

June 17, 1924.

1,498,144

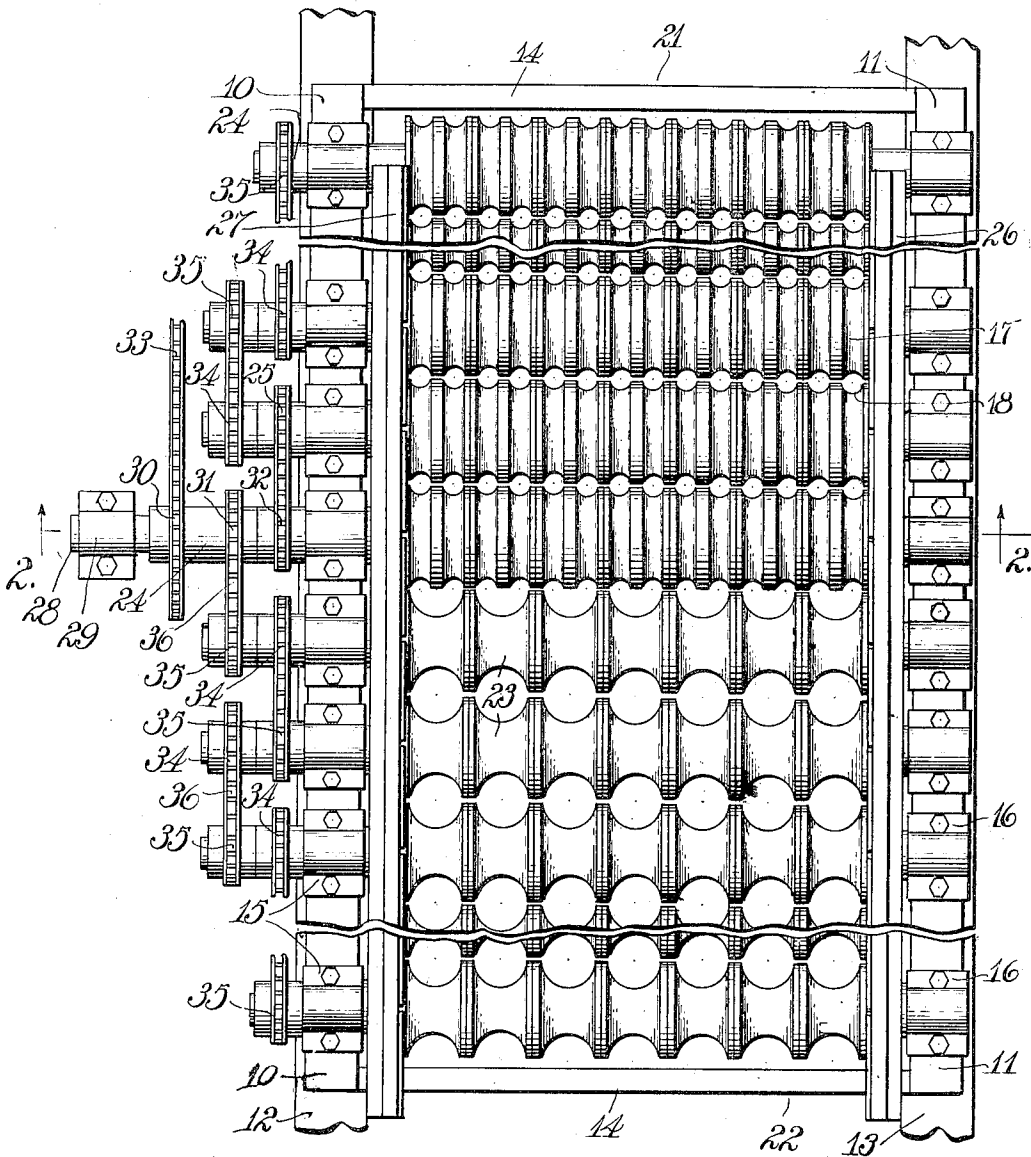
C. M. AVERY

ROLLER GRIZZLY

Filed Aug. 28, 1922

3 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

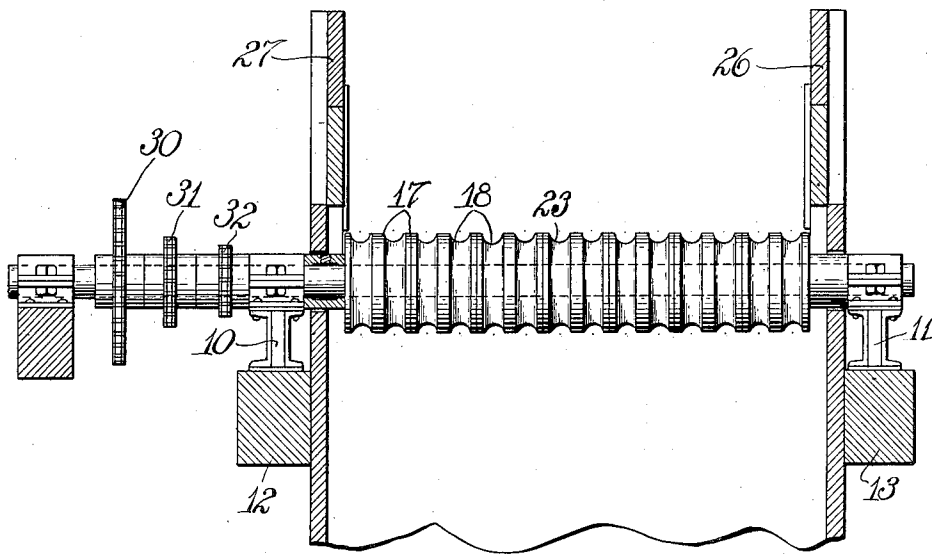


Fig. 3.

