

(No Model.)

C. A. CHRISTENSEN.
SLUICE BOX.

No. 577,356.

Patented Feb. 16, 1897.

Fig. 1.

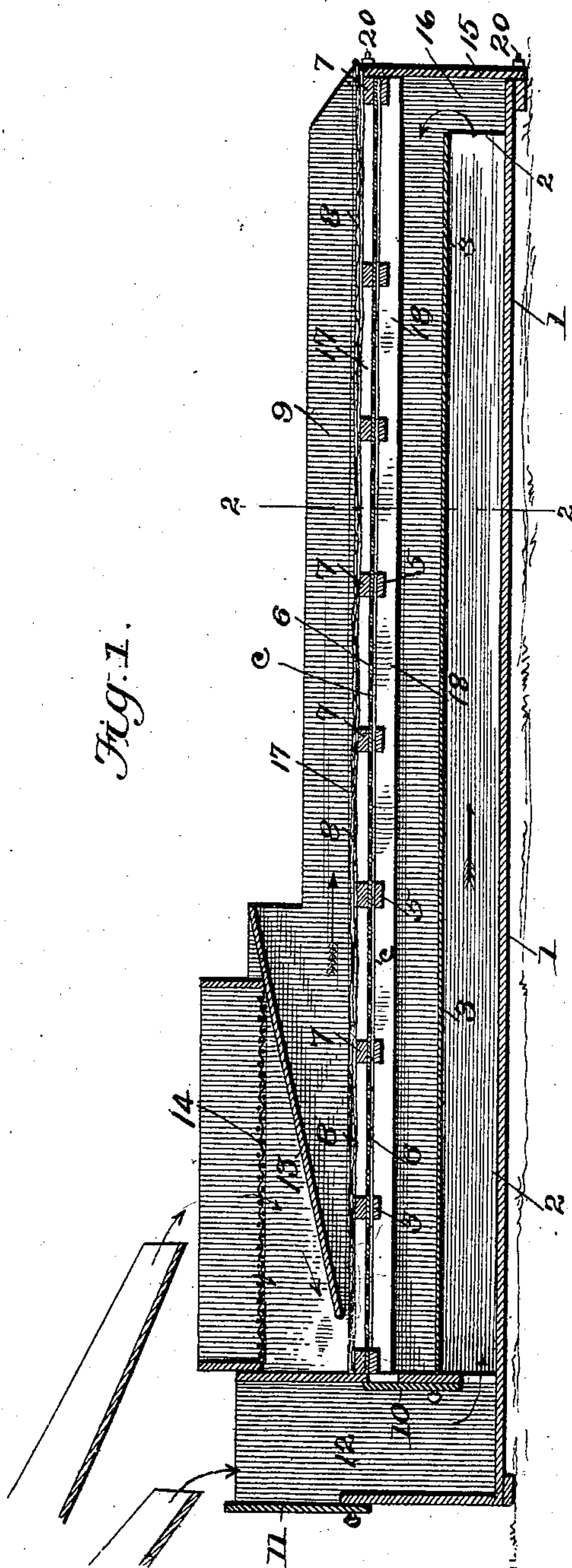
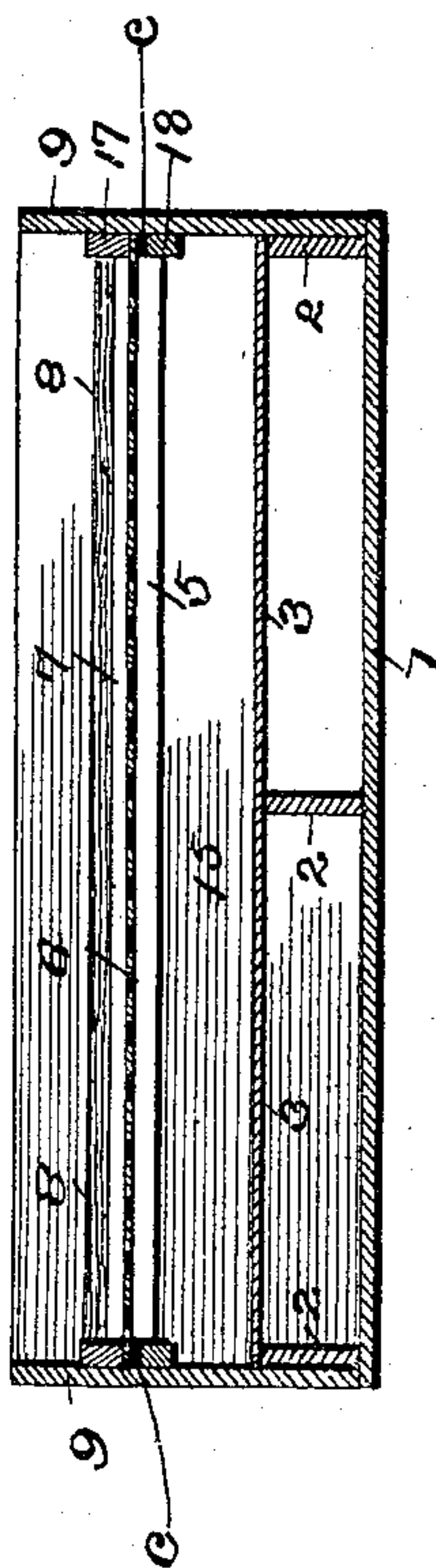


