

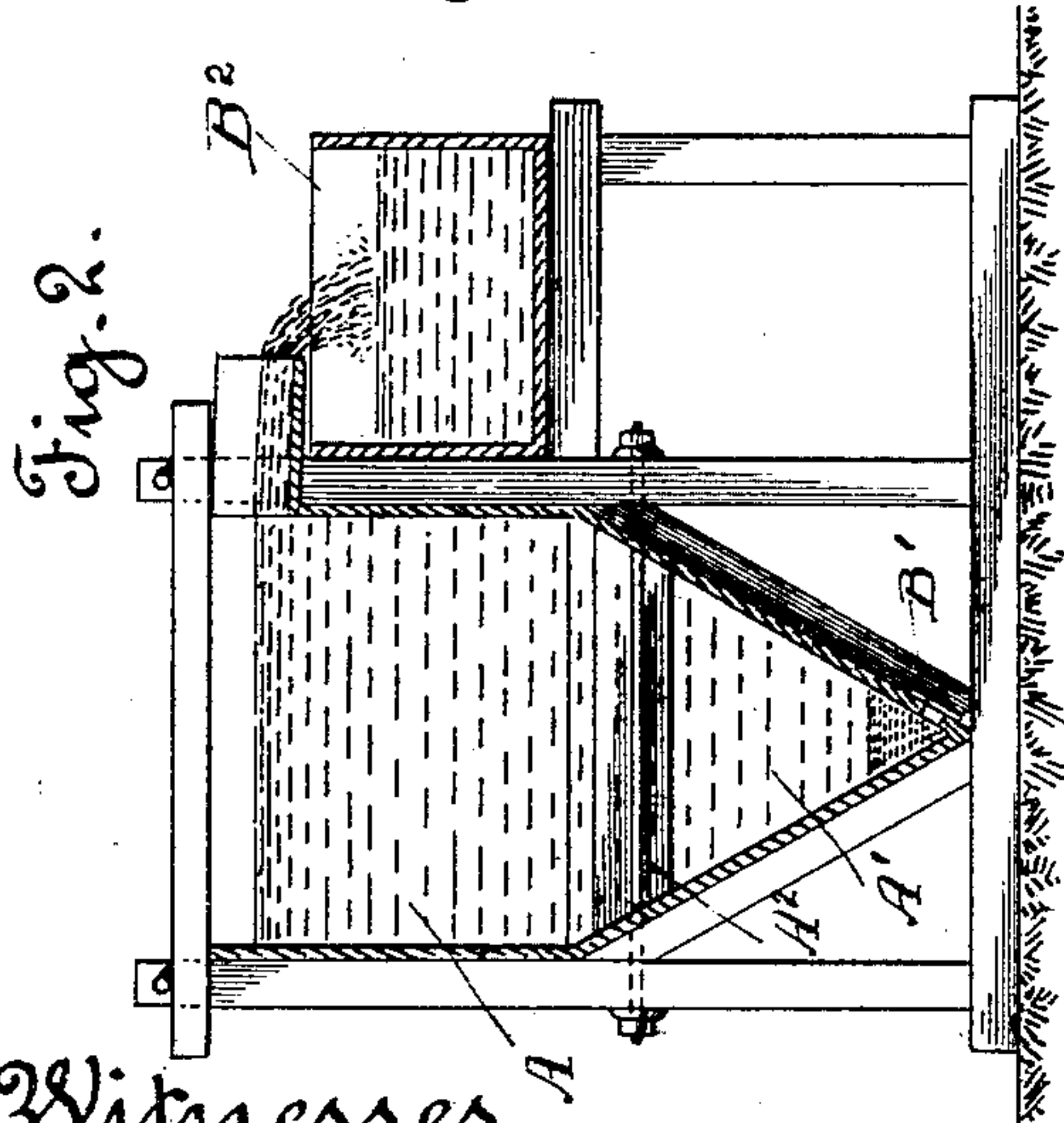
