

No. 833,415.

PATENTED OCT. 16, 1906.

F. E. PEARSON.  
ORE CONCENTRATOR.  
APPLICATION FILED FEB. 16, 1906.

2 SHEETS—SHEET 1.

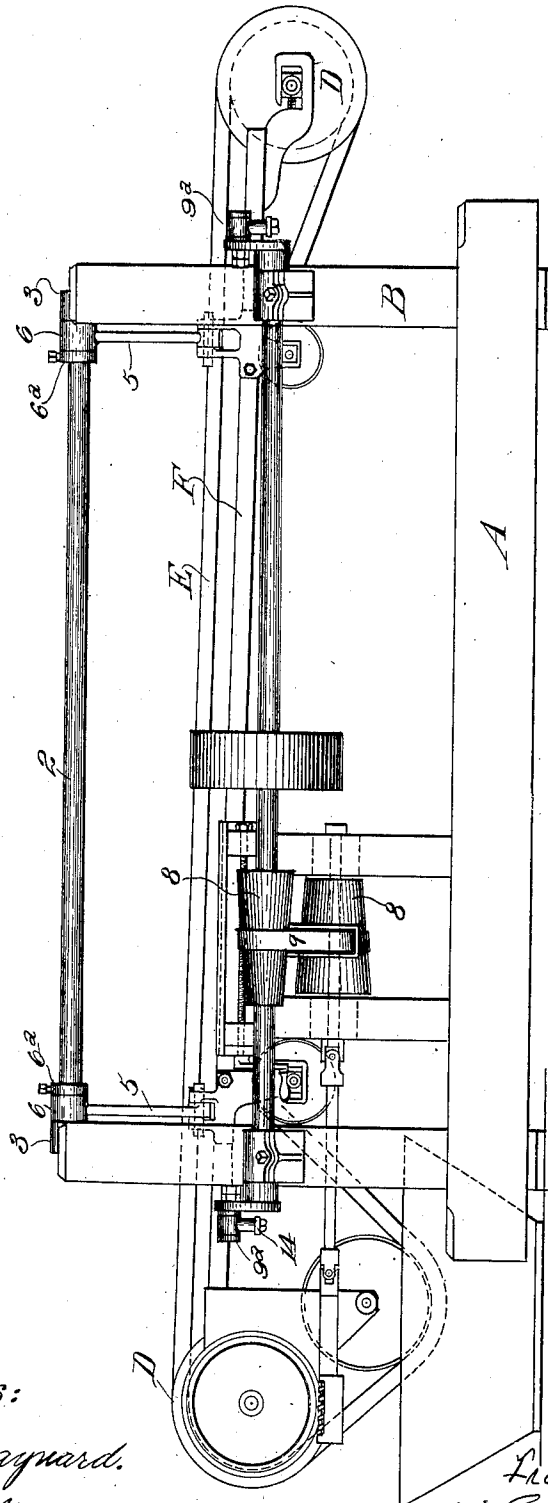


Fig. 1.

Witnesses:

Fred. E. Maynard.  
J. H. Strong.

Inventor:

Frank E. Pearson  
By Geo. H. Strong atty.

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2 SHEETS—SHEET 2.

Fig. 4.

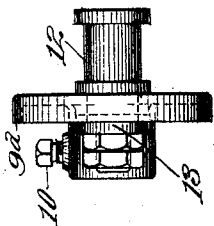


Fig. 3.

