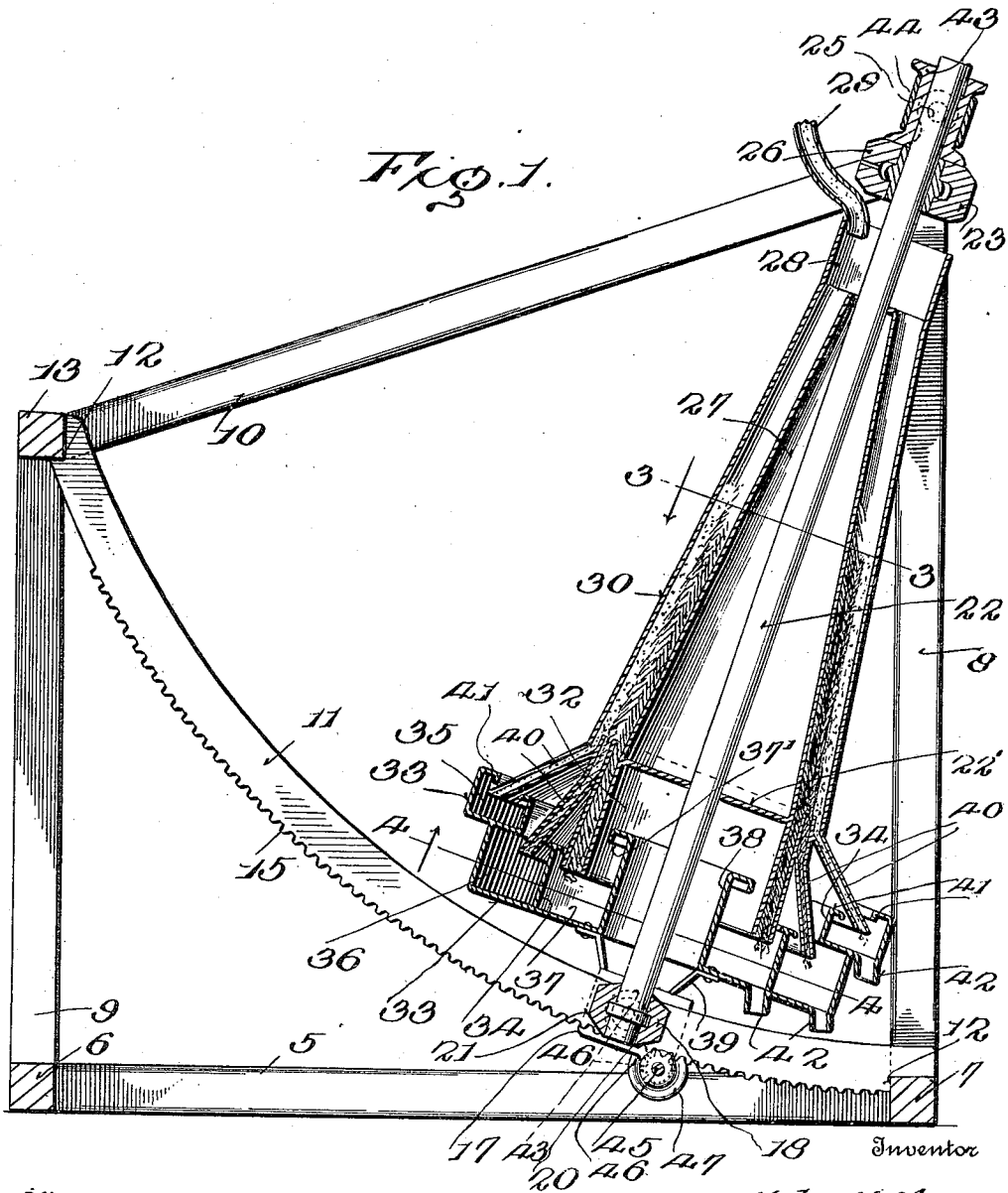


E. H. MOE.
ORE CONCENTRATOR.
APPLICATION FILED NOV. 26, 1909.

972,463.

Patented Oct. 11, 1910.

