

No. 672,298.

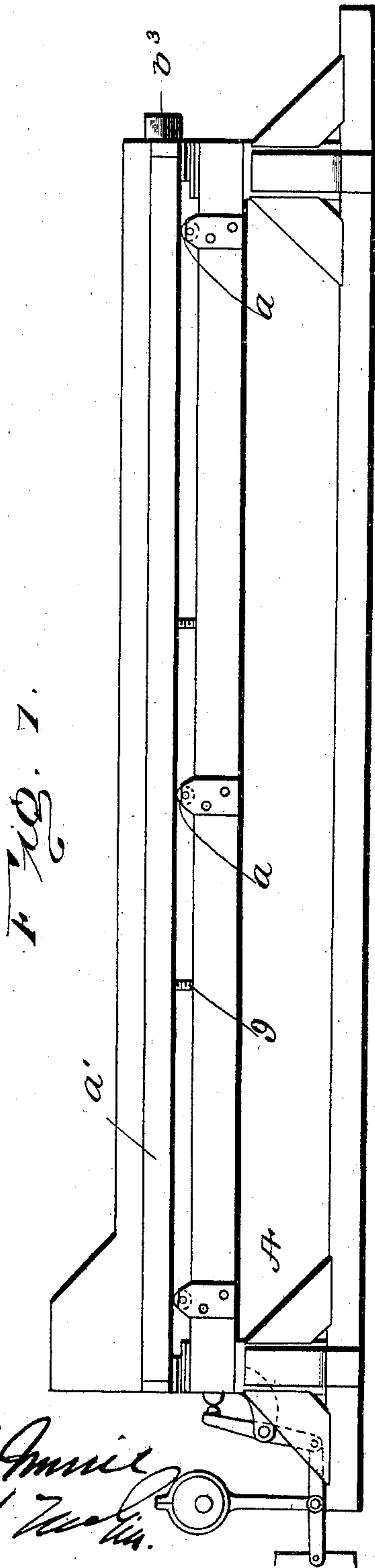
Patented Apr. 16, 1901.

C. A. TAYLOR.
TROUGH CONCENTRATOR.

(Application filed Mar. 27, 1900.)

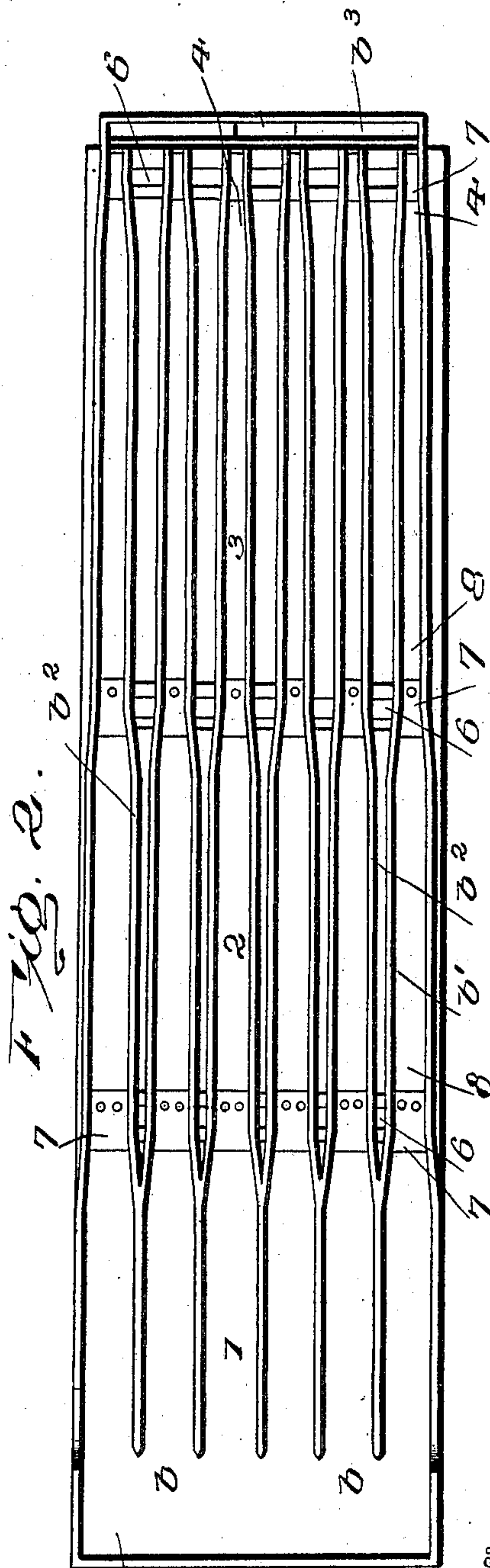
(No Model.)

