

(No Model.)

E. S. BENNETT.

VIBRATING SLUICE BOX FOR TAILINGS ELEVATORS.

No. 539,783.

Patented May 21, 1895.

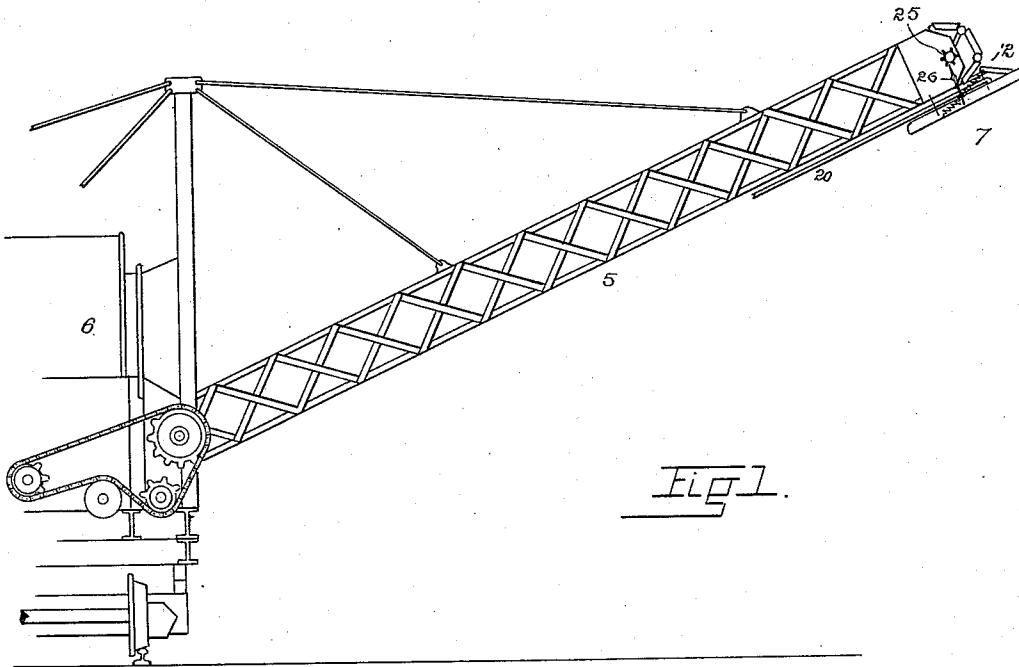


Fig. 1.

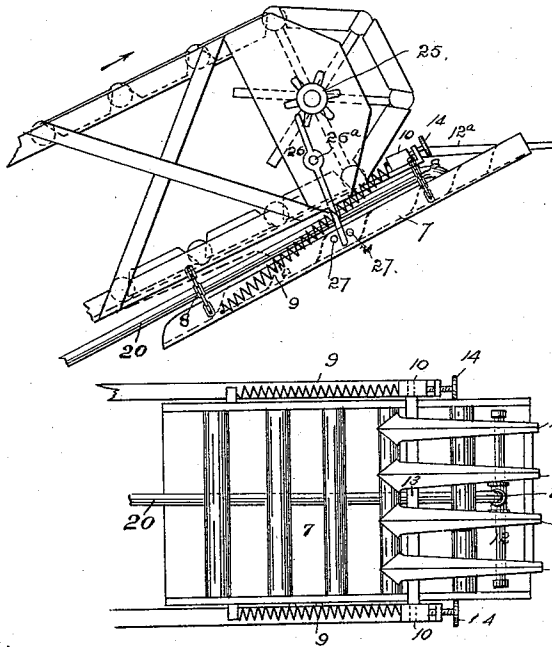


Fig. 2.

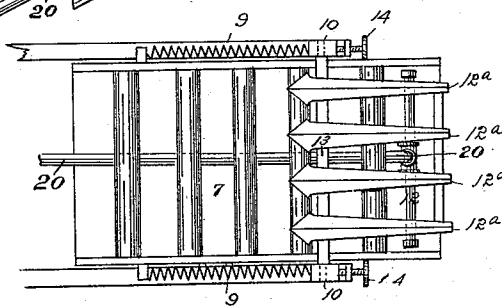


Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ERASTUS S. BENNETT, OF DENVER, COLORADO.

VIBRATING SLUICE-BOX FOR TAILINGS-ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 539,783, dated May 21, 1895.

Application filed June 30, 1894. Serial No. 516,211. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS S. BENNETT, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Vibrating Sluice-Boxes for Tailings-Elevators; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in means for saving the large particles or nuggets of gold which are too coarse to pass through the screen of the separating drum belonging to my combined dredging and amalgamating plant. The material to be treated is first passed through this drum, whose function is to remove the coarse rocky gangue, while the finer material containing the mineral is allowed to pass through the screen of the drum to the amalgamating tank. If it should happen that there are nuggets of gold too large to pass through the screen of the drum, they will pass with the gangue into the tailings elevator.