2 SHEETS-SHEET 1.



Witnesses
W. H. Thompson
Juana M. Fallon

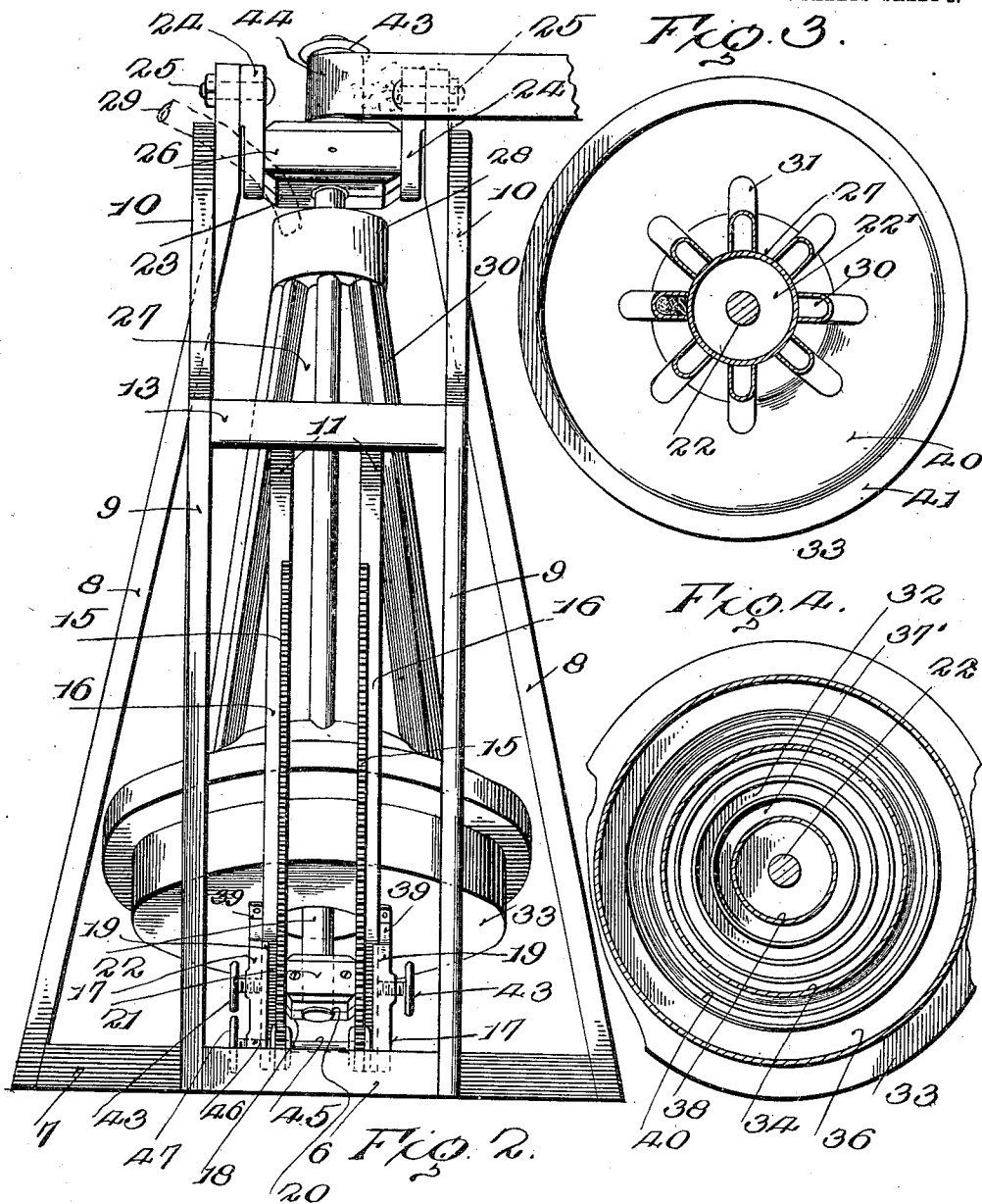
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Witnesses
W. H. Woodman
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UNITED STATES PATENT OFFICE.

ELDOR H. MOE, OF SALT LAKE CITY, UTAH.

ORE-CONCENTRATOR.

972,463.

Specification of Letters Patent.

Patented Oct. 11, 1910.

Application filed November 26, 1909. Serial No. 529,984.

To all whom it may concern:

Be it known that I, ELDOR H. MOE, citizen of Norway, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Ore-Concentrators, of which the following is a specification.

This invention relates to ore concentrators and has for its object the provision of a strong, durable and thoroughly efficient machine of this character, in which the separation of the material is effected by centrifugal force.

