

C. J. EVANS.
 BLACK SAND AND GOLD SAVING MACHINE AND UNDERCURRENT.
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1,032,746.

Patented July 16, 1912.

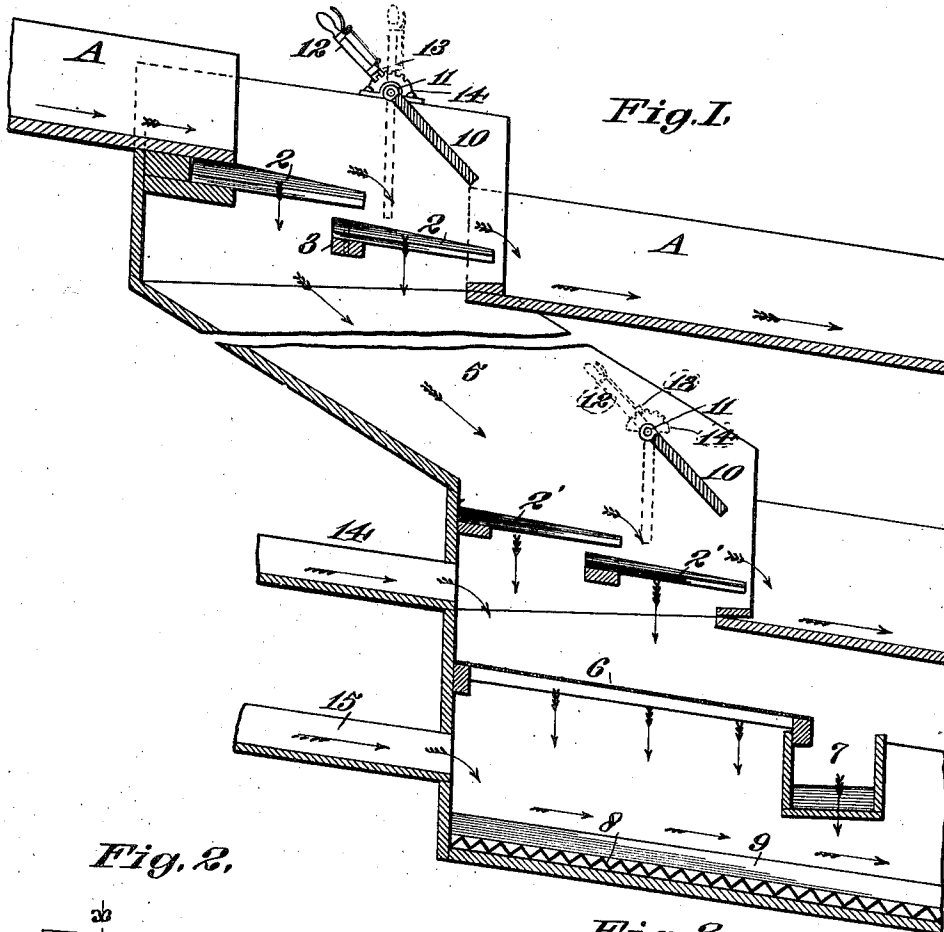


Fig. 1.

Fig. 2.

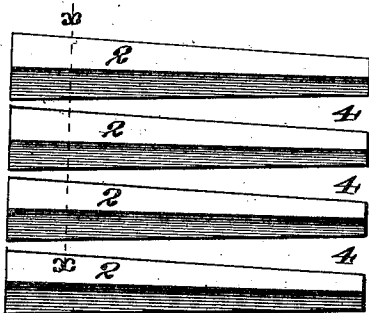


Fig. 3.

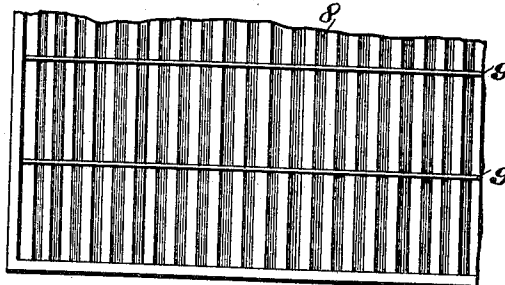


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES J. EVANS, OF SAN FRANCISCO, CALIFORNIA.

BLACK-SAND AND GOLD SAVING MACHINE AND UNDERCURRENT.

1,032,746.

Specification of Letters Patent.

Patented July 16, 1912.

Application filed March 13, 1911. Serial No. 614,023.

To all whom it may concern:

Be it known that I, CHARLES J. EVANS, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Black-Sand and Gold Saving Machines and Undercurrents, of which the following is a specification.

This invention relates to an apparatus for saving gold, and particularly pertains to a gold saving attachment for sluice boxes, such as are employed in placer and dredger mining operations, for separating mineral bearing sands from the aggregates.

It is the object of this invention to provide a means for separating fine materials from coarse materials, and for directing the fine materials over amalgamating riffles so as to separate the mineral values from the worthless aggregates.

The purpose of this invention is to provide a device which may be readily attached to a sluice box for the separation and segregation of mineral particles, which is not liable to become clogged or choked, and which may be easily cleaned and repaired when necessary.

A further object is to provide an apparatus of the above character which is simple in construction and inexpensive in manufacture and installation.