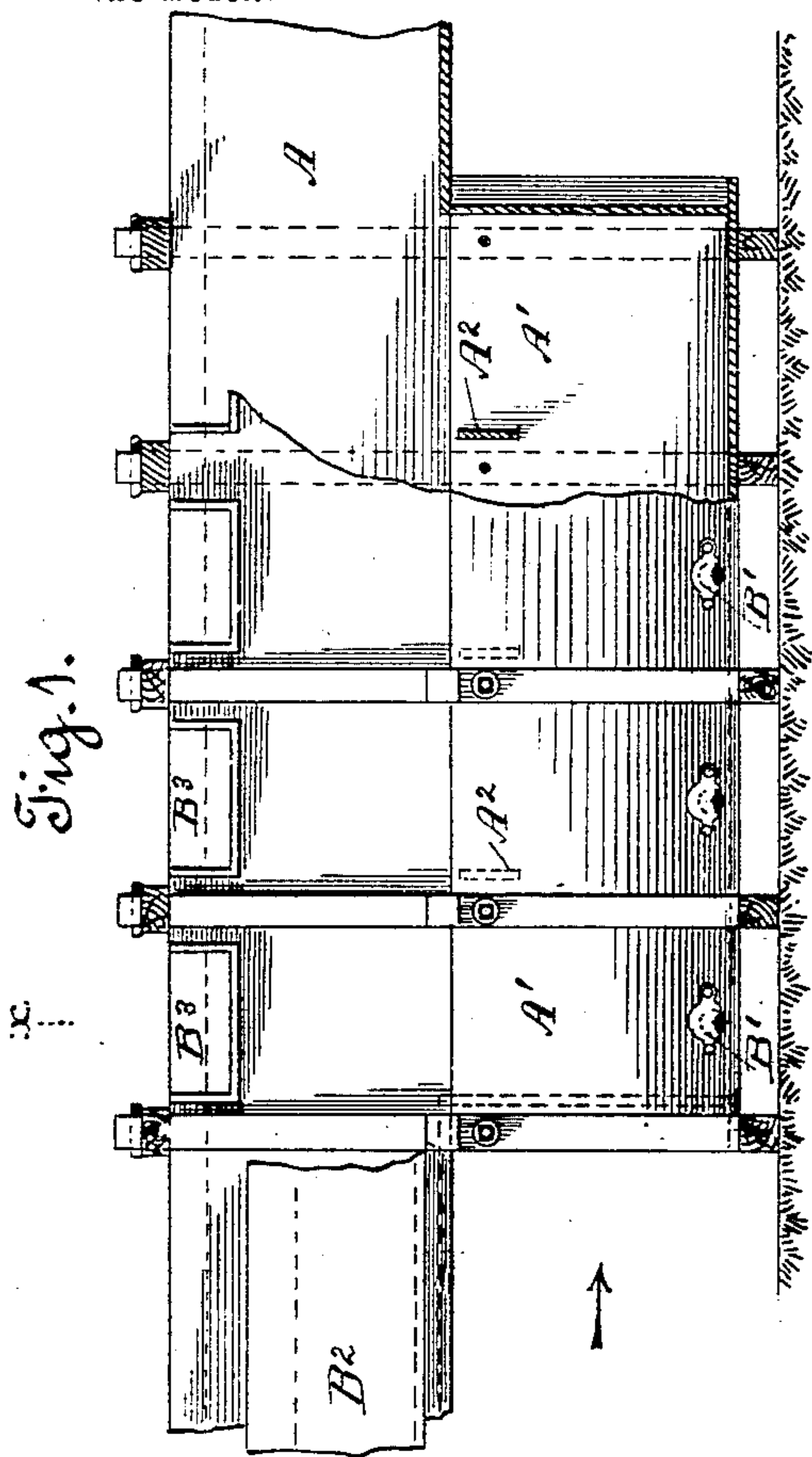
No. 630,971.