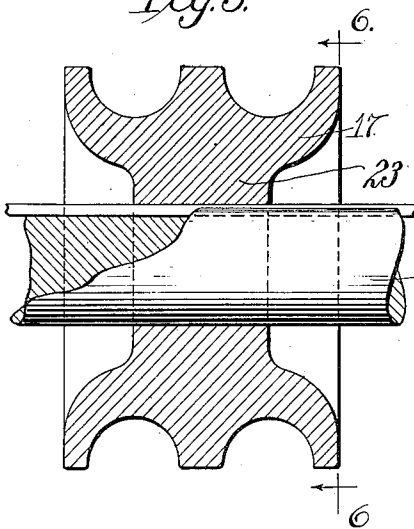
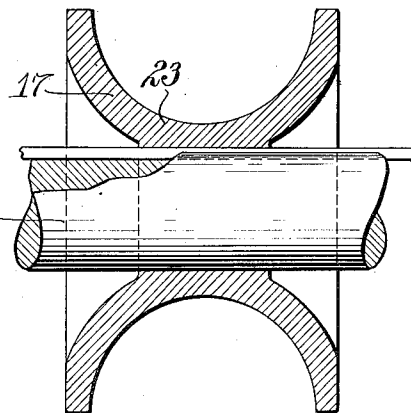


Fig. 4.



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Fig. 5.

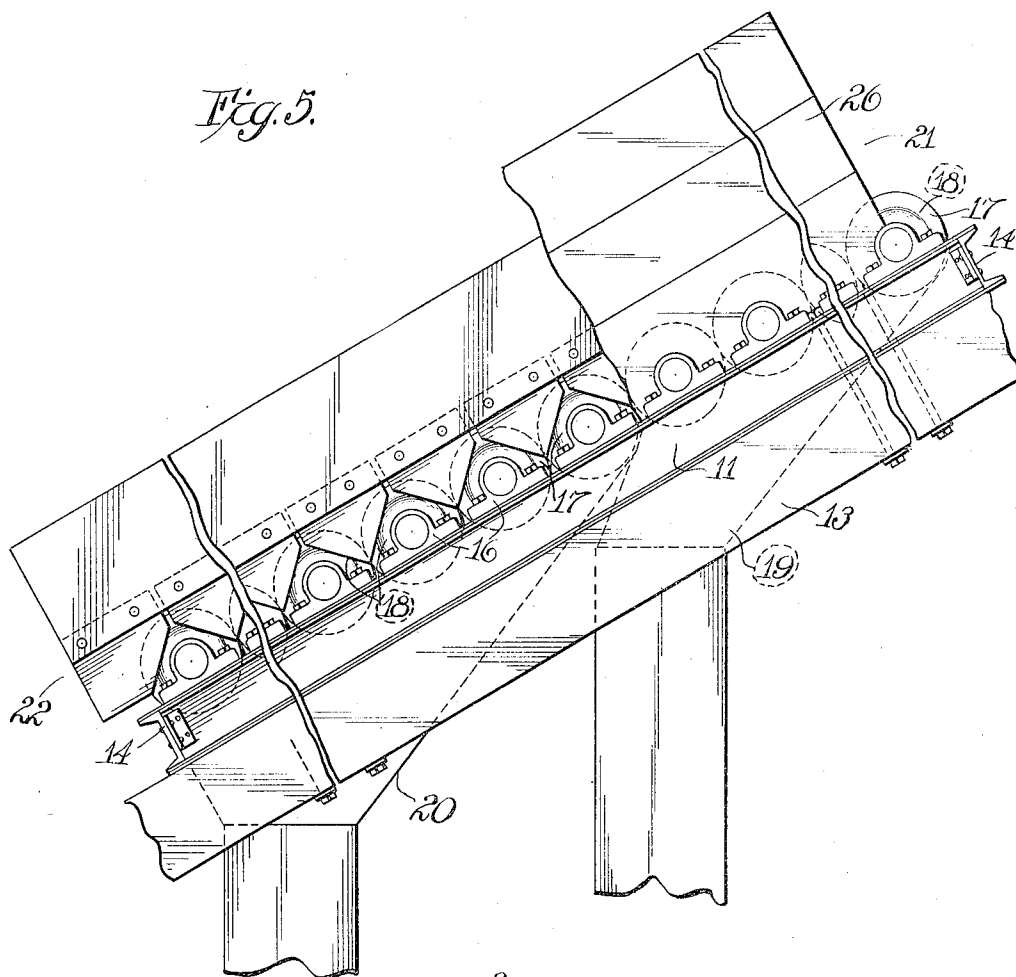
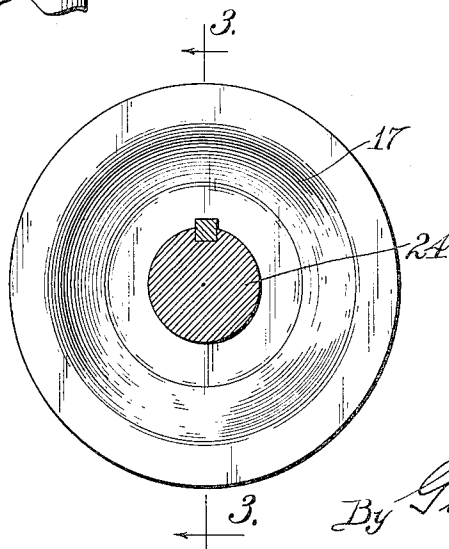