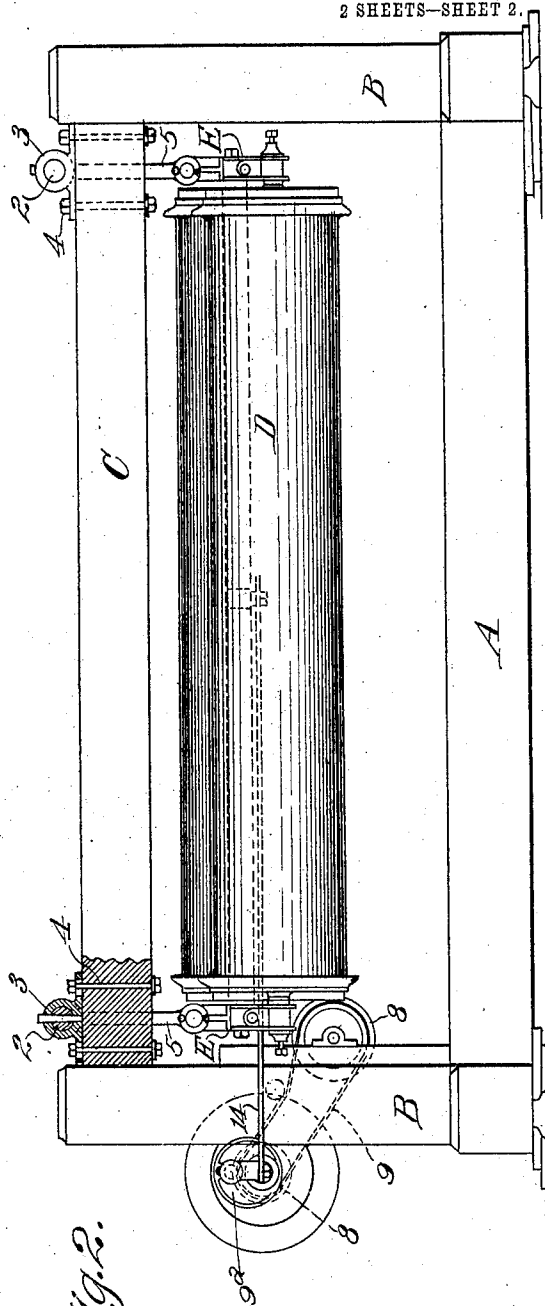
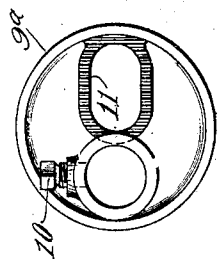


Fig. 2.

Witnesses:  
Fred C. Maynard,  
For use

Inventor:  
Frank E. Pearson  
By Geo. H. Strong, atty

# UNITED STATES PATENT OFFICE.

FRANK E. PEARSON, OF SAN FRANCISCO, CALIFORNIA.

## ORE-CONCENTRATOR.

No. 833,415.

Specification of Letters Patent.

Patented Oct. 16, 1906.

Application filed February 16, 1906. Serial No. 301,411.

*To all whom it may concern:*

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

My invention relates to ore-concentrators of a class in which an endless traveling belt is advanced in one direction over supporting-drums and is oscillated transversely to its line of travel.

My invention consists in a means of adjustably suspending the belt-frame, with means for changing the relative positions of the suspending-links to vary the tilting movement of the belt in its oscillations.

It also consists in a means for varying the throw of the crank or eccentric by which the oscillation is produced and regulating the speed of oscillation with reference to the throw of the crank.

It also comprises details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation illustrating my invention. Fig. 2 is an end view. Figs. 3 and 4 are enlarged views of the crank or eccentric adjustment.

A is the main frame having vertical standards B and transverse beams C at the top, uniting it into a sufficiently rigid structure. Supported from this frame are drums D, around which an endless belt E is adapted to travel at a slow rate of speed. Mechanism for actuating the belt is omitted as being no part of the present invention.

The drums and belt are carried upon a supplemental frame F, and it is the method of suspending this frame which is my invention in part.

2 represents shafts extending longitudinally between the transverse timbers C, which connect the upper end of the main-frame posts. These shafts are supported in boxes 3, which are secured to the main-frame timbers C by bolts 4 passing through these timbers and through the flanges of the boxes, so that when screwed down tightly the shafts 2 serve in a manner as braces for the main frame. The boxes are slotted, so that by loosening the bolts the boxes may be moved to or from each other, or both moved in the same direction, for a purpose to be hereinafter described. The belt-carrying frame is suspended from

the shafts 2 by means of links or suspending-rods 5, which connect with sleeves 6, these sleeves being journaled and turnable upon the shafts 2, and they may be retained in place and adjusted with relation to the suspended frame by collars 6<sup>a</sup>, which are set up against the sleeves and fixed by set-screws. If the boxes of the shafts 2 are moved so that the links hang directly vertical, the transverse oscillation of the belt and its frame will cause an oscillation of the belt in which the belt and frame move through a small concave arc, and all portions of the belt are raised and depressed substantially simultaneously.

