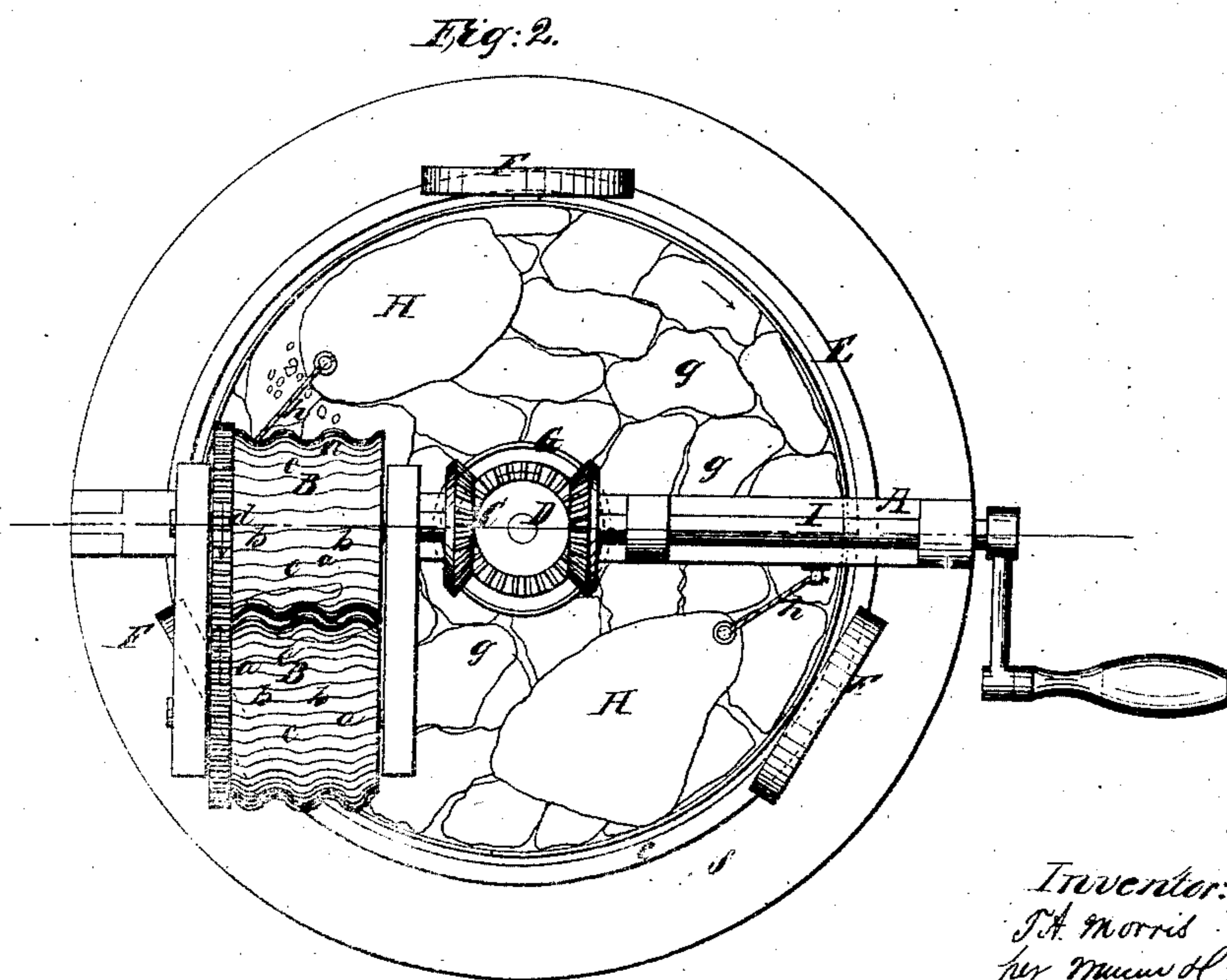
