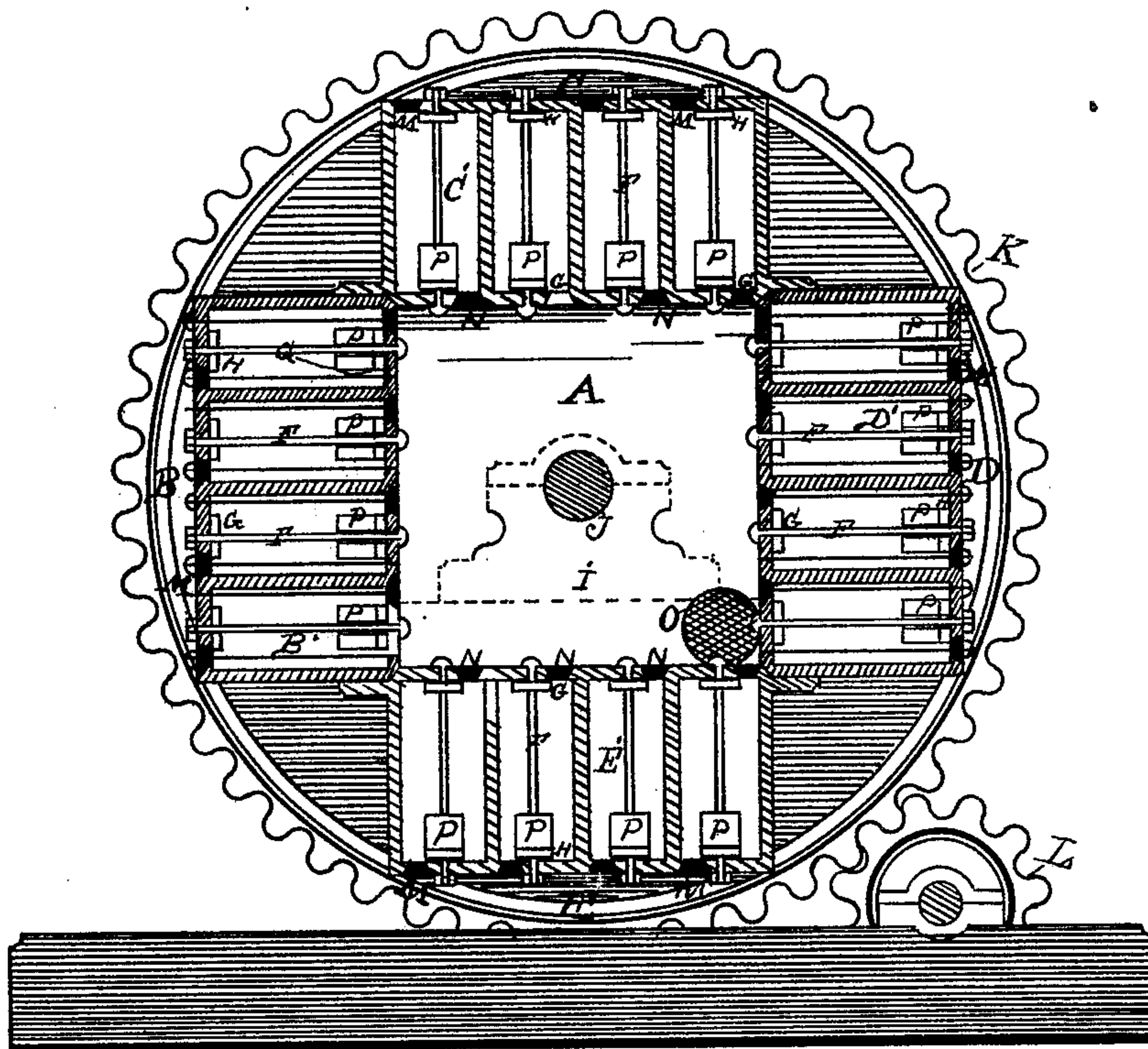


R. M. FRYER.

APPARATUS FOR PULVERIZING AND AMALGAMATING
GOLD AND SILVER ORES.

No. 176,291.

Patented April 18, 1876.



WITNESSES

J. O'Meara
Robt. L. Hall

Robt. M. Fryer
INVENTOR.

UNITED STATES PATENT OFFICE

ROBERT M. FRYER, OF NEW YORK, N. Y., ASSIGNOR TO THE FRYER NOBLE METAL MINING COMPANY OF NEW YORK.

IMPROVEMENT IN APPARATUS FOR PULVERIZING AND AMALGAMATING GOLD AND SILVER ORES.

Specification forming part of Letters Patent No. **176,291**, dated April 18, 1876; application filed May 20, 1875.

To all whom it may concern:

Be it known that I, ROBERT M. FRYER, of the city, county, and State of New York, have invented a new and useful Apparatus for Pulverizing and Amalgamating Gold and Silver Ores, of which the following is a specification:

The object of this invention is, first, to produce an apparatus by means of which quartz may be practically pulverized or reduced to a dry pulp, avoiding the necessity of employing water, as in the ordinary process. The further object is to so combine with the above an amalgamating-chamber, that while one charge of quartz is being acted upon by the former or pulverizer, a charge of material previously reduced therein is being treated with in the amalgamator; hence the result is like one continuous operation of crushing and amalgamating.

In order, however, to make my invention fully understood, that its novelty and usefulness may be readily observed, I will proceed with the general description, having reference to the accompanying drawing, which represents a vertical section of the entire apparatus.

A is the amalgamating-chamber, around which are located four subdivided chambers, B, C, D, and E. Within each subdivision (as B' C' D' E') are provided reciprocating weights P, which slide freely upon bars F, located therein, which guide the said weights as they traverse from G to H through the influence of their own gravity, when the said chambers are revolved as hereinafter described. J is a shaft, which rests upon bearings I, (shown in dotted lines,) and gives support to the amalgamator and pulverizing chambers, which are surrounded by the gear-wheel K, connected with and operated or revolved by pinion L. M are valves or openings, through which the compartments or subdivided chambers are charged with quartz. N are similar openings,

through which the said material, after being pulverized, is delivered to the amalgamating-chamber, from whence it is discharged through opening O to a suitable apparatus for separating the mercury or amalgam from the pulp.

It should here be stated that mercury and plated metal are employed in the amalgamator, which is kept in constant rotation for from six to twelve hours; hence, in the absence of very refractory ores, it is certain to practically separate the gold and silver from the pulp.

It is here evident that no waste of precious metal is possible during the crushing of the ore, even if water is present, as that operation is performed within an air-tight chamber. It is furthermore evident that the mercury or plated copper, or both, is kept in the best possible condition, the mercury not being crystallized as by the blows of ordinary stamp-mills, with which it is there brought in contact.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination of an ore-chamber and reciprocating weight, the chamber revolving about an axis at right angles to its length, the weight and ore falling from one end of chamber to the other, substantially as and for the purpose above set forth.

2. The combination of the revolving chambers, or subdivided chambers, B, C, D, and E, with the reciprocating weights P, substantially as and for the purposes above set forth.

3. The combination of the revolving chamber A and chambers B, C, D, and E, and weights P, for the combined purpose of pulverizing and amalgamating, substantially as and for the purpose above set forth.

ROBT. M. FRYER.

Witnesses:

ROBT. L. S. HALL,
T. O'MEARA.