



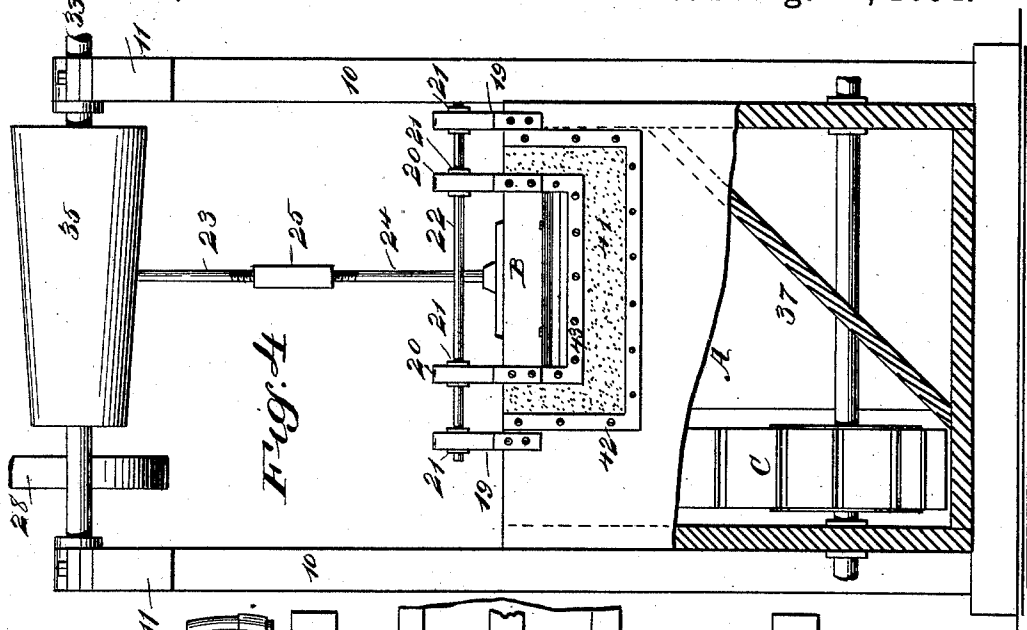
(No Model.)

2 Sheets—Sheet 2.

G. H. HOOPER,  
ORE CONCENTRATOR.

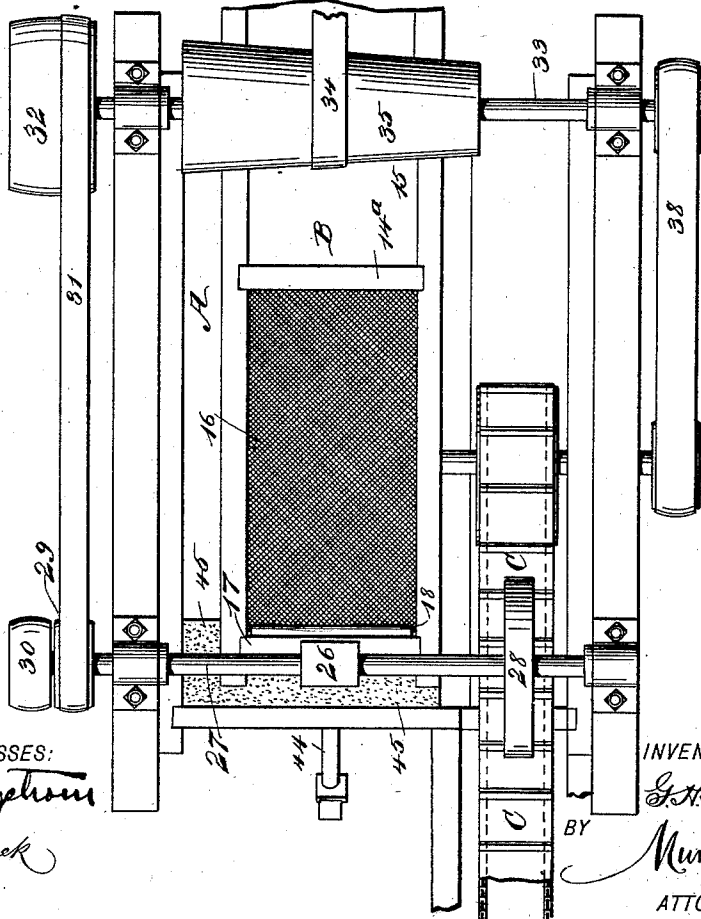
No. 524,592.

Patented Aug. 14, 1894.



*Fig. 4*

*Fig. 3*



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

GEORGE H. HOOPER, OF HAGUE, NEW YORK.

## ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 524,592, dated August 14, 1894.

Application filed January 31, 1894. Serial No. 498,585. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. HOOPER, of Hague, in the county of Warren and State of New York, have invented a new and useful  
5 Improvement in Ore-Concentrators, of which the following is a full, clear, and exact description.

