

(No Model.)

2 Sheets—Sheet 1.

T. McGLEW.
ORE CONCENTRATOR.

No. 505,412.

Patented Sept. 19, 1893.

Fig. 1.

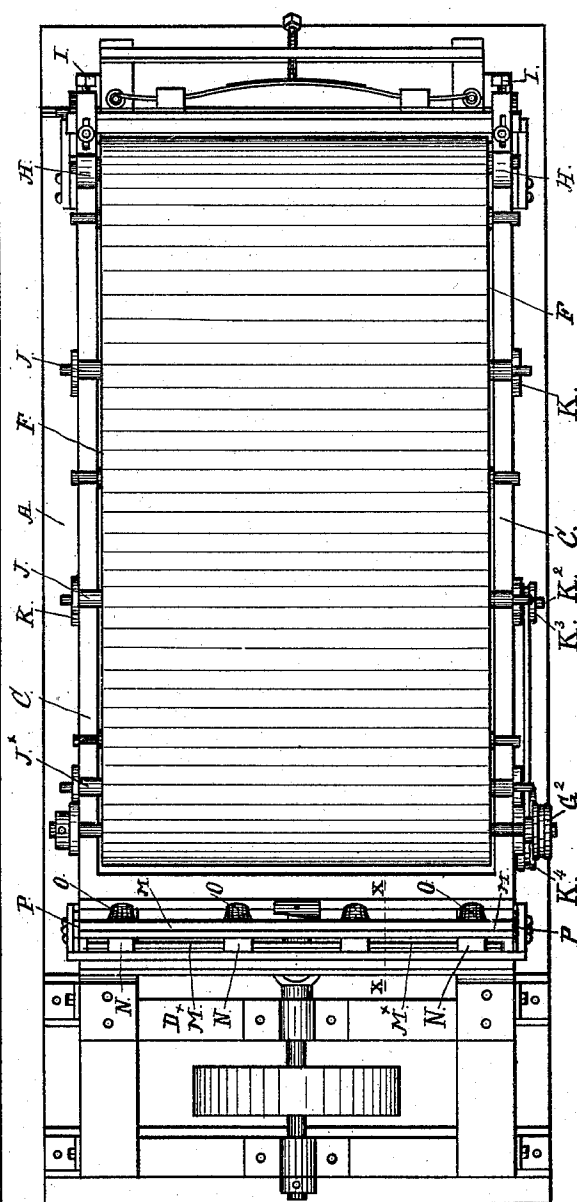
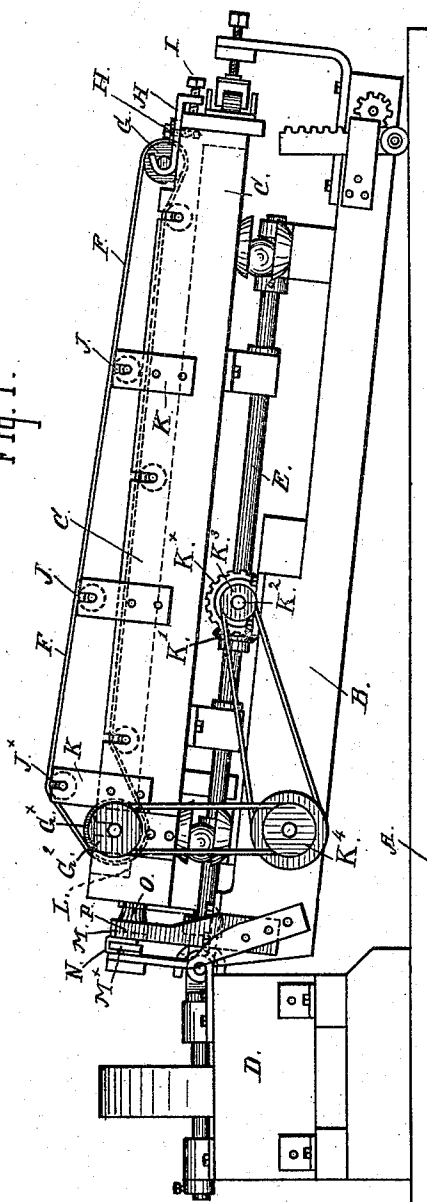


Fig. 2.

