2 Sheets—Sheet 1.

DeW. C. ROBERTS.

Ore Separator.

No. 202,122. Patented April 9, 1878.

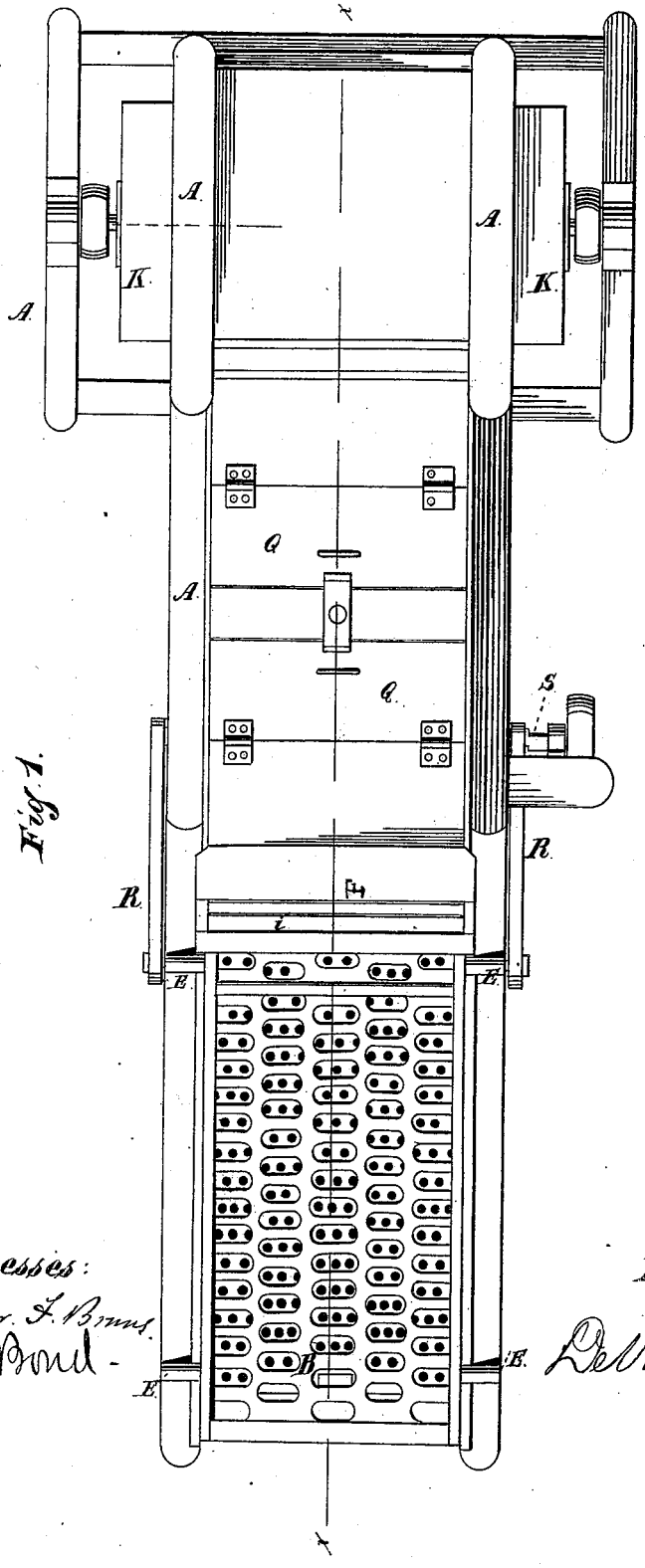

Fig. 1.

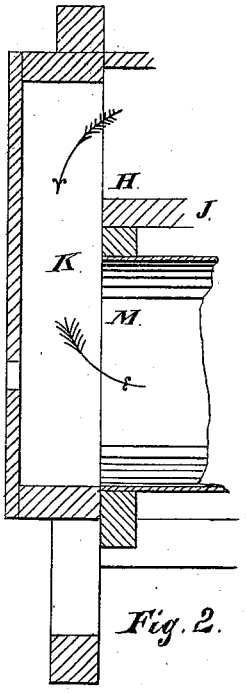

Fig. 2.

Witnesses:
Heinr. F. Bruns.
A. W. Bond.

Inventor:
DeWitt C. Roberts.

