Jan. 28, 1941. L. H. GARLINGHOUSE, JR 2,229,648

HEAVY DUTY LOADER

Filed Dec. 15, 1939 4 Sheets-Sheet 1

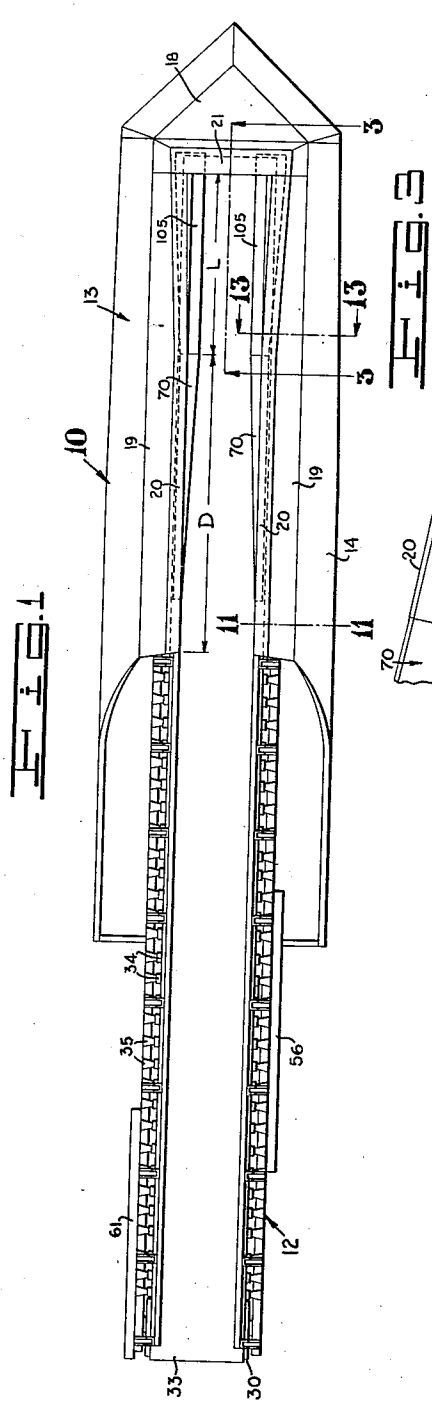


Fig. 1

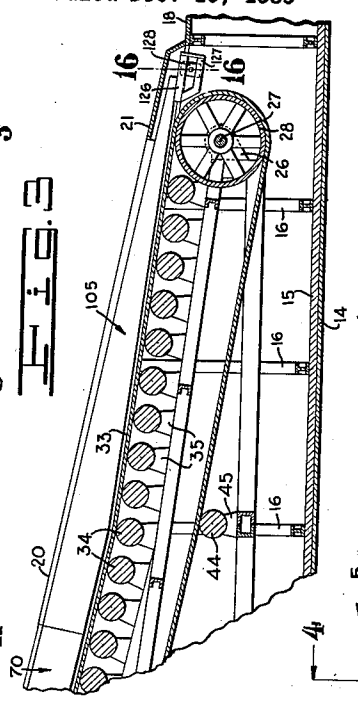


Fig. 3

Fig. 2

INVENTOR.
L. H. GARLINGHOUSE JR.

