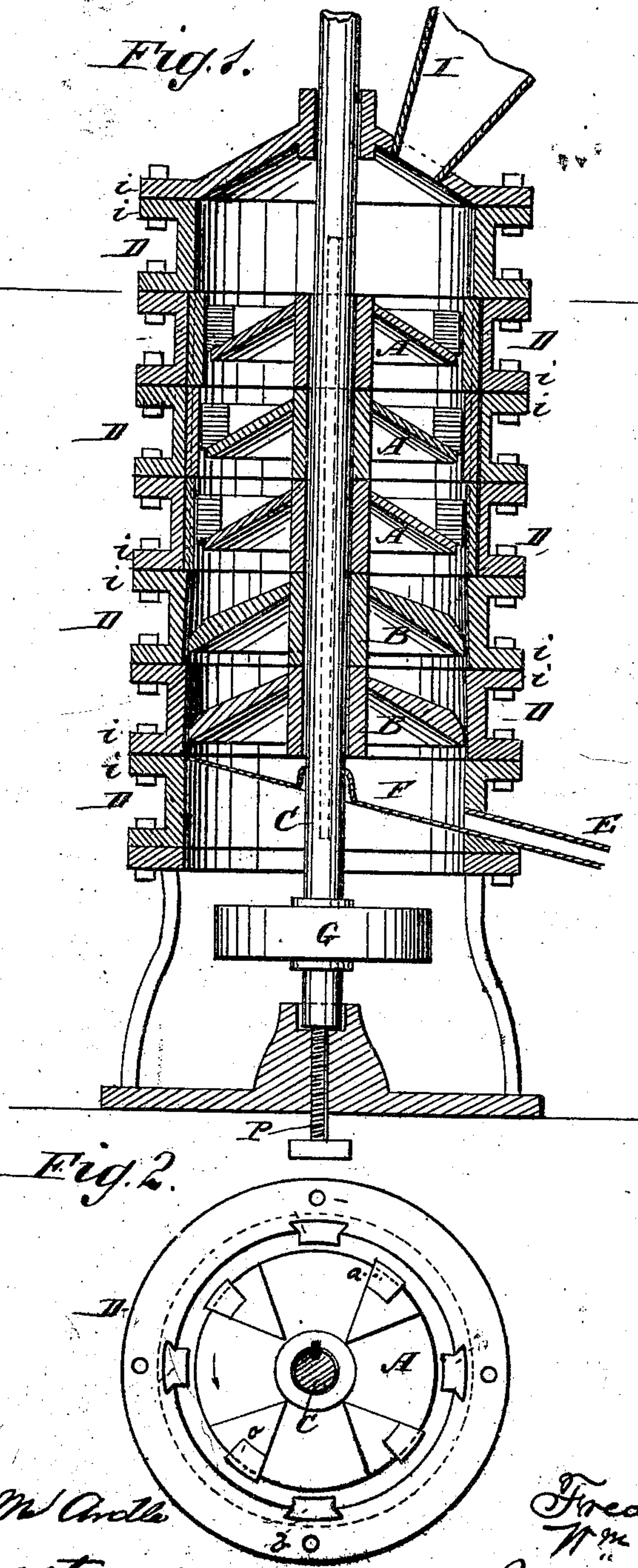


(No Model.)

F. J. & W. H. HOYT.
MACHINERY FOR REDUCING ORE, &c.

No. 256,570.

Patented Apr. 18, 1882.



WITNESSES:

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FREDERICK J. HOYT, OF NEW YORK, N. Y., AND WILLIAM H. HOYT, OF
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MACHINERY FOR REDUCING ORE. &c.

SPECIFICATION forming part of Letters Patent No. 256,570, dated April 18, 1882.

Application filed May 14, 1881. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK J. HOYT and WILLIAM H. HOYT, citizens of the United States, and residing respectively at New York city, in the county and State of New York, and at Jersey City, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Machinery for Reducing Ore and other Material, of which the following is a specification.

This invention relates to machinery for reducing ore and other similar materials; and it consists in the combination of revolving crushers and pulverizers, a vertical shaft or spindle, to which both the crushers and pulverizers are keyed, and a shell common to both the crushers and pulverizers, the shell being constructed in sections, one to each crusher and pulverizer.

This invention is illustrated in the accompanying drawings, in which Figure 1 represents a vertical central section. Fig. 2 is a horizontal section.

Similar letters of reference indicate corresponding parts.

The letter A designates the crushers; B, the pulverizers; C, the vertical shaft or spindle, and D the sections of the shell.

Both the crushers A and pulverizers B receive a revolving motion from the shaft C, to which they are keyed, the crushers being arranged on the upper part of the shaft and the pulverizers on its lower part, and they co-operate in conjunction with the inner surface of the shell to reduce the ore or other material to a fine powder, the material being fed to the machine through a hopper, I, and discharging through a spout, E, extending from an inclined plate, F, at the bottom of the shell.

The sections D of the shell are respectively provided with flanges *i*, whereby they are fastened together.

By placing the crushers A and pulverizers B on a common shaft independently from each other and constructing the shell D in independent or separable sections, either of the parts is adapted to be removed, if for any purpose it is desired so to do, without affecting the remainder; and hence the machine can be kept in good working condition without difficulty.

While the outside casing has been described as being made in sections, it is evident it may be made in one continuous cylinder, if necessary.

By raising or lowering the shaft C by means of the set-screw P the beveled edges of the pulverizers B approach or recede from the beveled inner surface of the shell D, and hence the effect of the pulverizing-disks can be adjusted and regulated with nicety.

The combination of the crushers A with the hammers and anvils is not claimed separately in this application, since such feature is claimed in an application filed by us May 14, 1881, serial No. 33,276; but in said application the said crushers, hammer, and anvils are not arranged within a cylinder above pulverizers B, which are not provided with hammers. The particular form of these crusher also constitutes the subject of an application filed by us May 14, 1881, serial No. 33,275, and hence is not claimed separately in the present case, the essential features of which consist in the combination of the crushers, hammers, and anvils with the pulverizers, and also in the combination, with the crushers and pulverizers, of the cylinder composed of sections, whereby the latter can be made more cheaply than if formed with a single case for the entire cylinder.

The crusher-disks A are provided with hammers *a*, and the sections of the shell around such crusher-disks are provided with anvils or lugs *b*, dovetailed in their inner faces. The pulverizing-disks B, however, have smooth beveled rims or edges, which act in conjunction with the smooth beveled inner walls of the sections of the shell surrounding them. Hence the ore is first crushed by the hammers and anvils, and then pulverized finely by the pulverizers.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a machine for reducing ores, of the vertical rotary shaft, with the crusher-disks A, provided with hammers *a*, the pulverizing-disks B, arranged below the crushing-disks and formed with smooth beveled edges, the cylinder composed of sections, one for each crushing and pulverizing disk, and the anvils *b*, arranged opposite the hammers,

whereby the ore is first crushed by the hammers and then pulverized between the shell and the pulverizing-disks, substantially as described.

- 5 2. The combination, with the vertical rotary shaft, of the crushers A, the pulverizers B, and the shell composed of sections D, bolted together, one of said sections being provided for each crusher and pulverizer, substantially
10 as described.

In testimony that we claim the foregoing we have hereunto set our hands this 13th day of May, 1881.

FREDERICK J. HOYT.
WILLIAM H. HOYT.

Witnesses:

FRANCIS CLARE BOWEN,
EDGAR GARRETSON.