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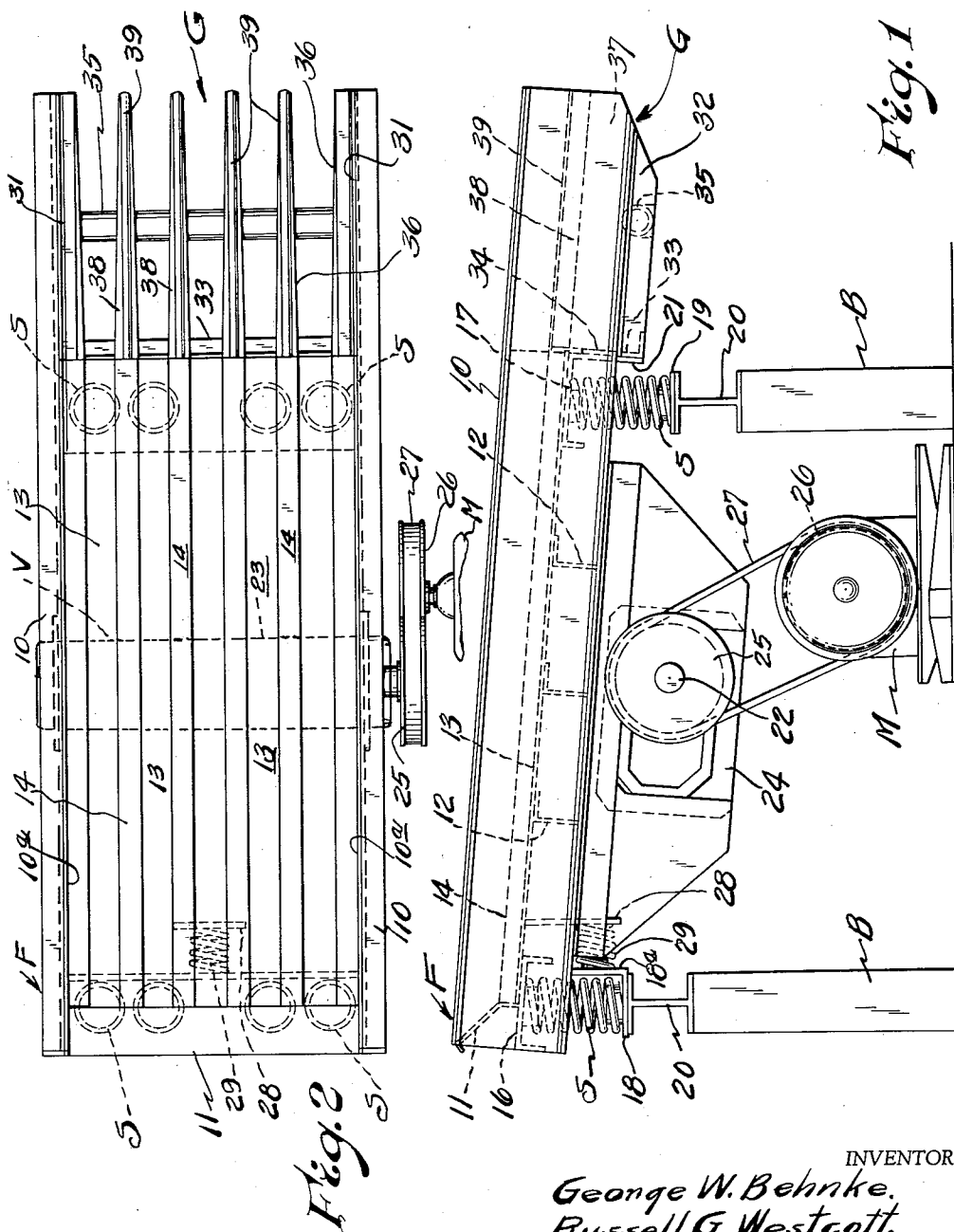
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GRIZZLY FEEDERS

