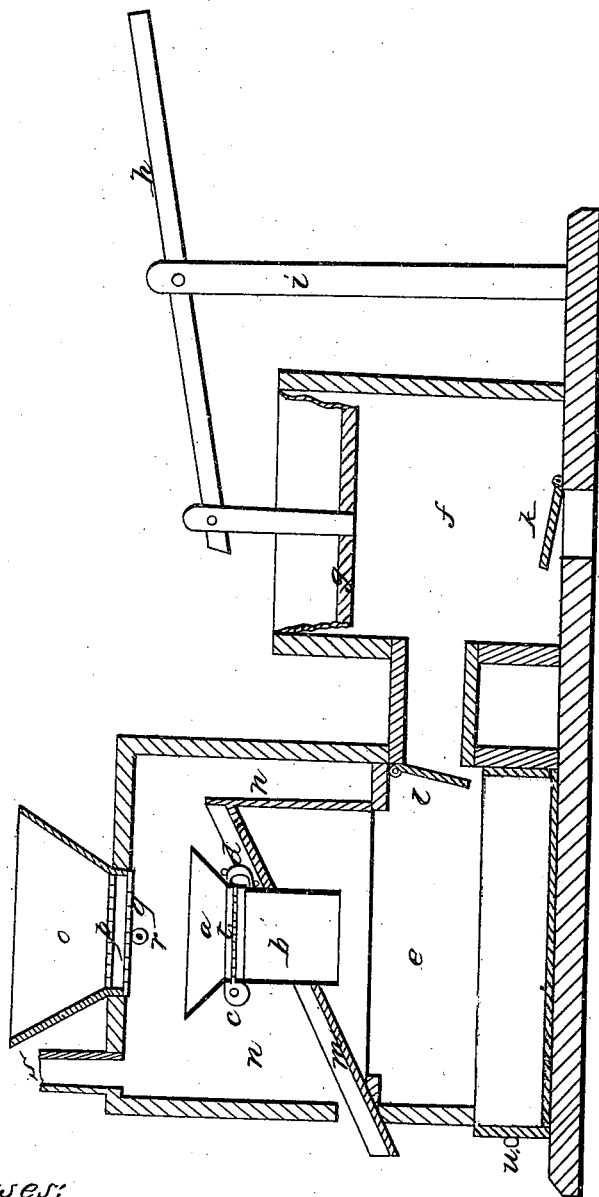


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E. L. SEYMOUR.

APPARATUS FOR SEPARATING AND CONCENTRATING ORES.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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OF SAME PLACE.

## IMPROVED APPARATUS FOR SEPARATING AND CONCENTRATING ORES.

Specification forming part of Letters Patent No. 51,662, dated December 19, 1865; antedated  
December 13, 1865.

### *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.

The accompanying drawing represents a perspective view of my apparatus, the details of which are as follows:

A pervious diaphragm or platform is arranged at the lower end of the shallow receptacle or basin *a*, which is supported upon the open air-pipe *b*, and is attached thereto either by telescopic attachment or by a hinge, *c*, upon the one side and a movable clamp, *d*, upon the other. The lower end of this air-pipe communicates with the base *e*, which constitutes an air-chamber, into which the blast is forced by an air-pump composed of the cylinder *f* and the piston *g*, which is moved by the lever *h*, attached to the pillar *i*, or by some similar arrangement, which said air-pump is provided with an inlet-valve, *k*, and with an exit-valve, *l*, of the usual form. The air-pipe *b* is surrounded by an inclined chute, *m*.

The feeding apparatus consists of a movable square box, *n*, either fitting upon the air-chamber *e* or attached to a separate frame, in the summit of which is the hopper *o*, fitted with a coarsely-perforated stationary diaphragm, *p*, and with a second coarsely-perforated diaphragm, *q*, which is supported upon a bar, *r*, at a short distance beneath the stationary diaphragm, in such manner that it may be vibrated horizontally by moving one end of the supporting-bar to and fro by power or by hand.

Near to the hopper *o* in the box *n* is an aperture or chimney, *s*, through which the finer particles of dust may escape, the object of the said box *n* being to prevent the said dust from scattering laterally in such a manner as to annoy the operator.

When the machine is put in operation currents of air are caused by the manipulation of the lever *h* to pass upward through the pervious diaphragm *t* and act upon the powdered ore delivered from above by the vibration of the feeding-diaphragm *q*. The action of the current passing through the pervious diaphragm is to cause the ore to arrange itself thereon in strata, the densest or heaviest on the diaphragm, and as the ore accumulates the lighter portions overflow over the rim of the

funnel-shaped receptacle or basin, and, passing down the inclined chute *m*, are discharged at the side of the machine as tailings.

The receptacle or basin *a* is made in the shape of a funnel, in preference to a square or vertical shape, for the reason that the particles of ore, when projected by the current of air, are less likely to escape laterally, and it is made shallow in order that the ore may be visible when in motion, so as to avoid loss by reason of too forcible projection.

When the appearance of the discharged tailings shows that valuable material is passing off with them the machine is stopped, the box *n* is raised either by hand or by machinery, the clamp *d* is unfastened, and the basin *a* is made to revolve upon the hinge *c*, so that all the ore therein contained is discharged into the chute and caught in a separate receptacle, when the operation is recommenced.

The tailings may be subjected to a second concentration in the machine if deemed expedient.

Such fine heavy particles as pass through the pervious diaphragm collect in the base *e*, and may be removed therefrom through an aperture fitted with a door, *u*, which remains closed during the operation of the machine.

In certain cases it would be preferable to substitute water instead of air as a motor, in which case it would be necessary to use a hydraulic pump in place of the air-pump described in the model and drawing, the machine in other respects remaining the same.

What is claimed as the part of the invention specially embodied in the above-described apparatus is—

1. The pervious diaphragm arranged at the lower end of a shallow receptacle or basin, whether funnel-shaped or otherwise, in combination with the devices for causing a current of air or water to pass through it, and for feeding it with material, as set forth.

2. The construction of the shallow receptacle or basin, whether funnel-shaped or otherwise, in such manner that the position of the said receptacle may be readily altered for the purpose of discharging the concentrated material, substantially as set forth.

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