BY

ATTORNEY

Jan. 28, 1941. L. H. GARLINGHOUSE, JR 2,229,648

HEAVY DUTY LOADER

Filed Dec. 15, 1939 4 Sheets-Sheet 2

FIG. 4

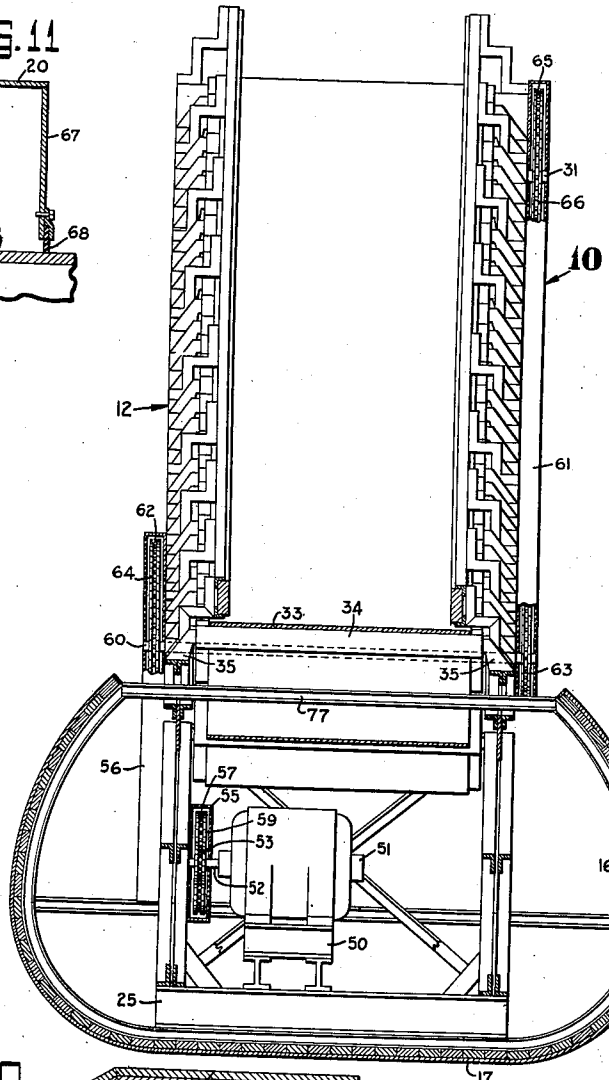


FIG. 11

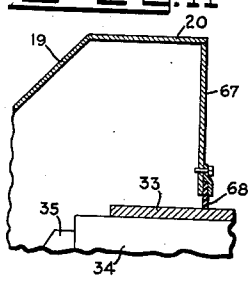


FIG. 10

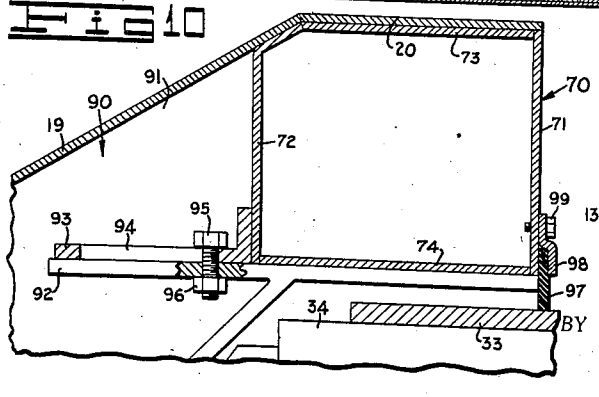
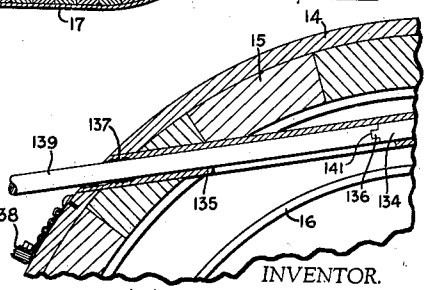


