

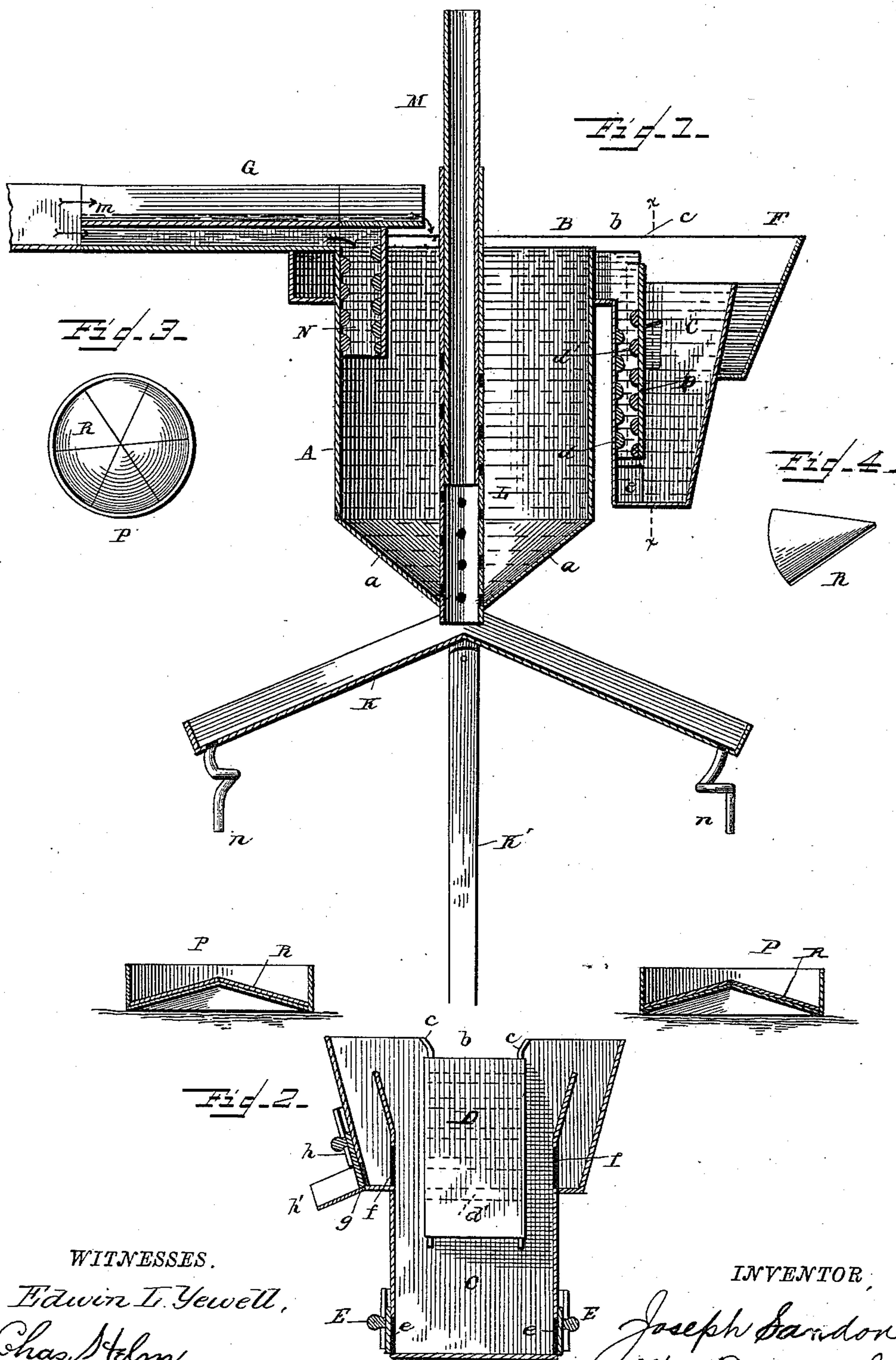
(No Model.)

