

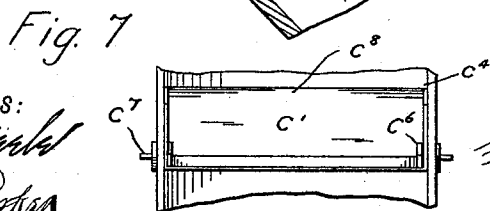
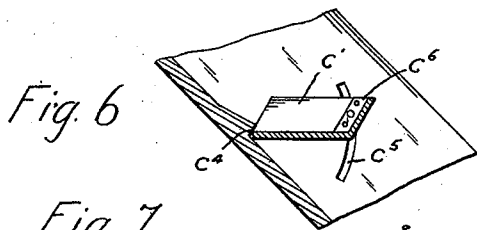
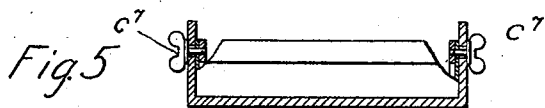
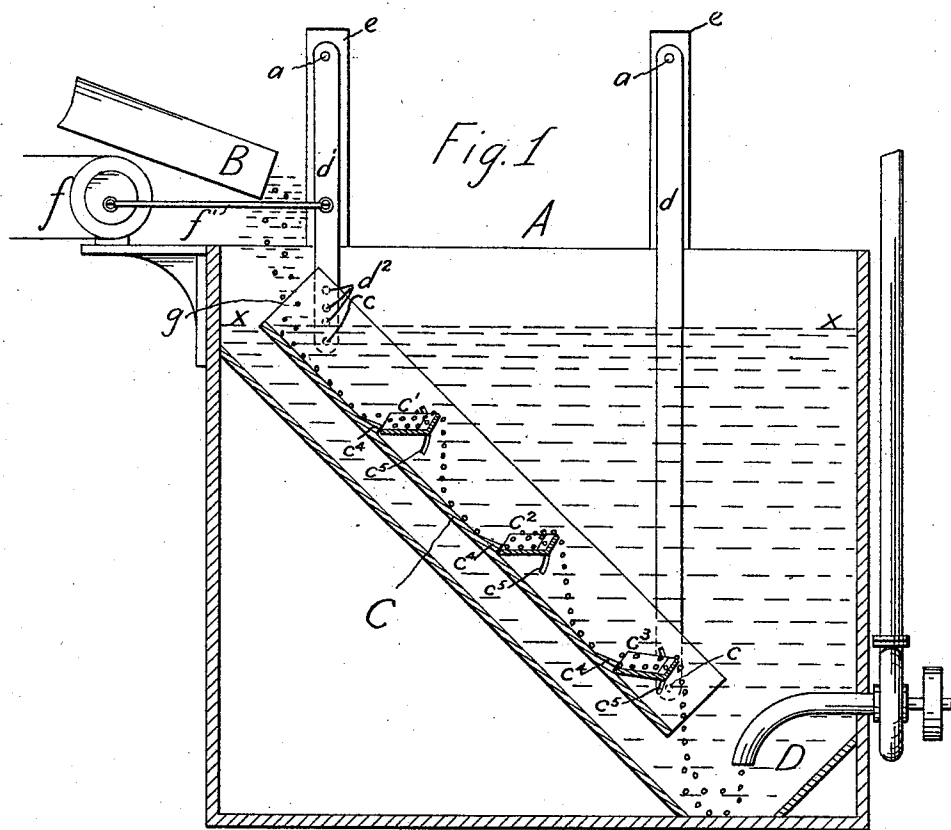
(No Model.)

4 Sheets—Sheet 1.

C. F. PIKE.
ORE WASHER.

No. 581,033.

Patented Apr. 20, 1897.



WITNESSES:

John A. Pike
John C. Parker

INVENTOR

Charles F. Pike
BY
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ATTORNEY.

