June 21, 1955 T. R. CLARK 2,711,250

ROTARY TROMMEL WITH INTERNAL GRIZZLY

Filed Nov. 30, 1953

2 Sheets-Sheet 1

Fig. 1

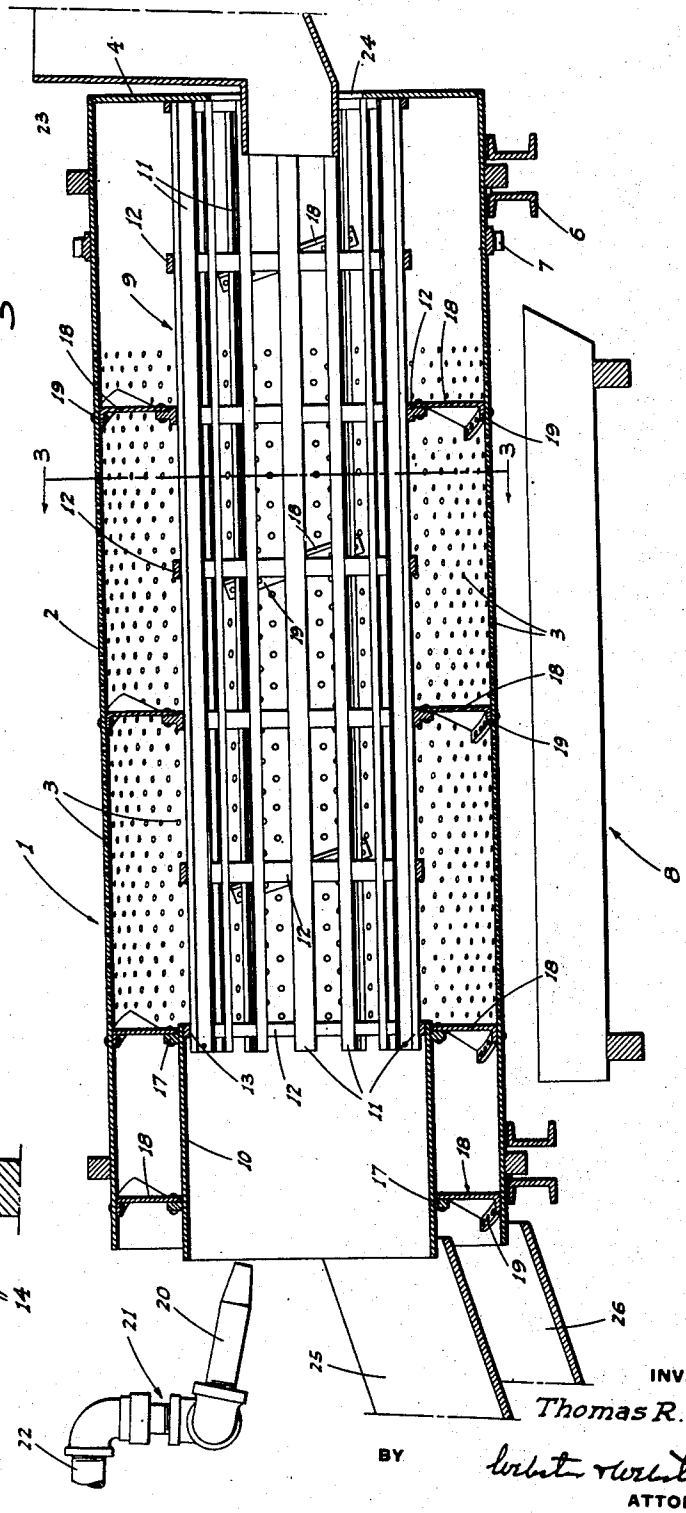
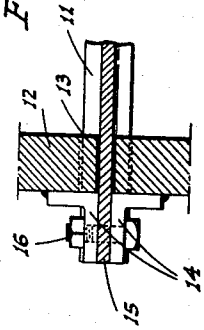


