

No. 836,553.

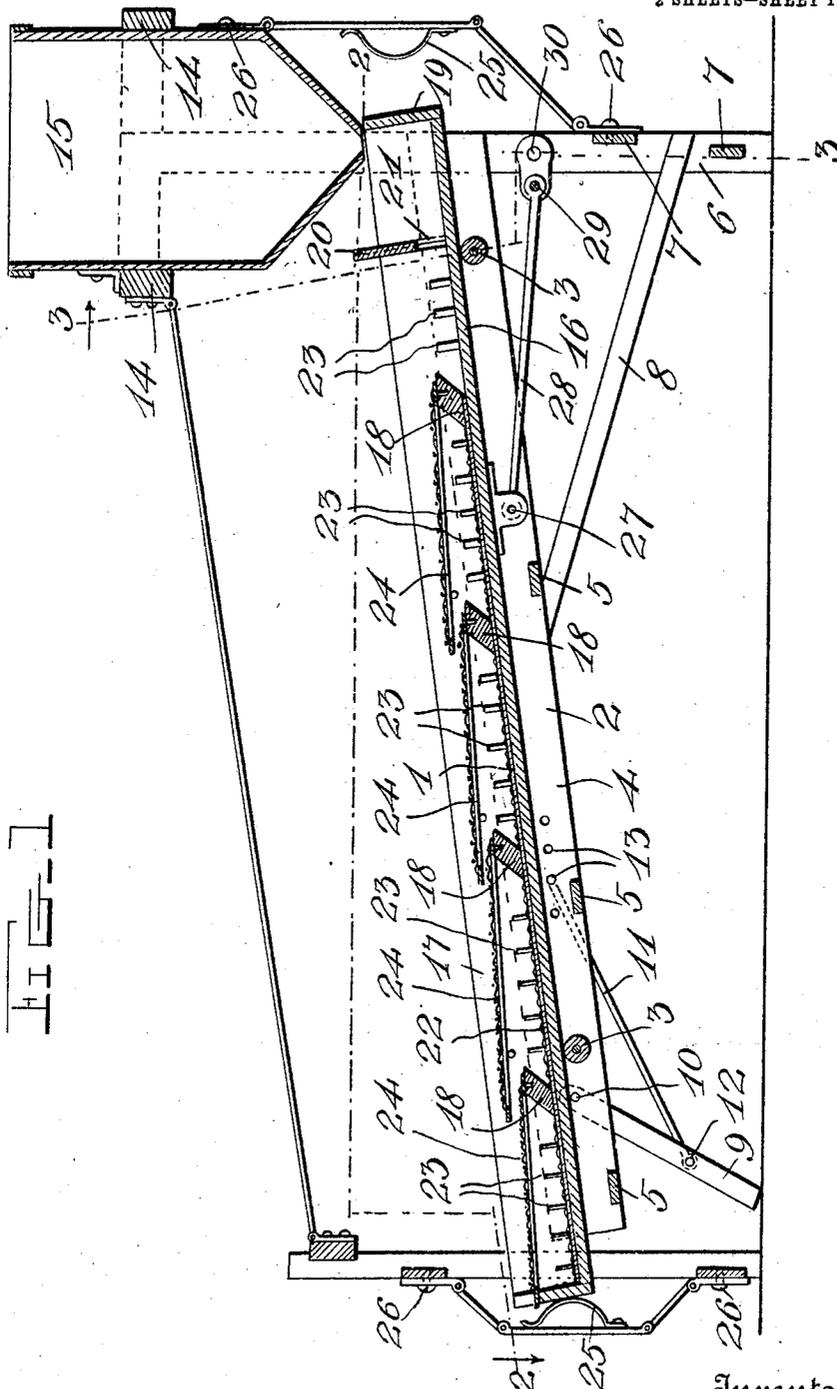
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A. J. BAUER.

ORE SEPARATOR.

APPLICATION FILED DEC. 7, 1905.

