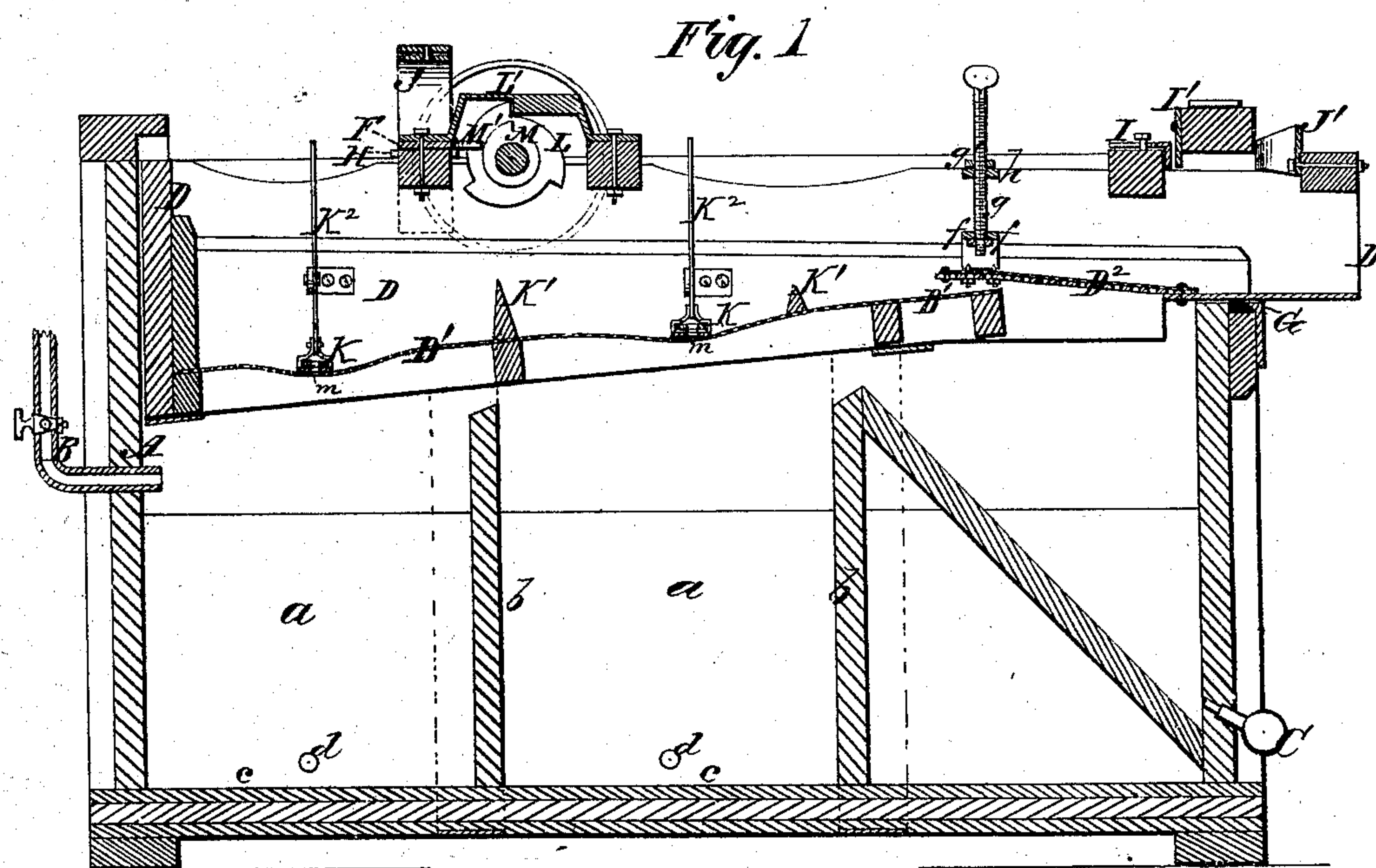