2 Sheets—Sheet 1.

J. SANDON.  
ORE CONCENTRATOR.

No. 379,418.

Patented Mar. 13, 1888.



WITNESSES.  
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INVENTOR,  
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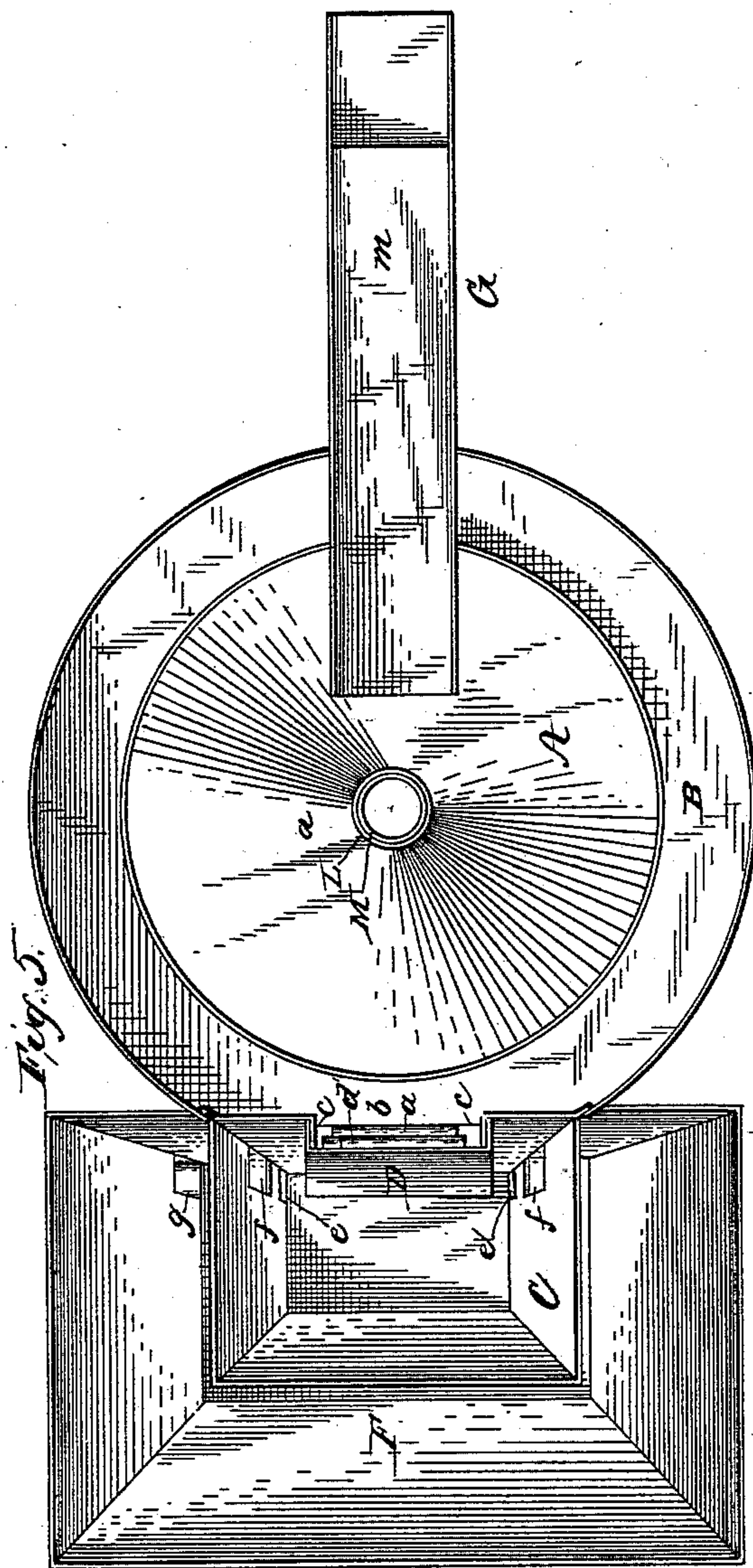
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2 Sheets—Sheet 2.