Fig. 6.



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UNITED STATES PATENT OFFICE.

COLBY M. AVERY, OF AURORA, ILLINOIS, ASSIGNOR TO STEPHENS-ADAMSON MFG. CO.,
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ROLLER GRIZZLY.

Application filed August 28, 1922. Serial No. 584,927.

To all whom it may concern:

Be it known that I, COLBY M. AVERY, a citizen of the United States, and resident of Aurora, county of Kane, and State of Illinois, have invented certain new and useful Improvements in Roller Grizzlies, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to that form of screening device known to the trade as a grizzly, in which the screening bed is formed of a plurality of parallel rods having spaces between the adjacent members through which the finer material falls, the larger lumps being carried the full length of the screen and deposited at one end thereof.

The principal object of the present invention is to grade coal, or like material, in accordance with the size of the lumps, without breaking any of them, since the larger sizes of coal bring the highest prices in the market.

A second object is to provide for the progressive feed of the material along the screen surface without the necessity of shaking the screen, since the usual shaking operation causes a tremendous vibration of the building in which the screen is located.

A third object is to obtain rapid movement of the material along the screen while insuring that all the particles of a given size will be removed at the proper portion of the screen.

According to the present embodiment of the invention the grading is accomplished by the use of parallel rollers which make up the screening bed, the rollers being preferably grooved and rotated at progressively increasing speeds from the feeding to the discharge end of the screen. The rollers at the discharge end of the screen are preferably provided with grooves of larger radius than those at the opposite end.

The invention in its preferred form is illustrated in the accompanying drawings, in which—

Fig. 1 is a top plan view of the device;
Fig. 2 is a sectional view on line 2—2 of Fig. 1, parts being shown in elevation;
Fig. 3 is a transverse section on line 3—3 of Fig. 6, showing in detail one of the ele-

ments of the roller mechanism having two grooves of small radius in its surface;

Fig. 4 is a section similar to Fig. 3, showing a roller element provided with but one groove;

Fig. 5 is a side view showing the frame of the grizzly, parts thereof being broken away; and

Fig. 6 is a detail of the roller element shown in Fig. 3, and taken on line 6—6 of Fig. 3.

As shown, the frame of the roller grizzly comprises a pair of I-beams 10, 11, tied together at their ends by transverse bars 14, and resting upon a pair of sills 12, 13. The frame is preferably inclined downwardly from the feeding end 21 to the discharge end 22. Supported upon the beams 10, 11, and journaled in a series of brackets 15, 16, mounted thereon, are a plurality of parallel rollers 17. In the surface of each roller is formed a series of parallel grooves, as 18. As shown, the grooves formed in the rollers at the feeding end of the grizzly are of smaller diameter than those at the discharge end. There may be three or more different sizes, according to the grades of material to be sifted out.