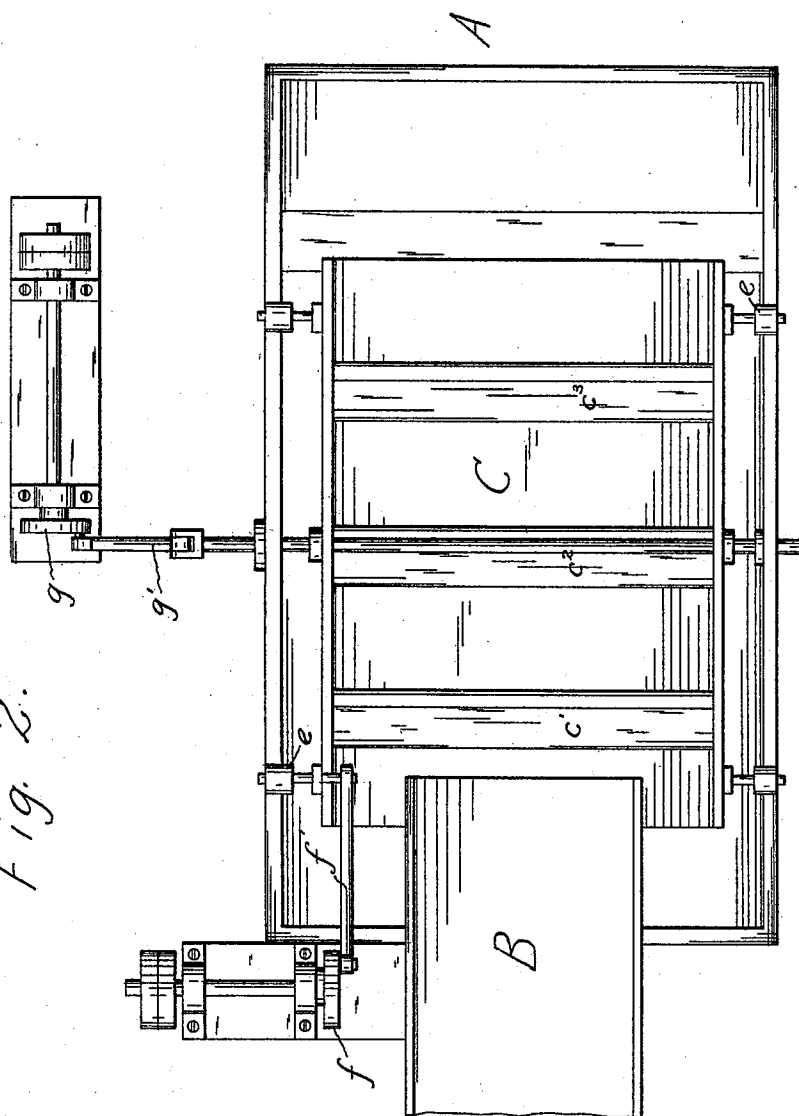
(No Model.)

4 Sheets—Sheet 2.

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Patented Apr. 20, 1897.



Witnesses
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(No Model.)

4 Sheets—Sheet 3.

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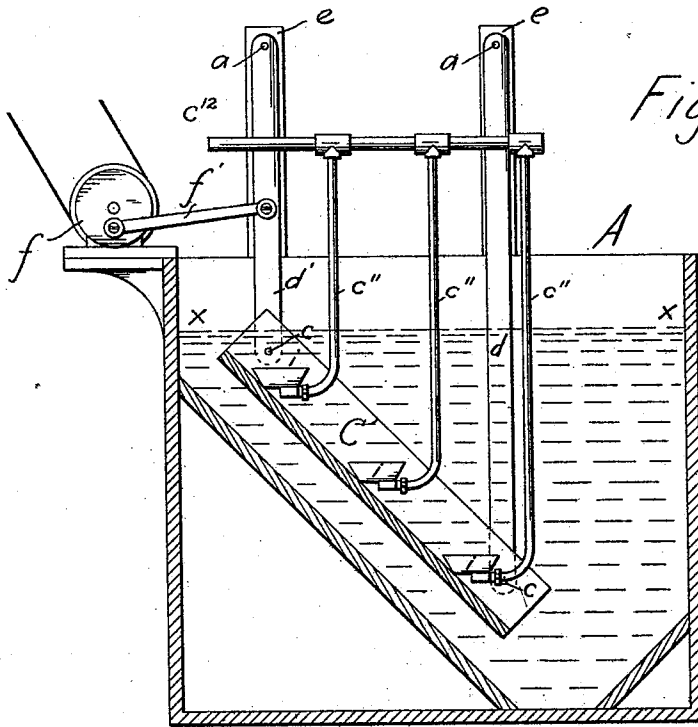


