(No Model.)

C. C. BIRUM.

ROCK AND ORE PULVERIZER.

No. 559,433. **Patented May 5, 1896.**

Fig. 1.

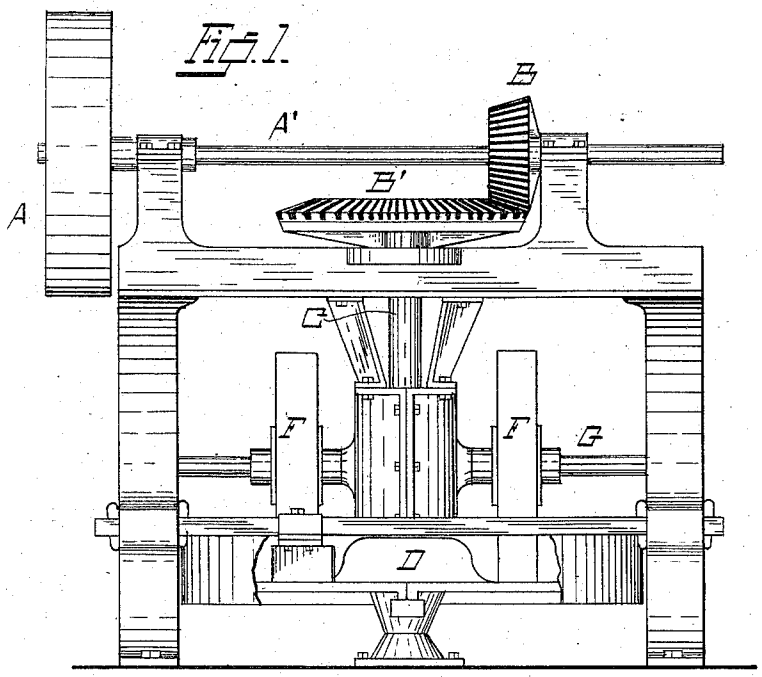


Fig. 2.

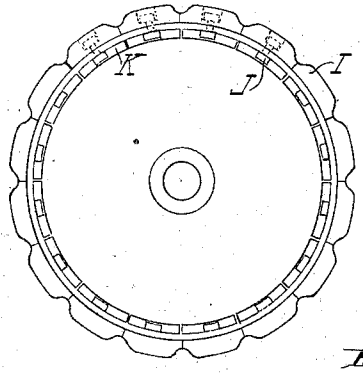


Fig. 3.

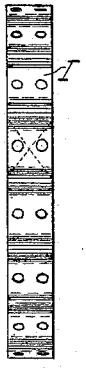


Fig. 5.

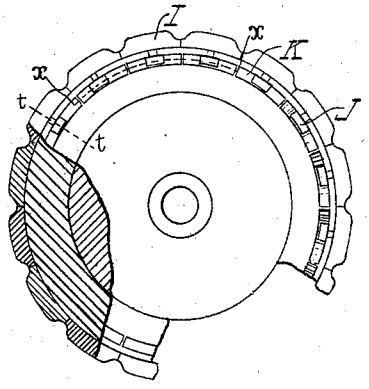


Fig. 6.

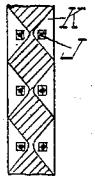
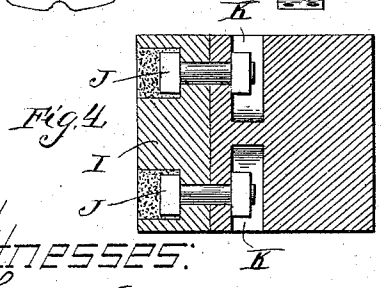


Fig. 4.



Witnesses:
Ferd. A. Otto.
C. L. Roesch

Inventor
Carlos C. Birum
By Erwin Wheeler & Wheeler
Attorneys.

UNITED STATES PATENT OFFICE.

CARLUS C. BIRUM, OF UTLEY, WISCONSIN, ASSIGNOR TO THE GREEN LAKE GRANITE COMPANY, OF CHICAGO, ILLINOIS.

ROCK AND ORE PULVERIZER.