Filed July 3, 1958

2 Sheets-Sheet 1



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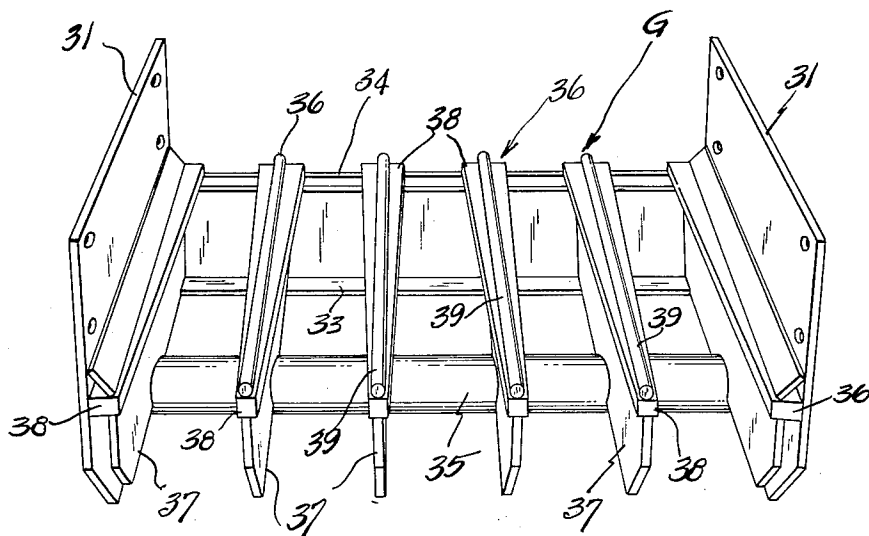
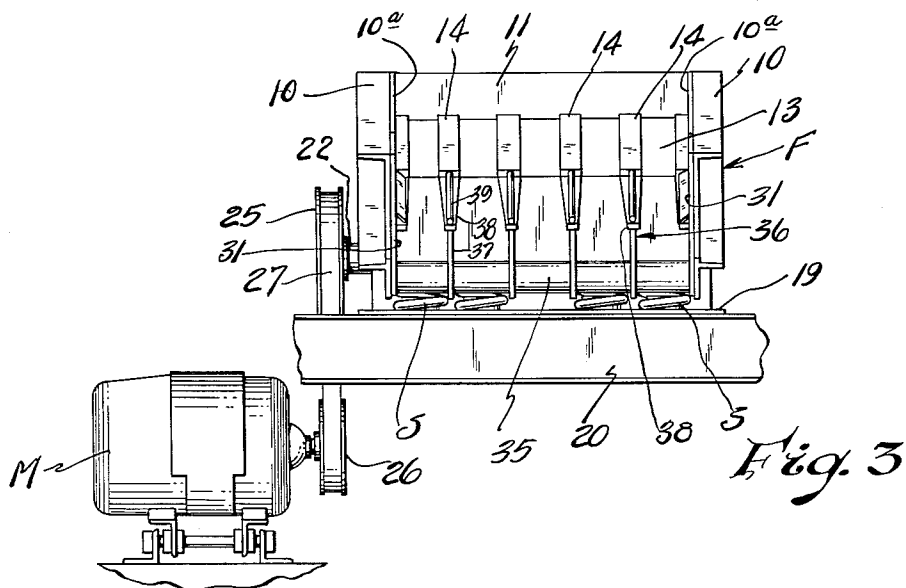


Fig. 4

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1

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## GRIZZLY FEEDERS

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5 Claims. (Cl. 209—247)

This invention relates to vibrating feeders for handling all kinds of fragmentary materials, aggregates and the like such as produced in the sand, gravel and mining industries, and more particularly to a vibrating feeder which combines scalping and feeding in one operation.

