

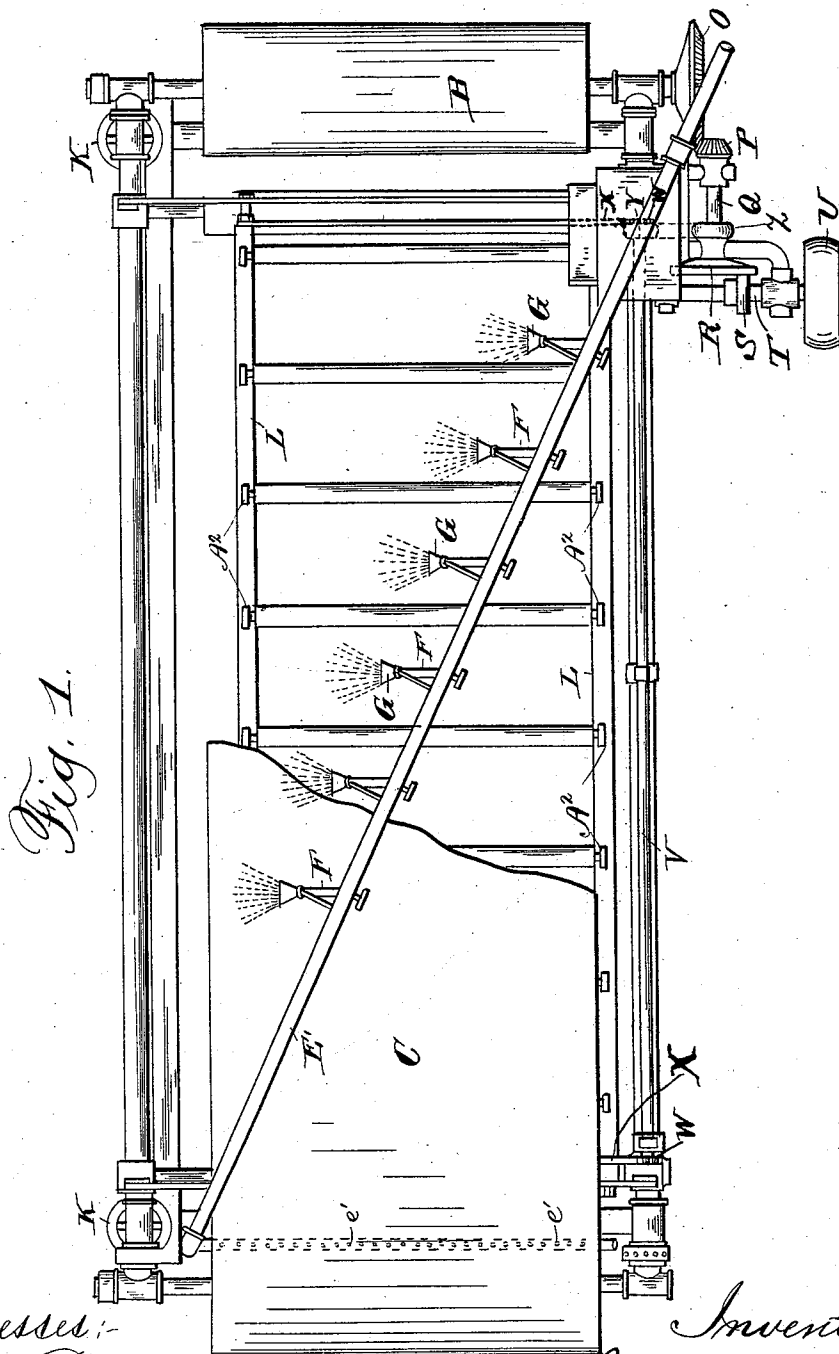
(No Model.)

2 Sheets—Sheet 1.

J. M. MONTGOMERY.
ORE CONCENTRATOR.

No. 531,381.

Patented Dec. 25, 1894.



Witnesses:-
Wm. E. Bulker
J. Willson.

Inventor:-
John M. Montgomery.
By J. H. Williams.
Attorney.