FIG. 17



INVENTOR.
L. H. GARLINGHOUSE JR.
BY
ATTORNEY

Jan. 28, 1941. L. H. GARLINGHOUSE, JR 2,229,648

HEAVY DUTY LOADER

Filed Dec. 15, 1939 4 Sheets-Sheet 3

FIG. 5

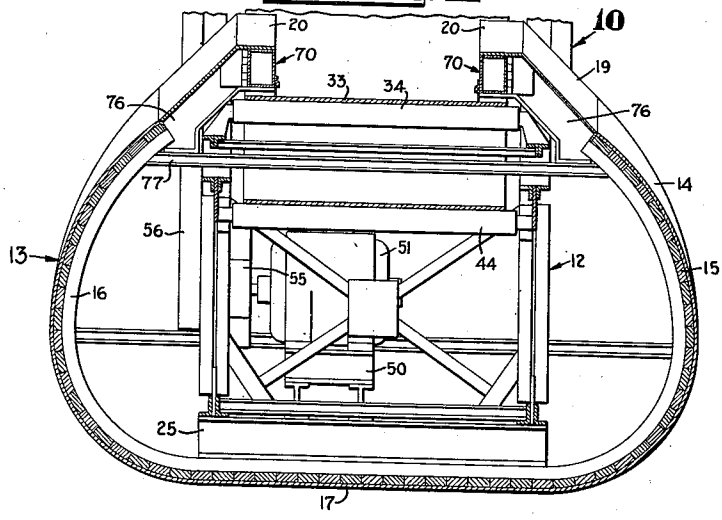


FIG. 6

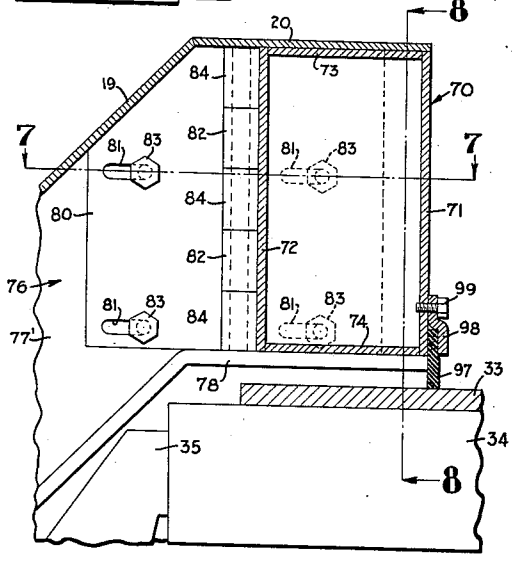


FIG. 7

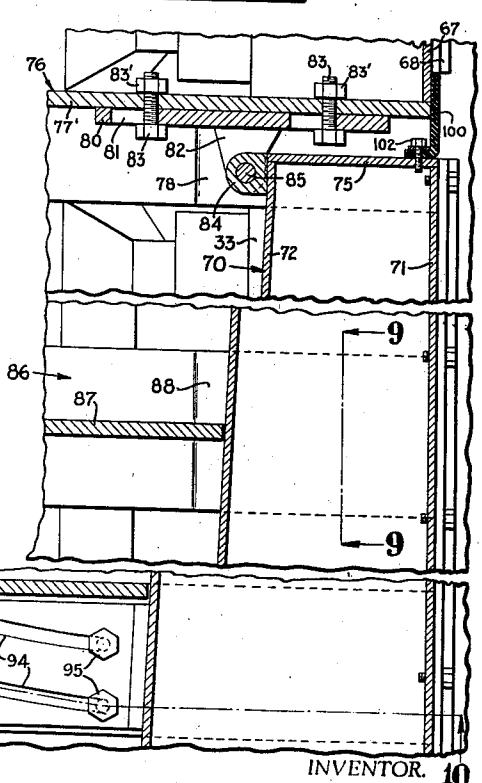


FIG. 8

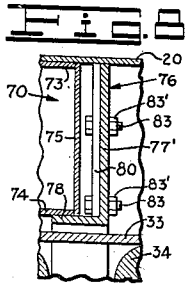
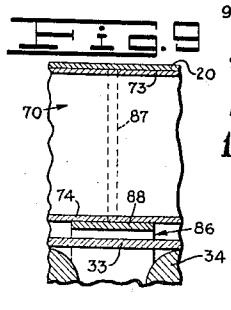


FIG. 9



INVENTOR.
L.H. GARLINGHOUSE JR.

BY

ATTORNEY.

