

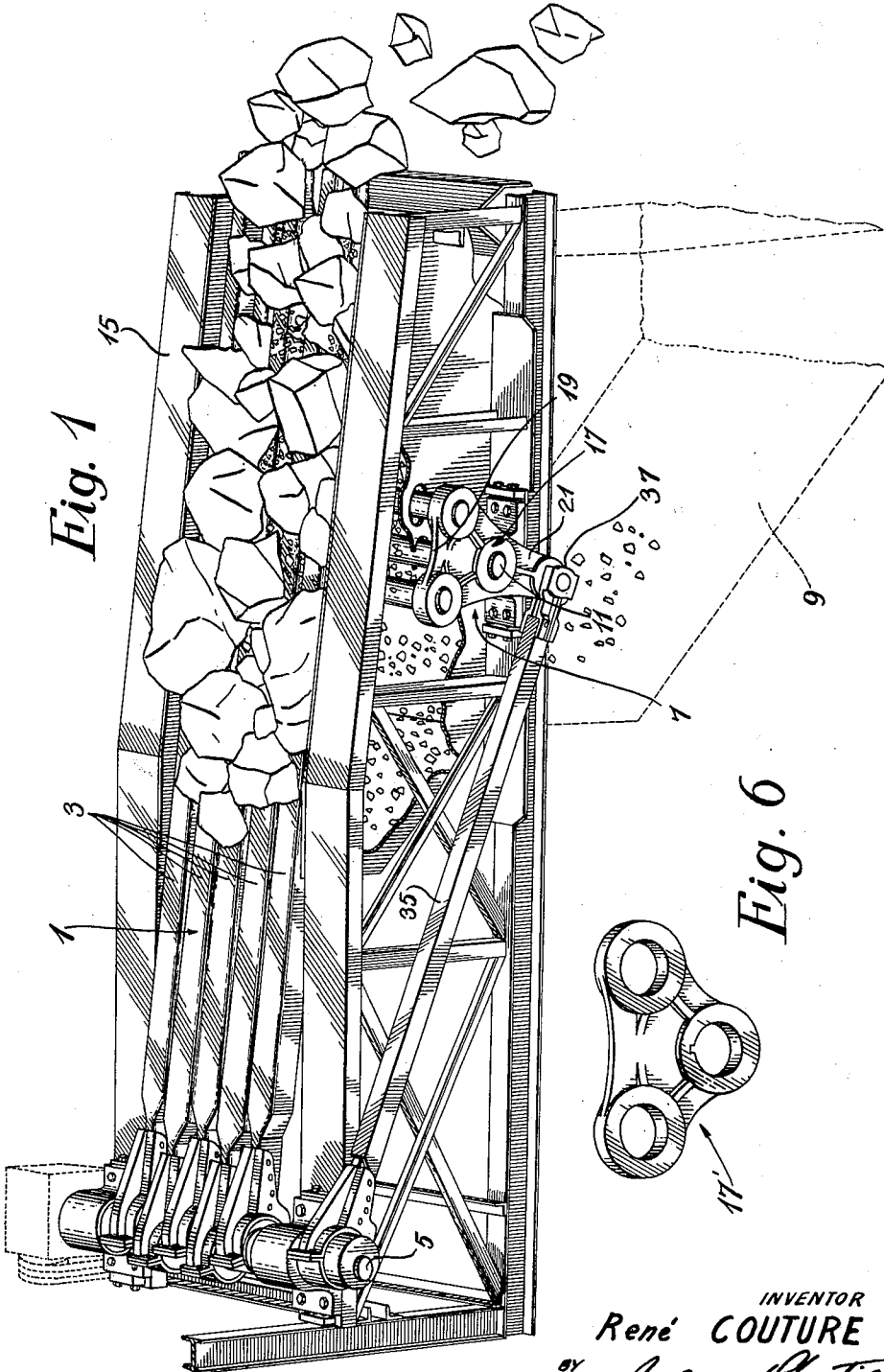
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R. COUTURE
GRIZZLY BAR FEEDER