My invention relates to an improvement in ore concentrators in which the sieve or separating medium has a jiggling action, and the  
10 object of the invention is to provide a means whereby the sieve or separating medium in addition to having a jiggling action imparted thereto will be simultaneously laterally reciprocated, the action of the sieve taking place  
15 in a body of water, whereby the cleaned minerals will be directed to one end of the sieve, a vanning action will be obtained and the refuse material fed to an overflow at the opposite end of the sieve.  
20

A further object of the invention is to provide the sieve with a solid overflow at one end, an outlet for washed minerals at the opposite end, and a screening section interposed between the two, and furthermore to provide an elevator located beneath the screening section of the sieve, whereby material passed through said section may be  
25 conveyed from the machine for further treatment if desired, the ore to be concentrated being fed upon the screen between the overflow and the delivery ends, nearer the former than to the latter.

The invention consists in the novel construction and combination of the several parts, as  
35 will be hereinafter fully set forth and pointed out in the claims.

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

Figure 1 is a partial side elevation and partial vertical section through the improved  
45 concentrator. Fig. 2 is a detail view of the adjustable axial support for the sieve or screen. Fig. 3 is a plan view of the machine; and Fig. 4 is an end view partially in section.

The body of the machine A consists of a  
50 tank or receptacle adapted to contain water, and from the said body, preferably at the

sides thereof standards 10, are projected upward, being connected at each side of the machine by beams 11 or their equivalents. A sieve or screen B, is located in the box or  
55 tank A near the top of the latter, and this screen or sieve consists of a front bar 12, side pieces 13, secured to said bar, and a cross bar 14 located between the center and rear end of the frame of the sieve, upon which cross  
60 bar a bridge 14<sup>a</sup>, is constructed, said bridge preferably consisting of a series of strips of material placed one upon the other and secured by bolts or the equivalents thereof. The said bridge 14<sup>a</sup> acts in the capacity of a  
65 dam, and is located adjacent to a bottom board 15 attached to the side pieces 13 of the frame of the sieve at the rear end thereof, the said bottom 15 constituting a solid overflow or conductor for the waste water and material  
70 from the sieve or screen, the bridge or dam 14<sup>a</sup> regulating the height at which the water shall come in the remaining portion of the sieve; and it will be readily understood that  
75 by removing one or more of the strips of which the dam is constructed the level of the water in the body of the sieve or screen may be increased or decreased as desired.

The screening or sieving surface 16 of the screen is located between the dam 14 and the  
80 front or end board 12 of the frame, and the material employed for this purpose may be either reticulated or perforated, and of a mesh suitable for the material to be treated. The front end board 12 of the sieve or screen is  
85 provided with an outlet 17, located about on a level with the top of the screening material 16, and the said opening 17, is controlled by a gate 18, held to slide upon the inner face  
90 of the screen frame.

The screen or sieve is pivoted in an adjustable manner at the rear portion of the body of the machine, and this attachment is accomplished in the following manner: Vertical  
95 hangers 19, are secured upon the rear end of the box or tank A at suitable intervals apart, and the said hangers, as shown in Fig. 2, are bifurcated at their upper ends, forming thereby two members with an opening between them. The similar hangers 20, are  
100 secured upon the rear end of the sieve or screen, one at each side, and in each hanger 19 and

20 a box 21, is held to slide, and the said boxes, as shown in Fig. 4, consist preferably of two side plates 21<sup>a</sup>, and a body connecting the plates, the body portion of the boxes being adapted to slide in the space between the members of the hangers. The boxes are held in predetermined positions upon their hangers preferably through the medium of set screws 21<sup>b</sup>, which are passed through the plates 21<sup>a</sup> of the boxes into the members of the hangers. The boxes are adapted to journal a shaft 22, as shown best in Fig. 4; therefore it will be observed that the sieve or screen at its rear end has pivotal or rocking support, and the shaft 22 through which it is suspended may be adjusted upward or downward so as to increase or decrease the lateral throw of the screen.