Patented Aug. 15, 1899.

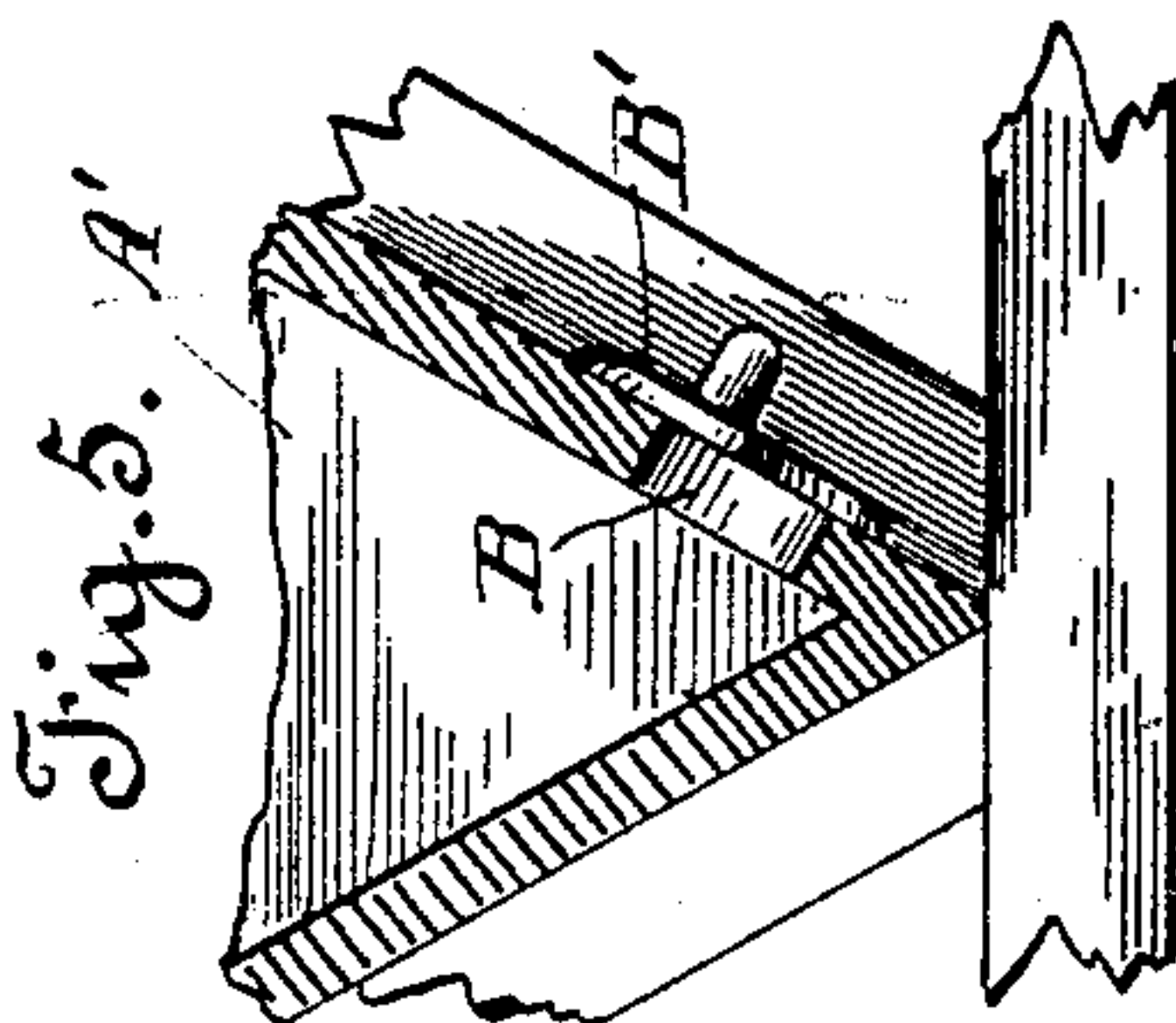
