

(No Model.)

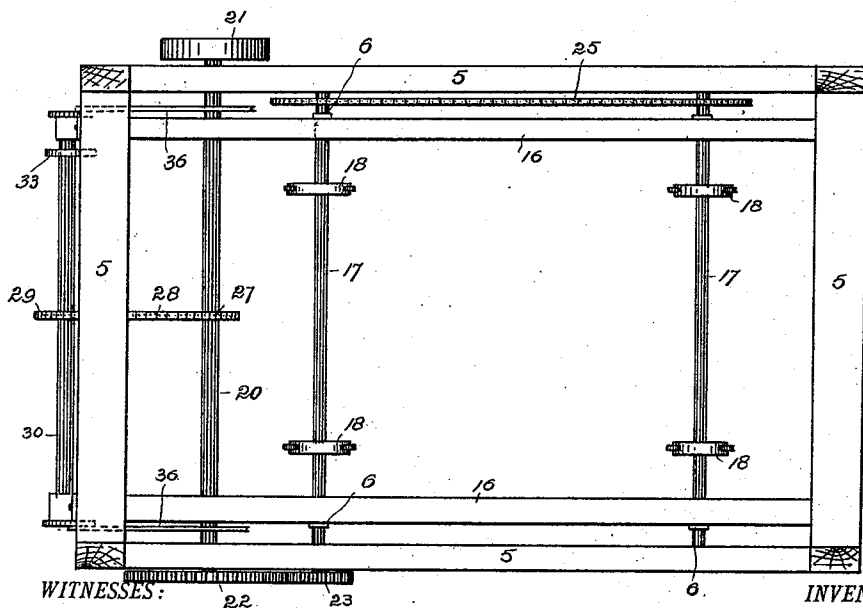
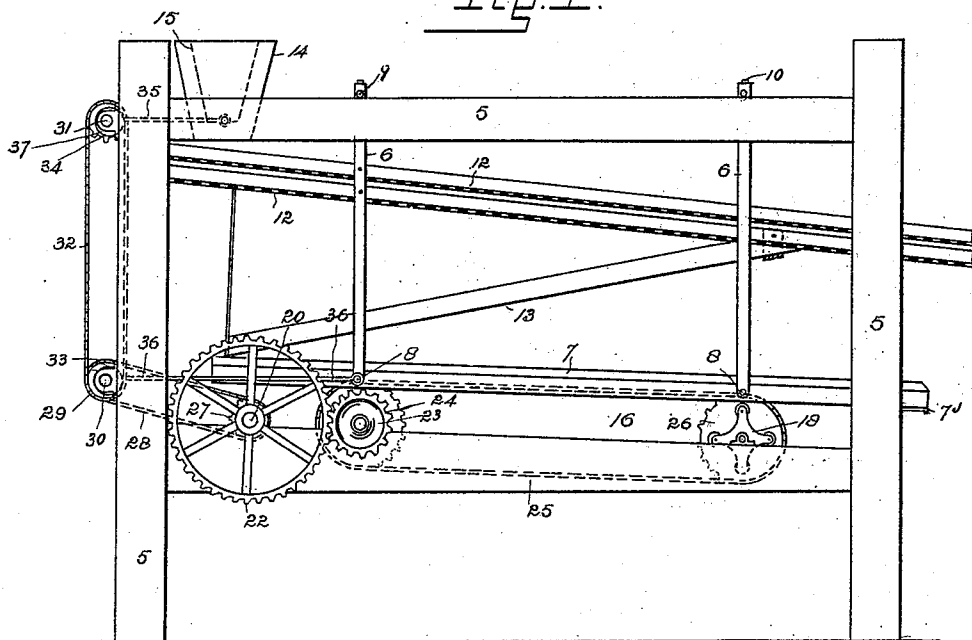
2 Sheets—Sheet 1.

R. L. CHATTERSON.
PLACER MACHINE.

No. 528,503.

Patented Oct. 30, 1894.

FIG. 1.



WITNESSES:

J. J. Ollivant
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FIG. 2.

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

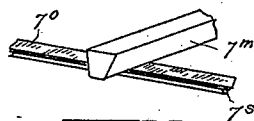


Fig. 10.

