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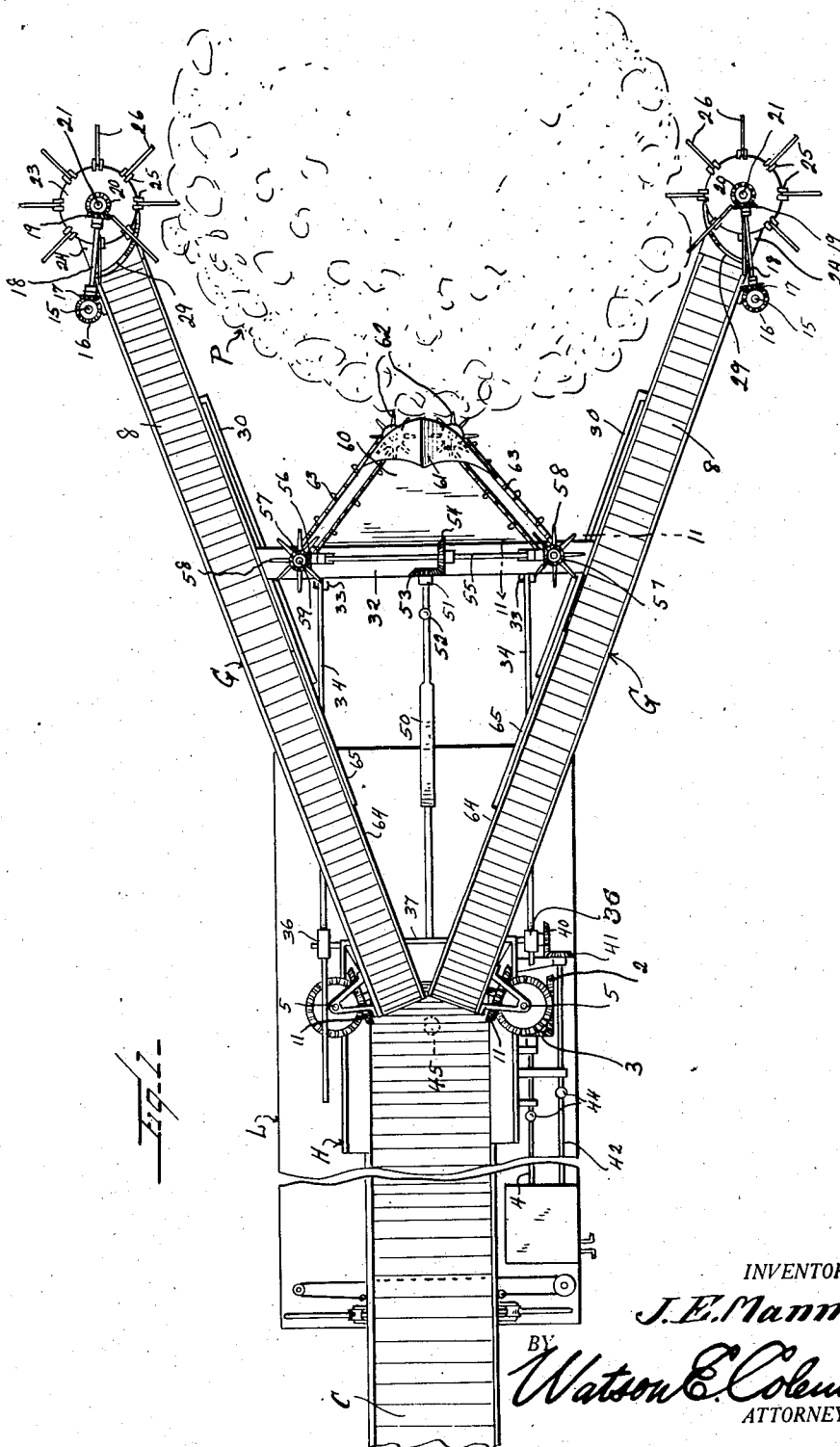
1,573,728

J. E. MANNING

LOADING APPARATUS

Original Filed Nov. 28, 1923

3 Sheets-Sheet 1



INVENTOR.