A further object to provide a concentrator including a revolving drum having a circumferential series of longitudinal separating tubes or chambers secured thereto and through which the ore is fed to receiving troughs.

A further object is to provide means connected with the separating tubes or chambers for positively directing the middlings, concentrate and residue into their respective receiving troughs.

A further object is to provide means for changing the angle or inclination of the drum with respect to the supporting frame thus to accelerate or retard the flow of material through the separating tubes.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a longitudinal sectional view of an ore concentrator constructed in accordance with my invention; Fig. 2 is a front elevation of the same; Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1; Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 1.

Corresponding and like parts are referred to in the following description and indicated

in all the views of the drawings by the same reference characters.

The machine comprises a supporting frame including spaced longitudinally disposed sills 5 connected by transverse bars 6 and 7, to one of which are connected in any suitable manner converging side bars 8, there being spaced uprights 9 secured to the other transverse bar and connected through the medium of rearwardly and upwardly inclined bars 10, the latter being bolted or otherwise secured to the converging ends of the side bars 8, as shown.

Disposed within the lines of the uprights 9 are arcuate bars 11 having their opposite ends recessed at 12 for engagement with the rear transverse bar 7 and a similar transverse bar 13 connecting the upper portions of the uprights 9.

The lower longitudinal edges of the arcuate bars 11 are formed with teeth 15, while the upper longitudinal edges thereof are provided with laterally extending flanges 16, which form a guide for a slide or carriage 17. The carriage 17 comprises a plate 18 which extends across the upper longitudinal edges of the arcuate bars 11 and is provided with oppositely disposed overhanging flanges 19 which embrace the flanges 16 of said arcuate bars, there being a recess 20 formed in the plate 18 and a corresponding recess formed in an auxiliary detachable plate 21 and registering with the recess 20 to form a bearing for the lower end of a main operating shaft, indicated at 22.

Pivotally mounted between the upper ends of the converging side bars 8, is a supporting member or bracket 23 having spaced vertically disposed lugs 24 provided with transversely alined perforations to permit the passage of pivot pins or bolts 25, the latter being extended through the adjacent ends of the converging side bars 8 so as to permit free oscillation of the bracket between the side bars.

The bracket 23 forms a bearing for the upper end of the operating shaft 22, there being registering recesses formed in the bracket and a plate 26 secured to the bracket to accommodate the shaft 22, as shown.

Keyed or otherwise rigidly secured to the operating shaft 22, is a conical shaped drum 27, the lower end of which is disposed con-

centric with the shaft 22 and provided with a transverse strengthening plate 22', while the upper end thereof supports a hopper 28, the ore and water being delivered to the
5 hopper through the medium of a flexible tube or conductor 29. Surrounding the conical shaped drum 27 and secured thereto in any suitable manner, are a circumferential series of longitudinally disposed inclined
10 separating tubes 30 through which the material is fed to the receiving troughs. The opposite side walls of the tubes 30 are preferably disposed parallel with each other, while the outer walls thereof are curved or
15 rounded, as indicated at 31 in Fig. 3 of the drawings.

Surrounding the lower end 32 of the drum, is a receptacle 33 having a plurality of upright partitions 34 defining independent
20 receiving troughs 35, 36 and 37, the metal forming the inner end of the trough 37 being extended upwardly to form a central tubular portion 38 having a depending flange 37' disposed within and spaced from
25 the cylindrical portion 32 of the drum, as shown.

The receptacle 33 is rigidly secured to the slide or carriage 17 by one or more inclined
30 braces 39, preferably disposed at the cylindrical portion 38.

As a means for positively directing the different grades of material into their respective troughs, there are provided a plurality of sets of funnel shaped plates 40
35 spaced apart to form an intermediate passage for the material, the passage between each set of plates communicating at its upper end with the several tubes or chambers and at its lower end with the adjacent receiving trough.
40

The outer walls of the receptacle 33 and the partitions 34 are each preferably formed with laterally extending flanges 41 to assist
45 in preventing the material in one receiving trough from entering an adjacent receiving trough, there being a spout 42 depending from each receiving trough to permit the discharge of the material. The upper end
50 of the shaft 22 is extended longitudinally beyond the bracket 23 to permit the attachment of a pulley 43, the latter being connected through the medium of a belt 44 with an engine or other suitable source of power for rotating the drum 27.
55

As a means for raising and lowering the lower end of the drum 27 thus to accelerate or retard the flow of material through the separating chambers or tubes, there is provided a transverse shaft 45 having its opposite
60 ends journaled in perforated lugs 46 depending from the flanges 19 of the carriage.