In a number of problems which are presented in the handling of materials, it is desirable to feed the material at a relatively constant rate; for example, as from a hopper to a crusher or to a belt conveyor. It oftentimes happens that a separation of materials according to size is desirable. For example, if material in a hopper is to be reduced to a predetermined size before being fed to a belt conveyor, the work done by the crusher may be reduced by separating the material which is already of desired fineness, and then feeding the crusher only the material which is larger than the desired fineness.

One of the prime objects of the invention is to design a vibrating feeder which can be installed either as a permanent or portable installation and which provided a smooth, continuous rate of feed, preventing surges of material from overloading and possible damage to the equipment.

The type of material handled is usually of a highly abrasive nature, consequently parts wear quite rapidly and replacement becomes an important matter because, in addition to the cost of replacement parts, there is the downtime required for removal and replacement. It is, therefore, a further object of the invention to design a vibrating feeder assembly equipped with a quickly removable grizzly section or unit facilitating quick and easy removal and replacement when the grizzly section needs to be changed, one size for another, or becomes worn, and needs replacement.

Another object of the invention is to provide a grizzly unit of unique design provided with horizontally tapered wear bars forming gradually tapered elongated spaces therebetween to insure against lumps hanging in and clogging the grizzly section, and to further provide for smooth operation and delivery of the material being handled.

Another object of the invention is to design a quickly detachable grizzly unit or section so that when a change in material being run requires larger or smaller lumps to be fed to a crusher or the like, another stock grizzly section with wider or narrower openings can be quickly substituted.

To the accomplishment of the foregoing and related ends, said invention consists of the combination and arrangement of parts, hereinafter fully described and particularly pointed out in the claims, the annexed drawings and the following description setting forth in detail, certain structure embodying the invention, such disclosed elements constituting however, but one of the various structural forms in which the principle of the invention may be used.

In the drawings:

Fig. 1 is a side elevational view of the vibrating feeder.

Fig. 2 is a top plan view thereof.

2

Fig. 3 is an end elevational view thereof.

Fig. 4 is an enlarged perspective plan view of the removable grizzly unit.

Referring now more particularly to the accompanying drawings in which we have shown the preferred embodiment of our invention, the letter V indicates a vibrator feeder assembly, the frame F of which includes side and end members 10 and 11 respectively with wear plates 10a secured to the inner face of each side member. A plurality of spaced apart, transversely disposed members 12 span the side members and a metal deck or apron 13 is mounted thereon. The front end plate 11 spans the side members 10, being inclined as shown and is secured in any desired manner.

Longitudinally disposed, transversely spaced wear-bars 14 are mounted on the apron 13, and all fines which pass the space between said bars fall thereon and travel to the discharge end of the apron as the device is actuated.

Channel shaped members 16 and 17 span the ends of the frame beneath the apron 13, and spring assemblies S are interposed between said members and plates 18 and 19 respectively, which plates can be mounted on I beams 20 carried on piers or abutments B as usual, or the frame can be suspended from suitable supports (not shown), or it can be mounted in any other desired manner.

The long leg 21 of the channel 17 forms the end of the apron, but the side channels 10 project beyond the end of the apron for the purpose to be presently described.

The vibrating mechanism is mounted under frame F and includes an eccentric shaft 22 mounted in a cylindrical housing 23 which spans the frame, and is supported on plates 24 depending from the frame side plates 10, and a sheave 25 is provided on the end of the shaft 22 and is drivingly connected to a sheave 26 provided on the motor M by means of belt 27, and we do not deem it necessary to describe this vibrating mechanism in detail as it is substantially the same as that shown and described in Pat. No. 2,311,814, issued February 23, 1943, to George W. Behnke, et al.

To compensate for thrust caused by the action of the feeder on the material which causes the feeder to move backward on its springs S, away from the discharge end, we provide a transversely disposed depending plate 28 secured to the bottom of the frame F, and a spring 29 is interposed between said plate and the upturned section 18a of plate 18 which rests on the abutment.