Fig. 4



INVENTOR
Thomas R. Clark
BY
ATTORNEYS

June 21, 1955 T. R. CLARK 2,711,250

ROTARY TROMMEL WITH INTERNAL GRIZZLY

Filed Nov. 30, 1953 2 Sheets-Sheet 2

Fig. 2

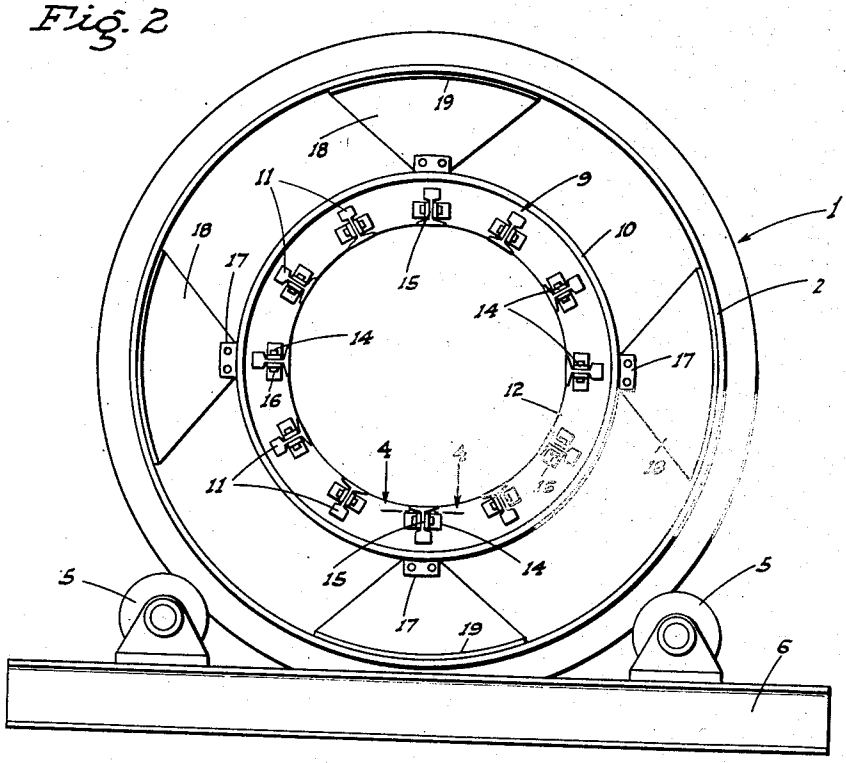
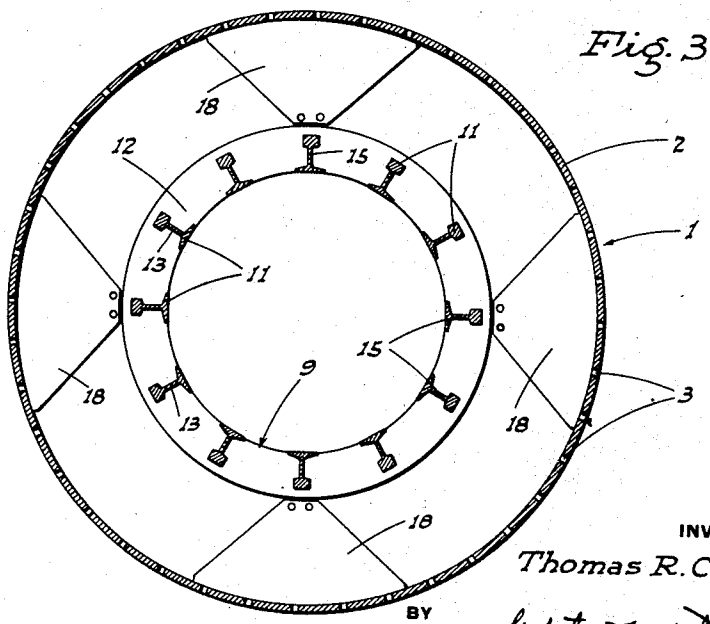


Fig. 3



INVENTOR
Thomas R. Clark
BY
ATTORNEYS

United States Patent Office 2,711,250
Patented June 21, 1955

2,711,250

ROTARY TROMMEL WITH INTERNAL GRIZZLY

Thomas R. Clark, Paradise, Calif.

Application November 30, 1953, Serial No. 395,103

3 Claims. (Cl. 209—291)

The present invention is directed to, and it is a major object to provide, an improved rotary trommel adapted for use to effectively classify earth aggregates, especially in connection with mining operations.

In conventional trommels used for this purpose the entire mass of earth aggregates is fed directly onto and moves along the perforate sheet metal cylinder which the trommel includes, any large rocks or boulders in the aggregates running and pounding directly on the sheet metal cylinder, causing damage thereto and its premature deterioration.

It is thus another important object of the invention to provide the trommel with an internal grizzly which functions to effectively segregate the large rocks and boulders from the aggregates, and prevents such rocks and boulders from coming into direct contact with the sheet metal trommel cylinder, so that the latter classifies solely the smaller gangue or gravel, and which does not cause undue wear and tear on said trommel cylinder.

An additional object of this invention is to provide a rotary trommel, as above, wherein the internal grizzly is of open cylindrical configuration, and is composed of a plurality of railroad rails extending longitudinally in circumferentially spaced relation; there being a novel mount for ruggedly but removably supporting such railroad rails in a rigid position in the trommel.