3,106,523

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3 Sheets-Sheet 1



INVENTOR
René COUTURE
BY *Colin Bastien*
ATTORNEYS

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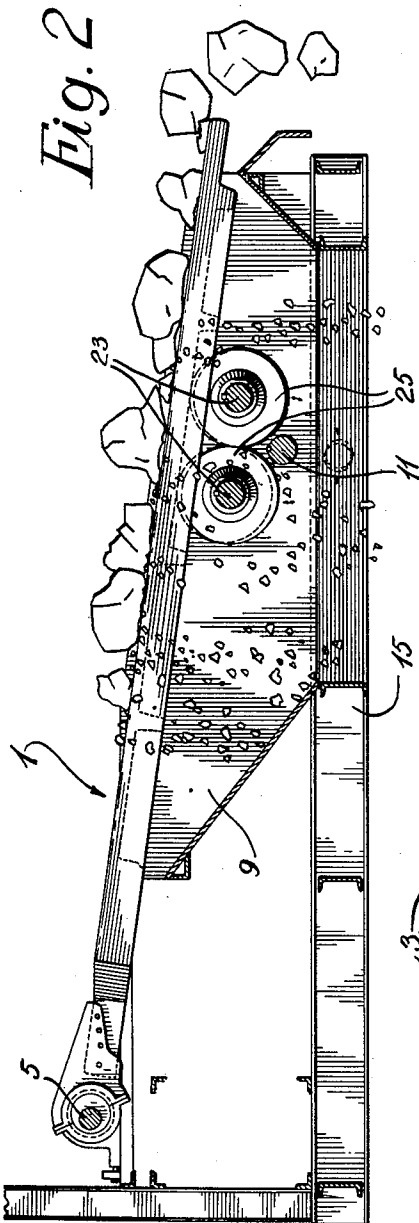


