T. R. TIMBY.

Ore and Rock Crusher.

No. 217.754. Patented July 22, 1879.

Fig 1.

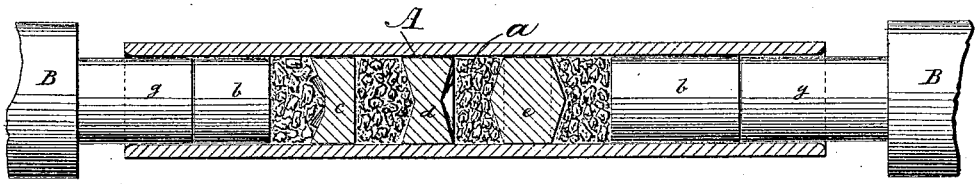


Fig 2.

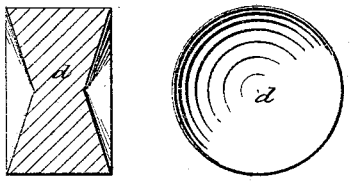


Fig 3.

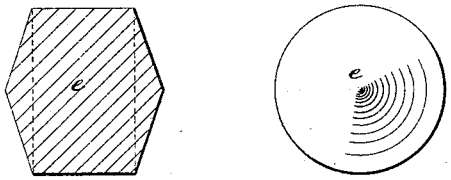


Fig 4.

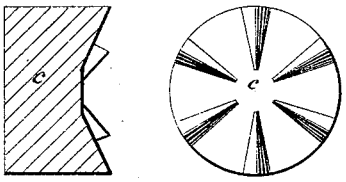
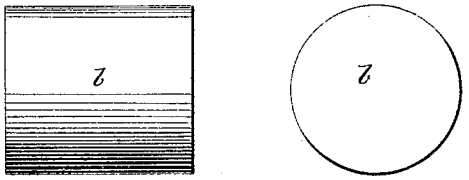


Fig 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

THEODORE R. TIMBY, OF NYACK, NEW YORK.

IMPROVEMENT IN ORE AND ROCK CRUSHERS.

Specification forming part of Letters Patent No. **217,754**, dated July 22, 1879; application filed May 26, 1879.

To all whom it may concern:

Be it known that I, THEODORE R. TIMBY, of Nyack, Rockland county, New York, have invented certain new and useful Improvements in Crushing Ores, Rock, &c., of which the following is a specification.

My present invention lies, mainly, in a novel and improved mode of crushing ores and similar material; and it may be stated to consist in submitting a layer or layers of the ore to steady or continued pressure between metallic disks within an inclosing cylinder or tube.

In the annexed drawings, Figure 1 presents a longitudinal section of my improved ore-crushing apparatus, and the remaining figures show in detail the various metallic disks removed from the tube.

As illustrated, A indicates a strong metallic cylinder or tube, of suitable length and diameter, which may be mounted on a proper support or foundation, (not shown,) and may be disposed in either a horizontal, vertical, or inclined position.

The ore, rock, or other material is indicated at *a a*, and is arranged, as shown, in one or more transverse layers within the tube, and between two or more metallic disks, *b c d e*, which fit the bore of the tube like pistons, as shown. These layers of ore, with their embracing disks, may be arranged in a continued series throughout the tube, and the terminal disks of the series receive the contact of the plungers *g* of a hydraulic or other suitable press, B, as shown.

The hydraulic press or presses may be arranged at either end of the tube, as shown; or but one press at one end of the tube and a fixed abutment at the other end will suffice.

The plungers of the presses or rams are arranged to fit and enter the bore of the tube and bear upon the disks, as illustrated, and as the plungers are forced out by the hydraulic or other pressure the disks are forced together, and the ore between them is thus crushed to the required degree.

The ore may thus be reduced to a condition of powder, or to any degree of coarseness or fineness, according to the amount of pressure applied, which is indicated by gages attached to the hydraulic cylinder. Thus, the crushing strength of the ore or rock being known, and the pressure on the disks, as well as the amount of compression of the charges between them, being indicated by suitable gages or indicators, the expert operator can thus regulate the action of the machine as required, so as to reduce the rock or ore to the required condition, which will, of course, vary in different cases.

The metallic crushing-disks may have their crushing-faces formed in various shapes. For instance, the faces may be flat, as shown at *b* in Figs. 1 and 5; concave, as shown at *d* in Figs. 1 and 2; convex, as shown at *e* in Figs. 1 and 3, or corrugated, as seen at *c* in Figs. 1 and 4.

The advantage claimed for this mode of ore or rock crushing is, that it is more expeditious and certain, and crushes the material to the required condition without serious jar, and with a less expenditure of absolute power than is the case with reciprocating or stamping machines, which waste a great deal of the power applied, and produce great noise and jar.

What I claim as my invention is—

An ore-crushing apparatus consisting of an inclosing cylinder or tube, a series of two or more metallic plates or disks movable within and fitting the bore of the tube for embracing layers of ore between them, and one or more hydraulic or other presses arranged at the end or ends of the said tube, with the plunger or plungers thereof adapted to enter the bore of the tube and force the said plates together, substantially as herein set forth.

THEODORE R. TIMBY.

Witnesses:

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JOHN E. GAVIN.