J. E. Manning

BY

Watson E. Coleman

ATTORNEY.

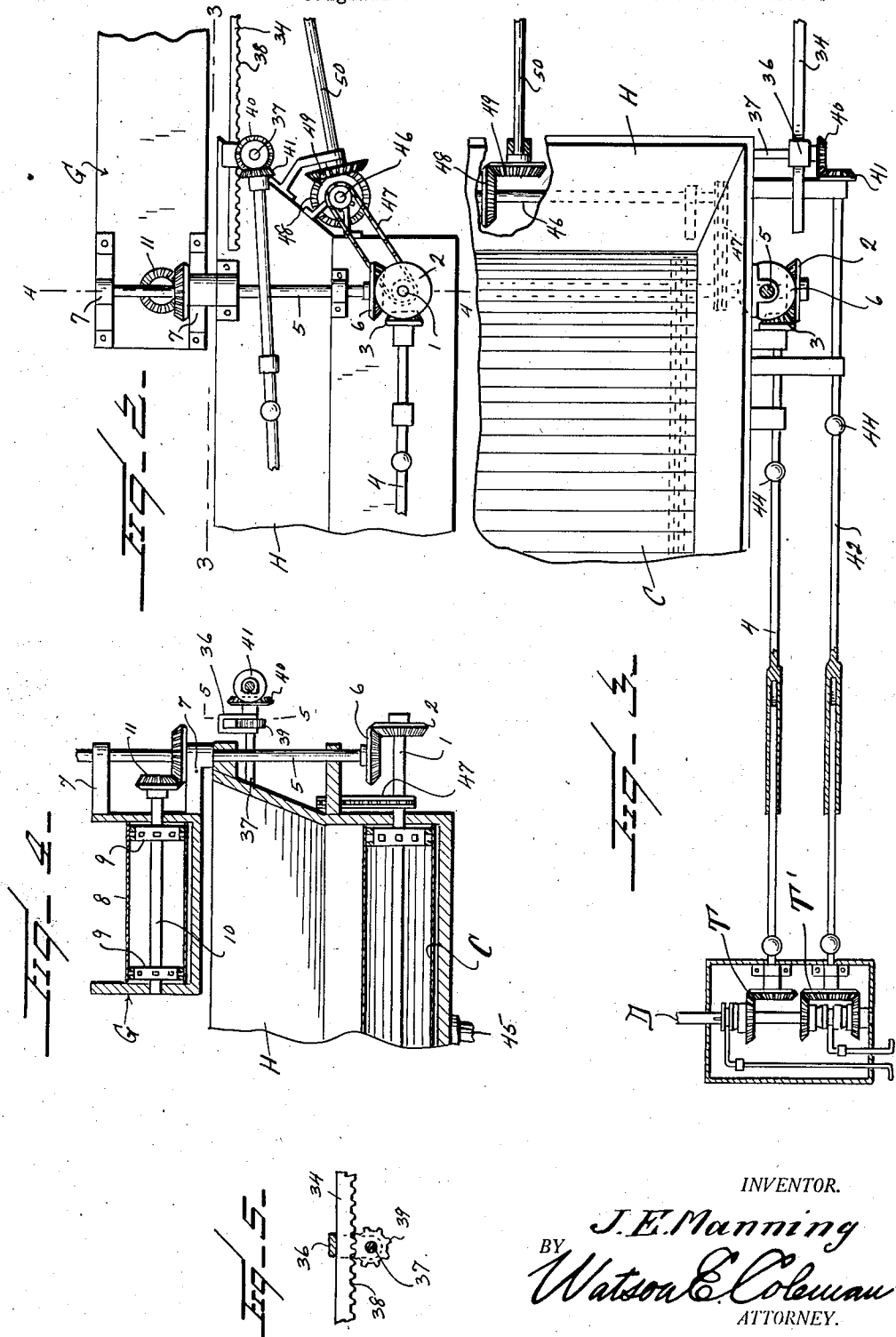
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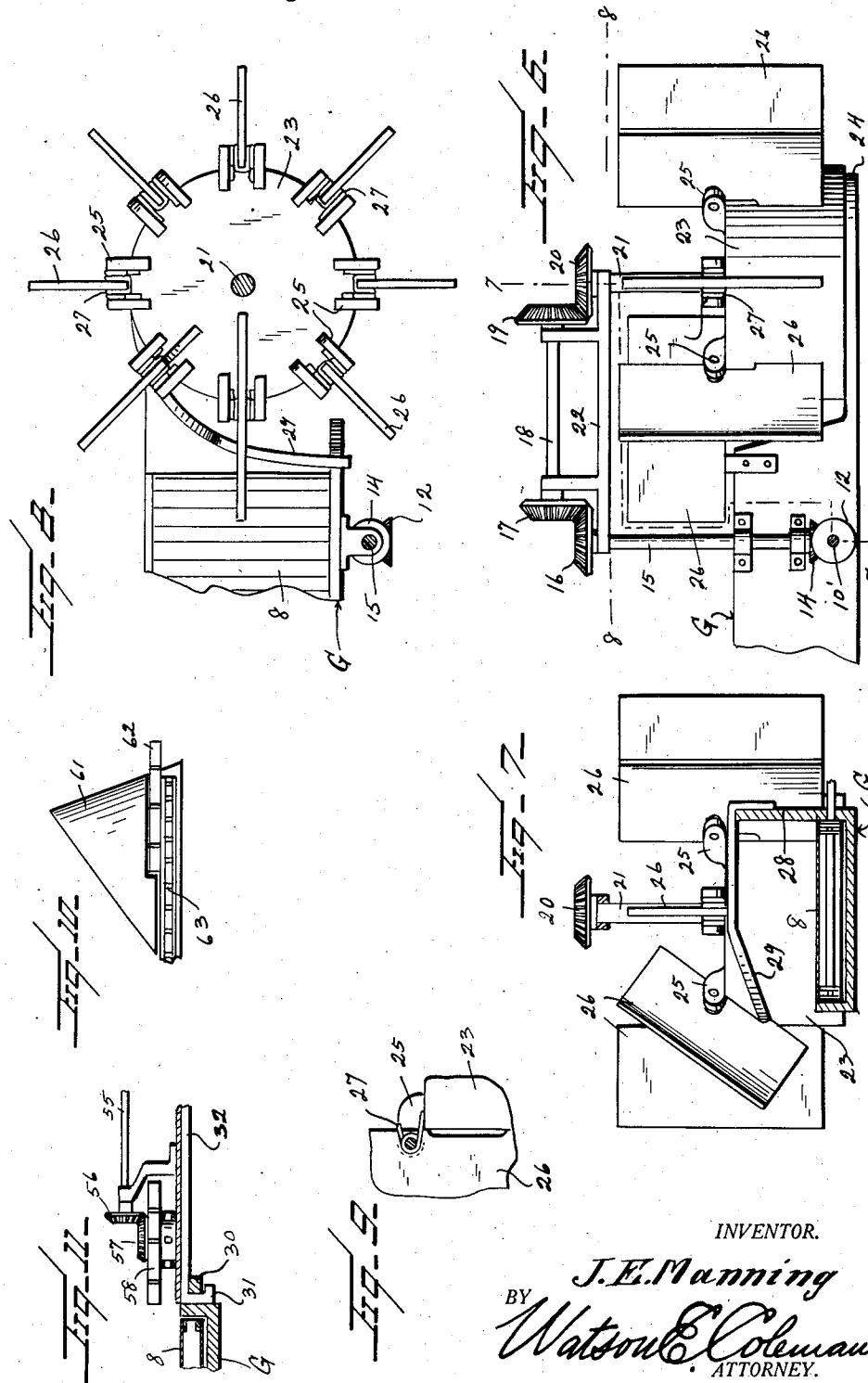
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ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN E. MANNING, OF BECKLEY, WEST VIRGINIA.