Fig. 2

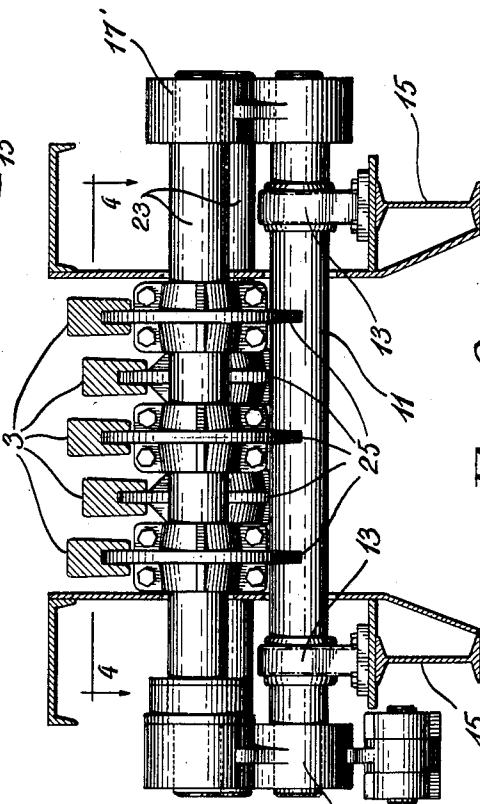


Fig. 3

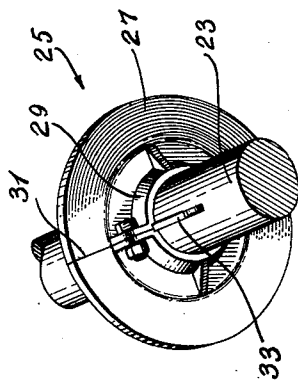


Fig. 7

INVENTOR
Rene COUTURE
BY *Robert A. Bastian*
ATTORNEYS

Oct. 8, 1963

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Fig. 5

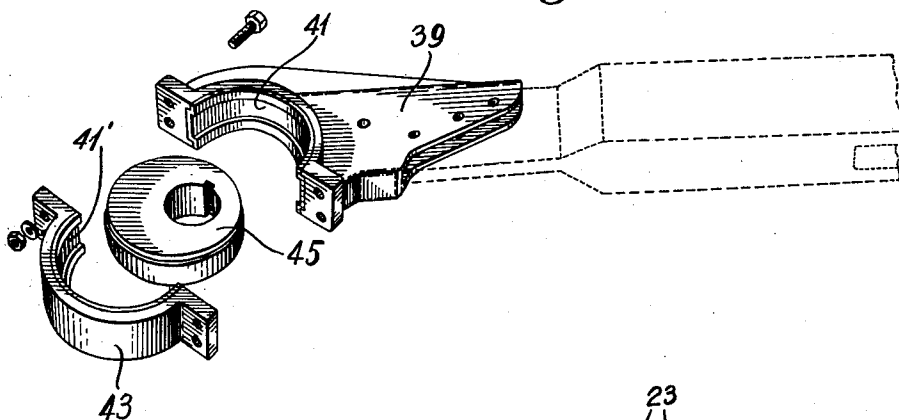


Fig. 4

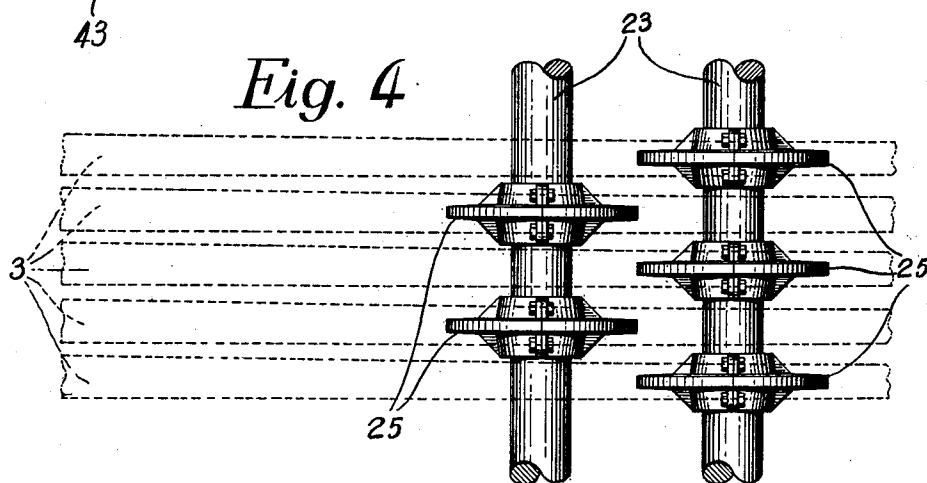
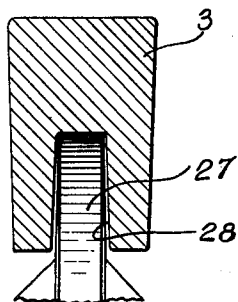


Fig. 8

INVENTOR
Rene COUTURE
BY *Robert H. Bastian*
ATTORNEYS

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3,106,523 GRIZZLY BAR FEEDER

René Couture, Montreal, Quebec, Canada, assignor to
Lefebvre Freres Limitee, Montreal, Quebec, Canada
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The instant invention pertains to a device for moving bulk material from one point to another while at the same time automatically discarding undersized material. It relates more particularly to a grizzly bar feeder having a vibrating screening table which carries the rocks to the crusher while at the same time classifying the rock material by eliminating the undersized rocks.

In present day rock crushing operations, rocks are fed to the crushing machine or crusher much in a conventional way by means of a conveyor onto which the rocks are dumped at one location to be carried thereby into the crusher.

Although the rocks are mostly of a relatively large size and require crushing, there is a relatively appreciable amount of smaller rocks which do not need to be crushed and which, nevertheless, are carried away to the crusher.

There results a loss of energy in the crusher but most important, the presence of these small rocks, by filling or partly filling the voids between the larger rocks, tend to clog up the crusher and appreciably reduce its efficiency.

It is, therefore, an object of this invention to provide a device which will eliminate the smaller rocks before they reach the crusher in order to avoid the clogging up thereof, by vibrating the said rocks onto a screening table which will let drop the smaller pieces requiring no crushing.

A further object of the invention lies in the provision of a mechanism of the above type which will function as aforesaid and which is very simple in construction and operation, thus keeping the cost and ease of maintenance at a very low relative figure.

These objects are attained by the provision of a grizzly table which is made of spaced apart elements that are free to vibrate. Below this table, a rocking assembly is provided with connections to the table elements. Therefore, when the rocking assembly is operated, the table elements vibrate and the smaller rocks escape therebetween.

