

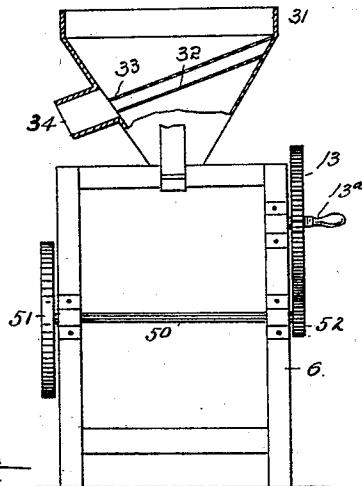
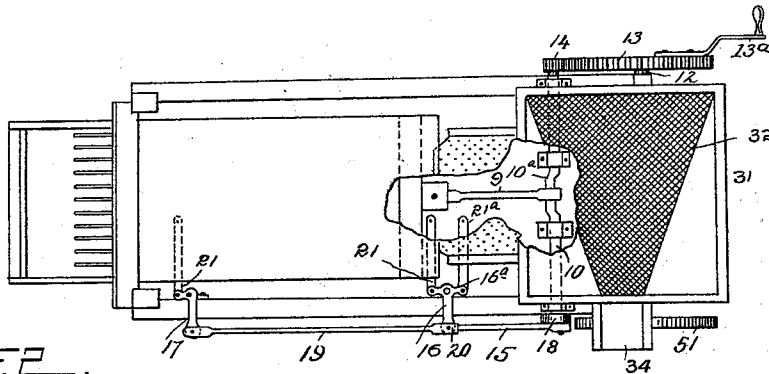
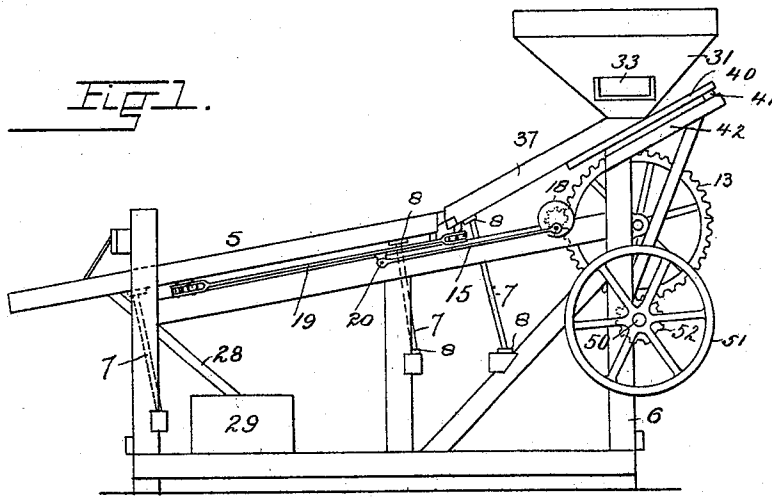
(No Model.)

3 Sheets—Sheet 1.

C. R. MUMMA.
CONCENTRATOR.

No. 539,879.

Patented May 28, 1895.



WITNESSES:

J. J. Pelland
Chas. E. Dawson

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ATTORNEY

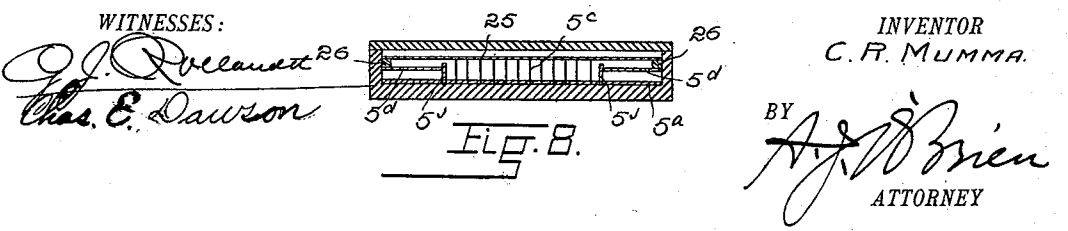
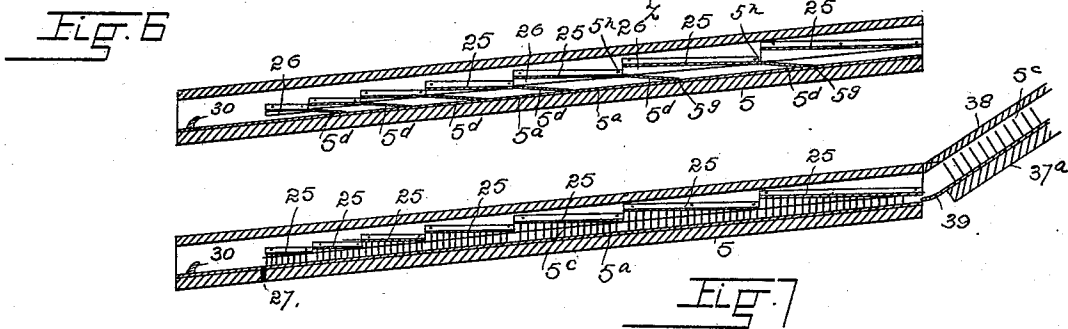
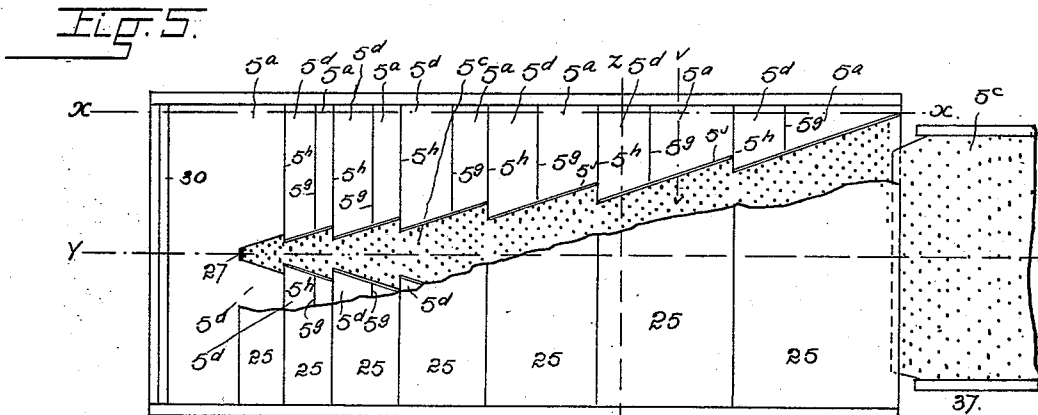
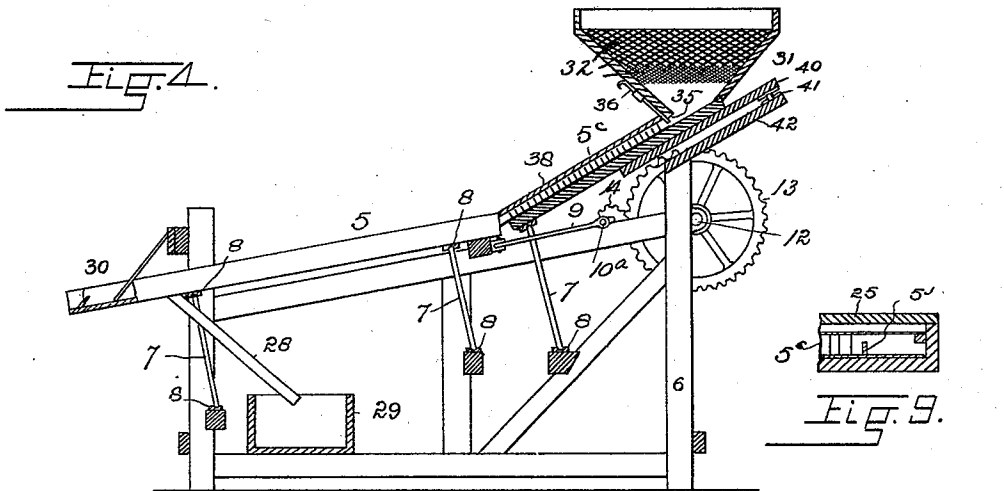
(No Model.)