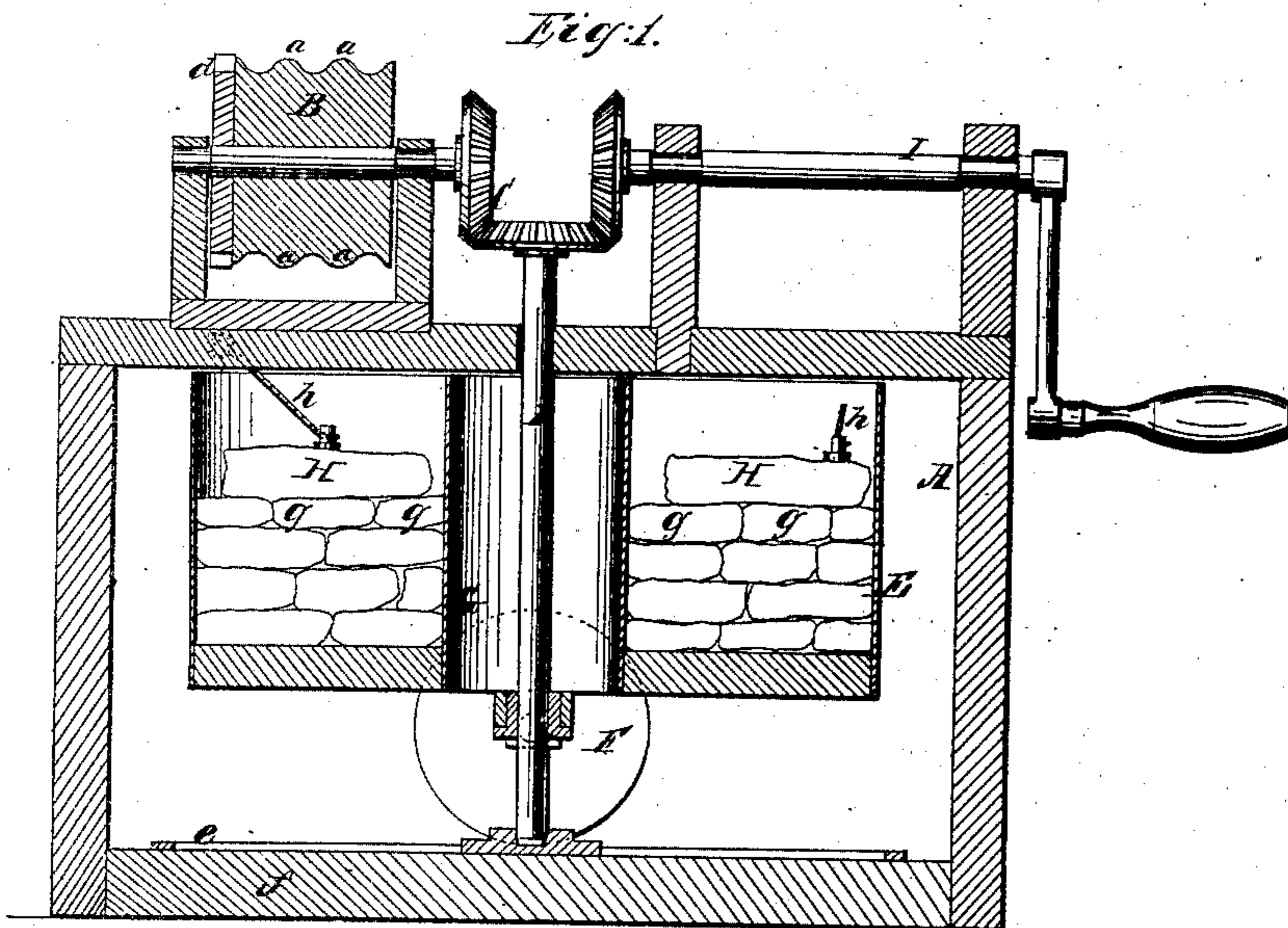


