of the material. The feed-pipes pass through the pulp-bonnets at the top.

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

1. A hollow rotary drum mounted upon horizontally-journaled supporting-rollers and having a belt by which it is rotated, a centrally-located interior ring or flange by which the drum is divided into two parts, dies fitted around the periphery of the drum having

the inner ends abutting against this ring and the outer ends against a corresponding outer ring, against which discharge-screens are fixed, crushing-rollers fitting each of the compartments of the drum and secured to a common shaft which extends through the rollers from end to end, hollow cylindrical shoes fitting upon said rollers, having their inner ends formed with closed heads through which the shaft passes, and a sleeve fitting the shaft between said heads, whereby the latter are kept in place upon the rollers, substantially as herein described.

2. The horizontal hollow rotating drum supported upon rollers having an interior ring or flange dividing it into two compartments, rollers fitting the compartments upon each side of the ring, having a common shaft extending through them, whereby the ring serves as a guide to keep the rollers in place, screens fitting the ends of the drum having rings around the periphery by which they are clamped or secured to corresponding rings or flanges upon the ends of the drum, a bar extending transversely across each end of the drum, feed-funnels fitted in the centers of said bars extending through the screens with the larger ends on the inside, and nuts by which they are secured in place, and a double feed-chute by which material to be crushed is delivered through the funnels in each end of the drum, substantially as herein described.

In witness whereof I have hereunto set my hand.

ANDERAS PHERSON ANDERSON.

Witnesses:

J. B. STODDARD,  
A. G. MILLER.