Spaced pinions are secured to the shaft 45 for engagement with the teeth on the rack
65 15, there being a hand wheel 47 secured to

one end of the transverse shaft 45 so that by rotating the hand wheel, the lower end of the drum may be adjusted in the arc of a circle on the arcuate bars 14, for the purpose
70 before mentioned.

Thus it will be seen that ore and water fed into the hopper 28 through the conductor 29 will enter the separating compartments or tubes 30 and will be thrown
75 outwardly by centrifugal force, the finer particles or concentrate adhering to the curved walls of the separating tubes, the middlings assuming a central position within the tubes and the residue collecting
80 around the inner edges of the tubes and against the outer face of the drum 27, as best illustrated in Fig. 3 of the drawings.

As the drum 27 revolves, the concentrate will be delivered through the passage formed between the outer set of plates 40 into the
85 receiving trough 35 for delivery through the spout 42 to the launder and the middlings will pass through the passage between the intermediate set of plates into the chamber 36 and thence be fed through the spout
90 42 into a receptacle for future delivery to the hopper 28, while the residue will pass through the passage between the inner set of plates into the trough 37 and thence off to the tailing dump.
95

In order to change the angle or inclination of the drum and its associated parts with respect to the supporting frame, it is merely necessary to rotate the hand wheel
100 47 until the desired adjustment is effected and subsequently rotate the clamping screws 43, which latter engage the flanges 16 and serve to lock the drum in adjusted position.

Attention is here called to the fact that the strands of the belt 44 are disposed on opposite sides of the pivot bolts or pins 25 so
105 that the belt 14 constantly maintains the proper tension regardless of the angle or inclination assumed by the hopper.

Having thus described the invention, what
110 is claimed as new is:

1. An ore concentrator including a supporting frame, a bracket pivotally mounted on the frame, spaced arcuate rack bars secured to the frame, a carriage slidably
115 mounted between the rack bars, an operating shaft journaled in the bracket and carriage respectively, a drum mounted for rotation with the shaft and provided with a plurality of circumferential separating compartments,
120 a series of receiving troughs, means for positively directing the different grades of material into their respective receiving troughs, and pinions carried by the carriage and adapted to engage the teeth on the racks for
125 moving the drum to different positions of angular adjustment with respect to the supporting frame.

2. An ore concentrator including a supporting frame, a bracket pivotally mounted
130

on the supporting frame, spaced arcuate rack bars secured to the frame, a carriage slidably mounted between the rack bars, an operating shaft journaled in the bracket and carriage respectively and having one end thereof projected longitudinally beyond the bracket and provided with a pulley, a drum mounted for rotation with the shaft, a plurality of open-ended separating tubes carried by the drum, a hopper communicating with the tubes at the upper ends thereof, a plurality of receiving troughs, means for positively directing the different grades of material into the adjacent troughs, pinions carried by the carriage and adapted to engage the teeth on the racks for adjusting the drum with respect to the frame, and a belt engaging the pulley and having its opposite legs disposed on opposite sides of the pivotal axis of the bracket.

3. An ore concentrator including a supporting frame, a bracket pivotally mounted on the frame and provided with a bearing, spaced arcuate rack bars secured to the frame and provided with laterally extending flanges, a carriage having a bearing and

provided with overhanging flanges engaging the flanges on the rack bar, an operating shaft journaled in the bearings of the bracket and carriage respectively, a conical shaped drum carried by the shaft and provided with a plurality of spaced radiating separating compartments, a receptacle secured to the carriage partitions disposed within the receptacle and defining independent receiving troughs, means for positively directing the different grades of material from the separating tubes into the adjacent troughs, a stub shaft journaled on the carriage, pinions secured to the stub shaft and engaging the teeth on the racks for changing the angle or inclination of the drum, and clamping screws piercing the flanges of the carriage and engaging the flanges on the rack bars for securing the drum in adjusted position.

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

ELDOR H. MOE. [L.S.]

Witnesses:

C. M. NIELSEN,
JOHN JONES.