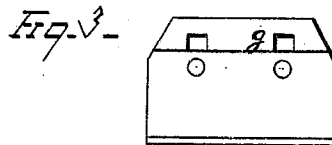
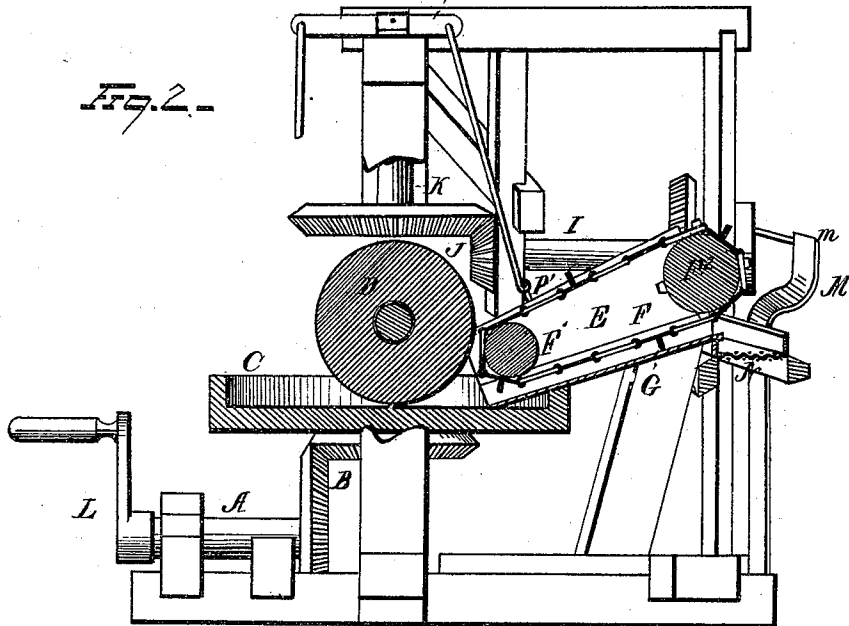
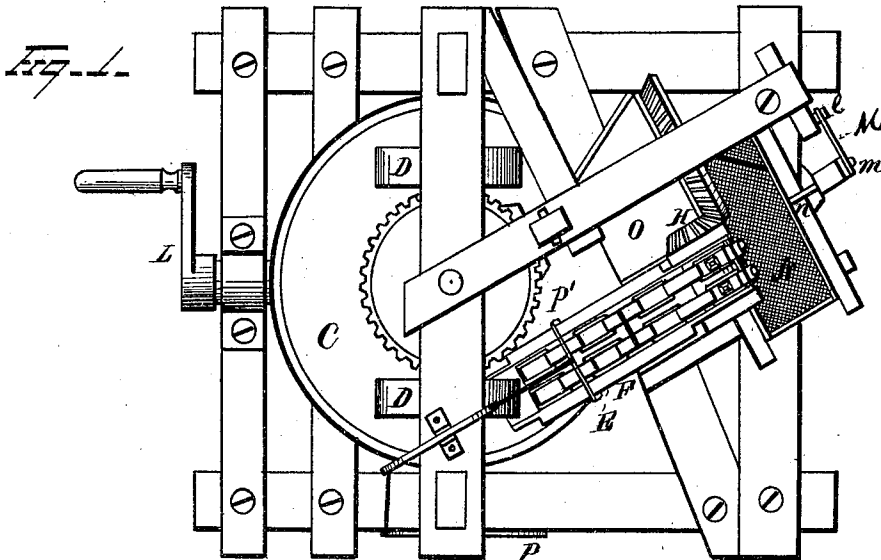


T. CARTER.

ORE PULVERIZER AND SEPARATOR.

No. 174,660.

Patented March 14, 1876.



WITNESSES
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UNITED STATES PATENT OFFICE

THOMAS CARTER, OF NILES, OHIO, ASSIGNOR TO TRUTH CARTER.

IMPROVEMENT IN ORE PULVERIZERS AND SEPARATORS.

Specification forming part of Letters Patent No. 174,660, dated March 14, 1876; application filed January 28, 1876.

To all whom it may concern:

Be it known that I, THOMAS CARTER, of Niles, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Machine for Separating and Pulverizing Ore; 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 machinery for separating and pulverizing ores; and consists in the several combinations of parts which are set forth in the following description of my invention, and clearly pointed out in the several claims.

