(No Model.)

J. A. COOMBES.

Ore Separator.

No. 236,672. **Patented Jan. 18, 1881.**

Fig. 1.

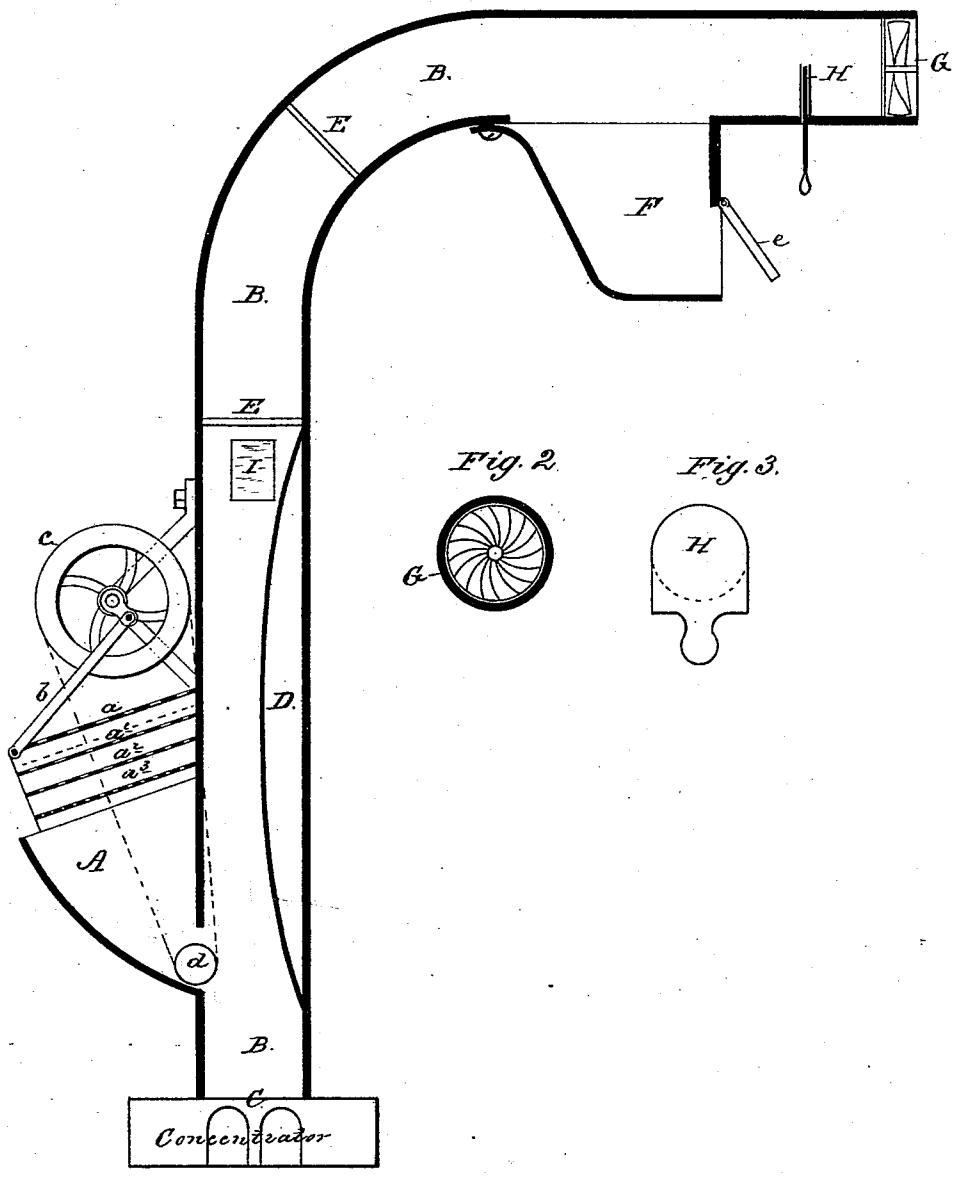


Fig. 2.

Fig. 3.

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JOSEPH A. COOMBES, OF SALT LAKE CITY, UTAH TERRITORY, ASSIGNOR OF THREE-FOURTHS TO CALVIN D. HAYWARD, JOHN D. KINNEY, AND JOHN H. JOHNSTON, OF NEW YORK, N. Y.

ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 236,672, dated January 18, 1881.

Application filed August 4, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. COOMBES, of Salt Lake City, in the county of Salt Lake, Utah, have invented a new and Improved Ore-Separator; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical central section. Figs. 2 and 3 are details, respectively, of the fan and the draft-regulator or damper.

My invention is an improvement upon that form of ore-separator in which the pulverized ore (or tailings) is fed to a hollow trunk and the lighter earthy particles separated from the heavier metal particles by an ascending blast of air, which carries the lighter earthy particles with it, while the heavier metallic particles drop down, from their greater specific gravity, and are separated for treatment by concentration.

My invention consists in the peculiar construction of devices operating on the aforementioned principle, as will be hereinafter more fully described, and pointed out in the claim.

In the drawings, A is the hopper, which receives the pulverized quartz (or tailings) which is to be treated. This hopper is provided with a nest of screens, *a a' a²*, &c., placed directly over the hopper, and having different-sized meshes, with the smallest at the bottom, so that the larger particles of the crushed ore are screened out. This nest of screens is reciprocated by any suitable means—such, for instance, as a pitman-rod, *b*, connecting with a crank or wrist pin on the wheel *c*, which latter is provided with a belt, that drives a roller, *d*, which feeds the pulverized material uniformly from the hopper into the trunk. B is this trunk, which is in the nature of a circular metal pipe bent at right angles, and the lower portion of which sets directly over the concentrator C.

D is the metal pilot-plate, which is located within the vertical section of the trunk, between the feed-hopper and the upper bend. This pilot-plate guides the air-current in its ascent, and also, by receiving the impact of the flying particles, prevents wear upon the walls of the trunk.

E E are rods set across the body of the trunk, which break up the air-currents and produce an agitation of the flying particles.

F is the tailings-box, placed in the bottom of the horizontal section of the trunk, which box receives such of the heavier particles as pass up to this point, and from which box they may be drawn off through a hinged door, *e*.

G is the suction-fan, which is situated at the end of the horizontal section of the pipe and creates the necessary upward draft, the strength of which draft is regulated by a damper, H.

Now, it will be seen that as the pulverized ore is fed in at the lower end of the trunk, the upward current of air catches the lighter particles and separates them from the heavier particles, which latter drop immediately down. Some of the lighter particles, containing more or less metal, will be deposited in the tailings-box, while the bulk of the dust will be blown through the fan.

To permit an inspection of the interior, a glass window, I, is set in one side of the trunk, at a convenient point.

Having thus described my invention, what I claim as new is—

The air-trunk B, constructed of a tubular pipe, bent as described, in combination with the hopper, the pilot-plate, the air-agitators, the tailings-box, the draft-regulator, the screen apparatus, and the fan, as shown and described.

JOSEPH ALLISON COOMBES.

Witnesses:
S. B. GOODALE,
E. D. GRANT.