A further object of the invention is to provide a trommel with internal grizzly which is not only effective to separate large rocks and boulders from the aggregates before the same reach the perforate sheet metal trommel cylinder, but one whose structure is such that the large rocks and boulders working the aggregates against the rails of the grizzly breaks up all mud or slugs, preventing choking both in the internal grizzly and outer perforate cylinder, whereby to assure of a smoother, more continuous flow in the machine, with greater capacity in yardage.

A separate object of the invention is to provide novel means for producing a constant forward feed of the aggregates in the machine between the internal grizzly and external perforate trommel cylinder.

It is also an object of the invention to provide a rotary trommel with internal grizzly which is of simple but rugged construction, and a machine which functions positively for the intended purpose; i. e., the initial separation of large rocks and boulders from the aggregates, and the subsequent classification of the remainder of the aggregates in the trommel cylinder.

Still another object of the invention is to provide a practical and reliable rotary trommel with internal grizzly, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a longitudinal sectional elevation of the improved rotary trommel with internal grizzly.

Fig. 2 is an end elevation of the same, taken from the discharge end of the machine.

Fig. 3 is a transverse section on line 3—3 of Fig. 1.

Fig. 4 is an enlarged fragmentary sectional plan view on line 4—4 of Fig. 2.

Referring now more particularly to the drawings, and to the characters of reference marked thereon, the machine comprises an elongated rotary trommel, indicated generally at **1**, such trommel comprising an external heavy-duty but sheet metal cylinder **2** formed, intermediate its ends, with a multiplicity of perforations **3**.

The trommel cylinder **2** is closed at the intake end by an end wall **4**; the cylinder extending therefrom at a slight downward incline.

The trommel cylinder **2** is supported, in conventional manner, by rollers **5** carried on beams **6** in a supporting frame which is not otherwise shown; said trommel cylinder **2** being rotated by a ring sprocket **7** to which suitable drive mechanism is connected.

The perforate section of the trommel cylinder **2** terminates short of both the intake and discharge ends of said cylinder, and a concentrating table, indicated generally at **8**, is supported—in receiving position—directly below said perforate section of the trommel cylinder **1**; such concentrating table being of conventional design.

A cylindrical, elongated grizzly, indicated generally at **9**, is disposed within the trommel cylinder **2**; said grizzly being of substantially lesser diameter than said trommel cylinder, being disposed concentrically therein, and extending from end to end of said trommel cylinder.

At the discharge end of the trommel cylinder **2** the grizzly includes a non-perforate discharge cylinder **10** which is relatively short; the remaining and major portion of the grizzly—i. e. the part of the same between the end wall **4** and said discharge cylinder **10**—being constructed as follows:

Such major portion of the grizzly **9** comprises a plurality of longitudinally extending, circumferentially spaced grizzly bars **11**, preferably in the form of railroad rails disposed with their bottom flanges innermost.

The grizzly bars **11** are supported, at longitudinally spaced points in the length thereof, by mounting rings, each of which is indicated at **12**; these rings being slotted, as at **13**, in matching relation to the grizzly bars **11**, and the latter projecting through said slots. The slots **13** open to the inner faces of the rings **12**, and the bottom or inner flanges of the in-place, railroad rail grizzly bars **11** lie flush with such faces, whereby there is no inward projection to obstruct free movement of the material in the grizzly **9**.

The grizzly bars **11** are releasably secured in position in the rings **12** by L-shaped attachment brackets **14** welded to the ring **12** which is closest to the discharge cylinder **10**; such brackets **14** being in pairs which lie flush against opposite sides of the web **15** of a projecting portion of each of the grizzly bars **11**.

A cross bolt **16** secures each pair of brackets **14** to the corresponding web **15**. See Fig. 4. With this arrangement the grizzly bars **11** are normally fixedly secured against displacement from the mounting rings **12**, but in the event that replacement of said bars is necessary the cross bolts **16** can be removed and said grizzly bars **11** slid outwardly from the rings **12** through the discharge cylinder **10**.

The discharge cylinder **10** is fitted on the outside with longitudinally spaced mounting rings **17**, and the latter, together with certain of the mounting rings **12**, are attached to the trommel cylinder **2** each by a plurality of circumferentially spaced connector plates **18**. These connector plates **18** increase symmetrically in width circum-

ferentially from the grizzly **9** to the trommel cylinder **2**, as shown in Figs. 2 and 3, and such plates include arcuate feet **19** fixed to said trommel cylinder. This form of the connector plates **18** enables the same to be set diagonal to the longitudinal axis of rotation; i. e., so that they follow a helical path, and said plates are pitched in a direction to cause aggregates in the trommel cylinder **2** to feed in a direction toward the discharge end thereof.

A relatively large, high pressure, water nozzle **20** is disposed at the discharge end of the trommel cylinder **2**, and is set to deliver a stream of water into the grizzly **9** through the discharge cylinder **10**; such setting being adjustable by reason of the fact that said nozzle **20** is supported by a swivel coupling **21** secured to the water feed pipe **22**.