2 Sheets—Sheet 2.

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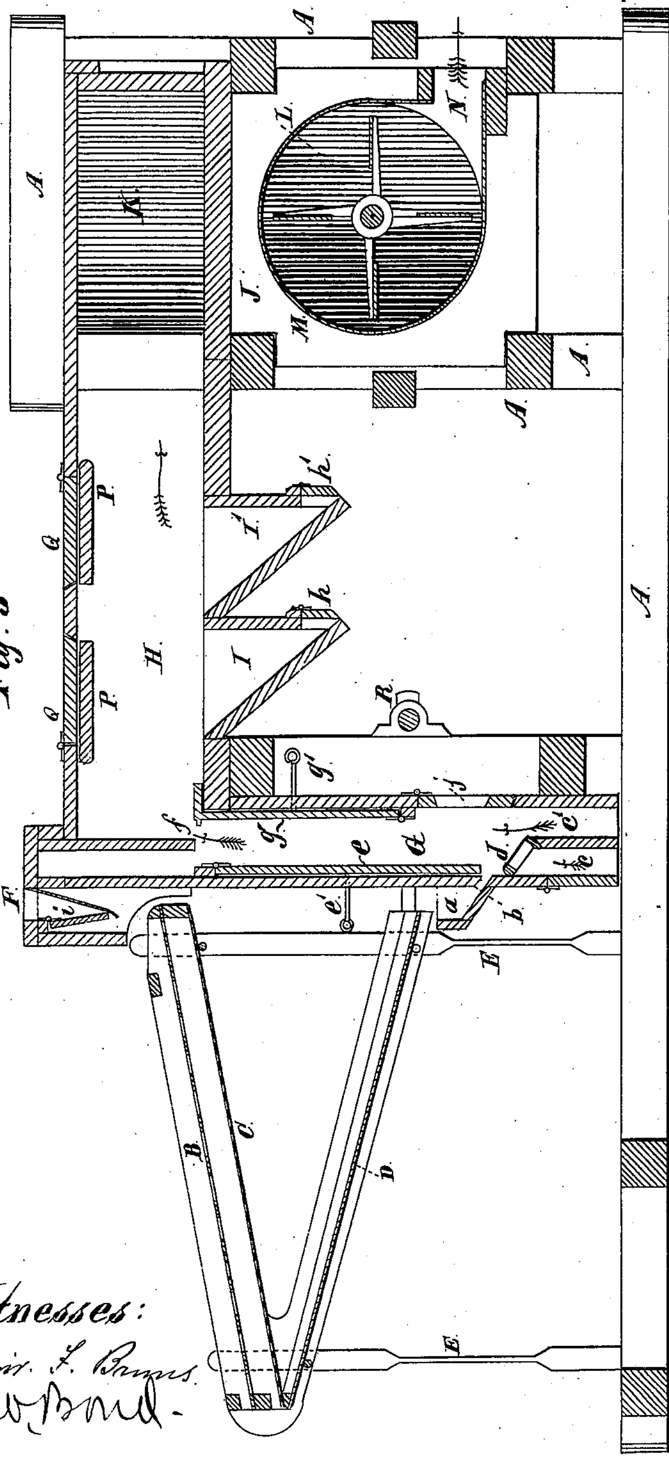
Fig. 3



Witnesses:

Henry L. Burns

O. W. Bond

Inventor:

DeWitt C. Roberts

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DE WITT C. ROBERTS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN ORE-SEPARATORS.

Specification forming part of Letters Patent No. **202,122**, dated April 9, 1878; application filed October 3, 1877.

To all whom it may concern:

Be it known that I, DE WITT C. ROBERTS, of the city of Chicago, Cook county, State of Illinois, have invented new and useful Improvements in Ore-Separators, of which the following is a full description, reference being had to the accompanying drawing, in which—

Figure 1 is a plan view; Fig. 2, a vertical cross-section of the parts represented, taken at *x x* of Fig. 1; Fig. 3, a vertical longitudinal section.

In auriferous regions there are large quantities of earth containing free gold, which it is customary to separate from the earth by washing, where water can be obtained; but such earth is found in many places where water cannot be obtained at all, or only at a very great expense.

The object of this invention is to construct a machine by the use of which gold can be separated from the earth without the use of water, which I accomplish by means of a suction-blast, in connection with passages and devices hereinafter fully described.