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ORE CONCENTRATOR.

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Witnesses

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Inventor.

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# UNITED STATES PATENT OFFICE.

JOSEPH SANDON, OF VIRGINIA CITY, MONTANA TERRITORY.

## ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 379,418, dated March 13, 1888.

Application filed April 21, 1887. Serial No. 235,666. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH SANDON, a citizen of the United States, residing at Virginia City, in the county of Madison and Territory of Montana, have invented certain new and useful Improvements in Ore-Concentrators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for concentrating ore of that class in which the material is separated according to its specific gravity; and it has for its object to save the minerals, such as grey copper, silver glance, sulphurets, and antimony, and the finer valuable minerals which are light enough to float, and which are lost or wasted as treated by all the concentrators with which I am familiar; and it consists of the parts and combinations of parts hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a central vertical section through my improved machine; Fig. 2, a detail view, being a section on the line *x x*, Fig. 1; Fig. 3, a plan view of one of the receiving or settling tanks; Fig. 4, a perspective view of one of the sections forming the false bottoms of the settling tanks, and Fig. 5 a plan view of the machine.

Similar letters refer to similar parts throughout the several views.

A represents a cylindrical tank having a conical bottom, *a*. This tank may be supported in any desired or convenient manner in an upright position. Around the upper portion of said tank is formed a circular trough, B, the upper edge of which stands or projects above the upper edge of the tank A, and which has an opening or outlet, *b*, formed in one side thereof, the sides of which are provided with flanges *c*, which extend down nearly to the bottom of a sluice-box, C, which is attached in any suitable manner to the trough B. Along that part of said sluice-box which adjoins the tank A a number of riffles, *d*, are formed, and on a removable cover, D, which is provided with side flanges to overlap the flanges *c* and form a tight joint, is formed a number of riffle-bars, *d'*, which, when the cover is in position, as shown, alternate with the riffles *d*, and thus form a tortuous passage, which greatly assists

the separation of the material under treatment.

At the bottom of sluice-box C, at each side, outlets *e* are formed and sliding gates or doors E provided, whereby the box may be emptied at will of all the material which may be caught therein, and in the sides of the box, near its upper edge, are formed openings *f*, which communicate with a supplemental trough, F, attached to the tank A, and which surrounds the box C for a portion of its length and is on a level with the trough B. As shown in Fig. 2, this trough also has an opening, *g*, guarded by a sliding gate, *h*, and has a spout, *h'*, projecting therefrom. In the center of the conical bottom of tank A an opening is formed through which a tube, L, is passed, said tube extending through the bottom a short distance and being rigidly secured thereto, and the upper end of the tube projecting or extending above the tank. This tube is perforated on all sides from the bottom of the tank up about two-thirds its length, and a shaft, M, either tubular or solid, of less diameter, is inserted or fitted within tube L, so as to be easily moved up or down therein, and thus open or close the perforations in tube L. If desired, the shaft M may be tubular and of greater diameter than tube L, in which case it will be slipped over said tube.

On the side of tank A, opposite the sluice-box C, I secure a double feeding trough or flume, G, which is divided by means of a horizontal longitudinal partition, *m*, into two sections, the upper of which receives the light floating tailings, which are conducted directly to the tank A and emptied therein at a point near its center, while the lower section receives the heavier tailings and conducts them to a vertical riffle box or sluice, N, provided with riffles arranged the same as those in the sluice-box C above described, and thence into the tank A. It will thus be seen that the tailings are given a preliminary separation prior to their entrance to the tank by the sectional sluice or flume G, and that when they enter the same they are in the best condition for further treatment or separation, because the lighter particles are fed directly to the surface of the water in the tank, and such of it as is not heavy enough to sink is immediately floated over the edge of the tank into trough B, and is conducted by it to its opening and into the sluice-



box through the riffles, where it is again sub-  
 5 jected to treatment, the lighter matter floating  
 over the upper edge of the sluice-box and  
 through the openings into the supplemental  
 10 trough F, where, the volume of water being  
 less, the lightest floating material is concen-  
 trated, if desired. Ordinarily the double con-  
 centration is sufficient, and the gate *h* in trough  
 F is opened the desired distance to regulate