These and further objects and advantages of the invention will become apparent as the following description of a preferred embodiment only of the invention proceeds which has regard to the appended drawings wherein:

FIG. 1 is a general perspective view of the grizzly bar feeder of the invention,

FIG. 2 is a longitudinal section thereof,

FIG. 3 is a frontal elevation of the rocking assembly showing, at the same time, a view, in section, of the supporting frame,

FIG. 4 shows, in plan view, the disposition of the table supporting elements, as mounted on the oscillating shaft, and is a view along line 4-4 of FIG. 3,

FIG. 5 illustrates, in exploded view, the members forming the connection of the table grizzly bars and the reciprocating lever to the driving shaft,

FIG. 6 is an elevation view of one rocking plate of the rocking assembly,

FIG. 7 illustrates how the supporting elements are secured onto the supporting shaft, and

FIG. 8 shows how the supporting elements are connected to the table through a sliding contact.

FIGS. 1 and 3 show how the invention is carried into practice by having a table 1, made up of spaced apart elements or bars 3 freely mounted on a driving shaft 5,

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vibrated upwardly by means of a rocking assembly 7 located below said table 1.

The rocks are fed, by known means not shown, onto table 1, at the left end of FIG. 1, the table being inclined to help the rocks on their way to the crusher, not shown. As aforesaid, table bars 3 are spread apart so as to leave space for the smaller pieces of rock which thus fall into a hopper 9 (FIGS. 1 and 2) and are then carried away.

Vibration of the table 8 is provided by means of a rocking assembly 7 located below the said table and composed of an oscillating shaft 11 mounted on suitable bearings 13 (FIG. 3) on the frame 15 of the grizzly bar feeder. Fixed at each end of this oscillating shaft 11 are rocking plates 17 and 17' one type of which is shown in FIG. 6.

Rocking plate 17 is centrally secured onto oscillating shaft 11 and is provided with upward and downward extensions 19 and 21, respectively. On the upward extension 19 are located, as shown in FIGS. 2 and 3, two supporting shafts 23, fixed thereto. The lower extension 21 serves to receive a driving connection as will be explained later.

If it is preferred to have only one drive connection, then the second rocking plate 17' may be dispensed with the downward extension and will be as shown at the right of FIG. 3 and in FIG. 6.

Onto supporting shafts 23 are fixed spaced supporting elements 25; the spacing of which corresponds to the spacing between successive bars 3. In the preferred form of the invention there are two supporting shafts 23 and the supporting elements are spaced a distance equal to the distance between two bars and are arranged in staggered formation as between the two shafts. This formation is best seen in FIG. 4.

It will be understood from perusal of FIGS. 1 and 6 that if a reciprocating connection is attached to the downward extension 21 of the rocking plate 17, the upward extension 19 will rock back and forth causing vertical reciprocation of bars 3. It should be noted from FIG. 3 that movement of the forwardly supported bars are 180° out-of-phase with the backwardly supported ones, i.e., they are at their upper extremities while the others are at their lower extremities. This rapid up-and-down motion coupled with the reciprocating motion, to be described later, cause vibration of the table and of the rocks lying thereover. Subsequently, any rocks having a size smaller than the empty space between the bars will automatically fall into hopper 9.

Each supporting element has an upstanding flange 27 (FIGS. 7 and 8) adapted to mate a groove 28 located in the lower face of each bar 3 and slidable therein so that the bar is free to move in the aforesaid reciprocating motion.

Preferably, supporting element 25 is a ring member having the abovementioned flange 27 and a collar 29 on each side thereof. The flange and collars are slit as at 31 and are secured on supporting shafts 23 by being keyed thereto as at 33 and suitably bolted (FIG. 7).

It should be pointed out that the invention can be carried out with only one or any number of supporting shafts to produce vibration of the table. Similarly, the staggering of the bars can be arranged differently and yet produce vibration of table 1.

Supporting elements 25, as described, are found particularly advantageous in that, when a portion of flange 27 is worn out by sliding in groove 28, the supporting shaft can be rotated in its support on the rocking plates 17 and 17' thus presenting new unworn areas of flange 27.

Rocking of plates 17 and 17' is obtained by means of reciprocating lever 35 which is rotatably connected there-

to, at one end, as at 37. The connection of the other end of lever 35 to driving shaft 5 is best seen in FIG. 5. This connection is the same as that of the bars 3 to the driving shaft 5.

The ends of the lever 35 and of the bars, adjacent shaft 5, are fixed to half bearings 39 each having an inner arcuate groove 41. Each half bearing 39 mates with a second half bearing 43 which also has an arcuate groove 41; complementing groove 41. The two half bearings are fixed together by means of standard flanges, bolts and nuts to form a bearing having a complete circular groove.

