(No Model.) 4 Sheets—Sheet 1.

A. HENDEY.

ORE WASHER.

No. 382,423. Patented May 8, 1888.

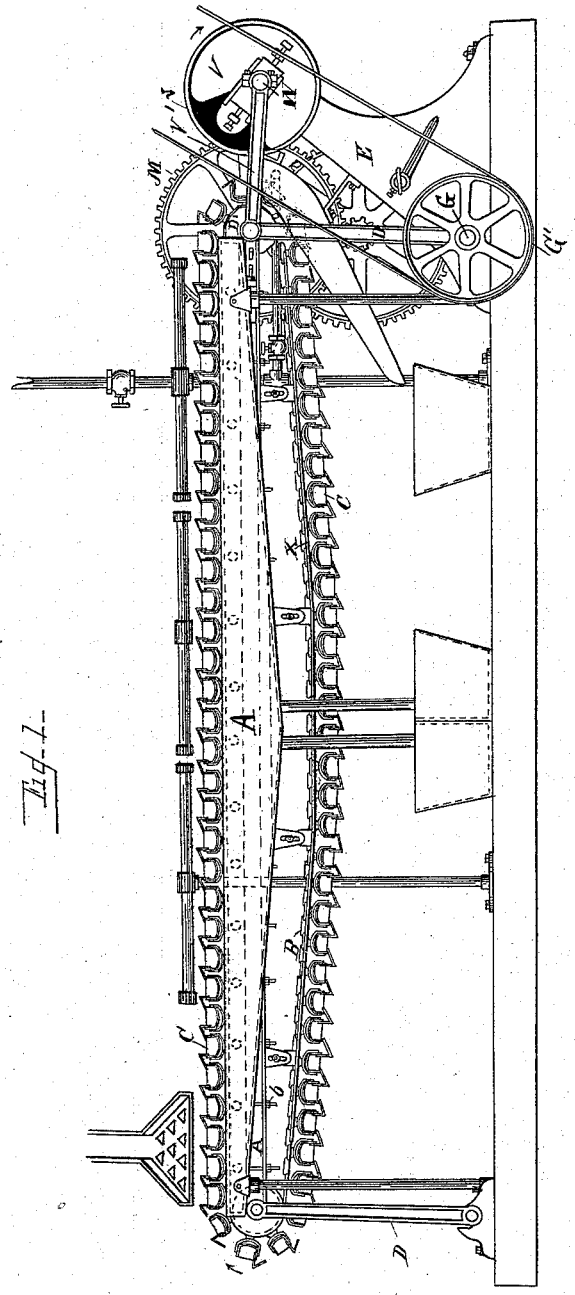

Fig. 1.

Witnesses,
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Wm. M. Stockbridge.

Inventor,
Arthur Hendey
By his Attorney
W. D. Stockbridge.

(No Model.) 4 Sheets—Sheet 2.

A. HENDEY.

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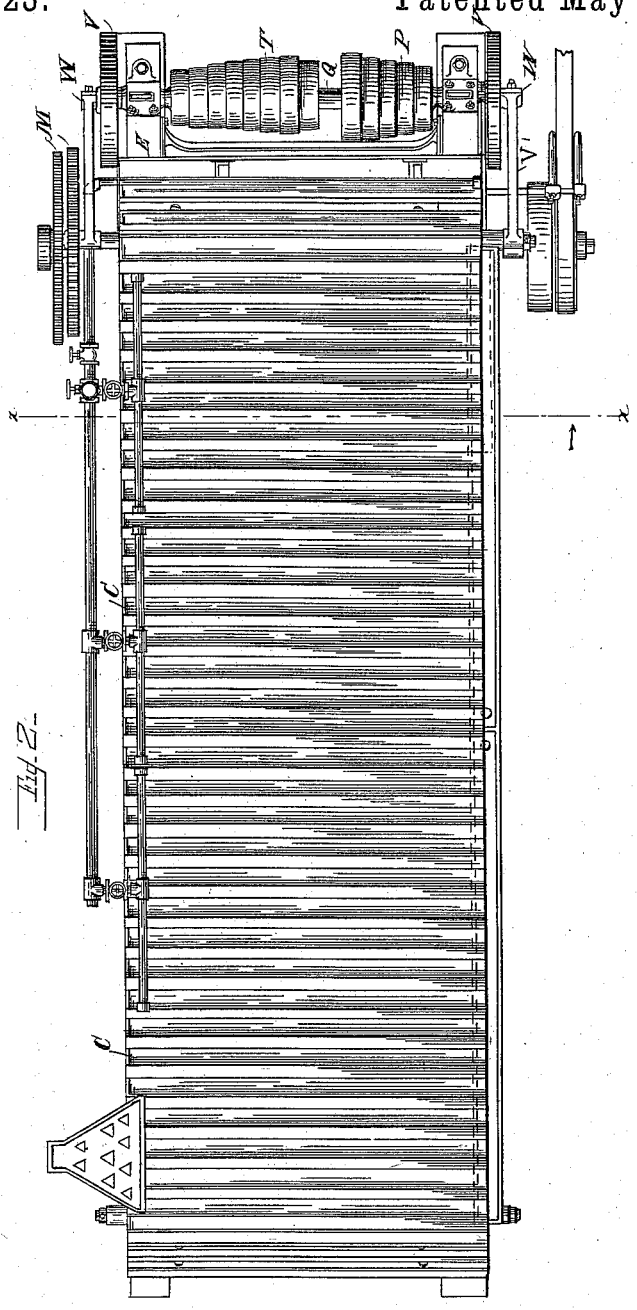

Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

A. HENDEY.

ORE WASHER.

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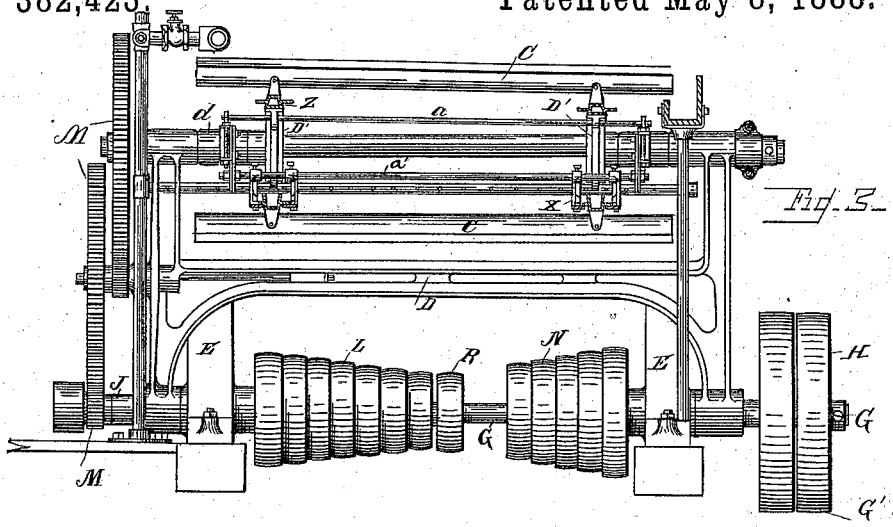

Fig. 3.

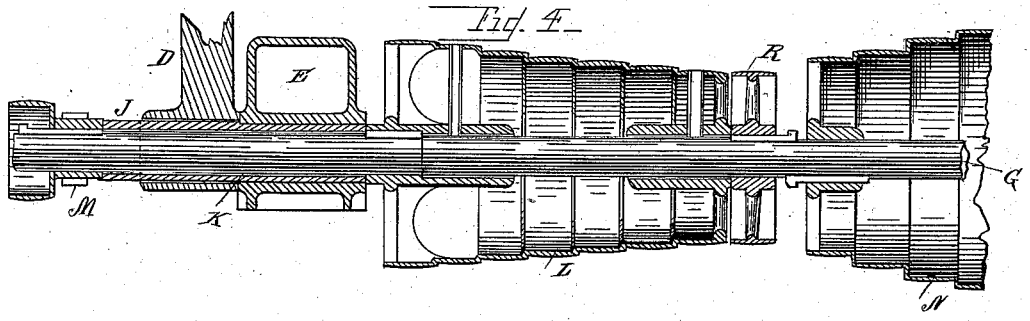

Fig. 4.

