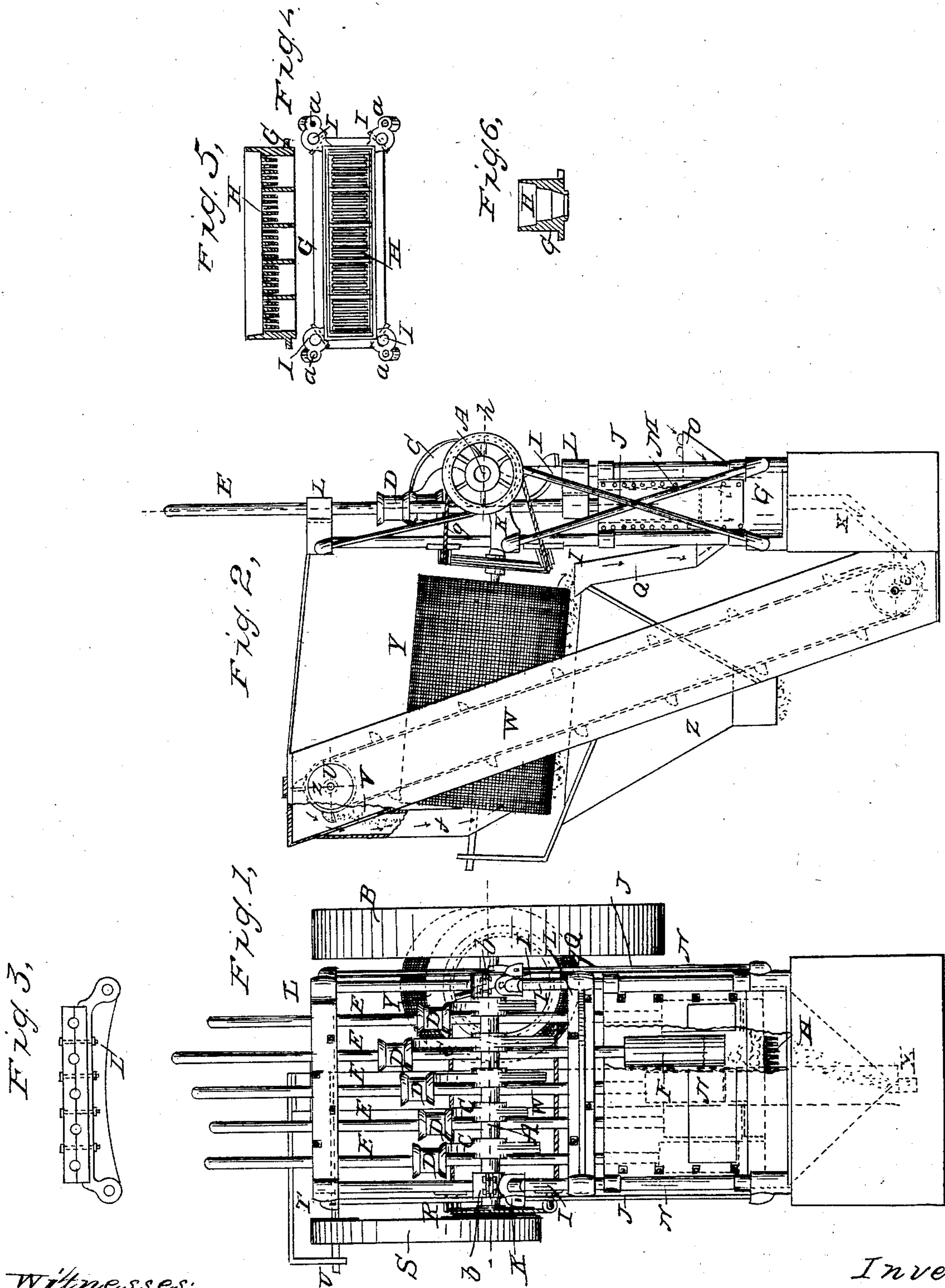


J. MOORE.  
Ore Crusher.

No. 35,202.

Patented May 6, 1862.



Witnesses:  
P. Torrey  
J. H. Parry

Inventor  
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# UNITED STATES PATENT OFFICE.

JOSEPH MOORE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE  
VULCAN IRON WORKS CO., OF SAME PLACE.

## IMPROVEMENT IN ORE-CRUSHING MILLS.

Specification forming part of Letters Patent No. 35,202, dated May 6, 1862.