It will be noted that the rollers are arranged in sections, the grooves of adjacent rollers of a given section mating with each other. Where two sections come together each groove formed in the roller of the section nearest the discharge end mates with two smaller grooves formed in the roller of the adjacent section. The apertures formed by the mating of adjacent rollers permit the screened material to fall through the screening bed preferably into hoppers, as 19 and 20, one being desirably located beneath each section of rollers.

As shown in Figs. 3 and 4, the rollers consist of a plurality of spools 23, keyed upon a shaft 24 journaled in the brackets 15, 16, the number of grooves formed by the spools in the section nearest the feed end being a multiple of the number formed in those in the lower section or sections. The particular construction of the rollers may obviously be varied without departing from the spirit of the invention.

Preferably side members, as 26 and 27, are secured to the frame of the grizzly in

any suitable manner to prevent the material to be screened from falling off the edges of the screening bed. The sides may be built higher adjacent the feed end than at the discharge end, owing to the fact that much of the material will have fallen through the grooves 18 and into hoppers 19 and 20 before the end 22 is reached.

Any suitable driving mechanism for the idler shafts 24 may be employed, but it is preferably such as to rotate the shafts at speeds increasing progressively from the feeding to the discharge end of the screen, thereby preventing lumps of coal from becoming wedged between the adjacent rollers. As shown, one of the shafts preferably near the center of the grizzly is extended and its outer end 28 journaled in a bracket 29. The extended portion of this shaft is provided with three sprocket wheels 30, 31 and 32, respectively. The outer wheel 30 may be driven by means of a sprocket chain 33 from any convenient source of power. Each of the other shafts except the two at the opposite ends of the grizzly is provided with a driving and a driven sprocket wheel 34 and 35, respectively, each shaft being rotated by means of a sprocket chain, as 36, from the adjacent shaft which is nearer the central driving shaft, and each in turn driving the adjacent shaft which is farther away from the central shaft. Each driving sprocket wheel located between the central shaft and the feed end 21 may be provided with one less tooth than the sprocket wheel driven thereby, this relation being reversed between the central shaft and the discharge end 22.

While an illustrative embodiment of the invention has been described with great particularity for the purpose of illustration, it is evident that many variations in the details of construction may be made, without departing from the spirit of the invention.

I claim as my invention—

1. A grizzly comprising a plurality of rollers having parallel axes, the adjacent rollers having spaces therebetween varying in size at different portions of the screen and means for rotating said rollers at speeds increasing progressively from one end of the grizzly to the other.

2. A screen comprising, a plurality of rollers provided with flanges forming circumferential spaces about said rollers, certain of said rollers having their circumferential spaces wider than those of the other rollers and having their flanges in alignment

with one another and in alignment with flanges on each of the other rollers, and means for operating said rollers.

3. A screen composed of a plurality of grooved rollers, the grooves of adjacent rollers mating with each other, and the grooves of the rollers at one end of the screen being larger than those at the other, all the rollers being arranged transversely of the screen, and all rotating in the same direction but at speeds increasing progressively in the direction of movement of the material to be screened.

4. A screen comprising a series of contiguous concentrically mounted rollers having parallel axes, the surfaces of the successive rollers having a series of corresponding circumferential grooves, and means including an extension on one of said rollers adjacent the intermediate portion of the screen, a journal for the outer end of said extension, driving mechanism on said extension inwardly of said journal, and driving connections between said rollers and said mechanism, for rotating the successive rollers at progressively increasing speeds.

5. A screen comprising a plurality of rollers having parallel axes, the adjacent rollers having spaces therebetween varying in size at different portions of the screen, and means for rotating said rollers at progressively increasing speeds from one end of the screen to the other.

6. A grizzly comprising a plurality of contiguous rollers, each having a plurality of circumferential grooves, curved in cross section, in its surface, rollers at various portions of the grizzly having grooves of different sizes the axes of all of said rollers being arranged in the same horizontal plane.

7. A grizzly comprising a plurality of contiguous rollers each having a plurality of circumferential grooves of semi-circular cross-section in its surface, the rollers at one portion of the grizzly having grooves whose radii are multiples of the radii of the grooves at another portion thereof.

8. A grizzly having an inclined surface comprising a plurality of contiguous rollers having parallel axes, the successive rollers having a plurality of corresponding parallel grooves, the grooves on the lower rollers being wider than those on the upper rollers and means for rotating the rollers at speeds progressively increasing from the uppermost to the lowest roller.

COLBY M. AVERY.