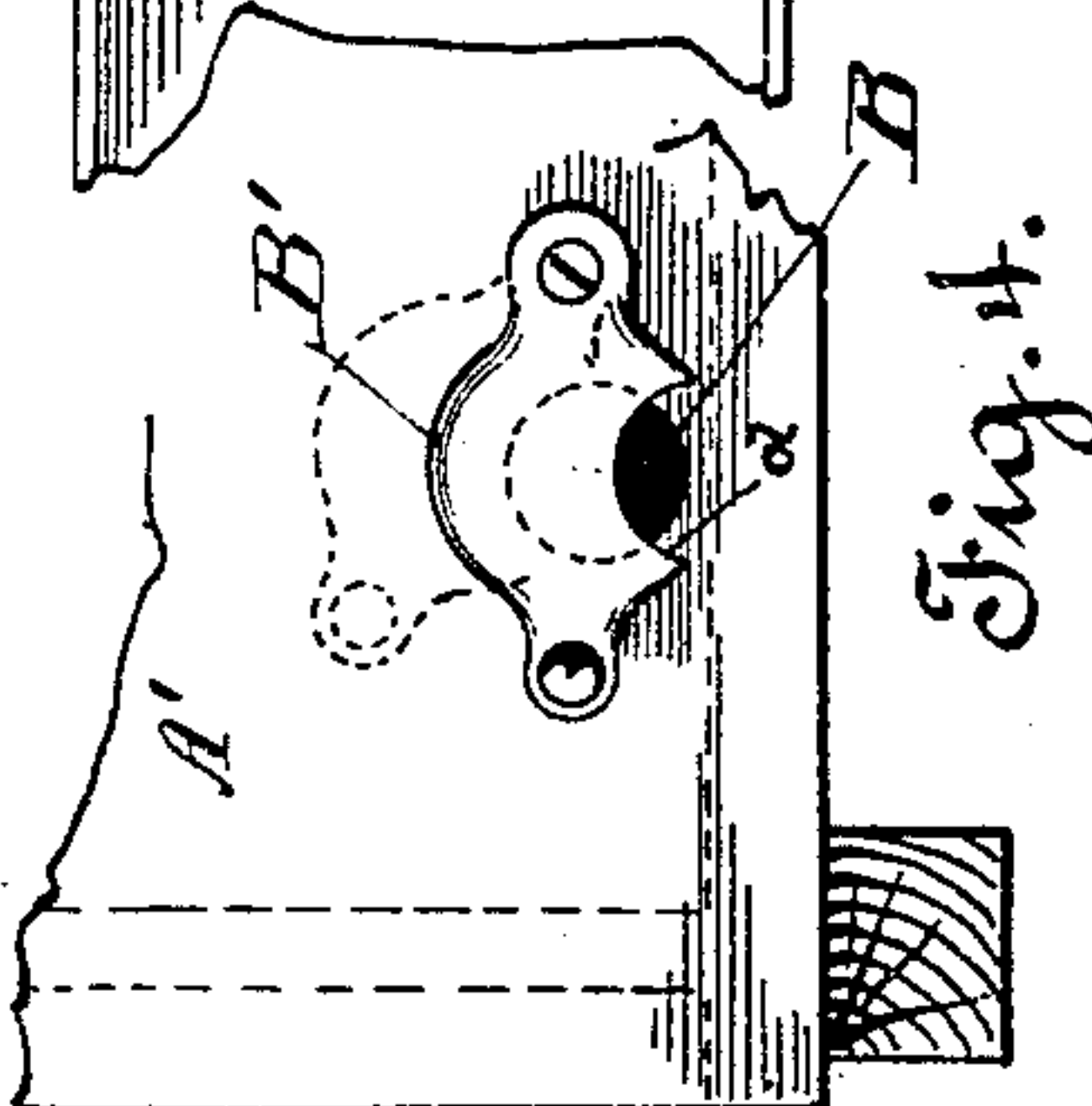
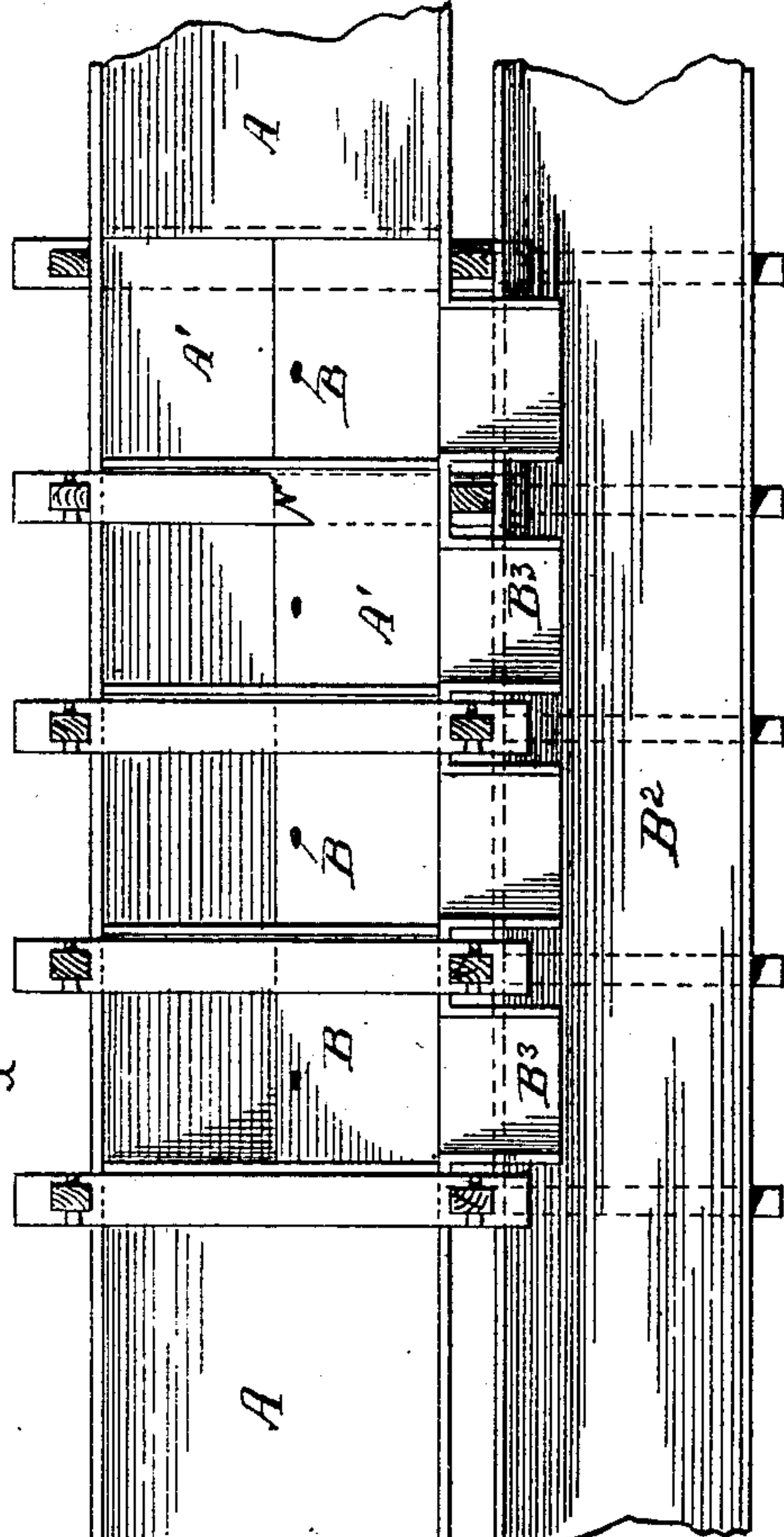
P. S. BUCKMINSTER.
SLUICE, RUNWAY, OR FLUME.