Fig. 2.



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SLUICE-BOX.

SPECIFICATION forming part of Letters Patent No. 577,356, dated February 16, 1897.

Application filed August 14, 1896. Serial No. 602,771. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOFFER A. CHRISTENSEN, of Oretown, in the county of Tillamook and State of Oregon, have invented a new and useful Improvement in Sluice-Boxes, of which the following is a specification.

The object of my invention is to provide an improved sluice-box for saving the fine gold which is mixed with dirt and sand; and it consists in the peculiar construction and arrangement of box whereby two currents of water are employed for disintegrating the dirt and separating the gold from the sand and waste material, one of which currents is employed to carry the sand and gold along the surface of a gathering-bed of burlap or similar material, and the other of which currents is directed upward through the burlap surface to keep the commingled sand and gold stirred from beneath by a sort of boiling movement to promote the separation of the gold and facilitate the passage of the gold and sand along the burlap bed, as will be hereinafter fully described.

Figure 1 is a vertical longitudinal section of the sluice-box, and Fig. 2 is a vertical cross-section of the same on the line 2 2.

In the drawings, 1 is the bottom of the box, and 9 its sides. In the bottom of the box are three longitudinal and parallel strips 2, one in the middle and one on each side, which support a sheet-iron plate 3, arranged upon the top of the same and extending from side to side of the box, but not extending quite the full length of the same. This iron plate divides the bottom part of the box from the upper part and extends from a receiving-chamber 12 at one end to near the tail of the box 15 at the other end, leaving a space 16 at this end through which water from below the plate 3 may pass to the space above it.

Just above the plate 3 in parallel position is a horizontal perforated metal plate 6, extending from side to side of the box and held in place between upper cross-bars 7 and lower cross-bars 5, which latter are mortised into longitudinal strips 17 18, attached to the side of the box by screws. Between the perforated plate 6 and the side strips a layer or strip of cloth *c* or other packing is laid to make a water-tight joint. The holes in the

plate 6 are about one inch apart, except the parts which lie between the cross-pieces 5 and 7, which are not perforated.

Upon the top of the strips 7 is smoothly stretched a layer of burlap 8 or other fabric of loose mesh adapted to catch the fine gold and yet permit water to pass up through it.

The feed end of the box is made higher than the other and contains a wire screen 14 and an inclined chute-board 13 immediately below it that serve to divide or disintegrate the gold-bearing dirt and feed it to the upper end of the burlap bed. A vertically-sliding gate 10 serves to cut off the receiving-chamber 12 from the space above or the space below the partition-plate 3, while a gate 11, sliding on the side of chamber 12, serves to regulate the head of water in said chamber. The tail-gate 15 is detachable and is held in place by bolts or screws 20.