3 Sheets—Sheet 2.

C. R. MUMMA.
CONCENTRATOR.

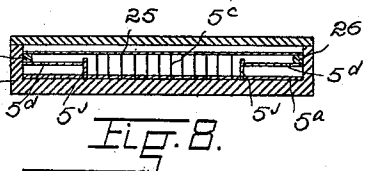
No. 539,879.

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(No Model.)

C. R. MUMMA.
CONCENTRATOR.

3 Sheets—Sheet 3.

No. 539,879.

Patented May 28, 1895.

Fig. 10.

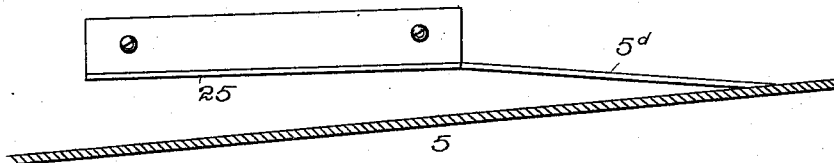


Fig. 11.

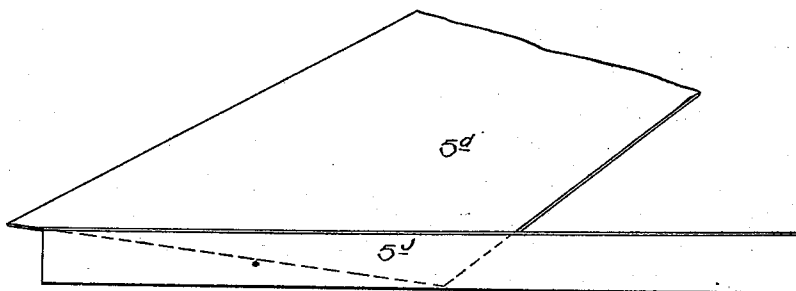
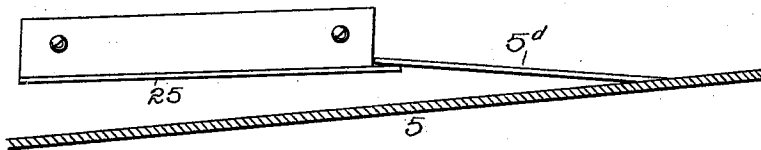


Fig. 12.

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UNITED STATES PATENT OFFICE.

CHARLES R. MUMMA, OF DENVER, COLORADO.

CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 539,879, dated May 28, 1895.

Application filed July 28, 1894. Serial No. 518,843. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. MUMMA, 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 Concentrators; 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 concentrators, specially designed for treating placer material or dirt containing free gold. The machine may be used with or without water, as circumstances may require, and consists of the construction 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 plan view of the same, the concentrating-table and hopper being partly broken away. Fig. 3 is a rear end view of the machine, the hopper being shown in section. Fig. 4 is a side elevation, partly in section. Fig. 5 is an enlarged top or plan view, in detail, of the concentrating-table, the top plates being partly broken away. A fragment of the chute leading from the hopper is shown in this view. Figs. 6, 7, and 8 are sections taken on the lines *x x*, *y y*, and *z z*, respectively, Fig. 5. Fig. 9 is a section taken on the line *v v*, Fig. 5. Figs. 10 and 11 illustrate the manner of connecting the two sets of plates on the concentrating-table, the flanges of the plates 5^d being omitted. Fig. 12 is a fragmentary perspective view of the plate 5^d, showing its flange.

Similar reference characters indicating corresponding parts in these views, let the numeral 6 designate the stationary framework composed of the horizontal base bars, the inclined top bars, the vertical bars connecting the top and bottom bars, and the transverse bars connecting the vertical bars. Movably mounted in this framework is the inclined concentrating table 5 which is supported by

rods 7 having rounded ends engaging sockets 8 attached to the frame and table, whereby the latter is permitted to move both longitudinally and laterally. The table has a longitudinal movement imparted by a pitman 9 connected with a crank 10^a formed on the shaft 10 journaled in the framework. The pitman is suitably attached to the upper extremity of the table at a central point.