*To all whom it may concern:*

Be it known that I, JOSEPH MOORE, of the city and county of San Francisco and State of California, have invented a new and useful Machine for Stamping or Crushing Metallic Ores in a Dry State; 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 specification, in which—

Figure 1 is a front elevation of my invention; Fig. 2, a side elevation of the same; Fig. 3, a detached plan or top view of the guide for the stamper-rods; Fig. 4, a detached top view of the mortar-bed and grate; Fig. 5, a longitudinal vertical section of the same; Fig. 6, a transverse vertical section of the same.

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

The object of this invention is to obtain a simple and efficient machine for crushing or stamping metallic ores in a dry state, one which, by a continuous operation, will pulverize the ore and sift or screen the same, so as to separate the sufficiently fine from the coarse particles and return the latter to the stampers for further reduction, while the sufficiently fine and pulverized part is discharged from the machine.

The invention consists in the employment or use of a series of stampers and mortar provided with a grating, a set of elevators, and a screen, arranged substantially as hereinafter shown and described, whereby the desired end is attained.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a cam-shaft, which may be driven, as usual, by a pulley, B, or by gearing. On the shaft A the cams C are keyed in any proper way, and at such points as to act upon hubs or collars D, which are secured on rods E of stampers F.

G is a mortar-bed, in which a grating, H, is laid. This grating may be formed of wrought-iron or steel bars placed transversely in the bed, as shown clearly in Fig. 4, or perforated dies or plates of cast-iron may be used for a grating.

In the mortar-bed G there are fastened four wrought-iron upright rods, I, one at each corner or angle of the mortar-bed. These rods form the frame of the machine, and they are stiffened by wrought-iron cross-braces J, which are fitted at their ends in taper sockets *a* on the cast-metal portions of the structure.

To the upright rods I are attached brackets K K of cast metal, said brackets containing the bearings *b* of the cam-shaft A and their caps, and also having the upper sockets, *a*, of the cross-braces J at their sides.

The upper and lower guides, L L, of the stamper-rods E may be secured to the rods I by side keys or screws. The mortar-bed G is boxed in by sheet-iron shrouding M, bolted and riveted to cast-metal tubes N, which are placed on the upright rods I.

At the front part of the shrouding M there is a hopper, O, and at the back part of the shrouding there is an inclined tube, Q, the lower end of which communicates with the chamber formed by the shrouding by one or more apertures.

On the shaft A there is placed a pulley, R, around which a belt, *g*, passes, said belt also passing around a pulley, T, on a shaft, U, which shaft has the upper pulley, *d*, of a set of elevators, V, upon it. The elevators V may be constructed in the usual way, a leather or flexible endless strap or belt of other material being placed on suitable pulleys, *d e*, having such a relative position with each as to give the strap or belt an inclined position. The elevator strap or belt is provided with suitable caps, and the strap and caps are inclosed within a suitable case, W, the lower end of which communicates with a spout, X, beneath the grating H of the mortar-bed G, and the upper end is provided with a spout, *f*, which leads into a rotary screen, Y, said screen being somewhat inclined and having its depressed end over the upper end of tube Q. The screen Y is rotated by a band, *g*, from a pulley, *h*, on cam-shaft A. Z is a spout placed below screen Y, as shown in Fig. 2.

The operation of the machine is as follows: The ore is fed in suitable quantities on the grating H through the hopper O, and is crushed by the stampers F, the crushed ore passing through the grating and down spout



X into the elevator-caps, which convey the crushed ore upward and deposit it into the upper end of the rotating screen Y. The fine portion escapes through the screen, while the coarse portion passes out of the lower end of the screen into spout Q, and is conveyed thereby to the grating H and subjected to a second crushing operation. Thus it will be seen that the operation is a continuous one, the ore being crushed and the fine pulverized portions passing through the screen, while the coarser portions are returned to the stampers to be recrushed and again screened. The grating H, it will be seen, prevents the escape of large masses of ore into the screen Y. No particles coarser than are allowed to pass through the grating H can pass into the screen.

By constructing the frame as described it is rendered extremely simple, strong, and durable—well calculated to resist concussions and jars due to the operation of the machine.

I do not claim the employment of one of the stampers F, for they have been previously used; nor do I claim, broadly, the elevators V; but

I do claim as new and desire to secure by Letters Patent—

1. The combination of the stampers F, grating H, elevators V, and screen Y, arranged for joint operation, as and for the purpose set forth.

2. The construction of the frame of the machine, to wit: the rods I, braced by the cross-rods J, the shrouding M, attached to rods I to form the mortar-box, and the guides L I, fitted on said rods I, as set forth.

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Witnesses:

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