W. O. BOURNE.
Ore Separator.

No. 236,416. Patented Jan. 11, 1881.

Fig. 1

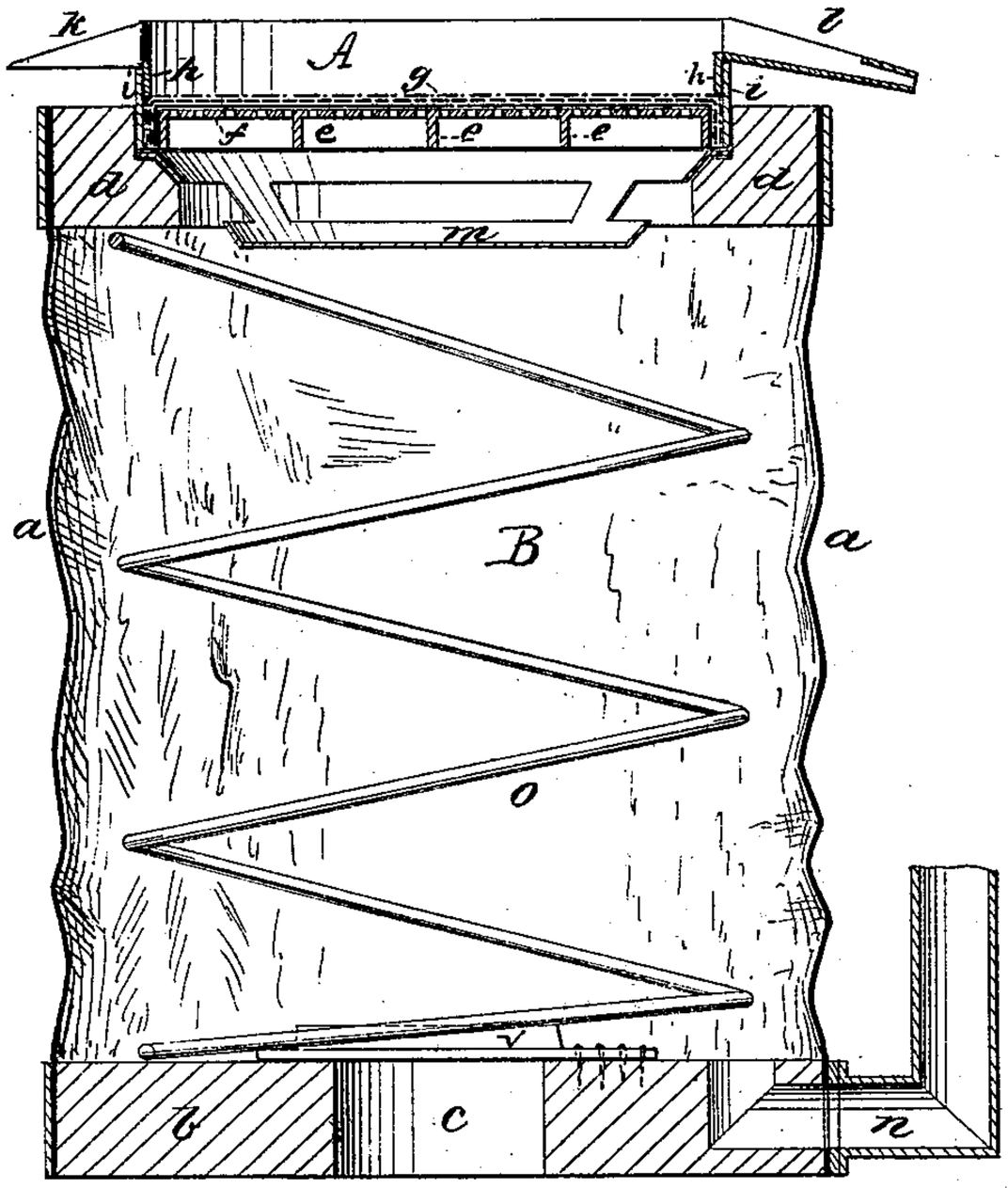
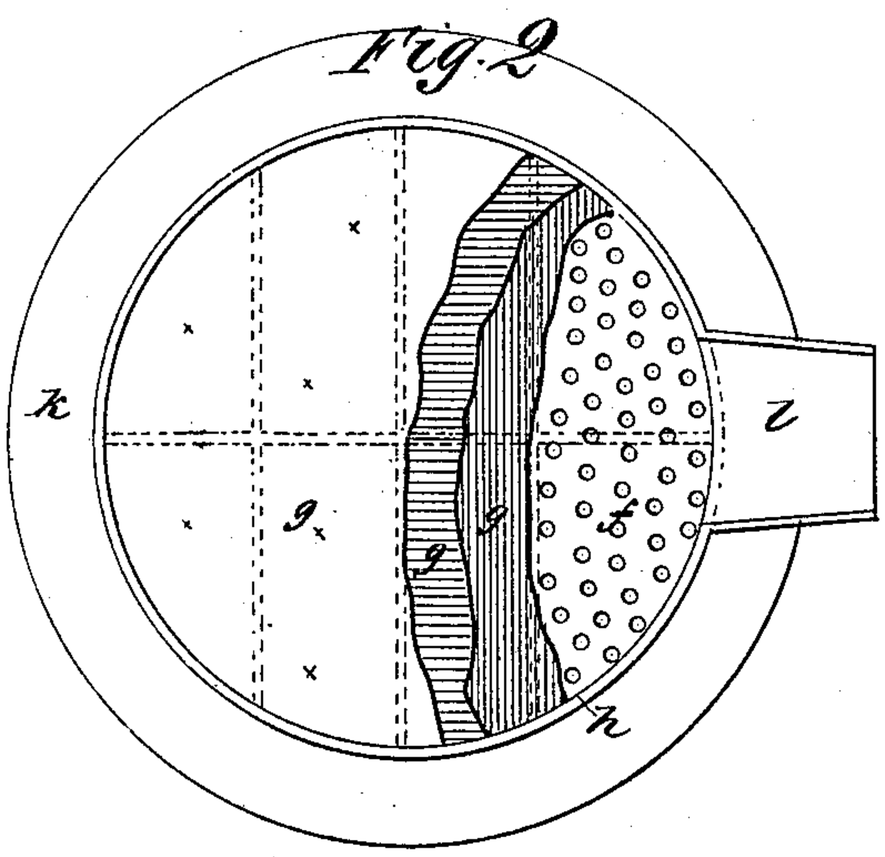


