





# UNITED STATES PATENT OFFICE.

JOSEPH A. BERTOLA, OF NEW YORK, N. Y.

## IMPROVEMENT IN ANTI-FRICTION STAMPERS FOR METALLIC ORES.

Specification forming part of Letters Patent No. 42,340, dated April 19, 1864.

*To all whom it may concern:*

Be it known that I, JOSEPH A. BERTOLA, of the city and State of New York, have invented, made, and applied to use a certain new and useful Improvement in Anti-Friction Stampers for Metallic Ores; and I do hereby declare the following to be a full, clear, and exact description of my said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a vertical section of my said stampers, and Fig. 2 is an elevation of the same on the side where the ores are delivered.

Similar marks of reference denote the same parts.

Stampers have heretofore been constructed to be raised and dropped within a mortar for the pulverization of metallic ores, said ores being supplied to such mortar and thence taken away for separation or concentration.

The nature of my said invention consists in the combination of a movable bottom plate and elastic bed with a hopper, in which the ores are supplied through a chute on one side and washed away through a spout on the other side after being pulverized.

I also make use of bars or handles to the stampers formed of two strips or plates of metal, between which is a roller acted on by a cam for raising said stampers, and said bars are also guided by rollers standing between them, so that each handle to the stampers and the rollers applied to the same are independent of the adjoining stampers or rollers; hence friction is not produced by the stampers moving on opposite sides of the same roller, and in case the frame becomes untrue the stamper-rods cannot bind.

In the drawings, *a* is a frame of suitable size and shape, carrying the shaft *b*, upon which are arms *c c*, so placed in advance of each other as to be successively operative in raising the stampers. *d d* are the stampers, extending up from which are the bars *e e*, by which the stampers are raised. Each stamper has two of these bars *e* attached to it, and said bars are connected and kept the proper distance apart by rivets through a block or blocks, 1, between said bars, and said bars are united at their upper ends by rivets or screws through the block 2. Between these bars *e* a roller, *f*, is provided on an axle passing through the bars, and this roller is taken by

the cam or cams *c* allotted to the particular stamper, so that the cams rotate between the bars of the respective stampers, and acting against the said rollers raise them and the stampers in succession, and they fall upon the ores placed in the hopper below, as hereinafter described.

*g g* are cross-bars carrying rollers *h h*, that set between the bars of the respective stampers below the rollers *f*, and *i i* are similar bars, carrying rollers *k k*, that are above the rollers *f*. These rollers allow the stampers to be raised successively and drop with but very little friction. The red lines, Fig. 2, illustrate the positions to which the stampers are successively raised.

The hopper or mortar in which the ore is contained is formed of sheet metal with an inclined side, *l*, ends *m m*, bottom *n*, and vertical side *o*, and in this side *o* is the delivery pipe or spout *q*. The hopper has also a vertical division, *p*, within it, parallel, or nearly so, to the side *o*, between which and said side *o* the stampers *d* operate, and an opening is left between the bottom edge of this division *p* and the bottom *n* of the hopper, so that the ore supplied in the chute between *p* and *l* shall gradually work beneath the stampers and be pulverized and delivered at the opening *q*.

Beneath the hopper, between that and the sill or bed-block of the frame *a*, is a layer of india-rubber or similar elastic material, *s*, and within the hopper is the anvil-plate *r*, fitting the bottom of the hopper.

The stampers, as they are raised and fall upon the ores that pass in between said stampers and the anvil *r*, crush and pulverize the said ores, and a stream of water is supplied into the hopper, as usual, and, in escaping from the spout *q*, conveys away the finely-pulverized ores or other substances.

The concussion of the stampers is taken on the anvil-plate *r*, which plate can be replenished, when worn out, without requiring an entirely new hopper, and the elastic layer *s* prevents the frame *a* and other parts from being so much shaken by the fall of the stampers as now usual, and the elasticity thereof causes a sufficient rebound of the stampers to relieve the cams and commencing to raise them, and the elastic layer *s* allows the hopper to be sufficiently shaken by the fall of the stampers to prevent the ore clogging.

The operations performed in my hopper are continuous, and no ore can escape until thoroughly stamped.

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

1. The movable bottom plate, *r*, and elastic bed *s*, in combination with the hopper, formed with a chute on one side for receiving the ore to be pulverized, and with a spout on the other for the delivery of such ore, as specified.

2. Forming the rod or handle for stampers

of two metallic bars, between which the roller *f* for the lifting cam is fitted, and which handle is guided by fixed rollers *g* and *i*, between such bars, as and for the purposes specified.

In witness whereof I have hereunto set my signature this 31st day of August, 1863.

JOSEPH ALCIDE BERTOLA.

Witnesses:

LEMUEL W. SERRELL,  
THOS. GEO. HAROLD.