2 SHEETS—SHEET 1.



3-3

Witnesses

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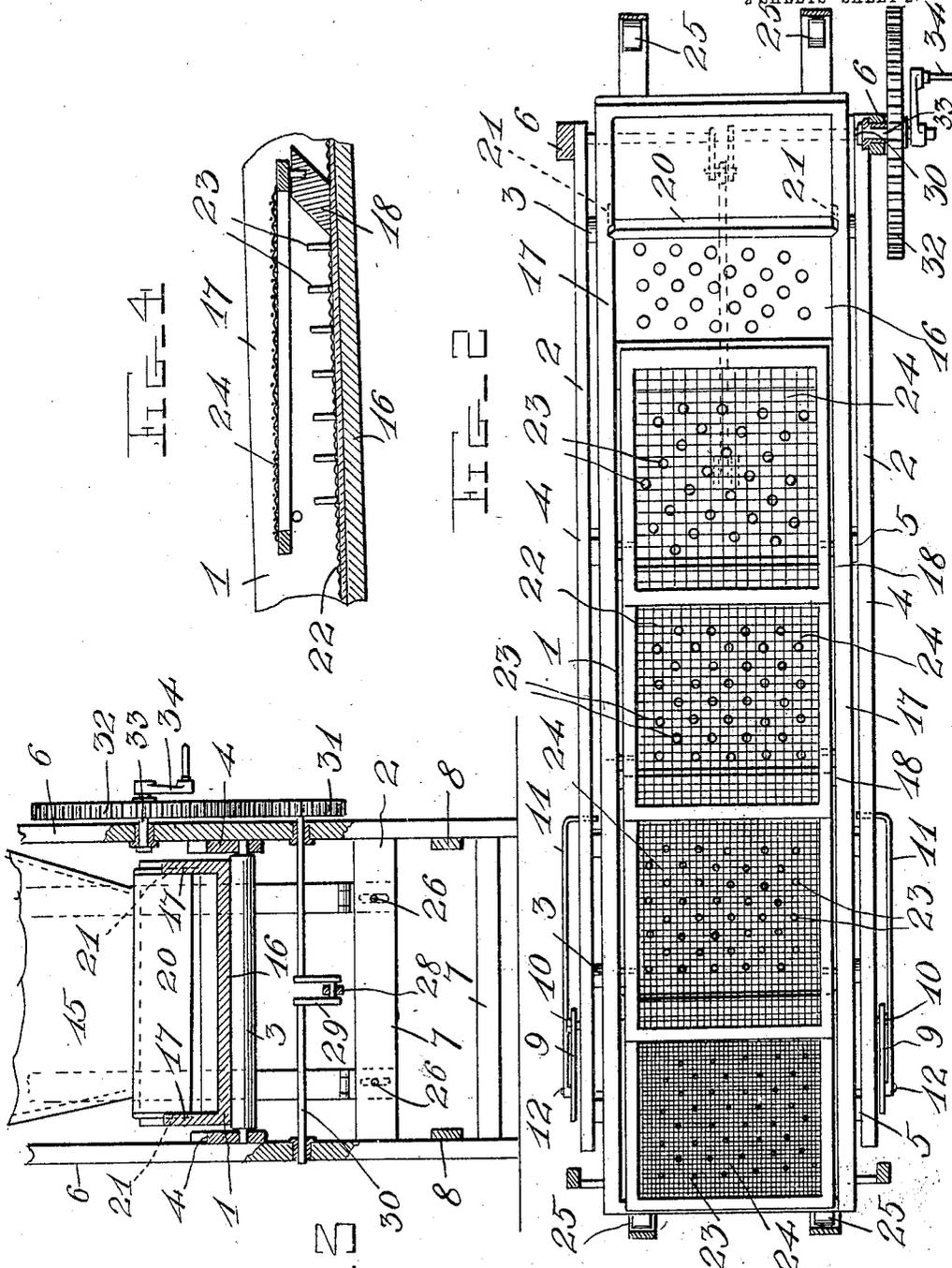
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2 SHEETS—SHEET 2



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No. 836,553.

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To all whom it may concern:

Be it known that I, ADAM J. BAUER, a citizen of the United States, residing at Collinsville, Cherokee Nation, Indian Territory, have invented certain new and useful Improvements in Ore-Separators; 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.

My invention relates to improvements in means used by the dry process in separating placer-gold from dirt and also separating gold from quartz-rock after it has been crushed.

One object of the invention is to provide a machine of this character with a longitudinally-reciprocating or oscillating sluice-box having means whereby the coarse dirt or rock will be deflected out of the same without being permitted to pass down over the bottom of the box and the riffles thereon with the fine dirt containing the gold.