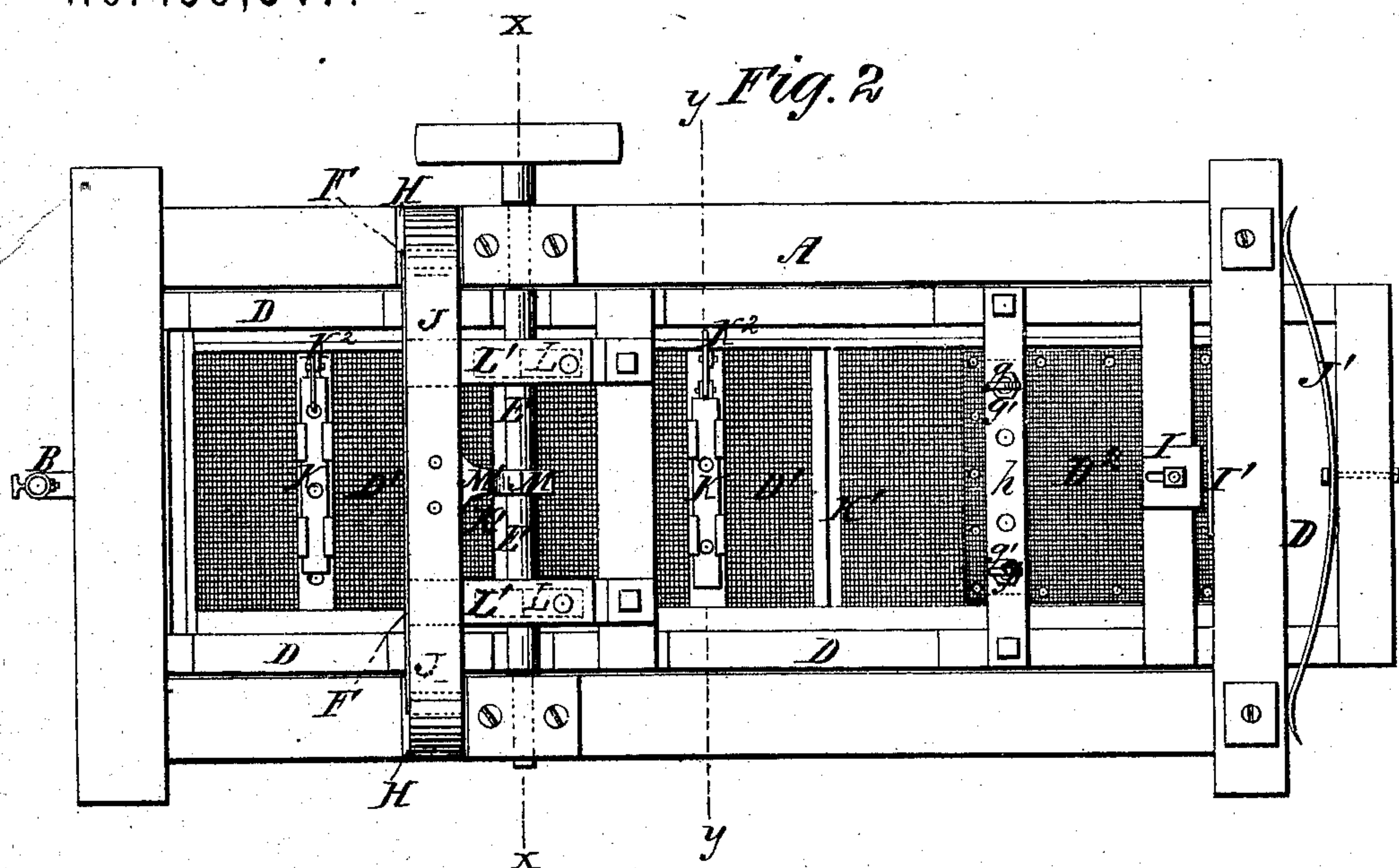