LOADING APPARATUS.

Application filed November 28, 1923, Serial No. 677,444. Renewed July 16, 1925.

To all whom it may concern:

Be it known that I, JOHN E. MANNING, a citizen of the United States, residing at Beckley, in the county of Raleigh and State of West Virginia, have invented certain new and useful Improvements in Loading Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to certain improvements in loading apparatus and has relation more particularly to a device of this general character especially designed and adapted for use in loading cars in the mines and it is an object of the invention to provide a novel and improved device of this general character embodying a main conveyor adapted to discharge within the car or the like to be loaded together with a pair of relatively movable conveyors discharging upon the main conveyor and provided with gathering means to cause the proper delivery upon the last named conveyors of the material within a pile to be loaded.

25 The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved loading apparatus whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

35 The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:—

40 Figure 1 is a view in top plan illustrating a loading mechanism constructed in accordance with an embodiment of my invention;

45 Figure 2 is an enlarged fragmentary detailed view in elevation illustrating a portion of the operating mechanism as herein comprised, the conveyor G having been moved so that its longitudinal axis is parallel to that of the conveyor C;

Figure 3 is a fragmentary sectional view taken substantially on the line 3—3 of Figure 2;

Figure 4 is a fragmentary vertical sectional view taken substantially on the line 4—4 of Figure 2;

Figure 5 is a detailed sectional view taken substantially on the line 5—5 of Figure 4;

Figure 6 is a fragmentary elevational view of one of the gathering heads as herein comprised and the mechanism concomitant thereto;

Figure 7 is a sectional view taken substantially on the line 7—7 of Figure 6;

Figure 8 is a sectional view taken substantially on the line 8—8 of Figure 6;

Figure 9 is a fragmentary view partly in elevation and partly in section illustrating a comprised and the mechanism concomitant the gathering heads;

Figure 10 is a fragmentary elevational view of the entering plow carried by the buffing head of the mechanism;

Figure 11 is an enlarged fragmentary sectional view taken substantially on the line 11—11 of Figure 1.

As disclosed in the accompanying drawings, L denotes a locomotive of a conventional type employed within a mine and upon which my improved mechanism is mounted.

In the present embodiment of my invention my improved loading mechanism comprises a hopper H supported directly above the locomotive L and with which is associated the main conveyor C which is adapted to deliver to the cars or the like to be loaded. The conveyor C embodies a shaft 1 having fixed to its opposite end portions the gears 2 one of which meshing with the gear 3 carried by an operating shaft 4 said shaft being operatively engaged with the transmission mechanism T of the drive shaft D.

Rotatably supported by and at each side of the hopper H is a vertically disposed shaft 5 provided at its lower end portion with a gear 6 meshing with a gear 2 whereby the shaft 5 is properly rotated. The upper por-

tion of each of the shafts 5 has freely or pivotally engaged therewith the vertically spaced brackets 7 providing a mounting for a gathering conveyor G. The conveyors G are two in number and are adapted to be disposed on a predetermined downward incline so that the outer ends thereof will closely approach the surface upon which is arranged the pile P of material to be loaded and the conveyors G, as is clearly illustrated in Figure 1, diverge upwardly and inwardly toward the hopper H and terminate inwardly of said hopper so that the material carried upwardly by the conveyors G will be properly discharged within the hopper H.

Each of the conveyors G comprises an endless carrier 8 passing around suitably positioned guide members, the guide members at the upper portion of a conveyor constituting driving sprockets, as indicated at 9. The sprockets 9 are fixed to a shaft 10 which extends beyond the inner side of the conveyor G and said extended portion has fixed thereto a gear 11 meshing with the adjacent gear 11' carried by the shaft 5 whereby the requisite travel of the endless member 8 is effected. The bearing 7 of each of the conveyors G provides means whereby each of said conveyors may be readily swung one relative to the other in a manner to be hereinafter more particularly referred to.