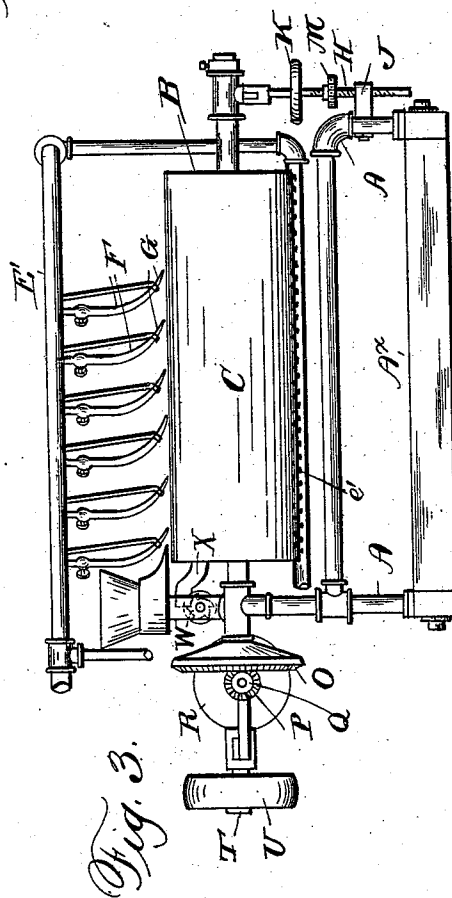
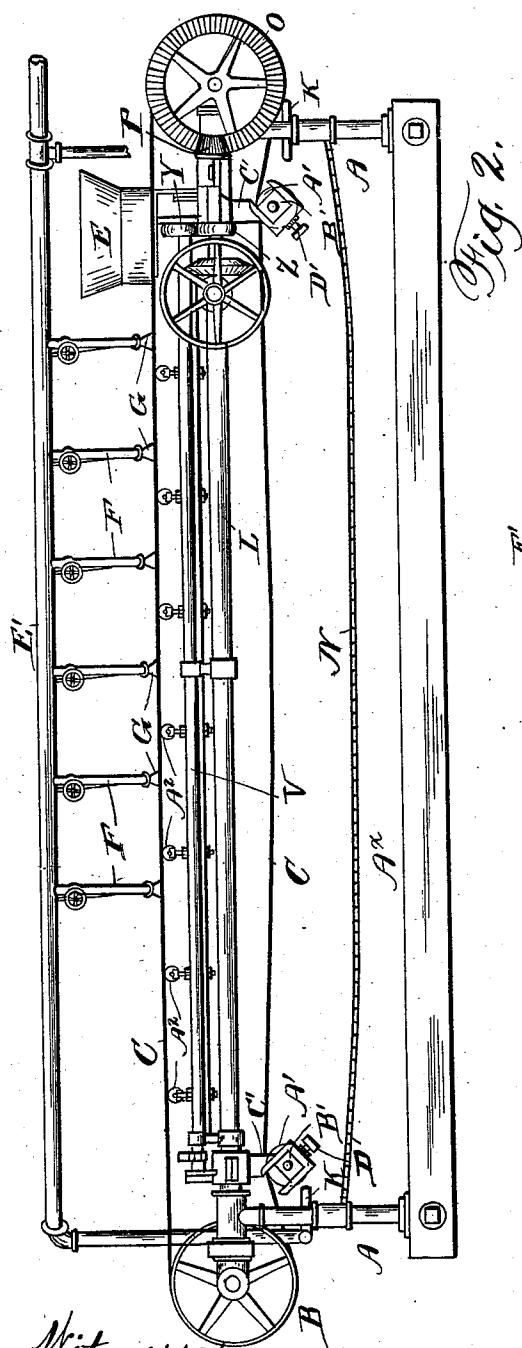
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2 Sheets—Sheet 2.

J. M. MONTGOMERY.
ORE CONCENTRATOR.

No. 531,381.

Patented Dec. 25, 1894.



Witnesses:-
Wm. C. Boulter.
J. Willson.

Inventor:
John M. Montgomery
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UNITED STATES PATENT OFFICE.

JOHN M. MONTGOMERY, OF BUTTE, MONTANA.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 531,381, dated December 25, 1894.

Application filed April 51, 894. Serial No. 506,472. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. MONTGOMERY, a citizen of the United States, residing at Butte, in the county of Silver Bow and State of Montana, have invented certain new and useful Improvements in Ore-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.

My invention has relation to ore concentrators or separators, and among the objects in view is to provide a concentrator which is comparatively simple and inexpensive in its construction, and effective in operation, and with the above and other objects in view, all of which will be apparent from the following description, my invention consists in the novel construction, arrangement and combination of parts, all as hereinafter fully described, illustrated in the drawings and pointed out in the appended claims.

In the drawings:—Figure 1 is a top plan view of my improved ore concentrator the endless apron or belt being broken away. Fig. 2 is a side elevation thereof and Fig. 3 an end view thereof.

In carrying out my invention I provide a suitable main supporting frame A, which is preferably constructed of piping and is firmly mounted upon the base A^x.

Pivotally mounted at one longitudinal edge upon the main supporting frame is a frame L, which is designed to carry the rollers supporting the under side of the apron or belt lying between the outer end supporting rollers or drums presently described, and which frame L is also designed to impart a jogging or shaking motion to the said apron or belt whereby the separation or concentration of the ore is rendered more thorough and effective.

The endless apron or belt upon which the concentration is effected passes around the end supporting rollers or drums B, which are carried by the main frame.