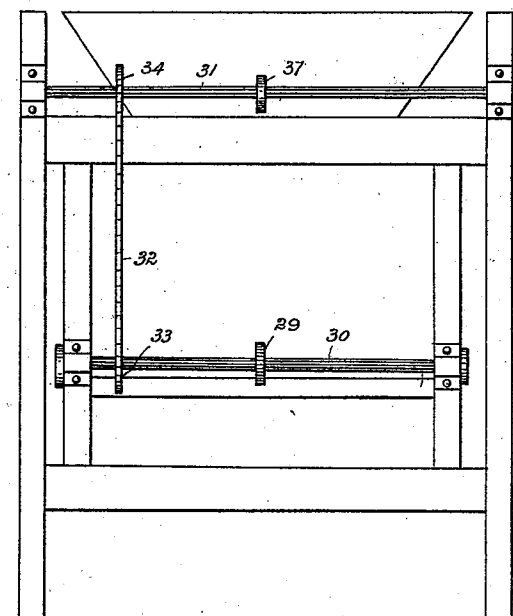


Fig. 6.

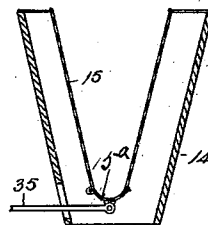


Fig. 4.

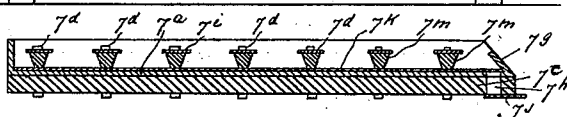


Fig. 5.

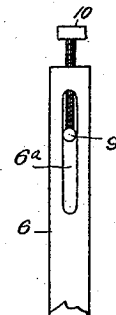
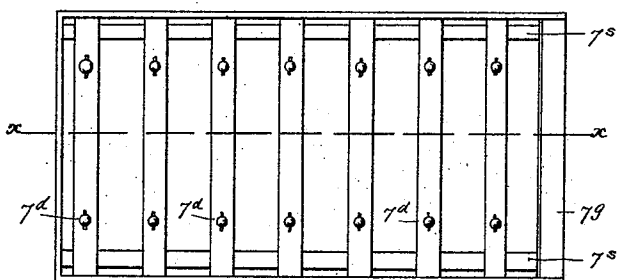


Fig. 7.

WITNESSES:

C. D. Deland
Chas. C. Dawson Fig. 8.

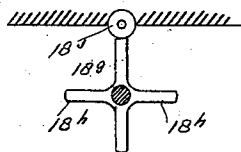
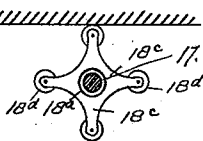


Fig. 9.

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UNITED STATES PATENT OFFICE.

ROBERT L. CHATTERSON, OF DENVER, COLORADO.

PLACER-MACHINE.

SPECIFICATION forming part of Letters Patent No. 528,503, dated October 30, 1894.

Application filed May 25, 1894. Serial No. 512,401. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. CHATTERSON, a citizen of the Dominion of Canada, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Placer-Machines; 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 machines for treating placer material; and is specially designed for handling adobe soil which is often richest in precious metals. This adobe material is very difficult to treat for the reason that the clay will not readily break up but remains in chunks called "gold thieves," since the gold adheres thereto and cannot be separated therefrom except by dissolving or thoroughly disintegrating and breaking up these clayey formations.

To this end, my improved machine is a combined concentrator and amalgamator.

I first concentrate by using burlap or suitable fibrous material on the bottom of the separating pan. This burlap allows the gold to hide in its meshes during the process of breaking up, separating and removing the adobe portion of the material. Below the burlap is the amalgamated copper bottom of the pan, which is protected by the burlap during concentration. Hence, when I am ready to amalgamate, I remove the burlap from the pan and replace the riffled frame, which then rests upon or engages the amalgamating plate.

My improved machine consists further of the features, arrangements and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a top or plan view of the same, with the pan, screens and trough removed to show the cam shafts and propelling mechanism. Fig. 3 is an end elevation of the machine. Fig. 4 is a vertical longitudi-

nal section taken through the separating pan. Fig. 5 is a plan view of the same. Figs. 6, 7, 8, and 9 illustrate details of construction. Fig. 10 is a fragmentary view in perspective, illustrating the riffle-frame of the separating pan.