2 Sheets—Sheet 1.



Witnesses

J. M. Miller
G. L. T. Miller



Inventor

Charles A. Taylor

by Alexander Rutherford

Attorney

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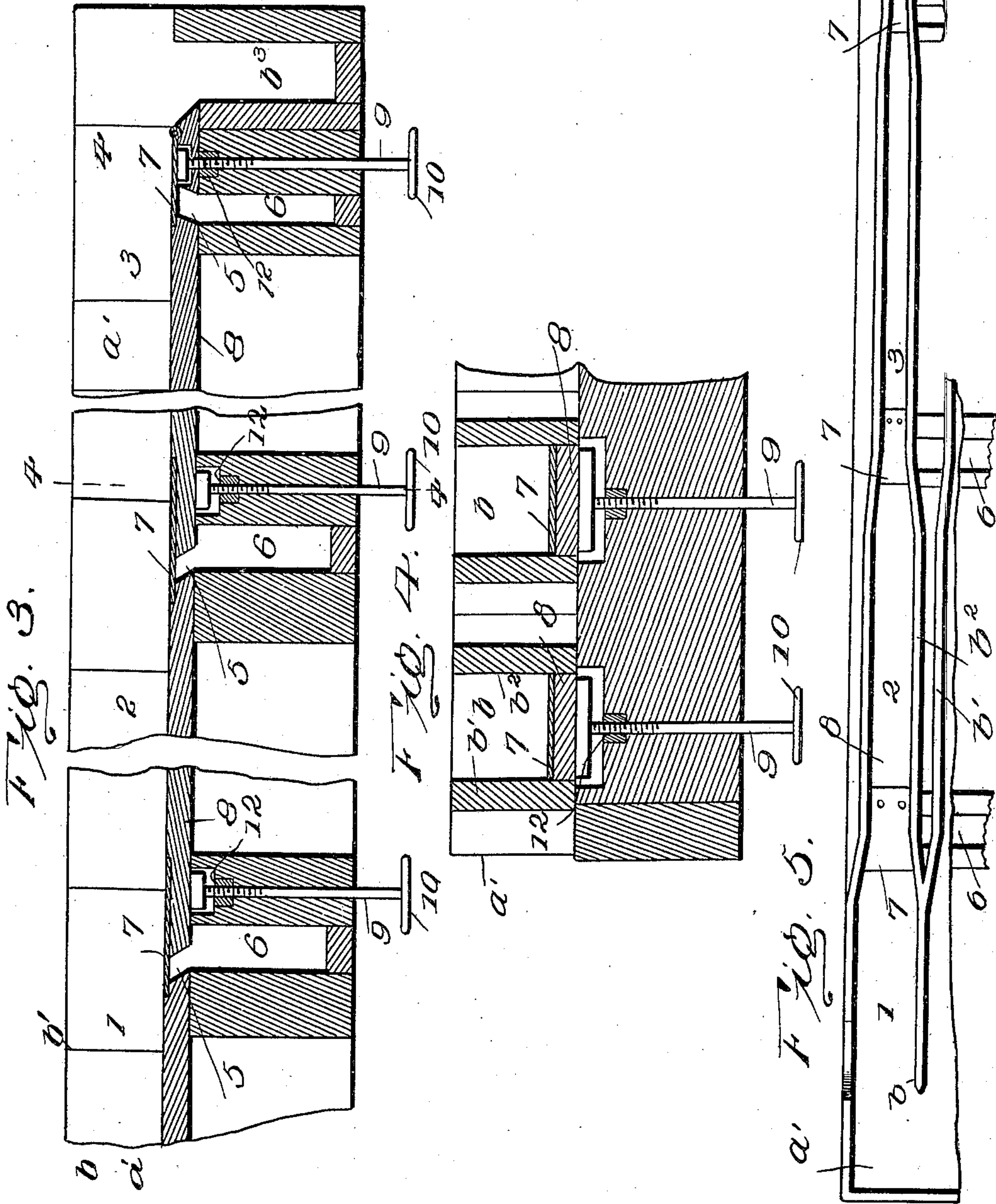
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2 Sheets—Sheet 2.



Witnesses
John H. Smith
G. L. Smith

Inventor
Charles A. Taylor
by *Allan Rutherford*
Attorney

UNITED STATES PATENT OFFICE.

CHARLES A. TAYLOR, OF LEADVILLE, COLORADO.

TROUGH-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 672,298, dated April 16, 1901.

Application filed March 27, 1900. Serial No. 10,328. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. TAYLOR, of Leadville, in the county of Lake and State of Colorado, have invented certain new and useful Improvements in Trough-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.