Another object of the invention is to improve and simplify the construction and operation of machines of this character, and thereby render the same more efficient and durable in use and less expensive to manufacture.

With the above and other objects in view my invention consists of certain novel features of construction, combination, and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view through an ore-separator constructed in accordance with my invention. Fig. 2 is a horizontal sectional view taken through the same on the plane indicated by the line 2 2 in Fig. 1. Fig. 3 is a vertical transverse sectional view taken on the line 3 3 in Fig. 1, and Fig. 4 is a detail view.

Referring to the drawings by numerals, 1 denotes a sluice-box or similar receptacle, which is mounted for endwise or longitudinal reciprocation or oscillation in a supporting-frame 2. As shown, the box 1, which is of rectangular form, has its flat bottom supported upon transverse rollers 3, which are journaled in the side bars 4 of the frame 2. These longitudinal bars 4 are connected by transverse bars 5 and are supported at their upper ends by vertical legs or uprights 6, connected together by suitable cross-bars 7 and to the sides 4 by diagonal braces 8. The

frame 2, which is mounted in an inclined position to cause the contents of the sluice-box to pass downwardly through the same, has its lower end supported by legs 9, which are here shown as being pivoted at their upper ends at 10 to the sides 4 and adjustably supported therefrom by diagonal brace-rods 11, the latter having their lower ends pivoted at 12 to the legs 9 and their upper ends adjustably engaged with the sides 4, as shown at 13. This adjustment of the legs 9 is provided for the purpose of raising and lowering the lower end of the frame 2 to permit the inclination of the sluice-box 1 to be varied; but it will be understood that any other suitable means may be provided for changing the inclination of the frame to effect this purpose. The upper end of the frame has mounted above it a horizontally-arranged support 14 for a feed box or hopper 15, the discharge-opening in the bottom of which is arranged above the upper end or head of the sluice-box 1, as clearly shown in Fig. 1 of the drawings.

The sluice-box 1 may be of any desired form and construction; but I preferably construct it with a flat rectangular bottom 16, having along its longitudinal edges vertical sides 17, which are connected at suitable points by transverse riffles 18. Any number of these riffles are provided, and they are preferably arranged in angular positions, as clearly shown in Fig. 1. The spaces at the head or upper end of the sluice-box between the uppermost riffle 18 and the head or end 19 of the box are divided into two compartments by a feed slide or gate 20. The latter is in the form of a transversely-extending vertically-disposed board or slide, which is mounted in suitable guides 21, provided upon the inner face of the sides 17 of the box, as clearly shown in the drawings. This feed board or gate 20 is adapted to be adjusted vertically to vary the space between its lower edge and the bottom of the box, and thereby regulate the feed or discharge of the material fed into the uppermost compartment of the box from the hopper 15. The gate or slide 20 may be supported in an adjusted position by its vertical engagement with the guides 21 or any suitable means may be employed for this purpose. The upper face of the bottom 16 of the box is preferably covered with ducking, fabric, or any other suitable material 22 which is coarse, so that it retards the movement of the fine material

passing over the same. In each of the compartments of the box between the adjacent riffles and between the uppermost riffle and the gate or feed-board 20 are provided agitating-pins 23. The latter, which may be in the form of screws, nails, or the like driven into the bottom 16, are arranged in zigzag or staggered relation, so that as the fine material passes through the box it will be agitated by striking these pins or pegs, and the gold will thereby be caused to settle upon the bottom of the box.

If desired, the pins or studs 23 in each succeeding group or compartment of the box may be of slightly less size than those in the next compartment above. In other words, the pins in the uppermost compartment may be very large or coarse and those in each succeeding compartment may be smaller and arranged closer together. In order to cause the coarse dirt and rocks to be thrown out of the box without passing downwardly through the same together with the fine material and gold, I provide above the compartments of the box inclined overlapping screens or sieves 24. Each of these screens, which are detachably or removably mounted, has its upper end supported upon one of the riffles 18 and its opposite end supported above the next adjacent riffle below and projecting beyond the same, so as to overlap the upper end of the next adjacent screen below. The effect of this arrangement of the screens is to cause the material which fails to pass through the screens after passing over the riffles upon which they are supported to pass over the screens successively until it rolls off of the lowermost one and falls from the sluice-box together with the waste material. The mesh of the uppermost screen 24, which is arranged above the compartment between the two uppermost riffles, is comparatively coarse, that of the next screen is a little finer, and so on down to the lowermost screen, the mesh of which is exceedingly fine. While these screens are shown as in the form of woven-wire fabric, it will be understood that they may be of any other form and construction. They may also be detachably or removably mounted in any suitable manner, but as shown they are provided with seats or sockets to engage studs or projections upon the sides 17 of the box and the riffles 18.