The screen is supported at its forward end preferably by two links 23 and 24, which are connected by a turn-buckle 25 in order that more or less of an inclination may be given to the forward end of the sieve. The upper link is connected with a head block 26, as shown in Fig. 1, which has cam or eccentric connection with a drive shaft 27, journaled upon the upper portion of the machine, transversely thereof, the said drive shaft, as shown in Fig. 3, being preferably provided at one end with a balance wheel 28, and at the opposite end with fast and loose pulleys 29 and 30. These pulleys are connected by a belt 31 with a main driving pulley 32, upon a main driving shaft 33, preferably journaled at the opposite upper end of the machine, the main driving belt 34, being carried from any desired source of power to preferably a cone pulley 35 located on said shaft 33. Thus it will be observed that when the shafts 27 and 33 are in motion the sieve will be given a jiggling vertical movement and at the same time a lateral or horizontal movement, the throw of the latter being regulated by the adjustment of the pivot of the screen. Owing to this action the material to be concentrated is fed through a trough 36 and delivered upon the screen at a point slightly forward of the dam 14<sup>a</sup>, and since the screen moves in a body of water contained in the tank the jiggling action thoroughly washes the ore fed to the screen, while the lateral movement will cause the ore or mineral to be gradually fed to the forward end of the screen or sieve, while the waste will pass in an opposite direction to the overflow end, and after passing the dam 14<sup>a</sup> will find an exit at the rear end of the machine. Thus the waste and the mineral move in opposite directions, and one in no sense interferes with the other, while the screened material will pass downward into the water below the screen and will be conducted by an inclined platform 37, shown in Fig. 4, to one side of the box or tank A, and delivered to an elevator or conveyer C, which is driven by a belt 38 preferably from the shaft 33, and the said conveyer or elevator at its upper end is located outside of and above the tank A,

whereby it will deliver the material conveyed to it in a manner to enable said material to be delivered to a second machine, or otherwise disposed of in any convenient manner.

In order that the screen or sieve may have lateral movement and at the same time a water-tight connection be maintained between the opening 40 in the rear of the box through which it passes and the bottom of the screen, the said opening is covered by a strip 41 of leather or like material suitably shaped and shown best in Fig. 4, the said strip being secured to the tank at the margin of the opening 40 by means of a metal plate 42, and the leather strip is secured in like manner to the rear portion of the sieve, the latter plates being designated as 43. When the cleaned mineral is drawn off from the screen or sieve through its forward opening 17, said mineral is conducted to a faucet 44 of any approved construction located in the upper forward portion of the tank through the medium of a partition 45 of a yielding material such as leather, said partition being attached to the inner wall of the front portion of the tank and to the bottom of the sieve or screen frame, the partition shown in Fig. 3 extending practically from side to side of the tank, or from one side of the tank to the opposite side of the screen frame.

It will be understood that the mineral may be either drawn off, or removed by hand while the machine is in operation, and that a suitably located pipe is employed to supply water to the tank A, as for example as shown at 45<sup>a</sup> in Fig. 1.

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

1. In an ore concentrator, a jiggling screen having side bars, a front end bar provided with a mineral outlet, a waste overflow or chute at the rear end of the screen, a sieve or screen between said end bar and chute about on a level with said mineral outlet and a dam at the juncture of the sieve or screen and the said overflow.

2. The combination with the tank having an opening in its rear end, a vertically rocking screen having its overflow end passing through said opening, a watertight flexible connection between the screen and the marginal edges of the said opening, a mineral outlet in the front wall of the screen about on a level with the screening surface and a dam at the juncture of said screening surface and the overflow, substantially as described.

3. The combination with the tank having an opening in its rear end and a mineral outlet in its front end, of a vibrating screen having a mineral outlet in its front end and having a flexible connection leading therefrom to the first named mineral outlet, the opposite or overflow end of the screen extending through the rear tank opening and having a watertight flexible connection with the margin thereof, the screening surface being in-

terposed between the inner end of said overflow and the front end of the screen, substantially as described.

4. In an ore concentrator, the combination, with a tank adapted to contain a body of water, hangers located at one end of the tank, and a shaft vertically adjustable in said hangers, of a screen or sieve open at one end and provided at its open end with an overflow comprising a solid bottom and a variable dam adjacent to the bottom, the said screen being provided with a mineral outlet at its opposite end and a screening surface between said outlet and the dam, hangers attached to the overflow end of the screen, having adjustable connection with the shaft located on the tank, said shaft forming a pivotal or rocking bearing for the overflow end of the screen, a drive shaft, an adjustable link connection between the end of the screen in which the mineral outlet is located and the drive shaft, and means, substantially as shown and described, for imparting jiggling motion to the links from the drive shaft, as and for the purpose set forth.

5. In an ore concentrator, the combination, with a tank adapted to contain water, a screen or sieve located in the tank, having adjustable connection with the tank at its rear end, the connection being effected above the sieve, and a jiggling mechanism connected with the opposite end of the sieve or screen, said screen or sieve being provided with an overflow at its pivotal end, an ore outlet at its opposite end, and a screening surface between the two, of a flexible connection between the ends of the sieve or screen and the ends of the tank, a mineral outlet located in the tank and connected with the mineral outlet in the sieve, an elevator located in the tank and extending outwardly therefrom, and means, substantially as described, for directing the screened material falling in the tank to said elevator or conveyer, as and for the purpose set forth.

GEORGE H. HOOPER.

Witnesses:

WILLIAM HOOPER,  
JOSEPH ROSS.