The invention consists of the parts and the construction and combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings in which—

Figure 1 is a vertical section of the invention as applied. Fig. 2 is a detail plan view of the segregating bars. Fig. 3 is a plan view of a part of the riffle employed in the invention. Fig. 4 is a sectional view of the segregating bars on the line X—X, Fig. 2.

In the drawings A represents a sluice box, which may be of any suitable construction, and supported and arranged in any desired manner, and to which a volume of water and aggregates may be delivered as ordinarily practised in hydraulic or placer mining.

My present invention resides in disposing a series of superposed or stepped-up rows of segregating bars or teeth 2 at any convenient point in the bottom of the sluice A, as shown in Fig. 1. In this case two rows of teeth are shown; the upper row being mounted beneath the bottom of the end of a section

of the sluice A and projecting a distance therebeyond. The teeth 2 of the lower row are mounted upon a laterally extending supporting member 3, with their upper ends disposed beneath the outer ends of the teeth 2 in the upper row, and with their lower ends projecting over the bottom of the upper end of the next section of the sluice A. These segregating teeth 2 are peculiarly shaped to adapt them for the purpose to which they are put, viz., that of separating and grading the aggregates which are delivered to the uppermost sluice A, and which are caused to travel across the teeth 2 by means of the flow of water in the sluice A; the teeth being V-shaped on their upper face and tapered from their inner to their outer ends to form gradually diverging slots or spaces 4 between adjacent teeth, as shown in Fig. 2. This is an important feature of this invention inasmuch as, by this formation of the teeth 2, there will be no tendency of boulders becoming wedged in the space between the teeth which would clog the teeth and prevent the successful operation of the apparatus.

Disposed beneath the segregating teeth 2 is a sub-sluice 5 in which the finer materials passing between the teeth 2 are received. This sub-sluice is provided with an opening in its bottom, at any convenient point, in which opening a second series of superposed rows of segregating teeth 2' are arranged in a like manner to the teeth in the sluice A; the teeth 2', however, being smaller or closer together so as to grade the materials delivered to the sub-sluice 5. The materials passing between the teeth 2' are delivered to an inclined screen 6 arranged therebeneath, which screen is preferably formed of burlap, or other coarse fabric, which screen further grades the materials, the coarsest of which pass over the lower edge of the screen into a chute 7, and the finest pass through the screen 6 and drop upon a series of riffles 8 where they are acted upon by quicksilver in the usual manner. These riffles are separated into rows by means of partitions 9 so as to confine the amalgams to a limited space and prevent their collection along the sides of the amalgamating box as would be the tendency if the apparatus is mounted on a barge or other structure having a rocking movement.

The operation of the invention is apparent from the foregoing description, it being

seen that the aggregates will be graded by the several series of segregating teeth 2—2'; and the fine mineral carrying particles will be further separated by the screen 6; and that the free particles of mineral will be taken up by the quicksilver on the riffles 8 in the usual manner. The materials delivered to the chute 7, as well as those passing over the riffles 8, may be subjected to further treatment as desired.

As a means of causing a back flow of water beneath the outer ends of the segregating teeth 2—2', a deflector consisting of a flat plate 10 mounted on a rock-shaft 11 is disposed across the sluices A and 5, this plate 10 being designed to be extended into the path of the current flowing through the sluices in any suitable manner, as indicated in dotted lines in Fig. 1, thereby acting to impede the forward movement of the stream and directing it back between and under the outer ends of the teeth 2—2'.

A hand lever 12 is mounted on each of the rock-shafts 11, exterior of the sluices A—5, by means of which the rock-shafts 11 may be actuated; a pawl 13 on the levers 12 being adapted to engage a toothed segment 14 to retain the rock-shaft 11 and the plate 10 in any desired position.

As a means of insuring a sufficient supply of water being delivered to the screen 6 and to the riffles 8, separate conduits 14—15 are provided, to which water may be supplied from any suitable source.

It is obvious that while I have shown but two sets of the segregating teeth 2—2', that as many sets may be employed as may be found desirable or as conditions may require.

It is desirable, in arranging the superposed rows of segregating teeth 2—2', that the outer ends of the teeth be spaced above the teeth or chute therebelow, a distance

equal to the space between the ends of adjacent teeth, and that the length of the overlap of the teeth be the same dimension so that there will be no possibility of the coarser materials being carried back under the edges of the teeth.

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

1. In an apparatus of the character described, the combination with a sluice having a bottom opening and overlapping, spaced screen sections, in said opening, of a pivoted deflector mounted on the sluice above said screen sections and adapted to cause a current of water to flow back through the space between the overlapping ends of the sections, and means for holding the deflector at various angles to the vertical.

2. In an apparatus of the character described, the combination with a sluice having an opening in the bottom thereof, of a series of superposed rows of segregating teeth disposed beneath the opening in said sluice, said teeth being formed with V-shaped upper edges and tapered from their inner to their outer ends to form diverging spaces therebetween, a pivoted deflector mounted on said sluice adjacent the outer ends of said teeth by means of which a current of water may be caused to flow back under and between said teeth, and means for holding the deflectors at various angles to the vertical.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES J. EVANS.

Witnesses:

JOHN H. HERRING,
ELI HARTER.