In operation of the above described rotary trommel with internal grizzly, the earth aggregates are initially delivered into the grizzly **9** adjacent the end wall **4**; this being accomplished by a feed chute or hopper **23** which enters the grizzly **9** through a central port **24** in said end wall **4**. After delivery of the earth aggregates into the grizzly **9**, any large rocks or boulders present in such aggregates are retained in the grizzly, working along for the full length thereof, passing finally through the non-perforate discharge cylinder **10** of said grizzly and feeding therefrom to a discharge chute **25**.

As the large rocks and boulders traverse the grizzly from end to end thereof they act upon the reminder of the aggregates to break up all slugs or mud which would otherwise cause choking either in the grizzly **9** or trommel cylinder **2**; the inwardly exposed bottom or inner flanges of the railroad rail grizzly bars **11** providing rugged and effective surfaces on which the aggregates work as the grizzly rotates.

Such remainder of the aggregates as so worked and broken up by the large rocks and boulders in the grizzly **9** deliver downwardly between the grizzly bars **11** and fall into the perforate trommel cylinder **2**, wherein further classification occurs; i. e., the fines pass through the perforations **3** and drop into the concentrated table **8**, while the gravel and the like flows in said trommel cylinder **2** toward the discharge end thereof, thence feeding into another discharge chute **26**.

Flow of the gravel and the like in the trommel cylinder **2**, in the direction of the discharge end thereof, is aided and assured by reason of the diagonal setting of the connector plates **18**.

It will thus be evident that the large rocks and boulders which in conventional rotary trommels were carried directly on the trommel cylinder **2** are here prevented from gaining access to said trommel cylinder, so that they cannot damage the same; such large rocks and boulders being confined within the grizzly **9**, ultimately feeding to the discharge cylinder **10**, and thence delivering therefrom.

In addition to the protection of the trommel cylinder **2** by maintaining the large rocks and boulders out of contact therewith, the action of said rocks and boulders on the remainder of the aggregates in the grizzly is advantageous for the reason that such remainder of the aggregates is pre-worked before entering the trommel cylinder **2** for final classification.

A further advantage is gained from the fact that the weight of the large rocks and boulders is maintained substantially centrally within the trommel cylinder **2**, with the result that lesser power is required to rotate the cylindrical assembly of the machine.

From the foregoing description it will be readily seen that there has been produced such a device as will substantially fulfill the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention the following is claimed as new and useful, and upon which Letters Patent are desired:

1. In a machine for classifying earth aggregates which comprises a generally horizontal rotary trommel cylinder, a generally cylindrical grizzly of lesser diameter than the cylinder disposed therein in concentric relation, the grizzly including a plurality of longitudinal bars arranged in circumferentially spaced relation, and a plurality of longitudinally spaced mounting rings supporting said bars; and disposed with their axes parallel to the axis of the trommel and means mounting the grizzly in the cylinder for rotation therewith; said means comprising plates extending between the rings and cylinder and overlapping one vertical face of the rings and being secured at their inner end thereto, said plates being relatively narrow at the rings and widening thence to the cylinder whereby the plates may be twisted outwardly of the rings so as to extend in a generally helical path at the cylinder, and being pitched in a direction to cause aggregates in said cylinder to feed toward one end thereof, and means securing the plates at their outer end to the cylinder.

2. In a machine for classifying earth aggregates which comprises a generally horizontal rotary trommel cylinder, a generally cylindrical grizzly of less diameter than the cylinder disposed therein in concentric relation, the grizzly including a plurality of longitudinal bars arranged in circumferentially spaced relation, and a plurality of longitudinally spaced mounting rings slotted for reception of the bars in slidable and removably fitting relation, the bars projecting a relatively short distance beyond one of the endmost rings, and means to detachably secure the bars to said one endmost ring; such means for each bar comprising brackets secured on the outer face of the ring on opposite sides of and adjacent the bar; and a removable bolt extending through the bar and brackets.

3. A structure as in claim 2, in which the bars are of rail form in section and each bar includes a transverse base flange and a radially projecting web disposed centrally of the flange, the base flange being disposed at the radially inner end of the bar and overlying the corresponding brackets, the latter being disposed in adjacent relationship to the web.

References Cited in the file of this patent

UNITED STATES PATENTS

640,261	Beeman	Jan. 2, 1900
796,780	Weaver	Aug. 8, 1905
883,974	Roughsedge	Apr. 7, 1908
1,343,292	Turner	June 15, 1920
2,122,075	Thorold	June 28, 1938
2,664,204	Hurter	Dec. 29, 1953

FOREIGN PATENTS

23,295	Australia	June 29, 1935