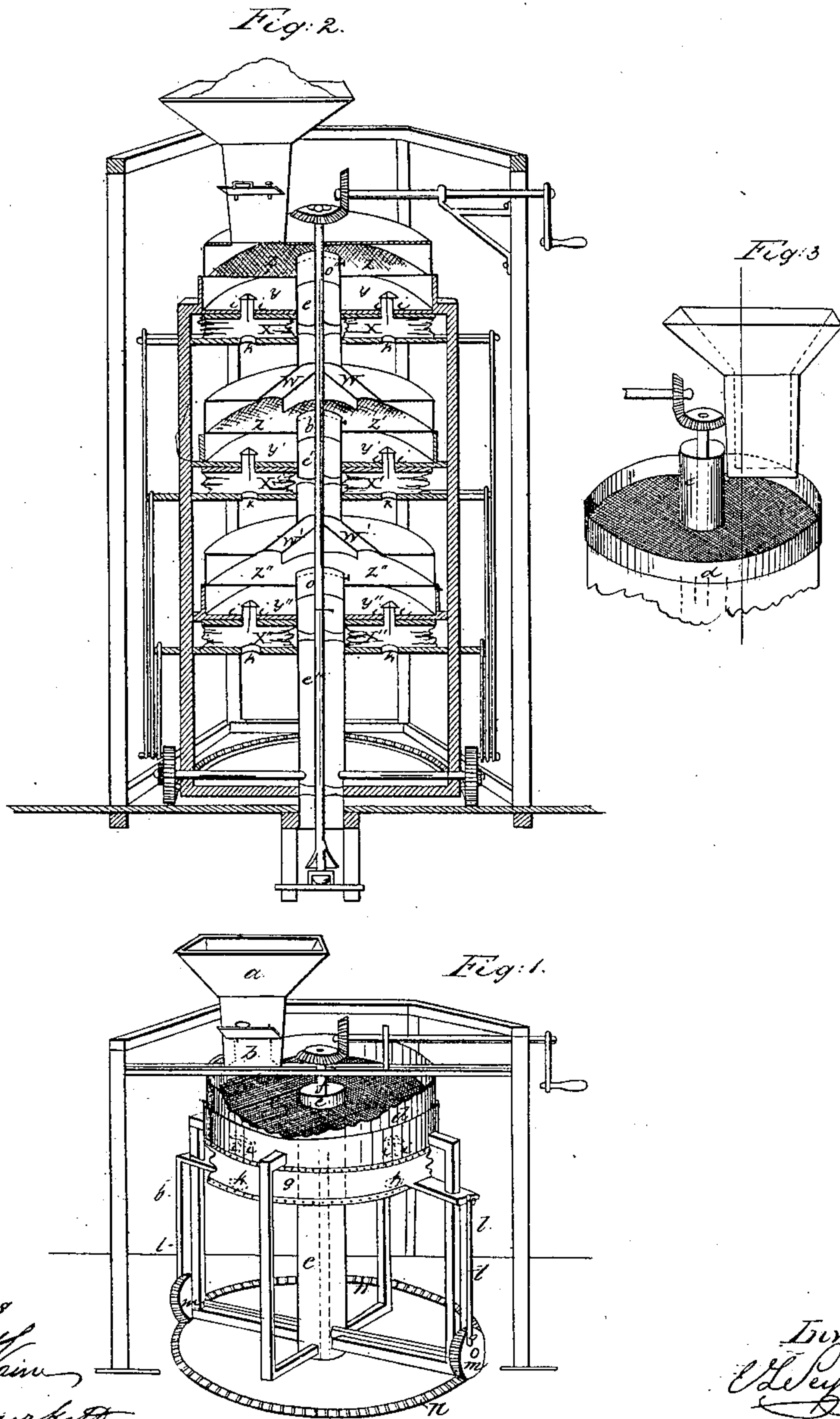


E. L. SEYMOUR.
ORE CONCENTRATOR.

No. 25,280.

Patented Aug. 30, 1859.



Witnesses
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EDWARD L. SEYMOUR, OF NEW YORK, N. Y.

ORE-CONCENTRATOR.

Specification of Letters Patent No. 25,280, dated August 30, 1859.

To all whom it may concern:

Be it known that I, EDWARD L. SEYMOUR, of the city, county, and State of New York, have invented a new and useful Apparatus for Concentrating Ores, of which the following is a full and clear explanation.

Figure 1 of the accompanying drawings represents a perspective view of my apparatus, the details of which are as follows.

10 *a* is a stationary hopper or feed-funnel supplying the ores to be treated, (that is to say, concentrated,) through its longitudinal bottom—aperture *b*, into the horizontal annular sieve *C*, which is inclosed between the 15 outer cylinder or curb *d*, and the inner cylinder or tube *e*; and which, during the operation, is made to revolve around its own center by means of the axis *f* (or in any other convenient manner) together with the 20 bellows *g*, which is permanently connected with said sieve *c* by means of the cylinder or jacket which forms the “trap” or “preserving chamber” (which I shall subsequently describe) in which are located the 25 upright and projecting valves *i*, *i*, (Figs. 1 and 2) which alternate in their working with the valves *k*, *k*, in the bottom of the bellows. While the sieve is thus made to revolve around its own center, an even and 30 uniform layer of ore is constantly being spread, as it issues out of the “hopper” or feed-funnel through its longitudinal bottom-aperture aforesaid, over the whole surface of the sieve; and the component particles or atoms of the ore under treatment 35 are, at the same time, being repeatedly projected in a vertical direction by the action of said bellows *g*, operated by the connecting-rods *l*, *l*, connected to crank-pins or eccentrics on the wheels *m*, *m*, which latter revolve on a circular rack or track *n*, *n*, 40 simultaneously with the sieve *C* and the bellows *g*.