15 the discharge from the sluice.  
 It will be noticed that the sluice-box C and  
 trough F flare outwardly from their bottoms,  
 as shown in Fig. 1, and that the sides above  
 20 openings *f* also flare outwardly. This assists  
 materially in the concentration of the tailings,  
 as it tends to bring the heavier particles closer  
 together. The concentrates are drawn off from  
 sluice-box C through the openings *e*. The  
 25 heavier tailings, which enter the tank through  
 the lower section of the flume, sink to the bot-  
 tom of the tank, and when shaft M is raised  
 to uncover the perforations in tube L they are  
 drawn off through the perforations and into a  
 30 double-inclined sluice or flume, K, which is  
 pivotally secured to a post, K', so that it may  
 be turned thereon to empty into different  
 tanks, and passing down these inclines escape  
 through coiled pipes *n*, secured in the lower  
 35 ends of the sluices, into tanks P, which are pro-  
 vided with removable false bottoms formed of  
 sector shaped plates R, the mineral catching  
 in said bottom, which may be taken out and  
 cleaned. The bottoms of these tanks are conical,  
 so that the mineral will gravitate toward  
 40 their peripheries, the water escaping over the  
 top of the tanks.

Having thus described my invention, what I  
 claim as new, and desire to secure by Letters  
 Patent, is—

45 1. In an ore-concentrator, the combination  
 of a tank, an upright perforated tube rigidly  
 secured to the bottom of said tank, a shaft  
 telescoped within said tube, a trough surround-  
 ing said tank and provided with an opening  
 50 in its side, a vertical sluice provided with  
 riffles, a sluice-box having an outlet at its bot-  
 tom, a supplemental trough surrounding said  
 sluice-box, and means for regulating the dis-  
 charge therefrom, substantially as described.

2. In a mineral-saving machine, the combi- 50  
 nation of a tank having a conical bottom, a  
 perforated tube secured therein, a tubular  
 shaft telescoping said tube, a trough surround-  
 ing said tank, a vertical sluice provided with  
 55 riffles, a sluice-box flaring upward, having  
 openings *f*, a supplemental trough flaring up-  
 ward and surrounding said sluice-box, and a  
 sliding gate to regulate the discharge, as de-  
 scribed.

3. In an ore-concentrator, the combination 60  
 of a tank, a feeding trough or flume, the hori-  
 zontal partition secured therein, the vertical  
 sluice, a perforated tube, a sliding shaft for  
 opening and closing said perforations, a double-  
 65 inclined sluice supported beneath said tube,  
 discharge-pipes therein, and receptacles to  
 catch the discharge, substantially as described.

4. A flume or sluice for the preliminary sep-  
 aration of tailings and the feeding of the same  
 to concentrators, having a horizontal partition 70  
 arranged longitudinally therein at its dis-  
 charge end, as set forth.

5. The hereinbefore-described concentrator,  
 consisting of a tank having a conical bottom,  
 a perforated tube rigidly secured in said bot- 75  
 tom, a shaft for opening or closing the perfo-  
 rations in said tube, a trough surrounding said  
 tank and having an opening in its side, a ver-  
 tical sluice having riffles therein, a sluice-box  
 having gates at its lower end and openings 80  
 near its upper edge, a supplemental trough  
 surrounding said sluice-box and provided with  
 a gate to regulate its discharge, a feeding flume  
 having a horizontal and longitudinal partition  
 therein, a vertical sluice having riffles in said 85  
 tank, a double-inclined sluice pivotally sup-  
 ported beneath said tank, coiled discharge-  
 pipe therefor, and the receiving or settling  
 tanks, as set forth.

In testimony whereof I affix my signature 90  
 in presence of witnesses.

JOSEPH SANDON.

Witnesses:

W. T. PIGOTT,  
 BARCLAY JONES.