(Application filed Jan. 17, 1899.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

PRESCOTT S. BUCKMINSTER, OF SAN FRANCISCO, CALIFORNIA.

SLUICE, RUNWAY, OR FLUME.

SPECIFICATION forming part of Letters Patent No. 630,971, dated August 15, 1899.

Application filed January 17, 1899. Serial No. 702,423. (No model.)

To all whom it may concern:

Be it known that I, PRESCOTT S. BUCKMINSTER, a citizen of the United States, residing at the city and in the county of San Francisco and State of California, have invented certain new and useful Improvements in Sluices, Runways, or Flumes; and I do hereby declare that the following is a full, clear, and exact description thereof.

10 This invention relates to certain new and useful improvements in sluices, runways, or flumes for use in connection with the work of hydraulic or gravel mining, said invention consisting in the arrangement of parts and
15 details of construction, as will be hereinafter fully set forth in the drawings and described and pointed out in the specification.

The main obstacle to be overcome in hydraulic mining in certain localities is to provide against the debris, tailings, or worthless particles being carried by the utilized water into rivers or streams located in the vicinity where such mines are being worked. Consequently the aim of each owner of mines of
20 this character is to continue the work and successfully dispose of the tailings without permitting the same to enter the rivers or streams. It is due to the strict laws enacted regarding the handling of debris of this class
25 of mining and the inability to take care of the same that has caused many of the hydraulic mines to shut down or cease working. To prevent the tailings being carried with the water and deposited in the streams and rivers, the attempt has been made, with more or
30 less success, to impound the same by building heavy dams which obstruct the flow of water in order to catch and retain the debris or tailings. This is not only exceedingly expensive, but in many cases does not produce the desired result. However, the expense alone renders such plan impossible to many owners of mines of this nature.

45 The object of my invention is to so arrange the flume used to carry off the utilized water that the tailings or worthless material carried thereby will be diverted from the body of flowing water and deposited at points alongside of the flume or water-runway, and
50 to this end the sluice, runway, or flume is constructed or provided with one or more settling or receiving chambers into which the

material or debris carried by the flowing body of water will settle by specific gravity at points throughout the length of the said flume, each receiving or settling chamber being provided with means which permits of the continual withdrawal of the settled or deposited material.

In order to comprehend the invention, reference must be had to the accompanying sheet of drawings, forming a part of this application, wherein—

Figure 1 is a side view in elevation of a portion of a flume, runway, or sluice, showing one of the settling chambers or depressions attached to the bottom thereof. Fig. 2 is a vertical sectional view, in end elevation, on line *x x*, Fig. 1, viewed in direction of arrow. Fig. 3 is a top plan view. Fig. 4 is a broken side view of one of the settling-chambers, illustrating one of the outlet-gates partly closed; and Fig. 5 is a vertical cross-sectional detail view, partly broken, of one of the settling-chambers.

75 In the drawings the letter A is used to indicate an ordinary sluice, runway, or flume, through which the material is carried by the flow of a body of water passing therethrough. At certain points in the length of the flume, sluice, or water-runway the bottom thereof is cut away or removed for a distance of, say, about one hundred feet, more or less, as desired, and below said cut-away portion is arranged a V-shaped settling tank, chamber, or receiver A'. As the water carrying the debris or tailings of the mined or excavated material is conveyed through the flume, sluice, or runway the same flows into and fills the settling-chamber or receiver A', and the material having a greater specific gravity than the water by which it is carried will settle or be deposited within the various chambers or receivers arranged at points throughout the length of the flume, sluice, or runway. It is
95 essential that provision be made to check the current or force of flowing water at such points, else the undercurrent of water flowing through the receivers or settling-chambers will be of such force as to carry the material entering therein from within the same back into the flume, sluice, or runway proper. To prevent such occurring and create still water within the said receivers or settling-

