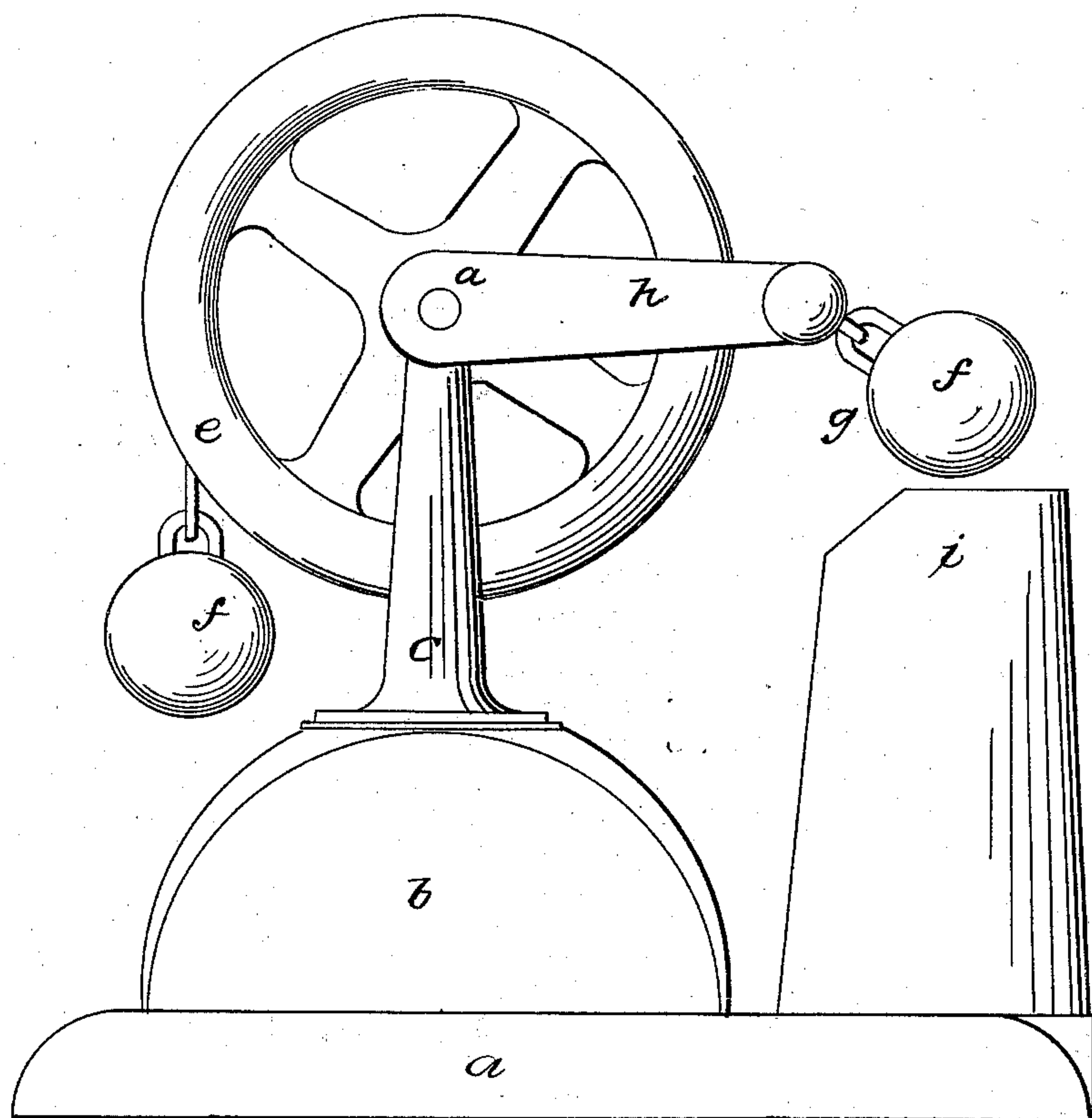


T. SHAW.  
Quartz Crusher.

No. 56,108.

Patented July 3, 1866.



*Witnesses*  
*C. Garber*  
*Chas M. Trimmer*

*Inventor*  
*Thomas Shaw*

# UNITED STATES PATENT OFFICE.

THOMAS SHAW, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN QUARTZ-CRUSHERS.

Specification forming part of Letters Patent No. 56,108, dated July 3, 1866.

*To all whom it may concern:*

Be it known that I, THOMAS SHAW, of the city and county of Philadelphia, Pennsylvania, have invented a new and Improved Quartz-Crusher; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention consists in the employment of heavy balls secured by chains to a hub of a revolving axle and to be thrown into a mortar, in the manner and for the purpose as hereinafter described.

In order to enable others to use and practice my invention, I will proceed to describe its construction and operation.

On reference to the accompanying drawing, which forms a part of the specification, Figure 1 is a side view of the quartz-crusher, of which *a* is a board, to which is secured blocks *b*, on the top of which is secured pillars *c*, which supports revolving shaft *d*. Said shaft carries wheel *e*, to which is secured cast-iron balls *f* by means of chains *g*. *h* is a crank, upon the propelling of which the balls are thrown into mortar *i*, all for the purpose as hereafter described.

It is intended that a suitable hopper or trough be connected on one end with the mortar *i*, so that quartz or other rock may be thrown in

by the shovelful, and that the jarring of the mortar by reason of the pounding of the balls will cause the rock to fall into the mortar.

The apparatus is put in operation in this wise. On the revolving of wheel *e* (which should be of large diameter to give proper effect) the balls *f* will be thrown out as far as chain permits by reason of centrifugal force. Said balls in the course of their flight will strike an opposing obstacle with force in proportion to speed of wheel.

The mortar is to be so placed that the balls will strike the center of same when thrown out the length of chain, in the course of which operation any rock or ores thrown into said mortar will receive the blows of balls, and the finer parts be dragged out when the ball makes its exit from mortar, after which the crushed quartz or ores may be sifted in the ordinary manner.

What I claim, and desire to secure by Letters Patent, is—

The employment of metal balls secured by chains to a revolving wheel, the whole constructed and operating for the purpose described.

THOMAS SHAW.

Witnesses:

E. COBB,

WILLIAM MYERS.