This invention contemplates certain new and useful improvements in the concentration of ores, having reference to the separation of precious metals or minerals by specific gravity under the action of water and longitudinal reciprocatory motion of a trough-concentrator.

The improvement comprehends a table having thereon a series of troughs, each of which is of differential width throughout its length—that is, the space between the sides of a trough is diminished at different points, with the widest space at the receiving end and the narrowest space at the discharge end.

The improvement further comprises means for controlling the outlet of the heavy metal at the end of each of the spaces of a trough—that is, at the point of junction between spaces of different widths.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation. Fig. 2 is a plan view of the table. Fig. 3 is an enlarged longitudinal sectional view with parts broken away. Fig. 4 is a transverse sectional view on line 4 4, Fig. 3. Fig. 5 is an enlarged view showing one of the troughs.

Referring to the drawings, A designates a stationary frame having rollers a , upon which the rectangular table a' may be longitudinally and vertically reciprocated by any suitable means, as by an eccentric, which will impart to the table the necessary back-and-forth movements. The top of frame A is inclined so that water and minerals on the table will readily travel toward the lowered discharge end of the latter.

Upon table a' is a series of continuous troughs b , formed by plates b' b^2 , perpendicular to the table-top. These plates are rela-

tively so arranged that they are convergent and parallel at different points. In this way the width of each trough is periodically decreased in the direction of the discharge end, forming three distinctive sets of passages 1, 2, and 3, the set 2 being narrower than the set 1, while the set 3 is the narrowest of all, and this in turn is further narrowed at point 4 at the discharge end of the table. At this end there is a gutter b^3 , which receives the water and tailings from the several troughs on the table.

At each point of convergence of the several plates forming the troughs and also at the discharge end is an opening 5 into a transverse gutter 6 beneath the table a' . Each opening is controlled by a valve in the form of a plate 7, fast on one of the bottom boards or timbers 8 in such manner that it will entirely close the opening or may be adjusted to arrest the passage of the heavy material and cause the same to fall through the opening into the transverse gutter. The raising and lowering of these plates and their complementary timber is effected by a screw-rod 9, having a hand-wheel 10 and working in a threaded member 12, depending from the bottom of the table. If the several outlet-openings are open, heavy material will fall into the first, while lighter material will pass on through the set 2 of passage-ways, and such as does not fall through the next opening will enter the third set of passage-ways and be discharged through opening 5 at the discharge end of the table. Any one of the openings may be entirely closed—as, for instance, at the point of union between sets 1 and 2 of the passage-ways—and thus the material will be caused to pass on to the other openings. According to the material to be separated the tables may be made of wood, iron, or copper, and where gold quartz is to be concentrated the troughs are made of copper, with corrugated or riffle bottoms and amalgamated with mercury.

In practice the ore to be concentrated is deposited upon the table at the receiving end, and as the longitudinal reciprocation is imparted to the table the ores will travel through the several troughs, passing first through the widest portion of each trough and thence through each of the contracted sections, ex-

cept such as may be discharged through any one of the openings before the passage-way 3 is reached. It is obvious that any suitable means may be employed for supplying water 5 to the ores on the table and also for removing the ores from the transverse troughs and the water and tailings from the trough at the discharge end of the table. The table, in addition to its longitudinal reciprocation, also 10 has a limited vertical movement, which may be had by any suitable means.

I claim as my invention—

1. An ore-concentrator comprising a table, a series of troughs on said table, each trough 15 having side plates perpendicular to the table, the side plates of each trough being relatively parallel at a plurality of points throughout the length of the table, whereby the space between such plates is greater at one end of the 20 table than at the other, outlet-openings being formed in each trough between the several adjoining parallel portions of the side plates, as set forth.

2. An ore-concentrator comprising a table, 25 plates perpendicular to said table relatively convergent and parallel at a plurality of points throughout the length of the table, forming troughs of varying widths, and outlet-open-

ings in each trough at the points where the said plates are relatively convergent, as set 30 forth.

3. An ore-concentrator comprising a table, a series of troughs on said table, each trough being continuous throughout the length of the table but of differential widths, outlet-open- 35 ings being formed in each trough at the points where the widths vary, and valves designed to control said openings, substantially as set forth.

4. An ore-concentrator comprising a table, 40 a series of troughs on said table, each trough being continuous throughout the length of the table and of varying widths, outlet-openings being formed in each trough at the points where the widths vary, movable timbers in 45 the bottom of each trough, plates secured thereto, extending over the outlet-openings, and screws for raising and lowering said timbers, substantially as set forth.

In testimony whereof I have signed this 50 specification in the presence of two subscribing witnesses.

CHARLES A. TAYLOR.

Witnesses:

GEORGE NICOLAI,

H. C. MAURER.