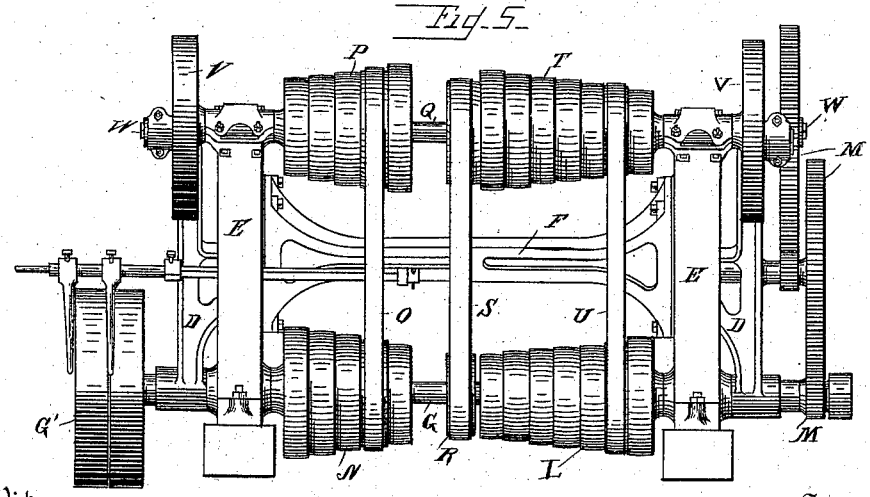

Fig. 5.

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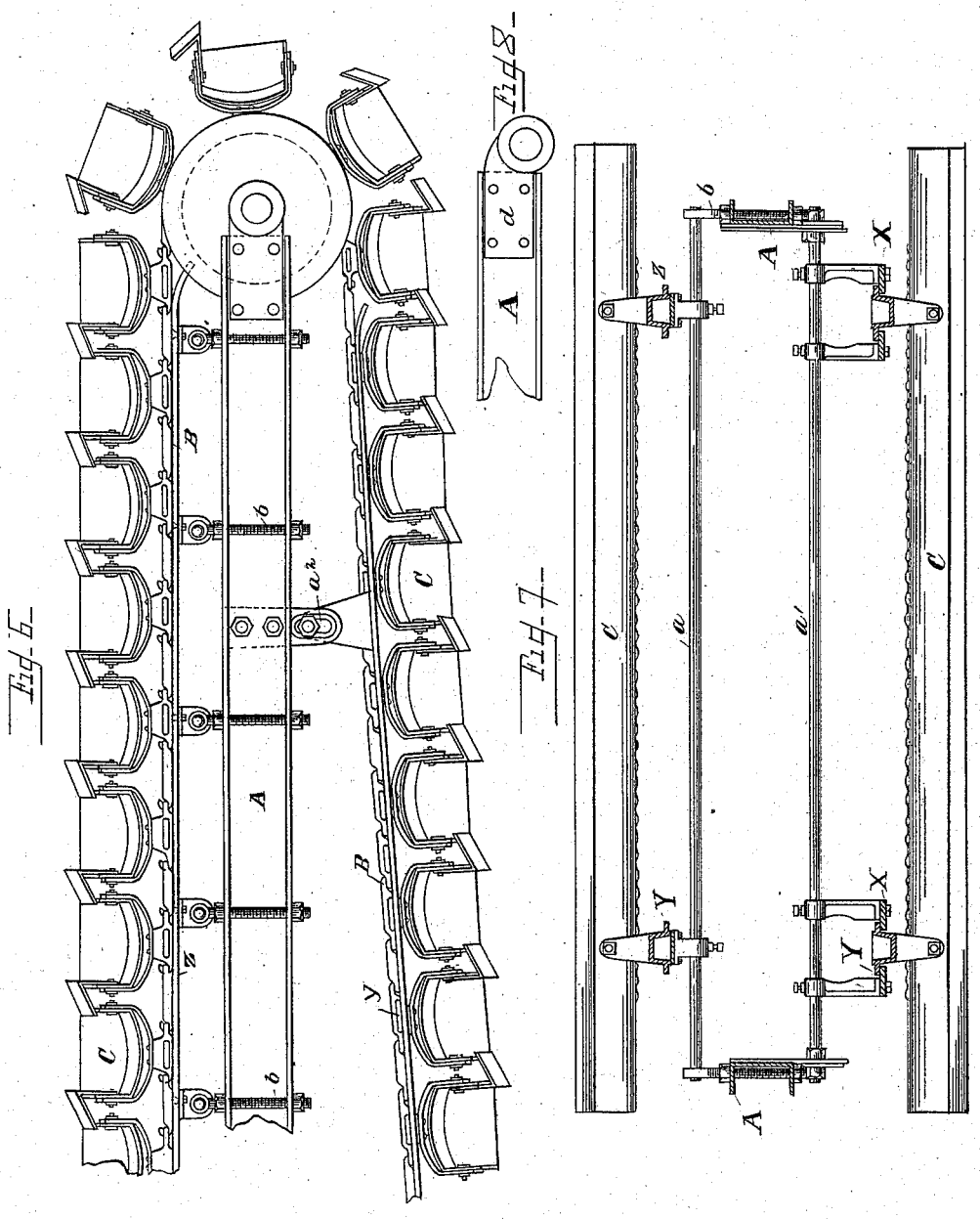
(No Model.) 4 Sheets—Sheet 4.