If it is desired to cause one edge of the belt to rise to a greater extent than the other, the suspending-shafts and their boxes are moved with relation to each other—that is, by moving one of the shafts so that the suspending-links on one side stand diagonally while the others are substantially vertical in the central portion of the oscillation, a movement to one side will raise the side of the belt suspended from inclined links more than from the opposite side, thus tending to shift the material on the surface of the belt toward the side having the least rise. The motion in the other direction will cause the opposite side to rise more than the one suspended from the inclined links, and these inclined links will depress that edge of the belt relative to the other. The action thus produced serves to distribute the material more evenly over the surface of the belt.

Various adjustments may be made, as will be seen by the shifting of the links and their supports with relation to the suspended belt.

In order to produce the required oscillation of the belt and to vary it with relation to the speed at which the belt is oscillated, I employ the cone-pulleys 8, having a belt 9, and power is communicated to revolve one of these pulleys from any suitable counter-shaft or motor.

The movement of the belt toward one end of the pulleys brings the belt upon the smallest part of the driving-pulley and the larger part of the driven pulley, and a movement toward the opposite end carries the belt upon the larger part of the driving-pulley and the smaller part of the driven pulley, thus varying the speed of the driven pulley mounted upon the driven-pulley shaft and cranks or eccentrics 9<sup>a</sup>. As here shown, these devices consist of circular disks having holes and hubs through one side, and these are fixed upon the driven shaft by set-screws or other

devices, as shown at 10. In line with the axes of these shafts and extending across the larger diameter of the disk are elongated slots 11. The peripheries of these slots are raised and notched, as shown. The connecting-rod pins 12 have the correspondingly-notched heads 13, which may interlock with the teeth of the slots 11, and they may be moved nearer to or farther from the axis of revolution of the disks and set in position. The connecting-rods 14, extending from these pins to the oscillating belt-carrying frame, make the desired connection, so that when fine sulfurets are being carried over the belt the stroke may be made long by changing the crank-pins to the farthest outward position on the disks and shifting the driving-belts so that the slowest motion of the driven pulley will be produced.

If the sulfurets are coarse, it is found better to make the stroke short by shifting the crank-pins to the position nearest to the center of motion and changing the belt on the cone-pulleys so as to produce the highest speed.

By this construction and combination of parts I am enabled to produce a great variety of movements and to more effectively carry on the concentration of the sulfurets passing over the belt.

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

1. An improved ore-concentrator consisting of a main frame having vertical end standards, transverse beams connecting the upper portions of said standards, an independent frame within said main frame below the top of the standards, an endless belt operable in the independent frame, boxes mounted upon the transverse beams of the main frame, parallel shafts extending from

one transverse beam to the other and having their ends supported in said boxes, said shafts serving as top braces for the standards of the main frame, and said boxes being adjustable in the direction of the length of the transverse beams, rods mounted on the shafts said rods depending from the shafts and having their lower ends pivotally connected to the independent belt-carrying frame whereby said latter frame is hung directly from the shafts, the opposite ends of said shafts being independently adjustable, and means for oscillating the independent frame in a transverse direction.

2. An improved ore-concentrator consisting of a main and supplemental frame said main frame having vertical standards at the ends, rods extending longitudinally and continuously from one end standard to the other whereby said standards are braced at their upper ends, means whereby the ends of the shafts may be independently adjusted in a transverse direction, an endless belt mounted in the supplemental frame, rods upon the end portions of the shafts and capable of a swinging movement thereabout, said rods depending from the shafts and having sleeves at their upper ends and having their lower ends pivotally connected to the supplemental frame, collars slidable on the shafts and adapted to abut against said sleeves to fix the rods in their adjusted positions, and means for giving the supplemental frame a transverse oscillating movement.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK E. PEARSON.

Witnesses:

S. H. NOURSE,  
D. B. RICHARDS.