Jan. 28, 1941. L. H. GARLINGHOUSE, JR 2,229,648

HEAVY DUTY LOADER

Filed Dec. 15, 1939 4 Sheets-Sheet 4

Fig. 12

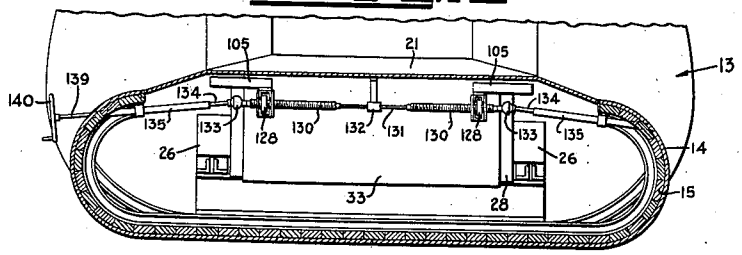


Fig. 13

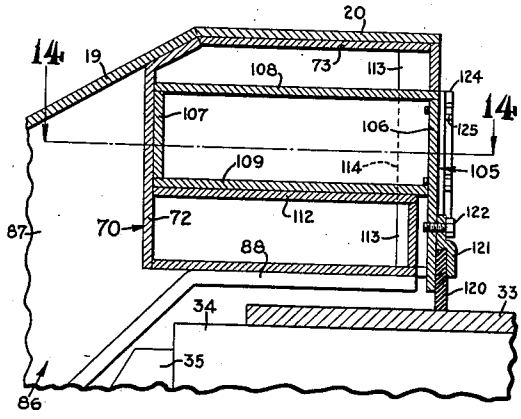


Fig. 14

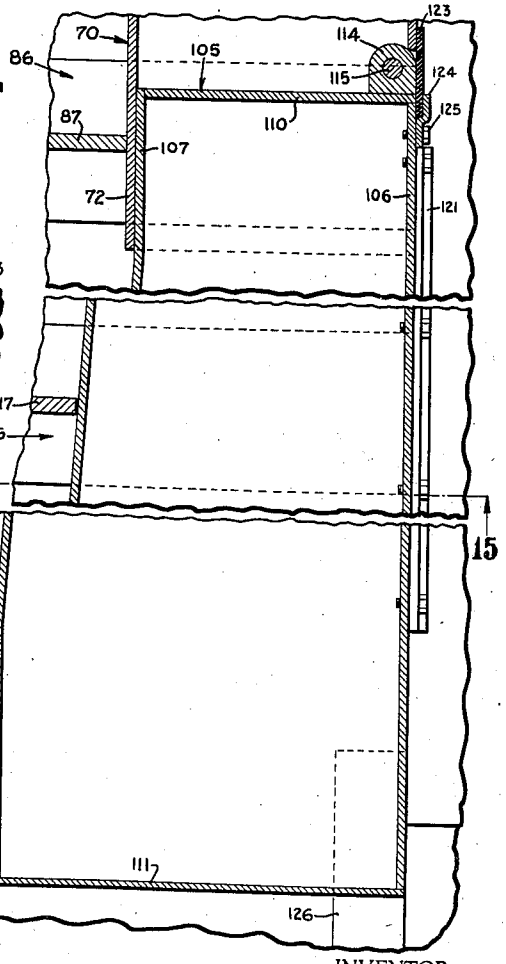


Fig. 15

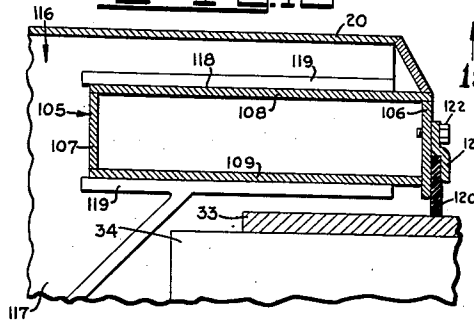
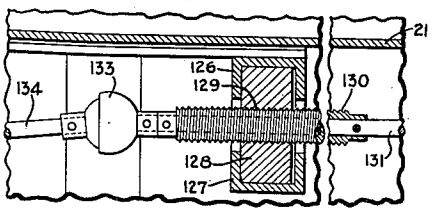


Fig. 16



INVENTOR.
L. H. GARLINGHOUSE JR.

BY

ATTORNEY.

Patented Jan. 28, 1941

2,229,648

UNITED STATES PATENT OFFICE

2,229,648

HEAVY DUTY LOADER

Leslie H. Garlinghouse, Jr., Los Angeles, Calif.

Application December 15, 1939, Serial No. 309,366

10 Claims. (Cl. 198—233)

This invention relates to improvements in heavy duty material loading devices.

The general object of the invention is to provide an improved device for loading excavated material into vehicles.

Another object of the invention is to provide an improved loader including a base supporting a cantilever frame on which is mounted a belt conveyor mechanism with the cantilever frame contacting the base only at a location intermediate its length.

Another object of the invention is to provide an improved loader of the class described including means for varying the width of the area where material is loaded on the belt conveyor and having means for varying the width of the area wherein the material is evenly distributed on the belt.

Other objects and the advantages of this invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a top plane view of my improved loading device;

Fig. 2 is a side elevation of the loader shown in Fig. 1;

Fig. 3 is an enlarged section taken on line 3—3, Fig. 1;

Fig. 4 is an enlarged section taken on line 4—4, Fig. 2;

Fig. 5 is an enlarged section taken on line 5—5, Fig. 2;

Fig. 6 is a fragmentary enlarged section similar to Fig. 5;

Fig. 7 is a fragmentary section taken on line 7—7, Fig. 6;

Fig. 8 is a fragmentary section taken on line 8—8, Fig. 6 on a reduced scale;

Fig. 9 is a fragmentary section taken on line 9—9, Fig. 7 on a reduced scale;

Fig. 10 is a section taken on line 10—10, Fig. 7;

Fig. 11 is an enlarged fragmentary section taken on line 11—11, Fig. 1;

Fig. 12 is an enlarged section taken on line 12—12, Fig. 2;

Fig. 13 is an enlarged fragmentary section taken on line 13—13, Fig. 1;

Fig. 14 is a section taken on line 14—14, Fig. 13;

Fig. 15 is a section taken on line 15—15, Fig. 14;

Fig. 16 is an enlarged fragmentary section taken on line 16—16, Fig. 3; and

Fig. 17 is an enlarged fragmentary section taken on line 17—17, Fig. 2.