The coarser material is caused to travel downwardly over the screens and off of the same, and the gold is caused to settle upon the bottom of the box by reason of the endwise or longitudinal reciprocatory or oscillatory movement of the box, and partly because of the jolts or jars it receives by its engagement with bumpers 25, arranged at the opposite ends of the frame. These bumpers, which may be in the form of blocks of rubber or elastic material or in the form of spring-supported stop-blocks, as shown, are

preferably adjustably mounted, as indicated at 26, or in any other suitable manner, so that the jar or jolt given the box may be varied, as desired. While I preferably support the sluice-box 1 upon the rollers, as shown, it will be understood that the same may be suspended or otherwise supported. The oscillation or reciprocation of the box is preferably effected by securing to its bottom 16, as shown at 27, one end of a pitman-rod 28, the opposite end of which is connected to a crank 29, formed in a transverse shaft 30, mounted in bearings upon the upper end of the frame 2. Upon one end of the shaft 30 is secured a pinion 31, which meshes with a gear 32, secured upon a stub-shaft 33 and carrying a crank-handle 34. It will be seen that when the crank 34 is turned the shaft 30 will be rotated to cause the box 1 to be oscillated between the bumpers 25, the connection between the pitman 28 and the bottom of the box permitting the box to be jolted by said bumpers.

The construction, use, and advantage of the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings. It will be seen that when the material to be treated is discharged from the hopper into the uppermost compartment of the sluice-box and the feed-gate 20 is properly adjusted to permit of the escape of the desired quantity of material beneath the same the reciprocation of the box by reason of the rotation of the crank 34 will cause such material to travel downwardly through the box. The coarse material which fails to pass through the screens 24 will pass downwardly over each successive screen and will therefore not interfere with the separation of the gold from the finer material, which passes through said screen and box in a zigzag course over the bottom of the box between the pins or pegs 23. The separation of the gold from the fine dirt will be exceedingly thorough by reason of this construction.

There is no screen over the first riffle, and as very coarse gold is effectively retained in a riffle no such coarse gold will pass from said riffle; but a portion of the finer gold will pass therefrom, and hence I have the screen over the second riffle sufficiently coarse to permit such gold to pass through said screen into the second riffle; but the dirt that is too coarse to pass through this screen will be discharged onto the finer screen next in succession and from that on to the next, and so on until it is finally discharged from the machine. The finer particles of dirt and the finer particles of gold will drop through the screens into the riffles. The gold particles will settle in the riffles, but the lighter worthless particles will pass therefrom, over the screens, and through the riffles in succession, and such gold particles as may pass

from one riffle will be caught in the next, while the dirt particles which pass from a riffle and are too coarse to pass through the screen over the next will be prevented by the finer screens from dropping into any of the succeeding riffles.

While I have shown and described the preferred embodiment of my invention, it will be understood that I do not wish to be limited to the exact showing set forth, since various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

The herein-described dry-process ore-separator comprising a frame having a feed-hopper fixed thereto, an inclined support in said frame, means to raise and lower one end of said support to vary the inclination of the same, a sluice-box mounted and movable on said support and adjustable therewith, said sluice-box having its upper end disposed un-

der the discharge of the hopper and provided at a distance from its upper end with a regulating-gate movable vertically toward and from the bottom of the sluice-box to enable material to flow under said gate and to regulate the quantity of material which thus flows therein, said sluice-box being further provided with transversely-disposed riffles on its bottom, agitating devices between the riffles, and screens extending from the riffles toward the discharge end of the sluice-box, each screen partly overlapping, spaced from and discharging on the next adjacent screen to subject the material successively to the action of all of the screens and riffles, means to impart reciprocating motion to the sluice-box, and means to jar the same at the end of each stroke thereof.

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

ADAM J. BAUER.

Witnesses:

C. D. EVANS,
W. S. EDWARDS.