Motion is transmitted to the shaft 10 from a short shaft 12 provided with a gear 13 meshing with a pinion 14 fast on the shaft 10. The shaft 12 is journaled in the framework, and the gear 13 is provided with a hand crank 13^a, though the machine may be propelled in any other suitable manner. The lateral movement is also communicated from the shaft 10 through the agency of a pitman 15, two bell crank levers 16 and 17, and a connecting rod 19. The pitman is connected at one extremity with a wrist pin formed outside the center of a disk 18 made fast on the shaft 10; while the opposite extremity is pivotally attached to the connecting rod 19 at a point 20. The connecting rod is pivoted to one arm of each bell crank lever, the other arm of each lever being connected with a metal strap 21 made fast to the bottom of the table. The arm connected with the strap 21 is preferably somewhat shorter in the lever 17 than in the lever 16, whereby the lateral movement of the upper extremity of the table is somewhat greater than the corresponding movement of its lower extremity.

The body of the table is preferably composed of wood, the upper surface of its bottom being provided with a covering 5^a of some suitable sheet metal, as galvanized iron. About one half of this sheet metal bottom, as shown in the drawings, is provided with short pins 5^c projecting upwardly therefrom. This pin-covered portion of the bottom is widest at the upper extremity of the table and diminishes gradually in width toward the lower extremity. (See Fig. 5.) On either side of the pin-covered portion of the bottom, are arranged plates 5^d which are soldered or otherwise suitably fastened to the bottom 5^a at the edges, designated by the lines 5^e. From the edges 5^e which engage the bottom 5^a, these plates 5^d are upwardly inclined, whereby their edges 5^h are considerably raised from the bot-

tom of the table. In describing the plates 5^d, their extent crosswise or transversely of the table will be termed their length; while their extent on a line at right angles to their length will be termed their width. The uppermost plates 5^d are shortest; and they increase in length from the upper part of the table toward its lower extremity where they are longest. The inner extremities of the plates 5^d are provided with depending supporting flanges 5^j which engage the bottom 5^a. These flanges also extend upwardly above the plate, and rearwardly therefrom, separating the plain part 5^a of the bottom of the table from the pin-covered curved part 5^c. The edge 5^h, or the raised edge of each plate 5^d, is engaged by a top plate 25 which extends transversely of the table, and entirely crosses the same. The ends of these top plates rest upon cleats 26, while they are centrally supported by the pins 5^c, whose tops they engage. The edges of the plates 25 nearer the upper extremity of the table may butt against the edges of the plates 5^d, or extend slightly under the same as may be desired, since the gangue from the plates 5^d must pass to the plates 25. The ends of the last named plates are provided with upwardly extending flanges apertured to receive fastening screws which enter the vertical sides of the table.

The table is provided at its lower extremity with an opening 27 in the bottom, communicating with a conduit 28 leading to a receptacle 29. Below the opening 27, the bottom of the box is provided with a transverse riffle 30.

The machine is provided at its head end or upper extremity with a movable feed hopper 31 having a double, transversely inclined screen 32 whose lower extremity communicates with an outlet 33 in one side of the hopper, from which leads a short chute 34 through which the coarser portion of the gangue is carried from the machine. The bottom of the hopper is provided with an outlet controlled by a gate or valve 36.

To the lower part of the hopper is attached a chute 37 whose bottom is covered with pins 5^c of the same character as those carried by the table 5. Above the pins, and engaging their tops, is located a plate 38 which forms the top of the chute which is closed thereby. The chute is properly inclined, and its bottom 37^a is covered by a plate 39 to which the pins 5^c are attached. The lower extremity of this plate leads to the bottom 5^a of the table 5.

To the bottom of the hopper, and extending upwardly and rearwardly therefrom, is made fast an arm 40 pivotally connected at its upper extremity as shown at 41 with a stationary projection 42 made fast to the framework at its lower extremity.

The lower extremity of the chute is supported by a rod 7 whose extremities engage sockets 8 attached respectively to the framework and the bottom chute.

The bell crank lever 16, heretofore described, is provided with an auxiliary arm 16^a

which is pivotally connected with a metal strap 21^a secured to the under surface of the chute's bottom, whereby an oscillating movement is imparted to the hopper and chute by virtue of the pivotal connection 41.