Referring to the drawings by reference characters I have indicated my improved loading device generally at 10. As shown the device 10 comprises a cantilever frame 12 mounted on a sled member 13.

The sled member 13 comprises an outer metal shell 14 having a lining of planks 15 engaging the inner faces thereof and a plurality of transverse ribs 16. The sled has a flat bottom as indicated at 17 and at the front the sled is pointed with the side walls curving outwardly and upwardly and then inwardly to merge with a flat deck 18. Extending upwardly and inwardly from the sides of the sled in the rear of the deck 18 I provide skirt members 19 each of which includes a flat upper portion 20 extending inwardly a predetermined distance towards the rear of the sled. Adjacent the front the skirts 19 are connected by a short deck 21.

The cantilever frame 12 is shown as a structural steel fabricated frame welded together and includes a horizontal lower reach 22, a rearwardly and upwardly extending reach 23 and an inclined top reach 24. The cantilever frame 12 is positioned in the sled 13 below the flat portions 20 of the skirts 19 and adjacent the rear thereof the lower horizontal reach 22 is mounted on a pair of I beams 25 which are in turn mounted on a pair of the sled ribs 16. All other portions of the frame 12 are free from engagement with any portion of the sled 13.

Mounted in bearings 26 on the front end of the frame 12 I provide a shaft 27 having a pulley 28 thereon and adjacent the rear of the frame I provide a pulley 30 mounted on a shaft 31 which is journaled in suitable bearings 32 mounted on portions of the frame 12. An endless belt 33 is positioned on the pulleys 28 and 30 and the upper reach thereof between the pulleys 28 and 30 is supported by a plurality of rollers 34 which are rotatably supported by bearings 35 mounted on portions of the upper reach 24 of the frame 12.

The belt 33 is spaced below the flat portion 20 of the skirts 19 and at each end extends thereunder a predetermined distance. Above the anchoring I beams 25 I provide a pair of spaced idler pulleys 36 and 37 which are rotatably supported in bearings 38 and 39 mounted on a portion of the frame 12. Intermediate the pulleys 36 and 37 I provide a take-up pulley 40 which is suitably supported by side arms 41 pivotally secured as at 42 to brackets 43 mounted on a portion of the frame 12. Suitable weights (not shown) or other means may be connected to the arms 41 to urge the pulley 40 downwardly. The lower reach of the belt 33 is positioned over the pulleys 36 and 37 and under the take-up pulley 40.

Between the front pulley 28 and the pulley 36 the lower reach of the belt 33 is supported by a plurality of spaced rollers 44 rotatably supported by bearings 45 which are mounted on portions of the lower reach 22 of the frame 12.

Adjacent the rear pulley 30 I provide an idler pulley 46 rotatably supported in bearings 47 mounted on portions of the frame 12. The lower reach of the belt 33 is positioned over the pulley 46 and between the pulley 37 and the pulley 46 the lower reach of the belt 33 is supported by a plurality of spaced pulleys 48 rotatably supported in bearings 49 which are mounted on portions of the frame 12.

Mounted on a suitable support 50 on the I beams 25 I provide an electric motor 51 having an armature shaft 52 on which I provide a sprocket 53. At the rear of the motor 51 I provide a shaft 54 (Fig. 2) which is rotatably supported in chair housings 55 and 56. The shaft 54 has a large sprocket 57 and a small sprocket 58 thereon. The sprocket 53 and the sprocket 57 are connected by an endless sprocket chain 59 (Fig. 4).

Intermediate the length of the lower inclined portion of the frame 12 I provide a transverse shaft 60 rotatably supported at one end by the housing 56 and at the other end by a chair housing 61 on the opposite side of the frame 12. In the housing 56 the shaft 60 has a large sprocket 62 thereon and in the housing 61 has a reduced sprocket 63 thereon. The sprockets 58 and 62 are connected by an endless sprocket chain 64.

The shaft 31 has a large sprocket 65 thereon in the housing 61 and the sprockets 62 and 65 are connected by an endless sprocket chain 66.

When the motor 51 operates the upper reach of the belt 33 travels from the front end towards the rear of the apparatus.

As indicated in Fig. 1 the forward portion of the device includes a loading area L and a loading and distribution area D at the rear of the loading area. At the rear of the distribution area D the opposed flat portions 20 of the skirts 19 each has a vertical flange 67 extending downwardly from the inner edge thereof to within a predetermined distance above the belt 33 (Fig. 11) and which extends forwardly a predetermined distance.

