A. GIDDINGS.

Triturating and Reducing Cylinder.

No. 206,720. Patented Aug. 6, 1878

Fig. 1.

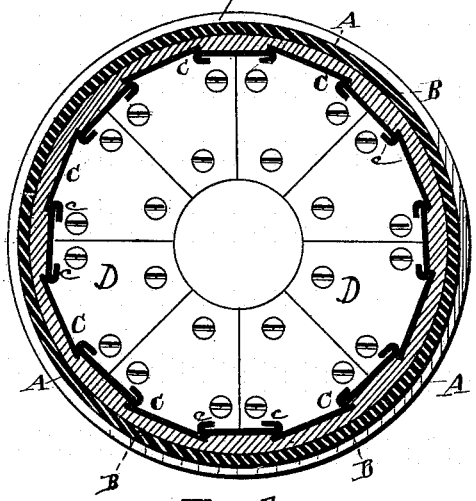
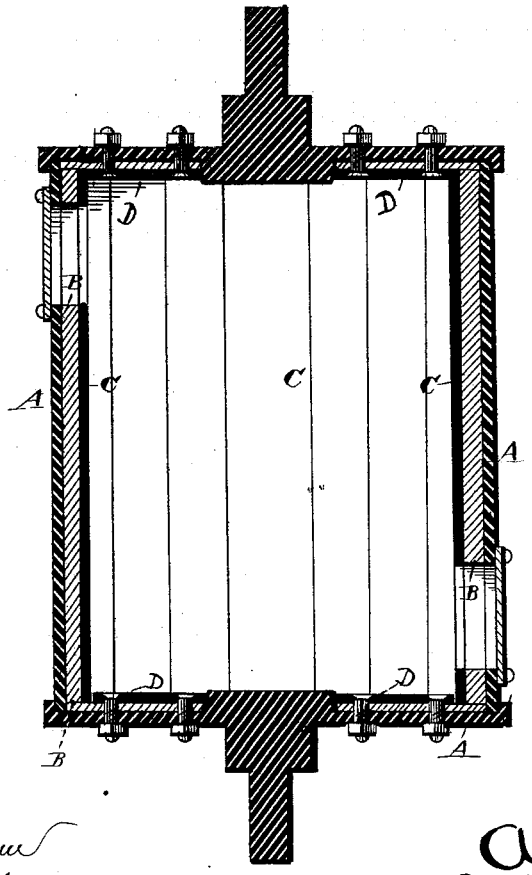


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN TRITURATING AND REDUCING CYLINDERS.

Specification forming part of Letters Patent No. **206,720**, dated August 6, 1878; application filed June 3, 1878.

To all whom it may concern:

Be it known that I, AMMI GIDDINGS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Grinding-Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to that class of grinding-mills knows as "ball and drum," and which employ any number of balls in a revolving cylinder.

The invention consists in the construction, as hereinafter described and claimed, by which the interior surface of the drum is formed with metallic plate-sections, connected together in such a manner that they can be independently or separately removed from the cylinder and other plate-sections substituted for the same.

In the drawings, Figure 1 is a transverse vertical sectional view of a cylinder embodying my invention, and Fig. 2 is an axial vertical section of the same.

A is an outer cylinder, constructed of metal or wood, sufficiently strong and heavy for the purposes required. If constructed of metal it should be supplied with a lining of wood, leather, rubber, or other yielding substance as a filling, as represented by B in the drawings.

If the outer cylinder is constructed of wood the filling is unnecessary, as the inner cylinder may be attached at once to it. In either case the interior metallic surface C is attached to the outer wooden cylinder or yielding filling, in plates or sections, so that if one portion is worn or broken in grinding the hard substances for which it is intended it may be readily removed and replaced without disturbing the whole of the inner cylinder.

The inner metallic lining is made in longitudinal sections C, each section having a sectoral-shaped end piece, D, formed right-angularly thereon, by which it is secured to the end of the cylinder. Bolt-screws or other suitable fastening devices may be used for this purpose. By this means each of the sections may be readily removed from the cylinder independently of the remaining sections, and other sections be substituted therefor. These several sections are each provided with longitudinal projections *c*, formed at desired intervals thereon, said projections being beads formed on both side edges of alternate plates, or on opposite side edges of consecutive plates, or otherwise, as desired, the object being to provide projecting surfaces, against which the balls may strike during the revolution of the cylinder, whereby an effective triturating action is obtained in the reduction of substances.

The operation of my device is as follows: The material to be ground is introduced into the cylinder through a proper aperture, and with it any number of suitable balls of iron, steel, or other substance sufficiently hard for the purposes required, and of any convenient size or shape, which, as the cylinder is made to revolve, serves to crush or grind the ore or other material between the balls themselves, and also between the balls and the lining.

The cylinder is supported and made to revolve by means of a shaft suitably connected with the power. After reducing the material to a powder sufficiently fine it may be sifted out of the cylinder through a sieve or grate placed over the aperture in its shell, through which the material is first introduced.

What I claim is—

In a sectional interior lining for grinding-cylinders, a removable section, C, consisting in the combination, with a series of metallic plates connected together and formed at suitable intervals with longitudinal projections or beads *c*, of a sectoral-shaped piece, D, which secures said section to the cylinder end by screw-bolts or similar fastenings, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AMMI GIDDINGS.

Witnesses:

JNO. CROWELL, Jr.,

F. TOUMEY.