*T. A. Morris,  
Ore Mill.*

*N<sup>o</sup> 30,522.*

*Patented Oct. 23, 1860.*



*Witnesses:  
H. Brown  
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T. A. Morris  
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Attorney*

# UNITED STATES PATENT OFFICE.

THOMAS A. MORRIS, OF GREEN BAY, WISCONSIN, ASSIGNOR TO HIMSELF AND F. R. SCHETTLER, OF SAME PLACE.

## CRUSHING AND PULVERIZING QUARTZ.

Specification of Letters Patent No. 30,522, dated October 23, 1860.

*To all whom it may concern:*

Be it known that I, THOMAS A. MORRIS, of Green Bay, in the county of Brown and State of Wisconsin, have invented a new and  
5 Improved Machine for Crushing Gold-Bearing Quartz; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this  
10 specification, in which—

Figure 1 is a vertical central section of my invention. Fig. 2, a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in the employment or use of one or more pairs of crushing rollers of peculiar form, in connection with a rotating cylinder provided with a bed of  
20 novel construction and with drags—all being arranged to operate in the most efficient manner to favor the separation of the gold from the quartz.

The difficulty attending the operation of the ordinary stampers has been that the quartz, although crushed, is allowed to carry away particles of gold embedded in it and covered by foreign substances such as sulfuret of iron which prevents the amalgamating of the gold.  
30

The object of the within described invention is to obviate this difficulty by dragging or scraping by a sort of grinding process the gold which may be embedded in the  
35 sand of the crushed quartz, so that such particles of gold may be expressed, amalgamated and saved with the general mass.

To enable those skilled in the art to make and use my invention, I will proceed to describe it.  
40

A, represents a stout framing on the upper part of which a pair of crushing rollers B, B, are placed and driven by gearing C. The rollers B, B, have their peripheries provided with knobs *a*, which may be described  
45 as being formed by circumferential and longitudinal grooves *b*, *c*; the knobs *a*, of one roller being circumferentially in line with the spaces between the knobs of the other  
50 roller as shown clearly in Fig. 2.

The rollers B, B, are of cast metal and may be formed in sections so that in case of breakage, a broken part may be replaced and the rollers thereby readily repaired.  
55 The rollers are connected by gearing *d*, at one end, and one or more pairs may be used as circumstances require one pair of rollers

being placed over the other if more than one pair are used.

D, is a vertical shaft which has a cylinder E, placed on or attached to it. This cylinder E, is mounted on wheels F, and the latter are placed on an annular way *e*, which is secured to the base *f* of the framing A. The cylinder E, has a tube or pipe G, fitted  
60 in it concentric with shaft D, and open at both ends, and the bottom of the cylinder E, is covered with pieces *g*, of quartz rock firmly bedded together in any suitable amount.  
70

To the framing A, there are attached by ropes or chains *h*, *h*, blocks of quartz rock H, which rest on the bottom of cylinder E.

The upper end of the shaft D, is connected to a driving shaft I, of the machine by  
75 a wheel which forms one of the gear wheels C, previously alluded to.

The operation of the machine is as follows. The shaft I, is rotated by any convenient power and the quartz is passed between the rollers B, B, which crushes it very effectually in consequence of the knobs *a*, on their peripheries. The crushed quartz passes down into the cylinder E, and there is subjected to a grinding action from the  
80 drags H, the latter perfectly scraping all substances which may cover particles of gold embedded in the quartz and which would otherwise prevent their amalgamation with the quicksilver with which the cylinder E,  
85 is supplied, the quicksilver, and water being supplied in a continuous stream and the debris discharged through the pipe G.  
90

This invention it will be seen is perfectly simple not liable to get out of repair and  
95 may be kept in proper working order without difficulty.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—  
100

1. The rotating cylinder E, provided with a bed or bottom formed of rocks *g*, in connection with the drags H, one or more, arranged substantially as and for the purposes set forth.  
105

2. The combination of one or more pairs of crushing rollers B, B, with the rotating cylinder E, and drags H, one or more, arranged for joint operation as and for the purposes specified.

THOMAS A. MORRIS.

Witnesses:

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J. KIP ANDERSON.