Fig. 3

Fig. 9

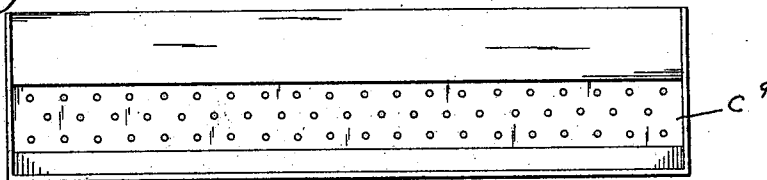
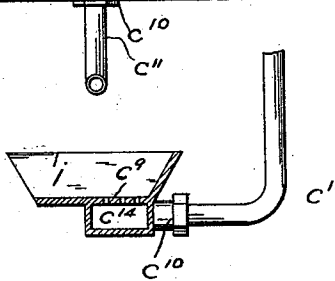


Fig. 8



Witnesses
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(No Model.)

4 Sheets—Sheet 4.

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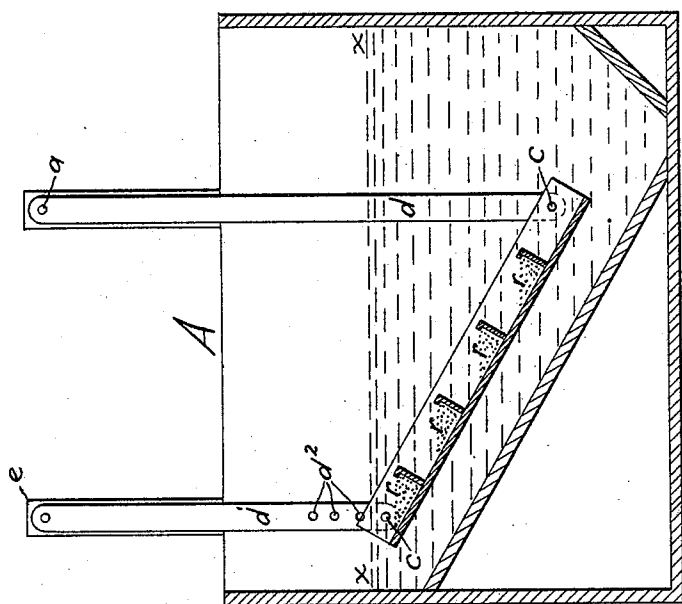