Similar reference characters indicating corresponding parts or elements of the mechanism in these views, let the numeral 5 designate the main framework of the machine composed of the vertical posts, and the longitudinal and transverse bars connecting the posts. Hung on this framework and supported by metal straps 6 attached to the longitudinal top bars, is an oscillating separating pan 7. The lower extremities of the straps 6 are pivoted to the pan as shown at 8. The upper extremities of the straps are provided with slots 6^a through which pass the horizontal suspension rods 9 made fast to the top bars of the frame. In the tops of the straps 6 are inserted the adjusting screws 10 which enter the slots and engage the rods. The straps, and consequently the separating pan, are raised and lowered by these screws. The ultimate function of these screws is to regulate the elevation of the pan with reference to the rotating cams engaging the pan underneath, and hereinafter described.

Above the pan 7, and also attached to the straps 6, are two parallel inclined screens 12 arranged one above the other, and an oppositely inclined trough 13 located under the screens. The function of this trough is to convey the screened material to the upper extremity of the pan. This trough is hinged at one extremity and supported by straps at the opposite extremity, the connection being such that it may be raised up out of the way while cleaning up. The screens are attached to the straps 6 and oscillate with the pan.

The screens 12 reject the bowlders and coarse rock portion of the gangue, and break up the adobe material fed thereto with the material from the hopper 14, in which is hinged a movable false hopper 15 composed of a screen-basket of such mesh as is best calculated to disintegrate and assist in the dissolution of the adobe portion of the material.

Underneath the pan 7, and journaled in beams 16 made fast to the framework, are two shafts 17 carrying the spider-shaped cams 18. These cams are composed of central web

portions 18^a (see Fig. 8,) from which, project arms 18^c carrying rollers 18^d. As the shafts 17 are rotated, the roller extremities of the cams engage the bottom of the pan 7, and impart thereto a vibratory movement in addition to the oscillating movement hereinafter described. The extent of the movement given by the cams is controlled and regulated by the screws 10 heretofore mentioned.

The separating pan 7 is composed of a wooden bottom 7^c, an amalgamated copper plate 7^a, a burlap covering 7^k for the plate, and a series of transverse riffles 7^m placed upon the burlap. The body portion of the riffles is composed of wood bars having inclined sides. These riffled bars are narrowest at the bottom, and gradually increase in size toward the top. To the upper surface of each riffle is attached a metal plate 7ⁱ which is wider than the top of the riffle, and projects thereover on either side. The riffles are attached in any suitable manner to two metal strips 7^s upon which a strip of rubber 7^o is placed before the riffles are attached. This rubber engages the bottoms of the riffles. This riffled frame is secured to the separating pan in such a manner that it is readily detachable to permit the removal from or the attachment to the copper lining of the pan, of the burlap covering, in changing the machine from a concentrator to an amalgamator; and vice versa.

As shown in the drawings, the riffled frame is held in place by bolts which pass up through the bottom of the frame and through the riffles, being secured by thumb nuts 7^d applied to the upper extremities of the bolts.

The lower extremity of the pan is turned upward and bent inward as shown at 7^e. The lower end of the pan is provided with an outlet 7^h controlled by a slide 7^j. By moving this slide and opening the outlet, the concentrates may be drawn off into a suitable receptacle.

Power is applied to the machine by rotating a shaft 20 journaled in the beam 16 and provided with a fast pulley 21 which may be connected by a belt with any suitable motor. The opposite extremity of the shaft 20 is provided with a fast gear wheel 22, which meshes with another gear 23 fast on one of the cam shafts 17. To the extremity of the shaft opposite from the gear 23 is made fast a sprocket wheel 24 which is connected by means of a chain 25 with a sprocket 26 fast on the other cam shaft 17. To the shaft 20 is also attached a small sprocket wheel 27 connected by a chain 28 with another sprocket 29 on a shaft 30 journaled in the front end of the machine, or that shown at the left in Figs. 1 and 2.

The shaft 30 is connected with a shaft 31 located directly above, by means of a chain 32 engaging sprockets 33 and 44 on the respective shafts. The false hopper 15 is actuated from the shaft 31 by means of a pitman 35 leading from an eccentric 37 on the shaft. The oscillating movement is imparted

to the separating pan from the shaft 30 by means of two pitmen 36 which are connected with two of the hangers 6.

In Fig. 9 I have shown a modified form of cam construction for imparting the vibratory movement to the pan 7. In this form, the cam, which I will designate as 18^e, is composed of arms 18^b made fast to a hub mounted on the shaft 17. The outer extremities of these arms engage a roller 18ⁱ journaled in the bottom of the pan, thus securing a result similar to that obtained from the cam shown in Fig. 8.