The operation of my improved sluice-box is as follows: A stream of water is run into chamber 12 and is allowed to fill the space in the sluice-box both below and above the plate 3, passing under gate 10 and upwardly through opening 16. Any sand or other impurities which the water may carry are deposited on the bottom 1. The water, under a head of pressure regulated by the gate 11, rises through the perforated plate 6 in a great multitude of little jets that impinge against and pass through the burlap bed by a sort of boiling action. The gold-bearing dirt or sand is put into the sieve 14, where the gravel and rock are retained and removed from time to time. A stream of water is also at the same time delivered onto the sieve with the gold-bearing dirt, and, washing through the same, passes onto the inclined chute 13 and is delivered upon the front end of the burlap bed 8, and it passes along on the surface of the same with the gold and sand. The gold being the heavier is entangled among the fibers of the burlap and held thereby, and some of it drops through upon the perforated plate and through the latter onto the plate 3, while the sand, being lighter, is carried along by the water and is discharged over the tail end of the sluice-box. As the gold, sand, and water are distributed over and carried along the surface of the burlap the other current of water, introduced

from underneath, rises through the numerous holes in plate 6, and, passing through the burlap with a boiling action, causes such agitation of the gold and sand as to facilitate the separation of the same from their different specific gravities, and thus secures a much more thorough and economical separation and recovery of the gold. As the water from below rises it stirs and keeps the sand loose, while the upper current moves it along and works it off rapidly.

The water in chamber 12 should be from two to six inches above the level of the water on the burlap in order to give the requisite pressure, and this head is regulated by the gate 11 according to the specific gravity of the dirt handled. The force of the water coming through plate 6 must be strong enough to keep any great amount of sand from falling through the holes, but must not be strong enough to keep the gold from sinking through the burlap and a part going through the holes and on the plate 3.

By stopping the flow of water into the sieve 14 and taking out tail-gate 15 any deposits in the form of impurities from the water used in chamber 12 can be easily and conveniently sluiced off, and by lowering gate 10 and arranging a chute under the tail end of plate 3 the deposits on top of plate 4 can be sluiced out and saved for the recovery of the gold.

This sluice-box is a great improvement in mining, and is especially adapted to working black sand and all other deposits carrying finely-divided gold. By this device I am enabled to work a relatively larger quantity of sand than heretofore and save also a larger per cent. of gold.

In practice the boxes may be built of any size and proportions; but I prefer to make them not less than ten feet long and of a width adapted to the amount of water available.

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

1. A sluice-box comprising a casing having a perforated horizontal diaphragm 6, supporting cross-bars 5, 7, surmounted by a fibrous bed, an inlet provided with a screen for introducing the gold-bearing dirt and water to the top of the fibrous bed, and a receiving-chamber for a second inflow of water communicating with the space below the perforated

diaphragm and rising to a height above the perforated diaphragm to supply a head of pressure substantially as and for the purpose described.

2. A sluice-box comprising a casing having a perforated horizontal diaphragm 6, supporting cross-bars 5, 7, surmounted by a fibrous bed, a subjacent imperforate partition-plate 3 having an opening 16 at its tail end, and an adjustable gate 10 at its front end, an inlet provided with a screen for introducing the gold-bearing dirt, and water to the top of the fibrous bed, and a receiving-chamber for a second current of water arranged at the front end of the box and communicating through the gate with the lower part of the box and rising above the level of the perforated diaphragm to supply a head of pressure substantially as and for the purpose described.

3. The combination with the casing in a sluice-box; of a horizontal perforated metal plate, cross-bars arranged above and below the same, longitudinal bars connecting and supporting the ends of the cross-bars, and a fibrous bed arranged upon the top of the upper bars substantially as and for the purpose described.

4. The combination in a sluice-box, with a horizontal gold-gathering fibrous bed; of a horizontal partition-plate arranged beneath the same and dividing the space into an upper and lower chamber with a communicating opening at the tail end, a receiving-chamber at the front end, and a gate arranged between the receiving-chamber and the upper and lower chambers of the sluice-box, and adapted to alternately throw these chambers into communication with the receiving-chamber substantially as shown and described.

5. The sluice-box comprising bottom strips 2 carrying on their upper edges the horizontal partition-plate 3 with opening 16 and adjustable gate 10, the perforated plate 6 with upper and lower clamping-bars with fibrous bed above them, the inlet for the sand and water having screen 14 and chute 13, and the receiving-chamber 12 with adjustable gate 11 substantially as and for the purpose described.

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Witnesses:

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