Clamped to each of the vertical flanges 67 adjacent the lower ends thereof I provide a flexible rubber guard member 68 which contacts the upper surface of the belt 33.

Within the distribution area D forward of the vertical flanges 67 I provide opposed distributing guide members 70. The guide members 70 are identical so but one will be described in detail. As shown in Figs. 5 to 10 inclusive a guide member 70 is in the form of an elongated box like structure including a front wall 71, a rear wall 72, a top wall 73, a bottom wall 74 and a rear end wall 75. The guide member 70 is positioned below the flat portion 20 of the skirt 19 and is spaced a predetermined distance above the belt 33. Adjacent the end wall 75 I provide a bracket 76 which is mounted on one of a plurality of transverse braces 77 of the sled.

The bracket includes a vertical web 77 and a horizontal flange 78 extending from one side of the web and positioned a predetermined distance above the belt 33 and supports the end of the guide 70. Adjustably mounted on the web 77' I provide a hinge plate 80 having a plurality of elongated apertures 81 therein and having a plurality of vertically aligned apertured hinge lugs 82 thereon. The hinge plate 80 is secured to the web 77' by a plurality of bolts 83 and nuts 83' the bolts being positioned in the elongated apertures 81 of the hinge plate and in suitable apertures in the web 77'.

Positioned on the rear wall 72 of the guide 70 adjacent the end wall 75 I provide a plurality of vertically aligned apertured hinge lugs 84. The hinge lugs 84 of the guide 70 are aligned with the hinge lugs 82 of the hinge plate 80 and a suitable hinge pin 85 is positioned in the apertures of the hinge lugs 82 and 84.

Intermediate the bracket 76 and the forward end of the guide 70 I provide a plurality of support brackets 86 which like the brackets 70 are mounted on certain of the transverse braces 77 of the sled. Each of the brackets 86 includes a vertical web 87 and a horizontal portion 88 positioned a predetermined distance above the belt 33, and is engaged by the bottom wall 74 of the guide 70. The vertical web 87 terminates at a position wherein it forms a stop engaged by the rear wall 74 of the guide 70 when the guide is in a fully retracted position.

Adjacent the forward end of the guide 70 I provide a bracket 90 which like the brackets 76 and 86 is mounted on one of the transverse braces 77 of the sled. The bracket 90 includes a vertical web 91 which terminates similar to webs of the brackets 86. Extending from one side of the web 91 the bracket includes a horizontal flange 92 positioned a predetermined distance above the belt 33 and engaged by the bottom wall 74 of the guide 70.

Mounted on the rear wall 72 of the guide above the bracket flange 92 I provide a plate 93 having a pair of elongated arcuate apertures 94 therein, the axis of the apertures being identical with the axis of the hinge pin 85. The plate 93 is adjustably secured to the bracket 90 by a pair of bolts 95 and nuts 96 the bolts being positioned in the elongated apertures 94 of the plate 93 and in suitable apertures in the flange 92.

When the nuts 96 are loosened the guide members 70 may be swung from their fully retracted position as shown in Fig. 5 to Fig. 10 inclusive, towards each other to their fully extended position as shown in Fig. 1 or any intermediate portion desired.

Mounted on the guide 70 adjacent the bottom thereof I provide a resilient wiper member 97 which is clamped to the front wall 71 by a suitable clamping bar 98 which is secured to the front wall by a plurality of bolts 99. The wiper member 97 engages the upper surface of the belt 33 and prevents material on the belt from passing under the guide 70.

Mounted on the end wall 75 of the guide 70 I provide a resilient wiper 100 which overlies the adjacent end of the wall 67. The wiper 100 is shown as secured to the wall 75 by a plurality of bolts 102.

Within the loading area L forward of the guides 70 I provide opposed loading guide members 105. The guide members 105 are identical so but one will be described in detail. As shown in Figs. 12 to 16 inclusive a guide member 105 is in the form of an elongated box like structure including a front wall 106, a rear wall 107, a top wall 108, a bottom wall 109, a rear end wall 110 and a front end wall 111. The front wall 106 extends below the bottom wall 109 to within a predetermined distance above the belt 33. As shown in Figs. 13 and 14 the rear portion of the guide 105 is positioned within the forward portion of

the guide 70 which has a shelf 112 therein on which the guide 105 rests.

Adjacent the end wall 110 of the guide 105 the guide 70 has a pair of spaced vertically aligned apertured hinge lugs 113 therein.