The lower shaft 10' of each of the gathering conveyors G is extended beyond the outer side of such conveyor and has fixed thereto a gear 12 meshing with the gear 14 carried by the lower end portion of a vertically disposed shaft 15. The shaft 15 is rotatably supported by the gathering conveyor G and is provided at its upper end with the gear 16 meshing with the gear 17 carried by the horizontally disposed shaft 18. The shaft 18 also has fixed thereto a gear 19 meshing with the gear 20 carried by the upper portion of a vertically disposed shaft 21 arranged at the outer end portion of the conveyor G, the shaft 18 being supported by a bearing 22 operatively engaged with the shafts 15 and 21.

The lower portion of the shaft 21 has fixed thereto for rotation therewith a drum 23 in close contact with an extension 24 of the baseboard of the conveyor G and positioned in advance of the endless member 8.

Pivotally engaged with the outstanding brackets 25 carried by the upper portion of the drum 23 and spaced circumferentially therearound are the gathering blades 26, each of said blades being normally maintained in substantially a vertical position through the medium of the spring 27 (Figure 9).

The drum 23 rotates in a direction whereby the blades 26 engage the pile of material and gather or throw such material upon the member 8 so that the same may be carried

to the hopper H. In order that the blades 26 may readily pass over the adjacent conveyor G or more particularly the inner side wall 28 thereof I provide the cam track-way 29.

The opposed portions of the conveyors G are provided with elongated runways or guides 30 in which are engaged the hooked end portions 31 of a cross member 32 so that upon movement of the member 32 lengthwise of the conveyors G, said conveyors will be drawn one toward the other or caused to have separating movement in accordance with the direction of travel of the member 32. By this means the conveyors G may be caused to move inwardly of the pile P until the material therein has been substantially entirely loaded.

Operatively engaged, as at 33, with the opposite end portions of the cross member 32 are the rearwardly directed bars 34. The rear portion of each of the bars 34 is disposed through an upstanding guide 36 carried by a shaft 37 rotatably supported by and extending across the forward portion of the hopper H. The end portion of the bar is provided with a rack 38 meshing with a pinion 39 fixed to the shaft 37 whereby upon requisite rotation of the shaft 37 the cross member 32 may be moved forwardly or rearwardly as desired.

One end portion of the shaft 37 has also fixed thereto a gear 40 meshing with a gear 41 carried by a rearwardly directed shaft 42 in driven connection through the transmission mechanism T' with the drive shaft D.

The transmission mechanism T' is such, as illustrated in Figure 3, whereby the shaft 42 may be rotated in either direction.

The shafts 4 and 42 are each of an extensible type, as illustrated in Figure 3, and also has interposed therein a universal joint 44. This structure is provided in view of the fact that the hopper H is supported, as at 45, for swinging movement in a horizontal direction whereby the efficiency of the loading mechanism is materially increased.

The forward portion of the hopper H also supports a transversely disposed shaft 46 in driven connection through the chain 47 with the shaft 1 hereinbefore referred to and the shaft 46 at a proper point thereon has fixed thereto a gear 48 meshing with the gear 49 carried by a forwardly directed extensible shaft 50. This shaft 50 has its outer or forward end portion rotatably supported, at 51, by the cross member 32 and also has interposed therein a universal joint 52.

The forward end or extremity of the shaft 50 has fixed thereto a gear 53 meshing with the gear 54 carried by a shaft 55 extending lengthwise of the member 32. Each end portion of the shaft 55 has a gear 56 meshing with the gear 57 carried by a gathering member 58 mounted upon the shaft 59. This

gathering member comprises a hub and a plurality of radiating teeth and is rotated in a direction to feed the material from the pile P to the adjacent conveyor G.