In the drawings, Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a sectional view, by a vertical plane through the elevator and one of the crushing-rolls, showing the relation borne by the receiver, crushing-rolls, elevator, and sieve. Fig. 3 is a separate view of one of the elevator buckets or scrapers.

A is any suitable power-shaft, whereby bevel-gears B or other suitable connection are driven for the purpose of causing the receiver C to revolve. C is the receiver, into which the ore is placed that is desired to be crushed. D are the crushing-rolls, which are loosely housed, so as to permit of rising and falling, and thus adapting itself to any charge of ore. The rolls D, however, are held in substantially the same position, so that they revolve in opposite directions as the receiver C is rotated. E is a chute, in which an elevator, F, operates. This elevator F is in the nature of a continuous chain passing around pulleys F¹ F², and is provided with buckets or scrapers G. This elevator is operated through the medium of the bevel-gears H and the shaft I, which, in turn, is actuated by means of the bevel-gears J, and the upright shaft K operated by the power-shaft A. The buckets G are preferably made adjustable, as shown in Fig. 3, so that they will, by their own weight, rest upon the bottom of the chute and carry forward the pulverized ore, and as worn away they will compensate for any such wear by dropping

down, a motion which is permitted by means of the slot g. I is a crank on the end of the shaft I, and connects with an arm, M, which is pivoted at m to the frame, and engages with the stud n that projects from the sieve N, and as the shaft I is revolved a shaking motion is thereby given to the sieve N. O is a chute, into which the tailings are delivered from the sieve, and are directed back into the receiver C to be reground.

It will be observed that the whole structures forms a combined mechanism, whereby the ore may be thoroughly pulverized, may be then conveyed to the sieve, may there be sifted, and the tailings run back for repulverizing.

P is a lever, which, by means of suitable connection P', serves to lift the chute and elevator E and F out of the receiver C when it is desired to operate upon the ore for a greater length of time.

The operation of the device is very simple. The ore is placed in the receiver C, and as the receiver is revolved the ore is passed beneath the crushing-rolls D, and is by them pulverized. When sufficiently pulverized the lever P is lowered, causing the chute E and elevator F to drop down and rest upon the receiver C. As the receiver revolves the pulverized ore is then scraped up by the edge of the chute E, is caught by the buckets G, and carried up and delivered into the sieve N. This is agitated by the arm M through the medium of the crank L. The pulverized ore is dropped through the sieve and the tailings are delivered upon the chute O and carried back into the receiver C, to be again subjected to the pulverizer.

I do not limit myself to the particular means by which the power is transmitted to revolve the receiver C; nor do I limit myself to the particular means by which power is transmitted to operate the elevator and agitate the sieve, because other mechanical contrivances for that purpose may readily be substituted; nor do I limit myself to the peculiar mechanism for raising and lowering the elevator; nor to the peculiar construction of the elevator-buckets.

What I claim is—

1. In an ore-separator, the combination, with

a revolving receiver and crushing-rolls, of an elevator, the lower end of which rests upon, or in close proximity to, the working face of the revolving receiver, substantially as and for the purpose set forth.

2. The combination, with a revolving receiver and crushing-rolls, of a vertically-adjustable elevator, the lower end of which rests upon, or in close proximity to, the working face of the revolving receiver, substantially as and for the purpose set forth.

3. The combination, with a revolving receiver, crushing-rolls, and vertically-adjustable elevator, arranged above the receiver as described, of a sieve and mechanism for agitating the same, substantially as and for the purpose set forth.

4. The combination, with a receiver, crushing-rolls, an elevator, the lower end of which is situated above the receiver, and a reciprocating sieve, all constructed to operate substantially as set forth, of a chute arranged to deliver the tailings back into the receiver, substantially as and for the purpose described.

5. The combination, with an upright shaft, having bevel-gears secured thereto, above and below a revolving receiver, of the respective driving and driven shafts A and I, and suitable intervening mechanism for actuating the elevator and sieve, whereby the revolving receiver, elevator, and sieve are operated simultaneously by the driving-shaft A, substantially as and for the purpose described.

6. The combination, with a revolving receiver, of an adjustable elevator, the lower end of which rests upon, or in close proximity to, the working face of the revolving receiver, the endless carrier of said elevator being provided with self-adjustable buckets, as and for the purpose set forth.

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

THOMAS CARTER.

Witnesses:

H. T. HOWER,
FRANCIS TOUMEY.