D. NEVIN.  
Ore-Separator.

No. 159,347.

Patented Feb. 2, 1875.



Witnesses:  
James Martin Jr.  
J. N. Campbell

Inventor:  
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by  
Mason Fenwick & Lawrence  
Attys.







# UNITED STATES PATENT OFFICE.

DAVID NEVIN, OF GEORGETOWN, COLORADO TERRITORY, ASSIGNOR TO HIMSELF, ROBERT NEVIN, AND J. OSCAR STEWART, OF SAME PLACE.

## IMPROVEMENT IN ORE-SEPARATORS.

Specification forming part of Letters Patent No. 159,347, dated February 2, 1875; application filed November 30, 1874.

*To all whom it may concern:*

Be it known that I, DAVID NEVIN, of Georgetown, county of Clear Creek and Territory of Colorado, have invented a new and useful Improvement in Ore-Separators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a longitudinal section of my improved ore-separator. Fig. 2 is a top view of the same. Fig. 3 is a cross view of the same in the line *x x* of Fig. 2. Fig. 4 is also a cross view in the line *y y*.

The nature of my invention consists in certain constructions and combinations of parts in an ore-separator which has a partitioned water-tank, a horizontally and vertically vibrating sorting-sieve, which is hung with one end extended through the frame, and kept water-tight at said end, while moving up and down and back and forth, by a suitable packing-bar or stuffing-box.

A is a water-tank, of oblong form, divided into several chambers, *a*, by transverse partitions *b*. Each of these chambers is formed with a funnel or hopper shaped bottom, *c*, at the angle of which a draw-off cock, *d*, is provided. B is a water-supplying pipe, and C a water-discharging pipe. These pipes are furnished with suitable cocks. D D<sup>1</sup> D<sup>2</sup> is the sieve, consisting of an oblong frame, D, a wire-gauze or finely-reticulated metal bottom, D<sup>1</sup> D<sup>2</sup>. The adjustable portion D<sup>2</sup> serves for shearing or dividing the grades of ore, and for guiding them into an appropriate receptacle or receptacles after the ore has been treated upon the portion D<sup>1</sup>. The portion D<sup>2</sup> of the sieve is suspended by an arched bar, *f*, and screws *g*, upon a cross-bar, *h*, of the sieve-frame D. The screws work in taps in the bar *h*, and are fastened by nuts *g' g'*. This sieve is suspended between the upright sides of the tank A with a downward inclination toward the receiving end thereof, being held a little forward of its receiving end by means of a cam-shaft, E, and a sliding cross-bar, F, which have their support upon the upper edge of the tank, and is sustained at its discharging end by a packing or stuffing bar, G, of the frame, and,

if desirable, by pivoted hangers pendent from the inner sides of the tank. H H are rubbers, upon which the ends of the bar F slide back and forth, and also bump. I is an adjustable bumper for controlling the extent of the longitudinal movement of the sieve. This bumper strikes a plate, I', of the frame of the tank. J J' are elliptic springs arranged near the respective ends of the sieve. The spring J receives the force of the sieve as it is moved upward, and the spring J' the force as it is moved forward. These springs serve to return the sieve to its normal position after being operated upon by the cams of the shaft E. K K are adjustable slide-valves, operated by levers K<sup>2</sup>, attached to the side of the sieve-frame, over relief passages *m*, formed through the wire-gauze bottom of the sieve. K<sup>1</sup> are riffles, placed across the sieve bottom. D<sup>1</sup> for retarding or arresting the heavy minerals. L L are cams on the shaft E, and working against tappets L' L', attached to the sieve for imparting a vertical motion to the sieve, and M is a smaller cam, also on the shaft E, and working against a tappet, M', also attached to the sieve for imparting a horizontal motion, or longitudinal motion, to the sieve. The counter or reciprocal movements of the sieve are produced by the springs J J', as above mentioned.

The operation is as follows: A continual supply of water is kept in the tank by the pipe B, so as to immerse the wire-gauze bottom of the sieve, and the ore or material to be separated is fed over the top of the frame into the receiving-end of the sieve, and the sieve is rapidly vibrated by suitable power applied to the cam-shaft E. The agitation of the sieve vertically in the water causes the lighter particles to separate from the heavier, and the lighter rise nearer to the surface, while the heavier settle at the bottom; and while this is being effected the horizontal or longitudinal motion of the sieve carries the lighter particles forward to the discharging end, where it is sorted, divided, or sheared by the portion D<sup>2</sup> of the sieve, and discharged into an appropriate receptacle or receptacles. The particles of ore which settle on the bottom of the sieve pass through the sieve and valve-passages into the hoppers below, and are drawn off by the

cocks *d*. The water, which flows in by pipe B, is discharged by pipe C'.

What I claim as my invention is—

1. The combination of the springs J J', slide-bar F, cams L L and M, tappets L' L' and M', with the ore-separating sieve and tank, the whole operating to produce an up-and-down and back-and-forward vibration of the sieve within the tank, substantially as and for the purpose described.

2. The relief-passages *m m* in the wire sieve bottom D, in combination with the valves K

and levers G<sup>2</sup> for opening and closing the valves, substantially in the manner shown and described.

3. The bar F, having the cams M' and L' L' applied to it, attached to the sieve-frame D, and hung loosely upon the tank, and combined with the tappets and tappet-shaft, substantially in the manner shown and described.

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Witnesses:

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