SPECIFICATION forming part of Letters Patent No. 559,433, dated May 5, 1896.

Application filed March 1, 1895. Serial No. 540,219. (No model.)

To all whom it may concern:

Be it known that I, CARLUS C. BIRUM, a citizen of the United States, residing at Utley, in the county of Green Lake and State of Wisconsin, have invented new and useful Improvements in Rock and Ore Pulverizers, of which the following is a specification.

My invention relates to improvements in those forms of rock and ore pulverizers in which the rock or ore is crushed between a rotating disk and heavy crushing-rollers resting thereon, and pertains especially to the construction of the rim or periphery of the crushing-rollers, as hereinafter described. The practice heretofore has been to provide the crushers with a smooth-faced removable rim, which requires to be frequently removed, owing to the rapid wear of the crushing-surface. In grinding hard stones these rims have to be renewed as often as once in three weeks, and as the machine has to be taken apart in order to do this the delay and expense occasioned thereby are considerable. Another objection to the rims heretofore used is that the pulverized stone tends to form a bed or solid track on which the crushers are supported, which materially interferes with the action of the rollers in crushing.

The object of my invention is, therefore, first, to provide a sectional rim composed of removable sections which can be renewed without taking the machine apart; second, to provide for working up the fragments of stone constituting the so-called "bed," so as to facilitate crushing them as rapidly as possible.

In the drawings, Figure 1 is a side elevation of my pulverizer to which my improvement is applied. Fig. 2 is a side view of my improved crusher-rollers. Fig. 3 is a front view of the same. Fig. 4 is an enlarged cross-sectional view of the rim, drawn on the line *t t* of Fig. 1. Fig. 5 is a partial side view of a crushing-roller, showing my invention applied to the smooth-faced removable rim heretofore used. Fig. 6 is a view of the concave under surface of the portion above the section-line *x x* of Fig. 5.

Like parts are identified by the same reference-letters throughout the several views.

The rock and ore pulverizer shown in Fig. 1 is one of the forms in ordinary use. The motion of the drive-wheel A is communicated through the shaft A', bevel-gearing B and B', and upright shaft C to the rotatable disk D, surrounded by a perforated plate or screen E, through which the crushed material is permitted to escape.

F are the crusher-rollers rotating on the shaft G and resting on the upper surface of the disk D; but I do not claim these parts as my invention, having limited my claims to the specific improvements in the construction of the crusher-rollers, as hereinafter described.

The periphery of my improved crusher is covered by a series of blocks I, which, taken together, form a sectional rim surrounding the solid portion of the crusher. These sections are preferably made thinner at their meeting edges than at their center, thus having the appearance of blunt cogs (best shown in Figs. 2 and 5) as viewed from the side.

The blocks I are attached to the body of the crusher by means of the bolts J, the heads of which are countersunk in the blocks, one at each end of each block, and which project into the recesses K, formed in the side of the solid portion of the crusher and adapted to permit the nuts to be adjusted on the projecting ends of the bolts.

The recesses K are preferably triangularly formed, as shown in Fig. 5, thus removing but little of the metal and not materially reducing its strength.

It is obvious that my improvement can be applied either to the solid central portion of the wheel, as shown in Fig. 2, or that it can be applied in addition to the smooth rims heretofore used, the recesses K being in the latter case formed in the rim. It will also be observed that the sectional blocks can be removed independently and replaced with new ones when worn out or broken, and that the peculiar form of the blocks will penetrate and stir up the material upon the disk D. Owing to the corrugated shape of the surface, the bearings at the points of contact are more intense than when distributed over the larger surface of a smooth periphery.

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

In a rock and ore pulverizer, a crushing-roller, consisting of the combination of the body portion provided with the triangular recesses K in its sides near the periphery, and bolt-holes leading from the periphery into said recesses, with the removable rim, formed in sections I, and having bolt-holes adapted to correspond with the bolt-holes in said body portion, together with the bolts for securing said rim-sections in place, substantially as described.

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

CARLUS C. BIRUM.

Witnesses:
JACOB ALLEN,
J. W. HALL.