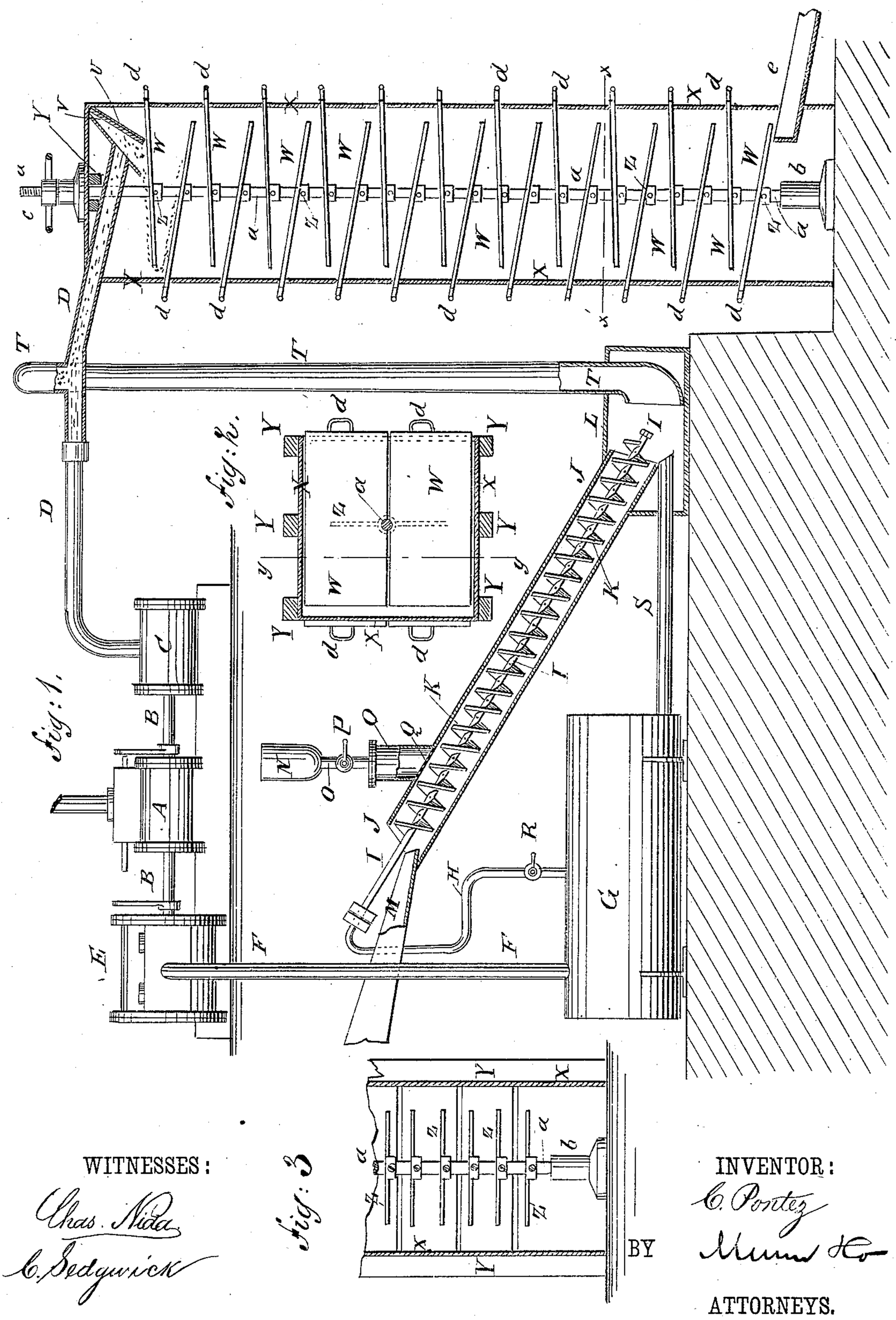
(No Model.)

C. PONTEZ.

AMALGAMATOR.

No. 256,733. Patented Apr. 18, 1882.



UNITED STATES PATENT OFFICE.

CHARLES PONTEZ, OF OMAHA, NEBRASKA.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 256,733, dated April 18, 1882.

Application filed August 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES PONTEZ, of Omaha, in the county of Douglas and State of Nebraska, have invented a new and useful Improvement in Amalgamators, of which the following is a full, clear, and exact description.

In the accompanying drawings, Figure 1 is a sectional side elevation of my improvement. Fig. 2 is a sectional plan view of the wet amalgamator, taken through the line *x x*, Fig. 1. Fig. 3 is a sectional side elevation of the lower part of the wet amalgamator, taken through the line *y y*, Fig. 2, and shown with the amalgamating-plates removed.

Similar letters of reference indicate corresponding parts.

The object of this invention is to facilitate the separation of fine gold from silicious or black sand.

The invention consists in the peculiar combination of dry and wet amalgamating mechanisms, whereby the gold-bearing sand in a dry state, after being thoroughly charged with quicksilver, is subjected to the action of water and caused to pass over a series of amalgamating-plates, as will be hereinafter fully described.

A represents an ordinary steam-engine, one end of the piston-rod B of which works an ordinary double-acting pump, C, to force a continuous stream of water through the pipe D. The other end of the piston-rod B works an ordinary air-pump, E, to force air through the pipe F into the air-chamber G. From the air-compressor G a small pipe, H, leads to and is connected with the end of a tubular shaft, I, which revolves in suitable supports and passes through the center of a large tube, J.