On the end wall 110 I provide an apertured hinge lug 114 which aligns with the hinge lugs 113 and a suitable hinge pin 115 is positioned in the apertured hinge lugs 113 and 114.

Intermediate the length thereof the guide 105 is supported by a plurality of brackets 116 which are mounted on certain of the transverse braces 77 of the sled similar to the brackets 76 and 86. Each of the brackets 116 includes a vertical web 117 which above the belt 33 has an aperture 118 therein in which the guide 105 is positioned. (See Fig. 15.) Extending from each side of the web 117 above and below the aperture 118 the bracket includes horizontal flanges 119.

Mounted on the guide 105 adjacent the bottom thereof I provide a resilient wiper member 120 which is secured in position by a suitable clamping bar 121 secured to the front wall 106 by a plurality of bolts 122. The wiper 120 like the wiper 97 engages the upper surface of the belt 33 to prevent material on the belt from passing under the guide 105.

Mounted on the front wall 106 adjacent the end wall 110 I provide a vertical wiper member 123 which overlies the adjacent end of the front wall 71 of the guide 70. The wiper 123 is retained in position by a suitable clamping bar 124 which is secured to the wall 106 by a plurality of bolts 125.

Mounted on the under face of the bottom wall 109 adjacent the front end and adjacent the wall 106 I provide a pair of spaced channel irons 126 and 127 which extend beyond the front end of the guide 105 a predetermined distance. (See Figs. 3 and 16.) Positioned between the flanges of the channels 126 and 127 I provide a block 128 having a threaded recess 129 therein. The threads in one of the block apertures are right handed and the threads in the other are left handed.

Positioned in the threaded aperture 129 I provide a similarly threaded sleeve 130. The two sleeves 130 are mounted on and secured to a rod 131 which is shown in Fig. 12 as supported intermediate its length in a bearing 132 depending from the deck 21. Outwardly from each of the sleeves 130 the rod 131 has one portion of a universal joint 133 mounted thereon. (See Figs. 12 and 16.) The other portion of the universal joint is secured to a rod 134 which is positioned in a pipe 135 which extends through the side wall of the sled and terminates flush therewith. (See Fig. 17.) The rod 134 terminates intermediate the length of the pipe 135 and the end thereof includes a flattened key portion 136.

Adjacent the outer end the pipe 135 is preferably internally threaded as at 137 to receive a threaded removable closure plug 138.

For rotating the rod 134 I provide a rod 139 having a hand wheel 140 on one end thereof and a slot 141 in the opposite end to receive the key 136 of the rod 134.

To swing the guides 105 an operator removes one of the closure plugs 138 and inserts the rod 139 in the pipe 135 and moves it into engagement with the rod 134 with the key 136 of the rod 134 positioned in the slot 141 of the rod 135. Thereafter by rotating the hand wheel 140 the operator can swing the forward ends of the guides either inwardly or outwardly.

Thus it will be seen that the guides 70 in the distribution area D may be set to various positions and the guides 105 in the loading area L may be adjusted to various positions at any time by operating the hand wheel 140.

The device 10 is primarily adapted for use on large excavating projects for loading trucks with material excavated by a drag line scoop. The excavated material is placed on the belt 33 within the loaded area L and the belt conveys the material upwardly and over the pulley 30 from whence it drops into a truck therebelow.

From the foregoing description it will be apparent that I have provided an improved heavy duty loader which is simple in construction and highly efficient in use.

Having thus described my invention I claim:

1. In a loader, a sled, a distributing guide member pivotally mounted at each side of said sled, means to shift the pivots of the guide members, a loading guide member pivotally mounted on each of said distributing guide members at the forward end thereof and means to shift the free end of said loading guide members.

2. In a loader, a sled including side portions, a belt movable along said sled, a pair of opposed distributing guide members pivotally mounted on said sled, said guide members being movable towards and from each other and over said belt and a loading guide member pivotally mounted on each of said distributing guide members.

3. In a loader, a sled including a bottom, side and top portions, a cantilever frame, means to secure the intermediate portion of the frame to one end portion of the sled, one end portion of the cantilever frame extending into the sled and being free from attachment with the end of the sled, the other end portion of the cantilever frame projecting beyond the sled, a motor mounted on said cantilever frame, pulleys on said cantilever frame, an endless belt conveyor passing over said pulleys and means whereby said motor drives said belt, pivoted guide means on said sled extending over said conveyor and means to shift the pivot of the guide means.