Fig. 2



Witnesses.
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WILLIAM O. BOURNE, OF NEW YORK, N. Y.

ORE-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 236,416, dated January 11, 1881.

Application filed October 14, 1879.

To all whom it may concern:

Be it known that I, WILLIAM OLAND BOURNE, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Ore-Separators, of which the following is a specification.

My invention relates to that class of machines which treat rocks and earths containing metals or metalliferous substances of different specific gravities, when such matters have been pulverized and sifted to an approximately-uniform fineness, and when such machines are provided with a working surface or bed of woven or perforated metal, or other proper material for carrying the pulverized material, and whereon it is subjected to an upward motion from puffs of air through the bed from a bellows or other blowing contrivance, and by which action the heavier are separated from the lighter particles, from difference of specific gravities, and fall on the bottom or bed, while the lighter portion forms a top stratum as waste. Such machines, actuated by mechanical power, are well known wherein the pulverized material is automatically supplied to the machine and is separated and passed from the machine in a continuous concentrated stream at one point of delivery, while the waste or tailings are also continuously delivered at another point.

The objective feature of my invention, which I have named the "pan-separator," is to construct a simple, cheap, and efficient portable separator to be worked by hand, and wherein I may employ either air or water as the separating medium; and my invention consists, mainly, in constructing such machines so that the downward movement of the ore-receptacle operates the bellows, and in certain combinations of parts whereby the main feature of my invention is carried out, as will be hereinafter more fully described, and then pointed out in the claims.

In the drawings, Figure 1 represents a sectional vertical elevation of my improved machine, and Fig. 2 a plan of the working-bed with certain parts cut away to illustrate its construction.

In the accompanying drawings, B represents a bellows consisting of a base-plate, *b*, provided with a central orifice, *c*, having a flap-valve, *v*, covering its inner end and opening upward. *a* represents a collapsible case, formed of leather or other flexible material, connecting the peripheries of the base *b* and upper head, *d*. The base-plate *b* is preferably provided with legs to raise it from the floor and admit a free passage of the air to the inlet-valve *v* of the orifice *c* communicating with the interior of the bellows.

A represents an ore-receptacle in a central opening in the upper head, *d*, communicating with the interior of the bellows, and consisting, mainly, of a sieve-bottom and curbs supported on a suitable frame.

e e e are thin bars lying under and supporting the sieve *f*, of woven wire, perforated metal, or other material, upon which a bed or cushion, *g*, is laid, consisting of one or more thicknesses of woven cloth stitched or quilted at frequent intervals to the sieve *f*.

i shows a shallow curb or border surrounding the bed, and *h* is an adjustable but deeper curb, fitting closely within the curb *i*, to be raised or lowered, according to the quantity and nature of the material under treatment. An inclined plate, *k*, as a waste or water shed, is secured to the top edge, outside of *h*, a part of which plate is cut away to receive a delivery-spout, *l*, as shown.

m represents a shallow pan secured under the bars *e*, so as to leave a space all around between its edges and the frame-work for free passage or outlet of the air from the bellows to the perforated bed and mineral above. This pan is to catch any fine particles of mineral which may pass through the bed. All the described upper part of the machine may be readily dissected from the frame *d*.

n represents a pipe intended to communicate with the interior of the bellows to supply water when that medium for separation is used instead of air, and *o* shows a helix-spring for distending the bellows-case.

The apparatus may with advantage be secured to the floor by the base *b* in any convenient manner when working, to prevent its moving about under the force employed, and in operating a thin couch of the pulverized matter is laid upon the bed *g;* then, with the hands on each side of the top rim, press gently downward. The air from the bellows will be forced through the sieves and mineral, giving it an undulating and wave-like motion, separating the lighter from the heavier portions and forcing the former to the top.

When either the concentration or the waste has accumulated so as to embarrass the working action it may be shaken off by the spout *l*, and a light brush and shovel be used to collect the ore from off the bed; or it may be thrown off into a proper receptacle by a dexterous motion of the hand.

In using water a supply-pipe from a fountain or other pressure should be attached to the pipe *u*, as described, proceeding as before.

What I claim, and desire to secure by Letters Patent for an ore-separator, is—

1. In a separator, a receptacle, A, having a sieve-bottom, in combination with and secured directly to a bellows, B, and moving therewith, the interior of the bellows communicating with the interior of the separator, whereby a movement of the receptacle will operate the bellows and agitate the material in the separator, substantially as specified.

2. In a separator, the combination of the receptacle A, having a perforated bottom, *a*, blast mechanism B, communicating with the receptacle A by an opening under the perforated bottom, and a spring, *o*, substantially as described, and for the purpose specified.

3. The combination of the base *b*, provided with the valve *v*, flexible material *a*, head *d*, carrying an ore-receptacle, A, having a sieve-bottom, adjustable curb *h*, and spring *o*, substantially as described, and for the purpose set forth.

4. The combination, with a bellows having a central opening in its head *d*, of an ore-receptacle having a sieve-bottom, and pan *m*, having openings in its side, suspended in the opening in the head *d*, substantially as described, and for the purpose set forth.

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Witnesses:
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