

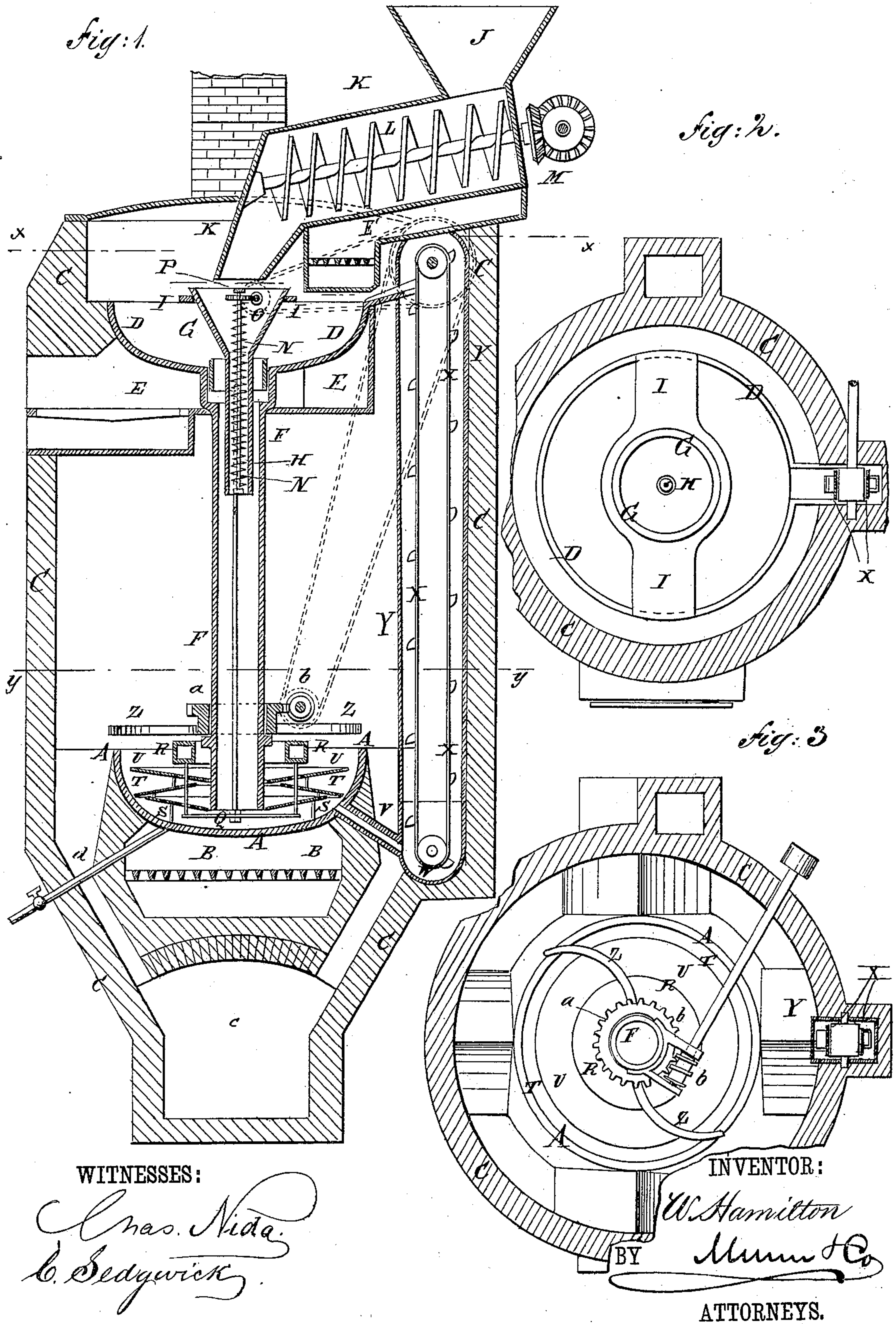
(No Model.)

W. HAMILTON.

APPARATUS FOR AMALGAMATING GOLD AND SILVER ORES.

No. 258,578.

Patented May 30, 1882.



UNITED STATES PATENT OFFICE.

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APPARATUS FOR AMALGAMATING GOLD AND SILVER ORES.

SPECIFICATION forming part of Letters Patent No. 258,578, dated May 30, 1882.

Application filed April 1, 1881. (No model.)

To all whom it may concern:

Be it known that I, WALTER HAMILTON, of the city, county, and State of New York, have invented a new and Improved Apparatus for
5 Amalgamating Gold and Silver Ores, of which the following is a specification.

Figure 1 is a sectional side elevation of my improvement. Fig. 2 is a sectional plan view of the same, taken through the line *xx*, Fig. 1; and Fig. 3 is a sectional plan view of the same,
10 taken through the line *yy*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to facilitate
15 the amalgamation of gold and silver ores and other substances.