chambers, so that the heavier material may have ample time to settle and be deposited therein, a series of cross-strips A^2 are arranged a short distance apart at the top of the said receivers or settling-chambers. In fact, these spaced cross-pieces, which are set edgewise, may be said to constitute a slatted bottom for the runway, chute, or flume at its cut-away points, inasmuch as they are arranged at the top of the receiving or settling chambers and extend throughout the entire length thereof. These cross-pieces A^2 are preferably arranged a slight distance below the level of the sluice, runway, or flume bottom proper and serve to prevent the friction of the flowing water producing a current through the settling-chambers or receivers. The cross-pieces thus break the current of water at such points and insure still water within the said receivers or settling-chambers.

The material conveyed by the body of water into the receiving or settling chamber settles therein owing to specific gravity, and is thus checked and "impounded," so to speak, at such points below the runway or sluice.

Near the bottom of each receiving or settling chamber A' , I provide a series of outlet-openings B , which are controlled by the swinging gates B' , pivoted to one side of the said settling-chambers. The material deposited within the said receiver or chamber escapes through these outlet-openings by reason of the pressure of the retained water, although the outflowing column or stream of material is governed by the position of the gates B' . The lower portion or edge of each gate is cut away to correspond with the shape of the outlet-opening, as shown at a , so that while the gates B' are closed or shut down their full distance an outlet for the deposited material will always remain open, thus insuring a constant outflow of the separated tailings or debris. These receivers or settling-chambers are located at such points of the water-runway as will enable the escaping debris or tailings to flow into hollows, cañons, or similar places, which will receive the material flowing in a semiliquid condition from the receivers or settling-chambers. Thus the debris or tailings is not only diverted or separated from the flowing body of water, but discharged at such places along the water-runway as requires filling in. By separating the debris or tailings the main body of water may discharge into the rivers or streams without carrying the objectionable material therewith, hence enabling the resumption of hydraulic mining by the owners of such mines as are now closed by reason of the fact that the tailings of necessity are conveyed to the rivers or streams in the vicinity of such work.

As the water is carried past the settling-

chambers or receivers I deem it of advantage to gradually draw off the clear water. To this end an auxiliary flume B^2 is arranged alongside of the flume, sluice, or runway proper, connecting at such point where the water in the main flume runs clear or free of tailings. Communication is made between the flumes by means of the lateral branch connections B^3 , which are arranged at such height from the floor of the flume proper as will suffice to divert all of the flowing water except such as may be required to carry the fine sediment contained within the flume proper to a place of deposit. By such arrangement I am enabled to terminate the flume A at any point desired and return the clear or main body of water to its original channel freed of the debris.

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

1. The combination with a sluice, runway or water-flume having its bottom removed at certain points, of a receiving or settling chamber arranged below said sluice, runway or flume at said points, a series of cross-pieces interposed between the receiving or settling chamber and said sluice for checking the current and preventing an undercurrent, runway or flume, and of an outlet-opening formed in said receiving or settling chamber.

2. The combination with a continuous sluice, runway or flume having a portion of its bottom removed, of a receiving or settling chamber arranged below said sluice, runway or flume at the point where said bottom is removed, a series of pieces arranged transversely of said receiving or settling chamber below the level of the sluice-bottom for checking the current and preventing an undercurrent, and a gate-controlled discharge-opening for said receiving or settling chamber, substantially as described.

3. The combination with a sluice, runway or flume having a portion of its bottom removed, of a V-shaped receiving or settling chamber arranged longitudinally below the sluice, runway or flume at the point where said bottom is removed, a series of transverse pieces in said receiving or settling chamber for checking the current and preventing an undercurrent, a controlled discharge-opening in said receiving or settling chamber an auxiliary flume arranged beside the main flume, and a discharge from the upper part of the main flume to the auxiliary flume, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 11th day of January, 1899.

PRESCOTT S. BUCKMINSTER.

Witnesses:

N. A. ACKER,

WALTER F. VANE.