Fig. 4 1/2

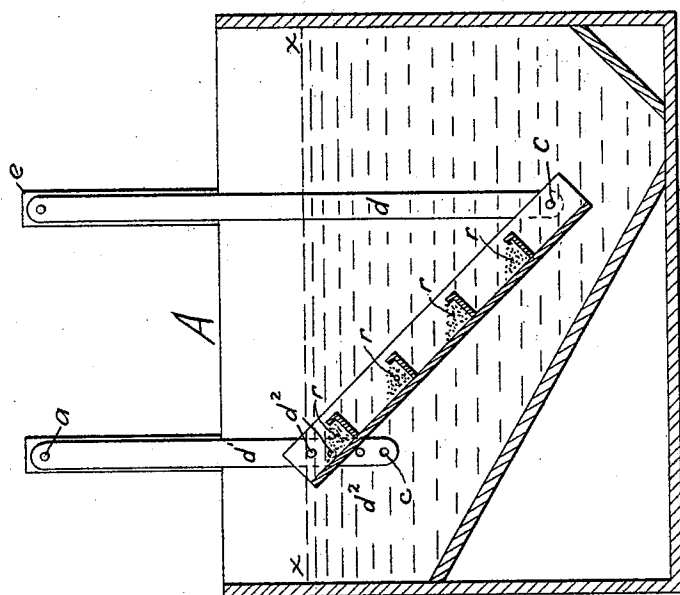


Fig. 4

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UNITED STATES PATENT OFFICE.

CHARLES F. PIKE, OF PHILADELPHIA, PENNSYLVANIA.

ORE-WASHER.

SPECIFICATION forming part of Letters Patent No. 581,033, dated April 20, 1897.

Application filed May 2, 1896. Serial No. 589,958. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. PIKE, a citizen of the United States, residing in the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ore-Washers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention has relation to ore washers and concentrators and is an improvement upon a similar invention granted to me under Letters Patent No. 529,307, bearing date November 13, 1894. In practically working
15 placer-gravel I find that the construction shown in said Letters Patent operates rapidly and successfully when the material is of a coarse nature, but where the black sand is very fine and the material carries a soluble
20 clay such as is found in some placers a different arrangement of the riffles is required to do rapid work. When working material that contains fine black sand carrying scale-gold, it becomes necessary to set the riffle-board at
25 a greater angle than when working coarse material, so that sufficient pitch may be obtained to cause such material to pass rapidly along. If the riffle-board is raised at one end to secure the desired angle and pitch, the space
30 back of the riffles in which the black fine sand is kept alive becomes reduced and limited and prevents a rapid and thorough separation of the fine black sand from the scale-gold unless the riffle-board is very violently vibrated,
35 in which case a current of water is caused to pass up and down the surface of the riffle-board. This is objectionable, because it scatters the fine material to such an extent that it is forced over the side of the riffle.

40 My invention has for its object such improvements as will effectually overcome these difficulties and permit of the rapid separation of the particles when working fine material and also thoroughly dissolving all clayey substances when present.

45 My invention accordingly consists in the combinations, constructions, and arrangements of the parts described in the specification and pointed out in the claims.

50 Figure 1 is a longitudinal vertical sectional view of the device, showing my improved riffle-board. Fig. 2 is a plan of the same, the

pump omitted, showing mechanism to give the riffle-board a motion at right angles to its length. Fig. 3 is a longitudinal vertical section
55 showing flexible pipe connections for the riffles. Fig. 4 is a longitudinal vertical sectional view of a riffle-board with the riffles fixed at right angles to the plane of the riffle-board. Fig. 4½ is the same view, wherein the
60 pitch of the riffle-board is increased, showing that the angle between the riffles and the riffle-board remains constant, while the space contained in the angle to catch the placer-dirt is decreased. Fig. 5 is an enlarged cross-
65 sectional view of the riffle-board with a portion of a riffle broken away. Fig. 6 is an enlarged section of a portion of the riffle-board and one riffle. Fig. 7 is a plan of Fig. 5. Fig. 8 is a section of a riffle, showing the water-
70 chamber and flexible pipe connection. Fig. 9 is a plan of Fig. 8, showing the perforations through which the water is forced.

A is a tank filled with water to the line *xx*.

B is the feed.

75 C is a riffle-board immersed in the water in the tank and is pivoted to the vertical links *d d'* at *cc*, the upper ends of which are pivotally supported on the uprights *ee* at *aa* and receives a longitudinal vibratory motion
80 by means of the crank *f* and connecting-rod *f'*.

D is a suction-pump to carry off the tailings as they pass from the riffle-board.