This groove will fit over a ring 45 having an eccentric bore 47 to mount the driving shaft 5. Ring 45 may be secured to shaft 5 by being keyed thereto.

It follows from the above description that whenever driving shaft 5 is rotated, eccentric rings 45 bring lever 35 and bars 3 into reciprocating motion. It is found preferable that adjacent rings be mounted on shaft 5 in diametrically opposite positions or 180° out-of-phase. The resulting motion of the driving shaft and rings will be that of a crank-shaft.

Reciprocation of lever 35, as aforesaid, produces rocking of plates 17 and 17' and subsequent up-and-down motion of supporting elements 25 and vibration of table 1.

Although a preferred embodiment has just been described, it should be understood that modifications thereto can be made without departing from the spirit of the invention, the scope of which is to be derived from the following claims.

What I claim:

1. A grizzly bar feeder comprising: a frame; a freely movable inclined table having a feed end adapted to receive bulk material and a discharge end; said table being composed of a plurality of elongated parallel spaced apart bars disposed longitudinally of said frame and freely mounted, at one end thereof, on a driving shaft extending across said frame; an oscillating shaft extending across said frame below said table; a rocking assembly fixed to said oscillating shaft and having a plurality of supporting elements disposed eccentrically of and above the oscillating shaft axis along two rows parallel to said axis; the radial distance of said supporting elements to said axis being substantially equal; said supporting elements each slidably supporting one of said bars eccentrically of said axis; at least one reciprocating actuating lever connected at one end to said rocking assembly eccentrically of said axis and below thereof and, at the other end, being mounted onto said driving shaft in crank-shaft manner so that rotation thereof produces reciprocation of said lever, whereby the said reciprocation causes rocking of said supporting elements and subsequent vertical alternative displacement of the table bars, thereby causing the material resting thereon to move longitudinally from the feed end to the discharge end of the table while simultaneously, and as a result of the vibration, allowing the material to be classified as to size and ac-

cording to the spacing between bars; the smaller material falling through the space between bars and the larger material being pushed towards the discharge end.

2. A feeder as claimed in claim 1 wherein said bars are mounted on said driving shaft in crank-shaft manner so that rotation thereof produces reciprocation of said bars.

3. A feeder as claimed in claim 1 wherein each of said supporting elements comprises a flange slidably receivable in a mating groove in each of said bars.

4. A feeder as claimed in claim 1 wherein said bars are downwardly inclined in a direction away from said driving shaft.

5. A feeder as claimed in claim 2 wherein said driving shaft is provided with a series of rings eccentrically fixed thereto and wherein said one end of said bars and the other end of said actuating lever are freely mounted on said rings.

6. A grizzly bar feeder comprising: a frame; a freely movable inclined table having a feed end adapted to receive bulk material and a discharge end; said table being composed of a plurality of elongated parallel spaced apart bars disposed longitudinally of said frame and freely mounted, at one end thereof in crank-shaft manner, on a driving shaft extending across said frame; said bars being divided into two groups, the movements of which are 180° out-of-phase; an oscillating shaft extending across said frame below said table; a rocking assembly fixed to said oscillating shaft and comprising a plurality of supporting elements disposed eccentrically of and above the oscillating shaft axis along two rows parallel to said axis; the radial distance of said supporting elements to said axis being substantially equal; said supporting elements being provided with upward flanges slidably engageable in longitudinal mating grooves on said bars; at least one reciprocating lever connected at one end to said rocking assembly eccentrically of said axis and below thereof and, at the other end, being mounted in crank-shaft manner on said driving shaft; whereby reciprocation of said lever causes rocking of said supporting elements and subsequent vertical alternative displacement of said table bars, thereby causing the material resting thereon to move longitudinally from the feed end to the discharge end of the table while simultaneously, and as a result of the vibration, allowing the material to be classified as to size and according to the spacing between bars; the smaller material falling through the space between bars and the larger material being pushed towards the discharge end.

References Cited in the file of this patent

UNITED STATES PATENTS

894,424	Converse	July 28, 1908
1,085,997	Sheridan	Feb. 3, 1914
1,552,397	Edwards	Sept. 1, 1925
1,686,696	Hirschmann	Oct. 9, 1928
2,974,795	Behnke	Mar. 14, 1961