Witnesses:

Mr. Regier
William Franklin

Inventor:

Thomas McGlew
By Smith & Osborn
Attorneys

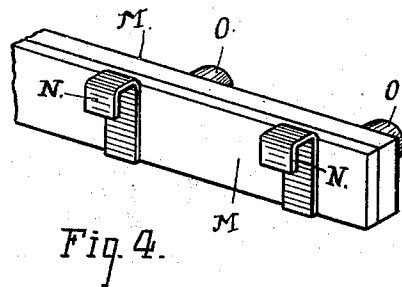
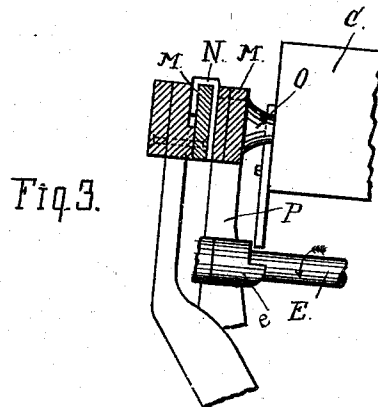
(No Model.)

2 Sheets—Sheet 2.

T. McGLEW.
ORE CONCENTRATOR.

No. 505,412.

Patented Sept. 19, 1893.



Witnesses:

M. Regner

William Franklin

Inventor:

Thomas McGlew

By *Smith & Osborn*
Attys.

UNITED STATES PATENT OFFICE.

THOMAS MCGLEW, OF SAN FRANCISCO, CALIFORNIA.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 505,412, dated September 19, 1893.

Application filed February 20, 1893. Serial No. 463,104. (No model.)

To all whom it may concern:

Be it known that I, THOMAS MCGLEW, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Ore-Concentrators, of which the following is a specification.

My present invention relates to improvements made in machines for concentrating ores of that class or description for which I made application for Letters Patent of the United States for improvements in ore concentrators, filed April 21, 1892, Serial No. 430,019.

The improvements consist in the novel construction and combination of a horizontal and transverse reciprocating concentrator frame and a transversely movable buffer imparting concussion or percussion to the frame and means for driving an endless apron or concentrator belt from a longitudinal shaft. They also comprise a novel means of supporting and taking up the slack of the endless concentrator belt or apron as hereinafter explained. The said improvements and the manner in which I construct and apply the same in the production of an ore concentrator are fully described in the following specification in which reference is had to the accompanying drawings.

Figure 1 is a view in side elevation of my improved ore concentrator. Fig. 2 is a plan. Fig. 3 is a section taken through line *x x* Fig. 2 showing the mechanism of shaking-table. Fig. 4 is a view in perspective of part of the buffer.

A is a bed or platform upon which is mounted a head piece or block D which carries the driving pulley of the machine.

B is a supporting frame and is secured at one end to the block D by means of hinges or other suitable connections, so that the free or opposite end thereof can be raised or lowered, as may be desired. Mounted on the supporting frame B by means of friction rollers is the shaker frame or table of the concentrator. There is also mounted upon the supporting frame B in suitable bearings a longitudinal shaft E. Upon this shaft E are cams which work in guides or brackets on the under side of the table and impart thereto a transverse movement when the shaft is ro-

tated. Near the forward end of the shaft is a cam *e* which engages a depending plate on the forward end of the table and serves to give the table a longitudinal movement when the shaft is rotated. The shaft E is connected to the shaft of the driving pulley by a universal connection. By this arrangement of the cams on the longitudinal shaft the table is given both a transverse and a longitudinal movement when the shaft is operated.

An endless apron or belt F for concentrating ore or sulphurets operates in the shaking-frame or bed C upon the two end cylinders G G^x. The latter is of greater diameter and has its journals in the shaking frame while the former G being of less diameter and has its journals in movable bearings which consists in slotted take up straps H H having curved inner ends which engage with the end-journals of the cylinder and are movable in the slots upon pins or screws by means of set screws I, I, passing through the arms thereof and bearing against the end of the shaking-frame. By this means any slack of the endless belt or apron is easily and quickly taken up.

Intermediate between the cylinders G G^x are placed the rollers J J J^x suitably supported and journaled in the brackets K K K connected to the side-rails of the shaking-frame. The upper roller J^x over which the endless belt passes will engage with the cylinder G^x and relieve the endless belt or apron from friction and strain and permit it to be operated with greater ease, while the roller J J will support the belt centrally and prevent it from sagging.