The detachable grizzly unit G forms a continuation of the apron wear-bars and is formed as clearly shown in Figs. 3 and 4 of the drawings, it comprises a pair of side plates 31 with an angle 32 secured to the lower edge thereof and depending below the main side members 10, and a transverse angle and plate 33 and 34 respectively spans the end of the grizzly.

A pipe section 35 spans the lower section of the grizzly at a point intermediate its length, and a plurality of transversely spaced wear-bars 36, running parallel with the wear-bars 14, are mounted therein. These bars are constructed to provide two way relief to the material flowing to the grizzly, the lower plate 37 of each bar being cut to fit the pipe 35, each plate being capped with a tapered bar of hardened stock 38 welded thereto, and a length of round bar stock 39 is welded to the upper face of the tapered bar.

We direct particular attention to the fact that the grizzly unit is open at the bottom, so that all fines, etc., that pass between the wear-bars are discharged at the discharge end of the apron, before the material passes over the grizzly, as an excessive amount of fines fed to a crusher would destroy the efficiency of the crushing operation. The fines may drop onto a belt (not shown),

which passes under a crusher (not shown), and the over-size material can be discharged directly into a crusher.

The shape of the pipe 35 insures that no material will hang between the grizzly bars.

The ends of the plates 31 butt against the ends of the side plates 10a which do not extend the full length of channels 10, and suitable openings are provided in the side plates 31 in alignment with opening in the projecting ends of the side channels 10 to facilitate securing the sections together, and openings (not shown) are also provided in the members 33 and 34 to accommodate bolts and provide a rigid connection to the leg 21, these bolts being easily removable for changing and/or replacement of the unit when desired or found necessary.

When the machine is in operation, the material is fed to the apron section of the feeder, the fines dropping down onto the deck between the wear-bars and travel toward the discharge end of the apron, the oversize material sliding from the wear-bars 14 onto the grizzly, thence over the wear-bars 36 of point of discharge, the tapering of the bars 38 eliminating the possibility of the material hanging therebetween or clogging the unit, and the fines cannot hang on the pipe 35.

It will of course be understood that the apron 13 can be replaced by a screen if desired.

From the foregoing description, it will be clearly obvious that we have perfected a very simple, practical, and economical apron feeder for handling material of all kinds, and in which the grizzly unit can be readily removed and/or replaced as required.

What we claim is:

1. A vibratory grizzly feeder mechanism comprising, a vibrating main frame, a feeder apron spanning said frame, transversely spaced, longitudinally extending wear bars provided on said apron with the faces of the bars spaced above the face of the apron, side members forming a part of said frame, side plates secured to said side members and extending a predetermined distance beyond the end of the apron, a quickly detachable grizzly unit

formed with side plates detachably secured to the inner face of the side members, a plurality of spaced apart wear bars in said grizzly, each bar being longitudinally tapered to form elongated, longitudinally disposed, tapered spaces therebetween, and a cross member having an upper face with generally sloping portions spanning the outer end of said grizzly section and secured to said wear bar and side plates.

2. The combination as defined in claim 1 in which the quickly detachable grizzly unit includes means spanning the front end of the side plates and detachably secured to the rear end of the feeder pan and frame, said cross member having a rounded upper surface spanning said wear bars and secured thereto, hardened rods welded to the upper face of the tapered wear bars, and means for detachably securing said grizzly unit between the side plate extensions of said main frame.

3. The combination defined in claim 1 in which each longitudinally tapered wear bar includes a vertically disposed plate, and a hardened rod section welded to the upper face of each longitudinally tapered wear bar.

4. The combination set forth in claim 1 in which the main frame is resiliently mounted, and horizontally disposed resilient means secured to said frame and to an abutment for limiting forward movement of said main frame.

5. The combination defined in claim 1 in which each side bar comprises a channel with a shorter upstanding plate in facial contact with the inner face thereof and the ends of the side plates of the grizzly secured to the extending section of the channel members and disposed in abutting relation with the ends of the shorter upstanding plates.

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