As long as the process continues, the particles or atoms of the ore arrange themselves upon the whole surface of the sieve according to their specific gravities, viz., the heaviest particles going to the bottom and the lightest to the top; from which (top), in 50 proportion as they accumulate, and occupy a higher level than the projecting top or edge of the inner or “waste-tube” *e*, they are made to fall, by the combined effects of the currents of air produced by the bellows,

or their equivalents, and of their own gravity into the said inner cylinder or “waste-tube” *e*; through which they are suffered, either to pass directly away, as refuse, or are led unto another secondary revolving sieve, as will be presently explained. 55 60

It may be necessary to remark, that the height of “waste-tube” *e*, above the level of the sieve *c*, should not exceed six inches; nor be less than one inch, according to the nature of the ore and the size of its component particles. I therefore make the top or mouth of “waste-tube” *e*, adjustable, by sliding in or out, within the limits named, in the manner of a telescope. *o*, *o'*, *o''* of Fig. 2 represent these adjusting pieces; they 65 70 may be fixed by a thumb-screw on each.

It is easily understood that, instead of carrying away the refuse or “tailings” through the inner tube *e*, as above described, the same can be made to fall outwardly by 75 reversing the relative heights of curb *d*, and tube *e*, as shown in Fig. 3; but this method is not as expedient to arrange as in Fig. 1, vizt., for the refuse to pass inwardly, and down “waste-tube” *e*. 80

Fig. 2, shows a modified arrangement of the apparatus represented by Fig. 1.

The refuse or “tailings” passing into the tube *e*, in lieu of being finally discharged, become the feed to a second, auxiliary sieve 85 *z'*, *z'*, beneath which is another bellows *x'*, *x'*, operated with, and by the same means as the first *x*, *x*; which, of course, is made to work in the same manner as the bellows *g*, of Fig. 1. Said refuse of the first or upper- 90 most sieve *Z* *Z* is thus re-treated or re-concentrated upon the second or lower sieve *Z'*, *Z'*, to which it is conducted by the bifurcations or branches *W*, *W*, of tube *e*. The refuse of the second sieve *Z'*, *Z'*, (aforesaid) 95 is, in its turn, conducted upon a third auxiliary sieve *Z''*, *Z''* (connected with its respective bellows *X''*, *X''*,) situated below the second, through the passages or branches *W'*, *W'*, of tube *e'*; where it is treated over 100 a third time; till it gets finally discharged through tube *e''*. This third treatment or concentration secures the very last percentage almost of any valuable ore, that with a most carefully operated or devised machine 105 would per necessity be lost;—and moreover, no extra-time or handling is required. Any number of sieves and their respective bel-

lows can thus be employed and operated at once, as will be readily comprehended without further explanation.

As portions of "gold-dust," and also
 5 earthy dust, &c. are some times so fine as to be almost impalpable; and, thus, some of it, will pass through the sieves during working, I employ, directly under each sieve, what I call a "trap", or "preserving cham-
 10 ber",—an inclosure, the bottom or floor of which forms the stationary (as far as the vertical motion is concerned) top of the bellows. Such inclosure or inclosures will receive and preserve the fine dust that passes,
 15 unavoidably, through the sieves; it being understood, that the sieves in question are not intended to act as sifters, being only calculated for the admission of a flow of air through their pervious interstices or
 20 meshes and through the mass of earth, or metal-bearing material upon them, in order to lift and disintegrate the component particles or grains of the same, and to permit them to settle according to their relative
 25 specific gravities.

When sufficient, after long working, has accumulated of this incidental escape matter or dust, it may be removed by a proper aperture provided, and receive a separate
 30 treatment in a smaller or more delicate machine. While collecting, that it may not clog the exhaust or outlet valves i, i , of the bellows X, X', X'' (as well as those of the bellows g , of Fig. 1,) I project their seats
 35 by a neck or tube; as shown in the "preserving chambers" or "traps" Y, Y', Y'' .

Also, for the same reason, the tops of the valves are made conical, and overhang their seats—as seen.

Of course, when inspection shows, that
 40 as much bold, or other heaviest metallic matter has accumulated on the sieves, as to justify a temporary stoppage of the machine, the concentrated metallic material resting on the different sieves, can be taken
 45 out, and briefly re-treated in a separate and smaller apparatus; in order to remove the slight amount of worthless matter still present.

Having now fully described my invention,
 50 what I claim and desire to secure therein by Letters Patent is as follows:—

1. The rotating sieve in combination with the bellows—or their equivalents; operated by the act of rotation of the former,—sub-
 55 stantially as described.

2. The application of two, or more rotary sieves, combined with such an arrangement of "waste-tubes" e , that the refuse of the upper sieve shall be led to constitute the
 60 supply or feed of the sieve next below it; as described.

3. I claim rendering the receiving mouths of the "waste-tubes" e, e', e'' adjustable; as described, and for the reason given. 65

4. I claim the use of the closed chambers or "traps" Y, Y', Y'' , below the sieves, as described, and for the purposes explained.

E. LUIS SEYMOUR.

Witness:

JAMES BURKETT,
 R. CHARLTON MITCHELL.