4. In a loader, a support, an endless belt conveyor mounted on said support, said support including a bottom, sides and a top portion at each side thereof adjacent said belt, opposed distributing guide members pivotally mounted on said support for movement over said belt, loading guide members pivotally mounted on said distributing guide members for movement over said belt, threaded means engaging said pivoted loading guide members and means to rotate said threaded means to thereby shift said pivoted loading members relative to said belt.

5. In a loader, a sled including side portions and a top member extending inwardly from each side portion, said top members being spaced apart, a belt conveyor beneath said top members, a pair of opposed brackets mounted on said sled, a distributing guide member pivotally mounted on each of said brackets, said guide members being opposed to each other and movable towards and from each other and over said belt, a loading guide member pivotally mounted on each of said distributing guide members at the forward end thereof, said loading guide members being disposed beneath said top members and over said belt, and means to shift said loading guide members.

6. In a loader, a sled including transversely extending U-shaped ribs having a shell thereon,

said sled including side portions extending above said ribs and a top member extending inwardly from each side portion, said top members being spaced apart, a belt conveyor beneath said top members, a pair of opposed brackets adjustably mounted on said sled for movement towards and from each other, a distributing guide member pivotally mounted on each of said brackets, said guide members being opposed to each other and movable towards and from each other and over said belt, a loading guide member pivotally mounted on each of said distributing guide members at the forward end thereof, said loading guide members being disposed beneath said top members and over said belt, and means to shift said loading guide members.

7. In a loader, a sled including transversely extending U-shaped ribs, planking on said ribs, an outer metallic covering on said planking, said sled including side portions extending above said ribs, said side portions being disposed at the forward end of the sled, a top member extending inwardly from each side portion, said top members being spaced apart, a belt conveyor beneath said top members, said sled having transverse braces thereon, a pair of opposed brackets adjustably mounted on said brace members for movement towards and from each other, an elongated distributing guide member pivotally mounted on each of said brackets, said guide members being opposed to each other and movable towards and from each other and over said belt, a loading guide member pivotally mounted on each of said distributing guide members at the forward end thereof, said loading guide members being disposed beneath said top members and over said belt, and means to move said loading guide members towards and from each other.

8. In a loader, a sled including transversely extending U-shaped ribs, planking on said ribs, an outer metallic covering on said planking, said sled including side portions extending above said ribs, said side portions being disposed at the forward end of the sled, a top member extending inwardly from each side portion, said top members being spaced apart, a belt conveyor beneath said top members, said sled having transverse braces thereon, a pair of opposed brackets adjustably mounted on said brace members for movement towards and from each other, an elongated distributing guide member pivotally mounted on each of said brackets, said guide members being opposed to each other and movable towards and from each other and over said belt, means for holding the guide members in adjusted position, a loading guide member pivotally mounted on each of said distributing guide members at the forward end thereof, said loading guide members being disposed beneath said top members and over said belt, a threaded member on each of said loading guide members, a threaded rod engaging each of said threaded members, the threads on one threaded member being right handed and on the other threaded member being left handed and means to rotate said rod.

9. In a loader, a sled including transversely extending U-shaped ribs, planking on said ribs, an outer metallic covering on said planking, said sled including side portions extending above said ribs, said side portions being disposed at the forward end of the sled, a top member extending inwardly from each side portion, said top members being spaced apart, a belt conveyor beneath said top members, said sled having transverse braces thereon, a pair of opposed brackets adjustably mounted on said brace members for movement towards and from each other, a hollow elongated distributing guide member pivotally mounted on each of said brackets, said guide members being opposed to each other and movable towards and from each other and over said belt, said guide members having flexible rubber members thereon engaging said belt, means on the sled engaging means on said guide members for holding the latter in adjusted position, a loading guide member pivotally mounted on each of said distributing guide members at the forward end thereof, said loading guide members being disposed beneath said top members and over said belt, a threaded member on each of said loading guide members, a threaded rod engaging each of said threaded members, the threads on one threaded member being right handed and on the other threaded member being left handed and means to rotate said rod.

10. In a loader, a sled including a bottom member having sides thereon, a top portion on each side, a cantilever frame, said frame including an upper portion and a lower portion, an endless belt conveyor mounted on the upper portion, the lower portion of the cantilever frame including a front part and a rear part, the front and rear parts being arranged at an obtuse angle to each other and means adjacent the apex of the obtuse angle to secure the cantilever frame on the sled, the rear part being disposed beneath said top portions, said frame being free from said sled except for the connection at the apex of the obtuse angle.

LESLIE H. GARLINGHOUSE, JR.