The operation of the machine may be described as follows: Assuming that the machine is set in motion by turning the gear 13, the material to be treated is discharged into the hopper 31. The coarser portion of the gangue is rejected by the screen 32 and thrown from the machine; while the finer part of the material passes through the hopper outlet 80 to the chute 37, and thence to the table 5. Through the movement of the chute and table, and through the agency of the pins 5^c, the material is continually agitated, whereby the settling of the values therein is facilitated; while after reaching the table it is subjected to a movement similar to that employed in hand-panning, this movement being resultant of the longitudinal and lateral movements imparted to the table, and heretofore described. As the material leaves the chute, the lighter and coarser gangue, which is uppermost in the bottom thereof, passes to the first plate 25 of the table; while the heavier gangue beneath, together with the mineral which has settled to engagement with the plate 39, passes to the plate 5^a on the bottom of the table. The separation is further continued on the table, and as the gangue rises to the top, and the mineral settles, the gangue passes over the flanges 5^j to the plates 5^d, and thence to the next plate 25; and so on, this method of separation being continued until the mineral or concentrates are discharged through the opening 27 in the bottom of the table, and pass thence through the conduit 28 to the receptacle 29.

It must be understood that this machine may be used with or without water. If water is employed to facilitate the separation of the mineral from the gangue, the pins 5^c, hereinbefore described, are used. If, however, it is desired to use the machine without water, whereby it becomes a dry placer machine, the pins 5^c are preferably omitted.

In addition to the mechanism heretofore described, a shaft 50 is journaled in the framework 6 and carries a fly wheel 51 at one extremity, and a pinion 52 at the opposite extremity. The pinion meshes with the crank wheel 13.

Having thus described my invention, what I claim is—

1. In a concentrator, the combination with a suitable stationary framework, of the table movably mounted therein and provided with a series of plates inclined to the plane of the table, and arranged on both sides of the central part of the table's bottom, said plates being provided with flanges 5^j which extend both above and below the plates, substantially as described.

2. In a concentrator, the combination with a suitable stationary framework, of the table

movably mounted thereon and provided with a series of inclined plates and arranged on both sides of the central part of the table's bottom and having flanges 5^j which extend both above and below the plates, and to the rear thereof, the central part of the table intermediate the two series of plates being provided with pins, substantially as described.

3. In a concentrator, the combination with a suitable stationary framework, of a table movably mounted thereon and provided with a series of inclined plates placed at intervals on both sides of the central part of the table, said plates having vertical flanges which extend both above and below the plates, and to the rear thereof, said plates being shortest at the head of the table and increasing in length toward the foot or tail thereof, substantially as described.

4. In a concentrator, the combination with a suitable stationary framework, of a table movably mounted thereon and provided with a series of inclined plates arranged on either side of the central part of the table and provided with flanges which extend above, below and to the rear of the plates, and other top plates extending transversely of the table, covering its central part, and so located as to receive the discharge from the first named series of plates, substantially as described.

5. In a concentrator, the combination with a suitable stationary framework, of the table movably mounted thereon and provided with a series of inclined plates arranged on both sides of the central part of the table's bottom, said plates being provided with flanges 5^j which extend above, below and to the rear of

the plates, other plates extending transversely of the table, covering its central part and so located as to receive the discharge from the first named series of plates, and a movable hopper also mounted on the framework and provided with a chute adapted to deliver the material to be treated to the table, substantially as described.

6. In a concentrator, the combination with a suitable stationary framework, of the table movably mounted thereon and provided with a series of plates inclined to the plane of the table, and arranged on both sides of the central part of the table's bottom, said plates being provided with flanges 5^j which extend above, below and to the rear of the plates, a hopper also movably mounted on the framework, and provided with a chute adapted to deliver to the table, the material to be treated, and suitable means for simultaneously imparting to the table and hopper, the requisite movement, substantially as described.

7. In a concentrator, the combination with a suitable stationary framework, of the table movably mounted thereon and provided with a series of plates inclined to the plane of the table and arranged alongside the central portion of the table's bottom, said plates being provided with flanges which extend both above and below the plates, substantially as described.

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

CHARLES R. MUMMA.

Witnesses:

BRINTON GREGORY,
CHAS. E. DAWSON.