A. HENDEY.

ORE WASHER.

No. 382,423. Patented May 8, 1888.



Witnesses.

G. A. Taubenschmitt,

Wm. M. Stocklidge.

Inventor.

Arthur Hendey.

By his Attorney

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UNITED STATES PATENT OFFICE.

ARTHUR HENDEY, OF DENVER, COLORADO, ASSIGNOR TO CHRISTIAN WAHL, OF MILWAUKEE, WISCONSIN, AND LOUIS WAHL, OF CHICAGO, ILLINOIS.

ORE-WASHER.

SPECIFICATION forming part of Letters Patent No. 382,423, dated May 8, 1888.

Application filed March 16, 1887. Serial No. 231,133. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR HENDEY, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Ore-Washers; and I do hereby 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 ore-concentrators, the same being designed as an improvement of the machine described in Patent No. 214,140, granted to William Hooper, April 8, 1879; and it consists in the combination of parts hereinafter described and claimed.

In the drawings forming part of this specification, and to which reference is made, Figure 1 is a side elevation of a machine embracing my improvements. Fig. 2 is a plan of the same. Fig. 3 is a transverse section on the line *x x* of Fig. 2. Fig. 4 is an enlarged sectional view of the cone-pulleys, the bottom of the frame, and the driving-shaft, the latter being in elevation. Fig. 5 is a front elevation of the machine, showing the operating mechanism. Fig. 6 is a partial side elevation. Fig. 7 is a section showing details of construction of the endless bands and of the means of supporting said bands; and Fig. 8 is a detail view of one of the clips or castings for the main frame.

A is the main reciprocating frame carrying the endless bands or chains B B and the series of sluices C C.

The sides A A of the frame may be of any suitable material and construction—either a simple channeled bar or beam or truss. The sides are connected at intervals by transverse rods *a' a'* and *a a*. Attached to the rods *a a* are the flat bars or ways Z, for supporting the endless chains. The rods *a a* are carried by eyebolts *b b*, which are vertically adjustable in the sides of A A of the frame, whereby the rails or bars Z may be adjusted at any part of their length to give the sluices the necessary tip at such point. There are also connected with the transverse rods *a' a'*, by means of suitable hangers, flat iron bars or ways X X, for supporting the endless bands of chains and sluices, each alternate link of the chain being provided with wings Y Y, to rest and ride upon said ways. The rods *a' a'* are made vertically adjustable to raise or lower the tracks X X by means of slots a^2 in the pendants and clamping-nuts on the rod, as shown in Figs. 6 and 7.

To give the frame the proper twist or "wind" without adjusting the bars Z at one point more than another, I attach to the diagonal corners corresponding to the feed and discharge corners straight eye castings or clips, like *c*, (shown in Fig. 6,) and to the other diagonal corners offset castings, like *d*. (Shown detached in Fig. 8.) By the arrangement of clips or corner pieces shown two diagonal corners of the frame are higher than the other two, and a twist is given to the frame when originally adjusted. The frame thus constructed is mounted upon the upper ends of vibrating frames or supports D D. These supports D D are preferably made of cast-iron and they are flexibly connected with the foundation-timbers of the machine. The support-frame D, next the front end of the machine, is mounted on sleeves J J, concentric with the driving-shaft G of the machine, and carries a drum or support, D' D', for the endless bands and sluices.