For supplying the ore or earthy matter to the endless apron or belt I employ a hopper E which is mounted upon the main frame at one corner thereof, and which hopper is de-

signed to discharge its contents upon the apron or belt.

For supplying the necessary liquid to the ore whereby the concentration is effected I provide a suitable water supply pipe E' which I arrange above and horizontally across the apron or belt, which pipe is provided with a series of depending branch pipes F, which at their lower ends are provided with nozzles G, which I make in a flat shape whereby the same will discharge the water in broad flat streams upon the apron.

The pipe E' extends downwardly at one end and beneath the apron in a transverse direction and is provided with a series of perforations e' whereby to effect the washing of the concentrates from the apron.

For the purpose of effecting the vertical adjustment of the frame L, I provide vertical screw-threaded shafts H which are arranged at each end of the machine and said shafts pass through threaded blocks J pivoted to the main frame and which shafts H are provided with hand wheels K for turning them.

The shafts are knuckle-jointed at their upper ends to the frame L, and are provided with sprocket wheels M geared together by a sprocket chain N. Thus by turning the hand wheel of one of the shafts H both ends of the frame L will be caused to be adjusted simultaneously.

For operating the apron to cause it to feed the ore along whereby to subject the same to the action of the water jets, I provide one of the drum shafts with a bevel wheel O, with which bevel wheel is adapted to mesh a bevel pinion P, which is mounted on one end of a short shaft Q, the opposite end of which is provided with a flat disk R, with which engages a disk S mounted on a driving shaft T carrying a belt pulley U.

In order to more thoroughly and effectively concentrate or separate the ore, a jogging or shaking motion should be imparted to the apron or belt carrying the ore. This jogging or shaking action may be effected in various ways, though I preferably secure such action by the means which I have devised for the purpose and which I have shown in the drawings. Such means comprise a longitudinally

arranged shaft V which is provided with ratchet wheels W upon each of which is adapted to bear the extended upwardly bent end L' of a cross bar of the frame L, so that it will be seen when the shaft is revolved a shaking motion is imparted to the frame L each time the ends of the cross bars clear the teeth of the ratchet.

For revolving the shaft V I provide the same with a belt pulley Y which is bolted to a similar pulley Z on the shaft Q, as seen in dotted lines, Fig. 1.

For the purpose of affording a support for the apron or belt C, I provide a series of longitudinally arranged rollers A', A² which rollers A' are journaled in bearing blocks B' slidably mounted in hangers C' carried by the frame L. The hangers are set at an angle to the face of the apron so that by adjusting the bearing blocks in the hangers by means of the set screws D' a greater or less tension may be put upon the apron by means of the rollers A'.

The rollers A' are mounted upon the longitudinal bars of the frame L.

From the foregoing description taken in connection with the accompanying drawings, the many advantages of my invention will be apparent.

What I claim, and desire to secure by Letters Patent, is—

1. In an ore concentrator, the combination with a supporting frame, of an endless apron or belt, end rollers or drums supporting said apron, a frame carrying apron-supporting rollers and provided with cross bars having ends projecting beyond the sides of the frame, a longitudinal shaft, ratchet wheels mounted thereon, and upon which ratchet wheels the projecting ends of the cross-bars bear, and means for rotating the said shaft and one of the apron rollers, for the purpose specified.

2. In an ore concentrator, the combination with a supporting frame, of an endless belt or apron, drums or rollers supporting said apron at the ends, a frame carrying intermediately arranged apron-supporting rollers and having cross-bars whose ends project beyond the frame, a longitudinal shaft V provided with ratchet wheels upon which latter said ends of the cross-bars bear, and means for rotating the end-supporting apron-rollers and shaft V consisting of a bevel wheel O on the shaft of one roller, a shaft Q having a bevel pinion P meshing with the said wheel O, a friction disk R on said shaft Q, a shaft T, a friction disk S thereon engaging the disk R, a belt pulley Z on shaft Q, a belt pulley Y on said shaft V and belted to a belt pulley U on shaft T, as described.

3. In an ore concentrator, the combination with a supporting frame, an endless apron or belt, drums or rollers supporting said apron, a frame L, and crossbars on said frame having projecting ends a longitudinal shaft having ratchet wheels upon which said projecting ends bear, of means for adjusting the ends of frame L simultaneously, consisting of vertical screw-threaded shafts H at each end of the machine, the upper ends of said shafts being jointed to the frame L, threaded blocks J through which said shafts work, said blocks being pivotally carried by the main frame, a hand wheel for each of the vertical shafts, sprocket wheels M on the shafts H and a sprocket chain N gearing said sprocket wheels together, as and for the purpose specified.

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

JOHN M. MONTGOMERY.

Witnesses:

HARRY V. HOPKINS,
WILLIAM I. LIPPINCOTT.