A suitable frame supports the various parts of the machine, parts of which frame are represented by A. B is a screen. C is another screen, located below B. D is an incline or chute. These screens and the incline are supported in a suitable frame, mostly or wholly independent of the frame A, and may be vibrated in any suitable manner. This can be done by making some parts of the supporting-posts small, as represented at E, and providing suitable devices connected with the driving mechanism for vibrating the screens and incline. F is an opening in the top of the machine, into which the earth is to be fed. *a* is a hopper or receptacle; *b*, an open passage from *a*. *c c'* are two air-passages, open at the bottom. *d* is a screen over the passage *c*. G is an air-passage, being, in fact, a continuation of the two passages *c c'*. *e* is a valve, which can be adjusted from the outside by means of the handle *e'*, for the purpose of contracting the passage G. *f* is a passage from G into the main air-passage H. *g* is another valve, operated from the outside by means of the rod *g'*, for the purpose of regulating the size of the passage *f*. I I' are receptacles communicating with the air-passage H. *h h'* are valves hinged so as to cover the outlets from the receptacles I I'. J is the bottom of the passage H. K K are two passages—one upon each side of the machine—into which the air passes from the passage H. L is a fan. M is the fan-case. N is the outlet for the air from the fan.

The passages K extend down on each side of the machine, and open into the fan-case.

P P are two valves hinged in the passage H. Q Q are doors in the top of the passage H, by means of which access may be had thereto. *i* is a valve used to regulate the flow of the earth.

In use, the earth is to be fed in any suitable manner into a hopper or receptacle placed over the opening F, and falls first upon the screen B. The rapidity of the fall of the earth from the hopper may be regulated by means of the valve *i*. The gravel, stones, and coarser portions will pass down the screen B, and be delivered at the end upon the ground, while the finer portions of the earth containing the gold will fall upon the screen C; and if there should be any gravel or other material larger than the perforations in C, it will pass over the ends of this screen, and the other portion containing the gold will fall upon the incline D, and gradually fall from it into the hopper or receptacle *a*, from which it will pass down through the opening *b* onto the screen *d*, a portion passing through *d* into the passage *c*, and the remainder passing over *d* into the passage *c'*. While this is being done the fan L is to be driven at a proper speed, and air will be drawn up through the passages *c c'*, and the earth will be carried along with the air, while the heavier particles of gold will fall through *c c'* into any suitable place prepared to receive them.

The course of the air is indicated by the arrows. It passes from G up through *f* into the main passage H; thence into the passages K, one upon each side of the machine; thence down these passages into the fan-case; thence out from the fan-case through the opening N.

The earth will be carried along with the air, and some of the heavier portions thereof and any of the particles of gold which may be carried up into the passage H will fall into the

receptacles I I′, and as they accumulate therein will open the valves *h h′* and pass out by their own weight.

The valves P P can be adjusted in any desired position, for the purpose of regulating the current through H.

j represents a glass door, through which the operator can look into the passage G.

It will be observed that the passage G extends directly upward for some distance, which construction facilitates the separation of the gold from the earth.

The earth can be fed continuously and at a uniform speed to the machine, so that a uniform quantity of the material will be constantly submitted to the action of the suction-blast. The fan is to be driven in any suitable manner.

R R are two bars, one end of which is pivoted to the frame which supports the screens, and the other ends pass around the shaft S, which may be made eccentric at the point of attachment of the bars R, and by means of which the screens can be vibrated, the shaft being driven by a belt or otherwise. The partition between *c* and *c′* only serves the purpose of supporting one edge of the screen *d*.

The air-passage H might open directly into the fan-case, instead of into the side passages K; but I am of the opinion that better results can be produced by the use of the passages K.

What I claim as new, and desire to secure by Letters Patent, is—

1. The separator constructed with vertical passages F G and horizontal passage H, and provided with a fan, L, substantially as and for the purpose set forth.

2. In an ore-separator, the combination of the passage G, throat *f*, horizontal passage H, and fan L, with the valves *e g*, substantially as and for the purpose set forth.

3. The combination of the vertical passage G, throat *f*, and horizontal passage H, with one or more valves, P, and fan L, substantially as and for the purpose set forth.

4. The vertical passage G, horizontal passage H, with the side passages K, fan-case M, and fan L, substantially as described.

5. The combination of the screen B C D with the passage F and receptacle or chute *a*, for separating the grosser parts from the material before it reaches the air-currents, substantially as and for the purpose set forth.

6. The combination of an open screen for first separating the grosser parts with the passages G H and fan L, for the further separating of the finer parts, substantially as specified.

DE WITT C. ROBERTS.

Witnesses:
E. A. WEST,
O. W. BOND.