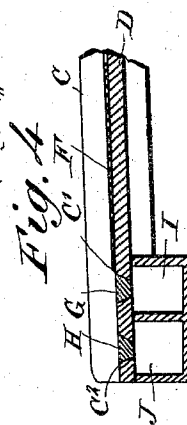
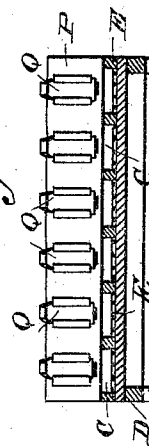
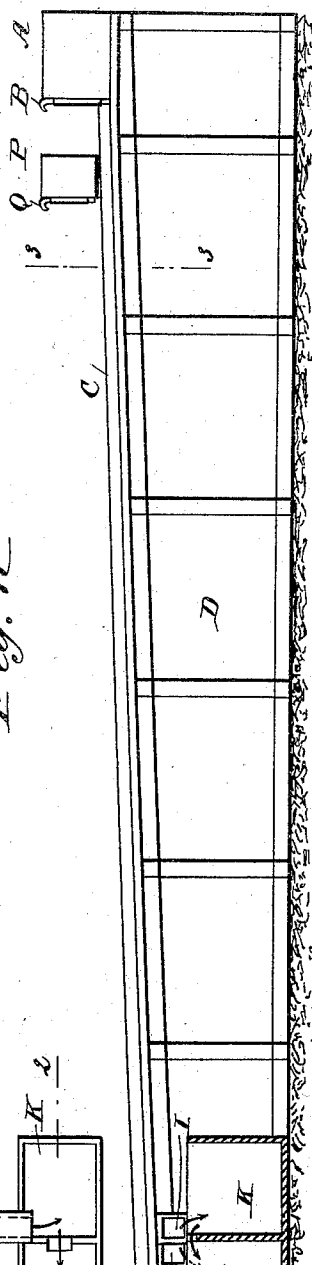


D. W. HUMPHRIES.
CONCENTRATOR.

Patented Sept. 12, 1893.



WITNESSES:

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DAVID WALTER HUMPHRIES, OF DE LAMAR, IDAHO.

CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 504,923, dated September 12, 1893.

Application filed February 15, 1893. Serial No. 462,360. (No model.)

To all whom it may concern:

Be it known that I, DAVID WALTER HUMPHRIES, of De Lamar, in the county of Owyhee and State of Idaho, have invented a new and Improved Concentrator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved concentrator, which is simple and durable in construction, very effective in operation and arranged to save the precious metals and the floured quicksilver passing with the tailings discharged from the mill.

The invention consists of an inclined table formed with a series of parallel channels for the passage of the tailings, each channel being covered in its upper part with a coarse mesh fabric, such as jute, and in its lower part with a finer fabric such as canvas.

The invention also consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is a side elevation of the same with parts in section on the line 2—2 of Fig. 1. Fig. 3 is a transverse section of the same on the line 3—3 of Fig. 2; and Fig. 4 is an enlarged sectional side elevation of part of the improvement on the line 4—4 of Fig. 1.

The improved concentrator is provided with a tailing receiving receptacle A provided in its front side with gates B, through which the tailings can be discharged from the receptacle A into channels C formed on the top of an inclined table D of suitable length and inclination. Each channel C has its bottom covered in the upper part with a coarse mesh fabric E such as jute, while the lower end of the bottom of each channel is covered with a finer mesh fabric F, such as canvas.

In the extreme lower end of each channel C and in the bottom thereof are formed two apertures C' and C'', adapted to be closed by valves G and H respectively, as plainly shown in Fig. 4, the said apertures C' and C'' leading to transversely-extending channels I and J, of which the channel I discharges into a

tank K connected by an overflow with a second tank K' which connects in a like manner with a tank K'', and the latter connects similarly with a tank K''', which discharges by an overflow into a tank K⁴, from which the water can finally pass to a tank K⁵ by means of an overflow, to run from the latter tank K⁵ through a chute K⁶ to waste. The other channel J discharges at one end into a tank L for receiving the lighter, second grade concentrates, as hereinafter more fully described.

The lower end of the table D discharges into the tailing box N from which leads a chute O to carry off all refuse sand and water. Near the upper end of the table D, in front of the tailing receiving receptacle A is arranged a water distributing box P provided in its front side with gates Q, for permitting the water to flow through the gates onto the respective channels C.

The operation is as follows: The tailings from the mill are carried by a suitable chute into the tailing receiving receptacle A from which they can pass through the opened gates B into the channels C at the upper end of the table D, the tailings flowing down the channels first over the coarse mesh fabric E and then over the finer mesh fabric F so that the tailings are well distributed over the entire surface of the table. When this has been done, and a sufficient quantity of the tailings have been distributed over the table, the gates B are closed, and the gates Q of the water box P are opened one at a time, and sufficient quantity of water is allowed to flow over the table to carry off the sand only, while the attendant sweeps the channel for about one third of its whole length with an ordinary mill broom the amount of water and the sweeping being so regulated that no concentrates will be carried off. After sweeping one-third the length of the channel, the plug or valve H of the channel being swept is removed, the gate Q is raised somewhat higher to permit an increased quantity of water to flow, and the sweeping is resumed, the result being that the lighter, or second class concentrates will enter the opening C'', and pass through channel J to the tank L, and by the time the channel is swept as far as the finer fabric F, the lighter concentrates will have all flowed into the tank L, the finer fabric not

offering sufficient obstruction to detain them. The plug or valve H now is replaced in the opening C² and the plug or valve G is removed from the opening C', and the sweeping 5 is continued to the end of the channel, the heavier or first class concentrate flowing into the tank K and its complementary tanks K', &c. Each channel is swept in the same way. More or less sand is present with the lighter 10 concentrates in the tank L, and the same are removed and distributed over the table and the operation repeated.

By this arrangement I am enabled to separate the precious metals and floured quicksilver from the gangue thus saving a large 15 percentage of valuable precious metal and quicksilver which would otherwise have gone to waste with the tailings, as they leave the mill.

20 If desired the finer concentrates may be run through the apertures C² and chute J into tank L, while the coarser concentrates are first passed through apertures C' and chute I into box K.

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

1. A concentrator provided with an inclined table formed with a series of parallel and longitudinally-extending channels, each covered 30 in the upper part of its bottom with a coarse mesh fabric and in the lower part of its bottom with a finer mesh fabric, substantially as shown and described.

35 2. A concentrator comprising an inclined table having a series of longitudinally-extending channels, each provided in the upper part

of its bottom with a coarse mesh fabric and in the lower part of its bottom with a fine mesh fabric, a tailings receiving receptacle 40 having gates discharging into the said channels at the upper end of the table, and a tailings box into which the said channels discharge at the lower end of the table, substantially as shown and described.

45 3. The concentrator comprising an inclined table formed with longitudinal channels each having a bottom covered in the upper part with a coarse mesh fabric and in the lower 50 part with a fine mesh fabric, the water distributing box set on the upper end of the said table and having gates discharging into the said channels, and transversely-extending chutes arranged under the lower end of the table and adapted to be connected with the 55 said channels by gates, substantially as shown and described.

4. The concentrator comprising an inclined table formed with longitudinal channels each having a bottom covered in the upper part 60 with a coarse mesh fabric and in the lower part with a fine mesh fabric, the water distributing box set on the upper end of the said table and having gates discharging into the said channels, transversely-extending chutes 65 arranged under the lower end of the table and adapted to be connected with the said channels by gates, and settling tanks connected with the said chutes, substantially as shown and described.

DAVID WALTER HUMPHRIES.

Witnesses:

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