Motion is imparted to the endless belt or apron by means of a bevel gear K' keyed to the longitudinal shaft E which is engaged by a beveled gear K^x connected to a transverse shaft K² journaled on the supporting-frame B. At the end of this shaft is a fixed pulley K³ which connects with a double grooved loose pulley K⁴ by means of belt. Connection is then made with the end of the driving cylinder G^x by a belt passing around a grooved pulley G² in the end of the shaft thereof and groove in the loose double pulley K⁴. As thus constructed and when power is applied to the longitudinal shaft E a horizontal transverse reciprocating motion is im-

parted to the frame carrying the endless belt or apron and causes the latter to move in a reverse or backward direction and when the sulphurets or ore with water is fed to the endless concentrating belt the gangue being lighter or of less specific gravity will pass down the belt or apron and be carried off with the surplus of water away from the lower end of the machine while the sulphurets or particles of ore being of greater specific gravity will be carried up on the face of the apron and deposited in a trough L containing water through which the apron passes in the usual way of saving sulphurets.

15 In the process of concentration it is important that the gangue should be separated from the ore or sulphurets as nearly as possible and this I accomplish in a more thorough manner than heretofore by imparting an intermittent percussion or concussion to the frame carrying the apron or belt which consists in providing a movable buffer composed of a transverse sliding plate M located in the head-block or frame D having bent hook-plates N, N, which engage with and operate upon the upper edge of a fixed plate M^x back of and parallel with the buffer-plate M. To the outer face of the buffer plate a series of elastic buffers O, O, O, O, preferably of india rubber so that when the shaking-frame or table is carried downward by the operation of the cam *e* on the longitudinal shaft against the depending plate secured to the forward end of the table C tension will be given to the flat spring at the foot and when released by the cam the table will spring back and the end thereof will impinge against the buffer and produce percussion or concussion and tend to separate the gangue or lighter particles upon the table or belt from the sulphurets or heavier and valuable portions of the ore in a more thorough manner than heretofore. As the end of the frame strikes the buffers the reaction of the flat spring will keep the table in close contact with them and when transverse motion takes place it will carry the buffer-plate with it and the hook-plates N, N, moving to and fro on the edge of the fixed plate M^x, the play of this buffer-plate in its transverse movement is controlled by the stiffness of the springs P, P, secured to the ends thereof, and connected to the supporting frame of the machine. When the depending plate secured to the forward end of the table is released from the cam *e* the table will be thrown by the spring at the other end thereof, forward and against the buffers on the buffer-plate M. While the table is held against the buffers it commences its transverse movement, and as it is held

tightly against the buffers, the buffer plate will move transversely with it until the table leaves the buffers and goes on its longitudinal travel, when the springs P, P, on the ends of the buffer-plate will return it to its normal position ready for the next impact of the table. It will be seen that by the use of this sliding buffer plate the action of the table in its transverse movement will be free and without any great friction, as would be the case if the buffer-plate were stationary.

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

1. In an ore concentrator of the character described, the combination of a longitudinally and transversely reciprocating frame or table, cylinders mounted at each end thereof, an endless belt on said cylinders, intermediate supporting rollers for said belt, and mechanism, substantially as described for operating the said belt and frame from the shaft E, with the buffer plate M having suitable buffers thereon, and support for said buffer plate, as and for the purpose set forth.

2. In an ore concentrator of the character described the combination of a longitudinally and transversely reciprocating frame or table, a cylinder mounted on one end of said frame, a cylinder mounted in an adjustable bearing at the other end thereof, an adjustable bearing for said cylinder, an endless belt on said cylinders, intermediate supporting rollers for said belt, and pulleys and belts, substantially as described, operated from the longitudinal shaft E; with the buffer plate M having suitable buffers thereon, support for said buffer plate, and hooks or guides for attaching said buffer plate to said support, the said buffer plate being adapted to reciprocate transversely of the machine, as set forth.

3. The combination with the shaking-bed or frame, of an ore concentrator, of the transverse-plate M carrying elastic buffers O, O, and bent arms or hook-plates N N moving on a fixed plate or runway M^x, as specified.

4. The combination with the shaking bed or frame of an ore concentrator, of the buffer-plate M having suitable buffers thereon, support for said buffer-plate, and hooks or guides for attaching said buffer-plate to said support, the said buffer-plate being adapted to reciprocate transversely of the machine, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

THOMAS MCGLEW. [L. S.]

Witnesses:

C. W. M. SMITH,
CHAS. E. KELLY.