A represents a basin of sufficient size to contain ten tons (more or less) of molten lead or other metal or composition of metals capable
20 of amalgamating gold and silver. The basin A is placed over the fire-chamber B of a furnace, C. At a suitable distance above the basin A is placed another basin, D, corresponding in size with the basin A. The basin D is
25 placed over a fire-chamber, E, in the upper part of the furnace C. From an aperture in the bottom of the basin D a vertical pipe, F, leads down into the basin A, and extends nearly to the bottom of the said basin A.
30 Within the basin D is placed a funnel, G, the discharge-tube H of which extends down through the center of the upper part of the pipe F. The furnace G is suspended by a bridge, I, or other suitable means, from the rim
35 of the basin D or other suitable support.

J is the feed-hopper, the discharge-spout K of which passes over a furnace, E', and terminates directly above the funnel G. Within the feed-spout K is placed a screw, L, to feed
40 the crushed or pulverized ore in uniform quantities from the hopper J to the funnel G, the quantity supplied depending upon the speed of the said feed-screw L. The screw L is driven by gear-wheel M, or a belt and pulley
45 from any convenient power.

Within the funnel G is placed a feed-screw, N, driven by a worm and worm-wheel, O, or other suitable gearing from the power that drives the feed-screw L. The screw N forces
50 the pulverized ore down through the funnel G and tube H in uniform quantities. The upper

end of the shaft of the screw N is pivoted to a bar, P, attached to the upper part of the furnace C or other suitable support. The lower end of the shaft of the screw N is pivoted to a
55 support at the lower end of the pipe H. With this construction, as the molten lead descends through the pipe F from the basin D to the basin A it tends to form a vacuum at the lower end of the tube H, and thus carries the
60 ore with it into the said lower basin, A. The rapidity of descent of the molten lead and the ore is regulated by a valve, Q, which may be placed at the lower end of the pipe F and controlled by a float, R, in the lower basin, A; or
65 it may be any ordinary stop-cock valve placed in the pipe F and operated by a stem passing out through the wall of the furnace C. As the ore escapes from the lower end of the pipe F it passes up the lower side of the outwardly
70 and upwardly inclined ring-plate S, and escapes around the outer edge of the said plate S to the outer part of the inwardly and upwardly inclined plate T, up which it passes and escapes around its inner edge to the inner
75 part of the lower side of the outwardly and upwardly inclined plate U, and so on through the series, any desired number of plates being used.

The plates S T U are connected by studs, and are attached to the pipe F, or to a sleeve placed
80 upon the said pipe, or to some other suitable support. By this construction every particle of the pulverized ore will be brought into contact with the molten lead, so that all the gold and silver will be removed. The molten lead
85 from the basin A flows through a tube, V, into a pump-well, W, from which it is raised by an endless chain of buckets, X, and discharged into the upper basin, D. The endless chain of buckets X should be inclosed in a pipe, Y,
90 to prevent the molten lead from being oxidized by contact with air. As the refuse rises to the top of the lower basin, A, it is swept off by arms Z, attached to a collar, *a*, placed upon the pipe F, and rotated by a worm and worm-
95 wheel, *b*, or other suitable gearing driven from the driving mechanism of the apparatus. The refuse, when it is swept off by the arms Z, falls into a receiving-chamber, *c*, whence it can be raked out or otherwise removed as desired.
100 When the molten lead has taken up as much of the gold and silver as it readily will it is

drawn off through a discharge-pipe, *d*, and replaced with a fresh supply of lead. With this construction all parts of the apparatus are kept at such a temperature as will keep the lead fluid.

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

1. In a gold and silver ore amalgamator, the combination of the upper and lower basins, D
10 A, the funnel G, having a feed-screw within its tube H, the pipe or tube F, surrounding tube H and communicating at the top with the basin D, and the valve Q, connecting with float R, as and for the purpose described.

15 2. In an apparatus for amalgamating gold and silver ores, the combination, with the lower basin, A, the upper basin, D, the connecting-pipe F, the elevator or pump X, and the funnel G H, of the furnace C, substantially as here-

in shown and described, whereby the amalga- 20 mating substance is kept molten, as set forth.

3. The combination, with the pipe F and basin A, of the revolving arms Z and a receptacle connecting with the top of said basin by a passage around the fire-chamber B, as
25 shown and described.

4. In an apparatus for amalgamating gold and silver ores, the combination, with the pipe F, connecting the upper basin, D, and the lower basin, A, of the valve Q, substantially
30 as herein shown and described, whereby the passage through the said pipe of the amalgamating substance and the ore is regulated, as set forth.

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Witnesses:

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