(No Model.)

S. W. KIMBLE.

ORE CRUSHING MACHINE.

No. 381,385. Patented Apr. 17, 1888.

Fig. 1.

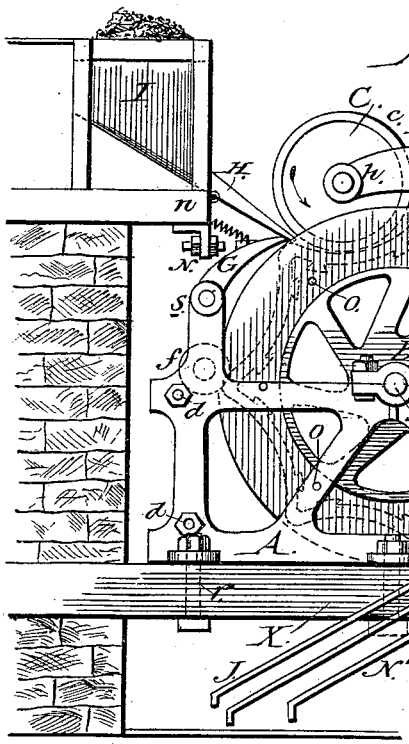


Fig. 2.

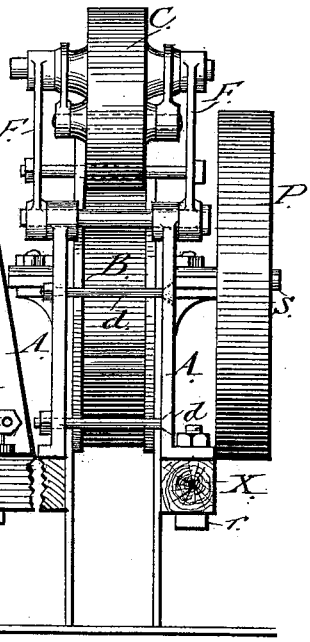


Fig. 3.

Fig. 5.

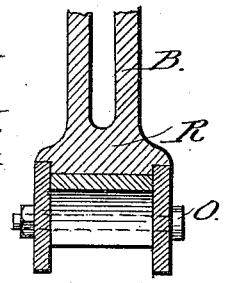


Fig. 4.

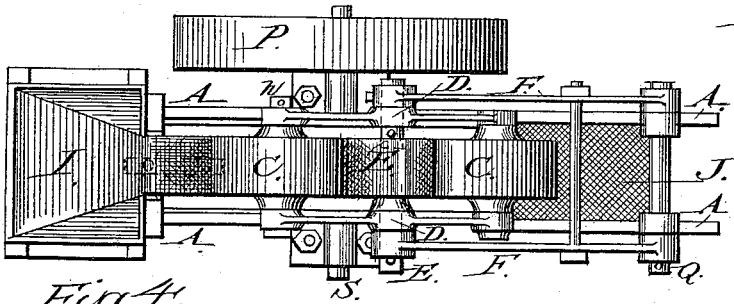
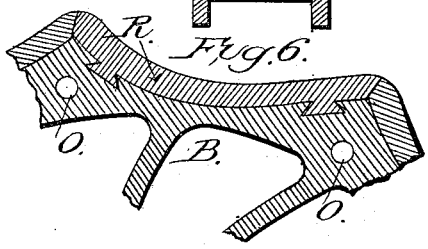


Fig. 6.



WITNESSES.

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UNITED STATES PATENT OFFICE.

SMITH W. KIMBLE, OF DENVER, COLORADO.

ORE-CRUSHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 381,385, dated April 17, 1888.

Application filed November 28, 1885. Serial No. 184,155. (No model.)

To all whom it may concern:

Be it known that I, SMITH W. KIMBLE, 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-Crushing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of an ore-crusher with my improvements attached. Fig. 2 is a rear view of the same. Fig. 3 is a plan view. Fig. 4 is a plan view of the frame D and connections. Fig. 5 is a cross-section through the lower rim of the battery-wheel. Fig. 6 is a detached sectional view of one of the shoes and part of the wheel, showing the means for securing the shoes.

My invention relates to certain improvements in ore-crushers; and it consists in the construction and combination of devices hereinafter described and specifically claimed.

To enable others skilled in the art to make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the drawings, A represents a suitable frame, the side portions of which are united together by bolts *d*, other bolts, *r*, securing these portions to the foundation-sills *x*, as shown in Fig. 1. Journaled between the sides of the frame is a shaft, S, upon which is mounted the wheel B, which has a broad face and is provided with depressions, in which the ore to be crushed is carried toward and against the roll-dies C C with great crushing force, the wheel B thus causing a succession of heavy crushing blows, which cause the roll-dies C C and frame D to move on their respective bearings and ride to the irregular face of the wheel B, producing thereby a revolving battery in which the shoes are to strike an upward crushing blow, the rolls C C at the same time becoming the dies on which the material is crushed. These roll-dies C C are provided with the shoes *c c* and are supported in the frame D by means of the shafts *h h*, and the wheel B is provided with shoes R, which are secured by dovetailed tenons and fit the depressions formed in the face of said wheel. The frame D and roll-dies C C are held in position by the arms F, which are connected to the frame D by pivots E and to the frame A by pivots at Q, which construction permits the frame D and roll-dies C C to closely ride the battery-wheel B.

Motion is imparted to the wheel B through a pulley, P, on the shaft S, and the ore from the hopper I, being delivered into the feed-spout H, is fed into the machine automatically by means of the knocker-arm G, supported on a shaft, *s*, through lugs on the frame A, and which is vibrated by the projecting points of the battery-wheel striking the loose pulley *f* on the lower end of the arm G, throwing the upper end of the arm forward and downward, thus causing the spout H to fall with a jar on the point of the arm and causing the material to feed under the roll-die just at a time when the depression in the battery-wheel is ready to receive it and carry it to the crushing-point.

The quantity of feed is governed by the adjusting-piece N, against which the spring *n* draws the feed-arm, as shown in Fig. 1. The material, having passed under the roll-dies C C, falls upon the screens J and K, of any desired size of mesh, and such of the material as will not pass through the screens may be taken out and returned to the hopper, to be re-crushed; and N′ represents the usual board placed beneath the screens.

The flanges M are secured to the wheel B by bolts O, and are to prevent the ore from falling off the face of the wheel, as also to keep the shoes in position, as shown in Fig. 6.

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

1. An improved ore-crusher comprising a main frame, a corrugated wheel mounted to rotate therein, a supplemental frame over the main frame, carrying a plural number of crushing-rolls engaging the corrugated wheel, and the arms F, pivotally secured to the main and supplemental frames, substantially as described.

2. An improved ore-crusher comprising a main frame, a corrugated wheel rotating therein, a pivotally-secured supplemental frame above the main frame, carrying a plural num-

ber of crushing-rolls, arms pivoted to said supplemental frame and to the main frame, a hopper and feed-spout, and a knocker-arm operated by the movement of the corrugated wheel, substantially as described.

In testimony whereof I have hereunto set my hand, at Denver, Colorado, this the 23d day of November, 1885, in the presence of two subscribing witnesses.

SMITH W. KIMBLE.

Witnesses:
F. Q. STUART,
J. W. MCHENRY.