E E are heavy pillars or supports preferably made of cast-iron and securely bolted or otherwise fastened to one end of the foundation timbers. They are also laterally supported by a transverse brace, F, as shown in Fig. 5. These pillars or frames E E furnish the supports and bearings for the shafting through which the vibratory motions are given to the main reciprocating frame A, and for the progressive movement of the endless series of sluices. G is the main driving-shaft of the machine. It is journaled near the lower end of one of the frames E, concentric with bearing of the forward vibrating frame D, and is propelled through driving-pulley G' from any prime motor. An ordinary loose pulley and belt-shifter is shown in Fig. 5. The driving-shaft G is shortened, as shown in Fig. 4, and another shaft, K, concentric therewith, is journaled in one of the sleeves J. On the inner end of shaft K is keyed a cone-pulley, L, and on the outer end is also keyed a pinion forming a part of a train of gearing, M, which imparts the progressive movement to the endless bands and sluices through the shaft

journaled in the upper end of the forward frame, D, which carries the drums D′ D′.

On the driving-shaft G there are keyed pulleys N and R. Q is a crank-shaft mounted in the upper part of the frames E E, carrying at its extremities crank-disks V V and intermediate cone-pulleys P and T, the former fast to the shaft and the latter bushed with anti-friction material loose thereon. The crank-disks V V are made heavy and provided with balance-bobs, to counterbalance in a measure the momentum of the reciprocating parts of the machine when in operation. The crank-pins W are made heavy, as shown as in Fig. 1, and are adjustably mounted in the disks through rectangular plates, as shown. Pitmen V′ V′ connect the cranks and the drum-shaft in the upper part of the forward support, D, and reciprocate the main frame A longitudinally. The cranks being adjustable the range of motion may be regulated to suit the character of the ore under treatment.

The operation of the machine is as follows: Power being applied to the driving-shaft G through pulley G′, the cone-pulley N through belt O imparts motion to pulley P and to crank-shaft Q. By means of these pulleys the speed of the crank-shaft, and consequently that of the reciprocating frame, is regulated. The shaft G also, through pulley R and belt S, imparts motion to loose pulley T, and said pulley T through belt U to pulley L, and thence through shaft K, to the train of gearing M, to drum or belt carriers D′ D′, to produce the progressive movement to the endless bands and the sluices connected therewith. The speed of the progressive movement of the bands is regulated by the cone-pulleys T and L. The endless bands slide along the flat bars or tracks Z, and that part underneath the frame is supported by wings Y Y on the ways or bars X X.

The pulp chute or spout, the water-supply, the troughs or ore-collectors, and the construction and operation of the sluices are similar to those described in the patent of Hooper, heretofore referred to, and are not herein described.

Having thus described my invention, what I claim is—

1. The combination of a progressively-moving endless series or apron of sluices, a reciprocating frame carrying said apron, pivoted links or frames supporting said sluice-frame from fixed points below, a shaft mounted in the frame-work concentric with the pivots of one pair of the links, a slow-down gear-connection between said shaft and a shaft of the endless apron for imparting the progressive movement to said apron, substantially as described.

2. The combination of an endless chain of sluices, a reciprocating frame for supporting said sluices, the rigid frames E E, adjacent to the reciprocating frame, distributing-gearing carried by frames E E, (consisting of main driving-shaft G, carrying pulleys N and R, the crank-shaft Q, carrying cranks V V, fast pulley P and loose pulley T, the shaft K, carrying pulley and pinion,) pitman V′, for reciprocating the frame, and the train M, for moving the chain of sluices, substantially as described.

3. The combination of a progressively-moving endless series or apron of sluices, a reciprocating frame carrying said apron, pivoted links supporting said frame from fixed points below, a solid frame-work, E E, at one end thereof, devices, substantially as described, mounted in frame E E for reciprocating the sluice-frame, a shaft mounted in the frame-work concentric with the pivots of the links at that end, a slow-down gear-connection between said shaft and the shaft for imparting the progressive movement to the apron, substantially as described.

4. In a machine for washing ores, the combination of a reciprocating frame, the vertically-adjustable pendent bars or ways X X, supported by the frame, a series of sluices arranged transversely of said frame, endless chains and ways Y Y, fastened to said chains for connecting and carrying the series of sluices, as and for the purpose specified.

5. In a machine for washing ores, the combination of a reciprocating frame, the vertically-adjustable rods *a a*, mounted on said frame, and the flat bars or ways Z Z, mounted on said rods, as and for the purposes set forth.

6. In a machine for washing ores, the combination of a reciprocating frame having two diagonally-opposite corners higher than the other two, making a wind or twist in the frame, and an endless series of sluices mounted thereon, with the straight and offset castings *c* and *d*, connected with the alternate corners of the frame, substantially as described.

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

ARTHUR HENDEY.

Witnesses:
H. F. JOLLY,
C. A. CHISHOLM.