To cause the fine material to pass rapidly over the riffle-board, it becomes necessary to
85 increase the pitch of the riffle-board by raising its end *g* nearest to the feed B and inserting the pivots higher in the holes *d²* in the vertical line *d'*. By reference to Figs. 4 and 4½ it can readily be seen that when the pitch
90 of the riffle-board is thus increased the spaces *rrrr* behind the riffles become decreased and limited and prevent a rapid separation of the finer particles.

I have found by practical demonstration
95 that if when you increase the pitch of the riffle-board you also increase the angle formed by the inner surface of the bottom of the riffle-board and the riffle this difficulty is over-
100 come and a rapid and thorough separation of the fine particles takes place. I therefore construct my improved riffle-board in such manner that the inner surface of its bottom is provided with projections or crosswise sup-

ports $c^4 c^4 c^4$, which may be formed out of the bottom of the riffle-board itself or fastened thereto in any manner desired. The riffle-board is also provided with riffles $c^1 c^2 c^3$, whose lower edge is adapted to impinge against the supports $c^4 c^4 c^4$ when in position and have flanged or thickening pieces $c^6 c^6$, tapped to receive the binding-screws $c^7 c^7$. (See Figs. 5, 6, and 7.) In the sides of the riffle-board are slots $c^5 c^5 c^5$, (see Fig. 6,) described on the arc of a circle by a radius the fixed end of which is at the edge of the corresponding support $c^4 c^4 c^4$.

To place the riffle in position, remove the binding-screws $c^7 c^7$, place the lower edge of the riffle c^8 against the support c^4 , pass the binding-screws $c^7 c^7$ through the slots $c^5 c^5$, and screw them into the tapped thickening-pieces $c^6 c^6$, binding or holding the riffles in position. (See Figs. 5, 6, and 7.)

When the riffle-board is changed from one angle to another to secure the desired pitch, the position of the riffles can be changed to correspond by removing the binding-screws and inserting them in the proper holes and then tightening them again when the riffle has been adapted to the position desired. This enables the riffle-board and the riffles to be regulated so as to suit the different grades of material that it is desired to work. This construction and arrangement give complete control over the riffle-plate and the riffles, so that they may be regulated at will as the requirements of the work may demand.

To avoid water-currents over the surface of the riffle-board caused by violent longitudinal vibration when the material being worked is light and fine, I employ an auxiliary motion at right angles to the longitudinal vibratory movement which is produced by the crank g and connecting-rod g' . (See Fig. 2.)

While the longitudinal vibratory movement causes the material to advance, the auxiliary movement at right angles thereto causes the fine black sand to be kept fully alive and pre-

vents the formation of water-currents over the surface of the riffle-board sufficiently violent to hinder or retard the work of rapid separation.

In case clay exists and has not all been dissolved, some portions remaining adhering to the different particles, causing them to mat, then the form of riffle-board shown in Fig. 3 is used. The bottom of the riffle is depressed and a perforated plate c^9 (see, more plainly, Figs. 8 and 9) is secured in position to form a chamber c^{11} for inflowing water through the pipe-opening c^{10} . To the pipe-opening c^{10} is attached flexible pipe connection c^{11} , having a water-supply c^{12} . The water-supply being above the level of the water in the tank A it is forced into the chamber c^{11} and upward through the perforated plate c^9 . This flow of water in connection with the motion of the particles rapidly dissolves and washes away the adhering undissolved clay, leaving the particles free to separate and pass along.

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

1. In combination, a riffle provided with flanged or thickening pieces tapped to receive binding-screws and a riffle-board having projections or supports on the inner surface of its bottom and its sides provided with slots through which said binding-screws are passed and screwed into said thickening-pieces, substantially as set forth.

2. In combination, a riffle-board and a riffle having its lower edge, when in position, in contact with the inner surface of the bottom of the riffle-board, said riffle being variably adjustable in such manner as to change the angle formed by the riffle and the inner surface of the riffle-board and provided with mechanism for locking the riffle in its adjusted position, substantially as set forth.

CHARLES F. PIKE.

Witnesses:

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JNO. STEELE.