To the tubular shaft I is attached a spiral flange, K, fitting into the tube J, the tubular shaft and its spiral flange forming a feed-screw. The tubular shaft I is finely perforated to allow the air forced into the said shaft to escape in every direction in fine jets. The tube J is open at both ends, is set in an inclined position, and its lower end is connected with and opens into an air-tight box or chamber, L.

With the upper end of the tube J is connected the spout or apron M, through which the sand to be operated upon is fed into the said tube J.

With the upper part of the tube J is connected a reservoir, N, for quicksilver, the discharge-pipe O of which is enlarged toward its lower end, and is provided with a valve, P, to regulate the escape of the quicksilver, and with a diaphragm, Q, of chamois-leather or other suitable material, to atomize the quicksilver as it passes into the tube J. With this construction, as the dry sand passes through the tube J it receives a spray of quicksilver, and is continuously agitated both before and after receiving the spray by the air-jets escaping from the perforations in the tubular shaft I and by the flange of the said shaft, so that every particle of sand will be brought into contact with the quicksilver. The air-pipe H is provided with a valve, R, for controlling and stopping the blast of air, as desired. As the sand and amalgamated gold enter the box L they are struck by a blast of air coming from the compressed-air chamber G through the pipe S, and are forced up through the pipe T, the lower end of which enters the box L and is flared, so that the sand, the amalgamated gold, and the air will enter it readily. The upper end of the pipe T is connected with and opens into the pipe D, so as to discharge the sand and amalgamated gold into the current of water passing through the said pipe D, to be carried along by and with the passing water. With this construction the current of water passing through the pipe D serves as a cushion to prevent the sand from impinging against the wall of the said pipe and wearing it, and also by passing the opening leading into the pipe T tends to form a vacuum in the said pipe, and thus assists the air-blast to raise the sand and amalgamated gold through the said pipe T. As the sand, amalgamated gold, and water escape from the pipe D they strike against the distributer U, which is lined with compressed paper-pulp V to prevent it from being worn by the sand. This distributer U guides the water, sand, and amalgamated gold to and spreads them over the upper part of the upper amalgamating-plate, W. The plates W are coated with amalgam in the ordinary manner, and are inserted alternately through slits in the casing X, which is supported by a frame, Y. The plates W incline alternately in opposite directions, and the lower edge of each plate does not extend quite to the casing X, a space being left for the water, sand, and un-

amalgamated gold to pass from the lower edge of each upper plate to the upper part of the next lower plate. The plates W are supported by the side of the casing X, through which they pass, and by cross-bars or rods Z, attached to a standard or rod, *a*, which passes vertically through the center of the upright amalgamating-box X. The lower end of the standard or rod *a* rests in a socket, *b*, at the bottom of the box X, and its upper part passes through a bar of the frame Y and has a screw-thread cut upon it to receive a hand-nut, *c*, so that the said rod *a* can be raised and lowered to regulate the inclination of the plates W by turning the said nut *c*. The plates W are each made in two parts, as shown in Fig. 2, so that they can be readily inserted and removed, and are provided with handles *d* at their upper edges for convenience in handling them. At the lower end of the casing X the sand and water escape into the trough-box or sluice *e*, through which they are conducted out of the way, and which may be lined with skins placed in the said box, hair upward, to catch any particles of gold that may remain in the sand.

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

1. An amalgamator constructed substantially as herein shown and described, and containing the following elements, viz: a mixing-tube in which rotates a conveyer and air-distributer and having a quicksilver-atomizer attached, a receiving-box connected with the mixing-tube and with an air-compressor, a transfer-pipe through which the contents of the receiving-box are projected by an air-blast into a water-pipe, and a water-forcing device by which the contents of the water-pipe are carried into an amalgamating-box and delivered upon a series of plates arranged within the box, all as set forth.

2. The combination, with the chamber G, having pipe H, of the perforated tubular shaft I, having spiral flange K, the inclined open-ended tube J, the air-tight chamber L, and the apron M, as and for the purpose described.

3. The combination, with the tube J and a quicksilver-reservoir, N, connected therewith, of the discharge-pipe O, enlarged toward its lower end, having the valve P, and provided with an atomizing-diaphragm, Q, as and for the purpose described.

4. The combination, with the pipe D, of the distributer U and the upper adjustable amalgamating-plates inclined in opposite directions and coming short of the casing, as and for the purpose specified.

5. In an amalgamator, the combination, with the mixing-tube J, of the receiving-box L, the air-blast pipe S, conductor-pipe T, and water-pipe D, substantially as herein shown and described.

6. In an amalgamator, the combination, with the perforated air-shaft I, tube J, and receiving-box L, of an air chamber, G, and pipes H S, substantially as herein shown and described, whereby the contents of tube J will be subjected to air-blasts, as set forth.

7. In an amalgamator, the combination, with the pipe D and the plates W, of the distributer U, substantially as herein shown and described, whereby the contents of pipe D will be spread upon the said plates W, as set forth.

8. In an amalgamator, the distributer U, constructed with a face-lining, V, substantially as described, whereby the wearing of the said distributer is prevented, as set forth.

9. The method of transferring the amalgamated gold and sand to the wet amalgamating mechanism, which consists in forcing the said amalgamated gold and sand by means of a blast of compressed air into a stream of water that flows into the wet amalgamating-box, as set forth.

CHARLES PONTEZ.

Witnesses:
W. SIMERAL,
FRANK M. WINNIE.