My present invention is attached to the discharge extremity of this elevator; and its object is to catch these particles of gold which have escaped with the tailings. The attachment consists of a flexibly-supported riffled box or sluice having a grating attached to its upper extremity and hinged to the track of the elevator, whereby as the tailings fall upon the grating, the sluice is made to vibrate sufficiently to effect a separation between the gangue and the nuggets, which fall through the bars of the grating. Hence, these nuggets are caught in the vibrating box or sluice.

Having thus outlined the main features of the invention, as well as its function, I will now proceed to describe the same in detail, reference being had to the accompanying drawings in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side eleva-

tion of the tailings-elevator with my improvement attached. Fig. 2 is a similar view of the outer extremity of the elevator, the improvement being shown on a larger scale. Fig. 3 is a top or plan view of the same.

Similar reference characters indicating corresponding parts in these views, let the numeral 5 designate the tailings elevator suitably attached to the framework or platform of the plant, and adapted to receive the material discharged from the separating drum 6.

To the outer extremity of the elevator frame or track is attached a trough or sluice box 7 which is hung on the elevator by means of chains, pivoted straps or other suitable supports 8 adapted to permit the necessary vibration of the box. This box is provided with riffles and further attached to the frame or track of the elevator by coil or other suitable springs 9. The upper extremities of these springs may be movably attached to the carrier frame, while their lower extremities are made fast to the sides of the sluice box. The tension of these springs should be such as to normally support the box approximately in such a position that the supports 8 occupy a position at right angles to the length of the elevator frame or track, thus allowing the box ample scope for vibration as the rocky gangue falls upon the grating 12. This grating is preferably composed of bars 12^a which are attached at one extremity to a shaft 13, the opposite extremity resting on the upper extremity of the sluice box. This shaft may be journaled in the boxes 10, which are adjustable by means of screws 14. This adjustment of the boxes is for the purpose of regulating the tension of the springs 9.

From the foregoing description, the operation of my improvement will be readily understood.

All the material discharged by the elevator falls upon the grate bars 12^a which are so separated as to allow the largest nugget of gold to pass through into the sluice box. As the rocky gangue falls upon the bars, the sluice box is subjected to a vibratory movement resulting from the downward movement imparted by the falling gangue, and the return movement following the recoil of the springs.

This vibration effects the separation of the gold or mineral from the gangue, the valuable portion being retained by the riffles, while the gangue passes over the tail or lower extremity of the box.

Ordinarily there is sufficient water accompanying the gangue, and carried by the elevator, to supply the sluice box with the water required for the purposes of concentration, or the separation of the nuggets from the gangue. When, however, this is not sufficient, said supply may be supplemented from a water pipe 20 connected with any suitable supply source. (See Fig. 1.)

Sometimes the material contains no stones large enough to give the necessary vibration to the trough or sluice 7. In this case, other means must be resorted to, to produce this vibration. In the drawings, I have shown a cam 25 attached to the revolving shaft of the carrier, or elevator wheel, and adapted to engage a lever or tappet 26, one arm of which occupies a position in the path of the revolving cam, while the other arm projects between two lugs 27 fast on one side of the sluice box. The tappet-lever is fulcrumed at 26^a on the carrier or elevator frame.

The operation of the mechanism will be understood at a glance.

Having thus described my invention, what I claim is—

1. The combination with the tailings elevator, of a concentrating box or sluice movably hung upon the discharge extremity of the elevator, said box being supported beneath the elevator and normally occupying a position parallel or approximately parallel therewith, grate bars hinged to the outer extremity of the elevator and resting upon the outer end of the concentrating box, and springs attached to the box at one extremity and to the elevator at the opposite extremity, the tendency of the springs being to support

the box in its normal position, substantially as described.

2. The combination with a tailings elevator, of a concentrating box or sluice movably supported on the outer extremity of the elevator and projecting beneath the same, said box occupying a position parallel or approximately parallel with the elevator, a shaft journaled in adjustable boxes supported on the elevator frame, grate bars attached to this shaft and resting upon the outer extremity of the concentrating box, and springs attached to the box at one extremity and to the movable journal boxes at the opposite extremity, substantially as described.

3. The combination with the tailings elevator, of a riffled concentrating box or sluice movably mounted on the elevator and projecting beneath as well as beyond the outer extremity of the same, said box occupying a position parallel or approximately parallel with the elevator, movable journal boxes mounted on the elevator frame, adjusting screws connected with said boxes, a shaft whose extremities engage said journal boxes, grate bars attached to said shaft and resting upon the outer extremity of the concentrating box, coil springs attached to the concentrating box at one extremity and to the movable journal boxes at the opposite extremity, a tappet lever fulcrumed on the elevator frame and engaging a bearing on the sluice box, and a cam also mounted on said frame and engaging the lever, whereby the necessary vibratory movement is communicated to the sluice or concentrating box, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

ERASTUS S. BENNETT.

Witnesses:

C. F. SCHOFIELD,
CHAS. E. DAWSON.