From the foregoing description of the mechanism, its operation will be readily understood.

The material to be treated is fed into the hopper in any suitable manner. By applying power to the machine in the manner heretofore explained, a shaking movement is imparted to the false hopper which is hinged to the top of the stationary hopper. A suitable quantity of water is fed to the hopper simultaneously with the discharge thereof of the material to be treated. This shaking movement of the false hopper has for its object, the breaking up and disintegration of the adobe material. From this hopper, the material passes to the screens 12, which further disintegrate the adobe material, and separate the coarser part of the rock and gangue. After passing through the screens, the material drops into the trough 13 and is carried thereby to the front end of the separating pan, in which it is subjected to the influence of the combined oscillating and vibratory movements imparted to the pan by the pitmen 36 and the cams 18. The concentrates collected in this pan are drawn off through the opening 7^h as heretofore described. When it is desired to amalgamate the concentrates thus collected, the thumb nuts 7^d are removed, the riffle frame lifted out of the pan, the burlap covering of the pan removed, and the copper plates charged with mercury. The riffle frame is then replaced and fastened, the concentrates placed in the pan, and the operation of the machine continued.

To facilitate the removal of boulders or other coarse rocky material which will not pass through the meshes or apertures of the false hopper, I have provided this hopper with a hinged bottom 15^a which may be opened at intervals for the purpose of releasing such coarse rocky gangue as cannot otherwise escape. This hinged bottom may be controlled in any suitable manner from the outside of the hopper.

Having thus described my invention, what I claim is—

1. In a concentrator, the combination with the stationary frame, the movable pan, the supporting hangers movably attached to the pan, the rods passed through the upper part of the frame, the upper extremities of the hangers being vertically slotted to receive

the said rods, adjusting screws passed through threaded apertures formed in the top of the hangers and extending to the slots whereby the screws are adapted to engage the rods, two shafts 17 passed through the lower part of the frame and carrying cams adapted to engage the bottom of the pan, a main shaft 20, and another 30, journaled in the frame, pitmen connecting the hangers with the shaft 30, and suitable connections whereby motion may be transmitted from the shaft 20 to the shafts 17 and 30, as and for the purpose set forth.

2. In a concentrator, the combination with the stationary frame, of the movable pan, hangers attached to the pan at one extremity and to the frame at the opposite extremity, the upper part of the hangers being slotted vertically to receive supporting rods passed through the frame, adjusting screws passed through apertures formed in the top of the hangers and communicating with the slots, whereby the screws are adapted to engage the rods, shafts 17 passed through the lower part of the frame and carrying cams adapted to engage the bottom of the pan, shafts 20, 30 and 31 journaled in the frame, pitmen leading from shaft 30 to the hangers supporting the pan, a stationary hopper support in the framework, a false hopper movably supported in the stationary hopper, said false hopper being adapted to screen the material, a pitman leading from shaft 31 to the false hopper, and suitable connections between shafts 20, 17, 30 and 31, whereby the requisite motion may be transmitted from shaft 20 to the pan and the false hopper, as and for the purpose set forth.

3. In a concentrator, the combination with the stationary frame, of the pan provided with riffles, the hangers attached to the pan at one extremity and to the frame at the opposite extremity, shafts 17 journaled in the lower part of the frame and carrying cams engaging the bottom of the pan, said shafts being suitably connected, a main shaft, 20 to which power is applied, a shaft 30 journaled in the frame, means leading from the shaft for imparting the oscillating movement to the pan, and means for connecting shafts 30 and 17 with shaft 20 whereby the rotation of the last named shaft communicates motion to the other shafts, substantially as described.

4. In a concentrator, the combination with the stationary frame, of the pan carrying the riffle-frame, the hinged, inclined trough located above the pan, the screen located above the trough, the hangers attached to the pan at one extremity, and to the frame at the opposite extremity, shafts journaled in the lower part of the frame and carrying cams engaging the bottom of the pan, said shafts being connected by chains engaging sprockets on the shafts, a main shaft 20 to which the power is applied, a shaft 30, pitmen connecting the shaft 30 with the hangers supporting the pan, and means for connecting shafts 30 and 17 with shaft 20, whereby the requisite movements may be imparted to the pan, substantially as described.

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

ROBERT L. CHATTERSON.

Witnesses:

G. J. ROLLANDET,
CHAS. E. DAWSON.