5 Movable with the cross member 32 and carried thereby is a forwardly directed plate 60 herein disclosed as triangular in form with its apex forwardly directed, said plate in practice being closely adjacent to the surface upon which is arranged the pile P. 10 The forward or apex portion of the plate 60 is provided with an upstanding entering plow 61 which is adapted to penetrate the pile P but arranged at opposite sides of the central portion of the plow 61 are the rotatable gathering members 62 also comprising a hub and a plurality of outwardly extending radial fingers. The gathering members 62 are rotated in a direction to cause the material in the pile P to be thrown against the endless conveyors 63 operatively engaged with the hubs of each pair of gathering members 58 and 62 whereby further means is provided for causing the material within 25 the pile P to be properly delivered upon the conveyors G.

The forward portion of each of the conveyors G is free of a side board while the rear part of said inner portion is defined by the side board 64. As the member 32 advances, the inner side portions of the conveyors G immediately to the rear of said cross member 32 are maintained closed by the side board 65 carried by the member 32 and lapping the forward portions of the side boards 64 as is believed to be clearly illustrated in Figure 1 of the accompanying drawings.

From the foregoing description it is 40 thought to be obvious that a loading apparatus constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as 50 limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

55 1. A loading mechanism comprising a main conveyor, gathering conveyors discharging thereon, means for supporting said gathering conveyors for lateral movement one relative to the other, and gathering means positioned 60 between the conveyors and discharging thereon.

2. A loading mechanism comprising a main conveyor, gathering conveyors discharging thereon, means for supporting 65 said gathering conveyors for movement one

relative to the other, means for moving said gathering conveyors one with respect to the other, and a gathering mechanism carried by said last named means and discharging upon the conveyors.

3. A loading mechanism comprising a main conveyor, gathering conveyors discharging thereon, means for supporting said gathering conveyors for lateral movement one relative to the other, means for moving the gathering conveyors one with respect to the other, and gathering means positioned between the conveyors and discharging thereon, said gathering means engaging the material to be loaded at substantially the same level as the gathering conveyors.

4. A mechanism of the class described comprising a main conveyor, gathering conveyors discharging thereon, means for supporting said gathering conveyors for movement one relative to the other, a member operatively engaged with said gathering conveyors and movable therealong, such movement of the member imparting movement to the gathering conveyors one relative to the other, and means for moving said member.

5. A mechanism of the class described comprising a main conveyor, gathering conveyors discharging thereon, means for supporting said gathering conveyors for movement one relative to the other, a member operatively engaged with said gathering conveyors and movable therealong, such movement of the member imparting movement to the gathering conveyors one relative to the other, means for moving said member, and gathering means carried by the member.

6. A mechanism of the class described comprising a gathering conveyor, a drum rotatably supported in advance of the gathering conveyor, outstanding blades carried by the drum and supported for vertical swinging movement, said blades operating upon rotation of the drum to throw material upon the conveyor, said blades during rotation of the drum passing across the adjacent end of the conveyor, a cam trackway disposed in advance of the conveyor and with which the blades contact for elevating said blades as they pass across the conveyor, and means for rotating the drum.

7. A mechanism of the class described comprising a main conveyor, gathering conveyors discharging thereon, means for supporting said gathering conveyors for movement one relative to the other, a member operatively engaged with said gathering conveyors and movable therealong, such movement of the member imparting movement to the gathering conveyors one relative to the other, means for moving said member, and an entering plow carried by the member.

8. A mechanism of the class described comprising a main conveyor, gathering conveyors discharging thereon, means for supporting said gathering conveyors for movement one relative to the other, a member 5 operatively engaged with said gathering conveyors and movable therealong, such movement of the member imparting movement to the gathering conveyors one relative to the other, means for moving said member, an 10 entering plow carried by the member, and gathering means carried by the member and at opposite sides of the entering plow and discharging upon the gathering conveyors.

In testimony whereof I hereunto affix my 15 signature.

JOHN E. MANNING.