Jan. 21, 1930. W. G. BRIGGS 1,744,066

SNOW CLEANING APPARATUS

Filed Oct. 20, 1928 4 Sheets-Sheet 1

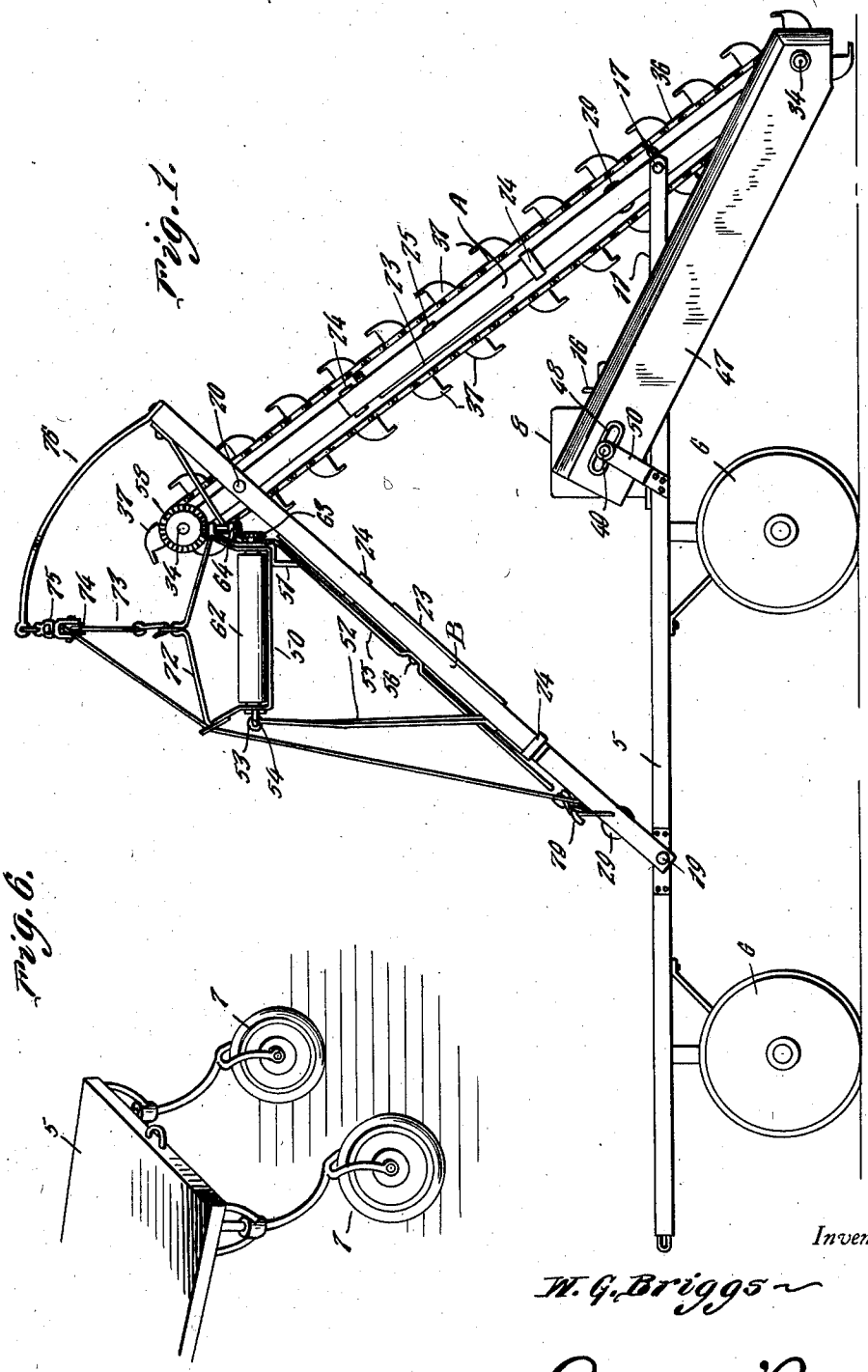

Fig. 1.

Fig. 6.

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Fig. 2.

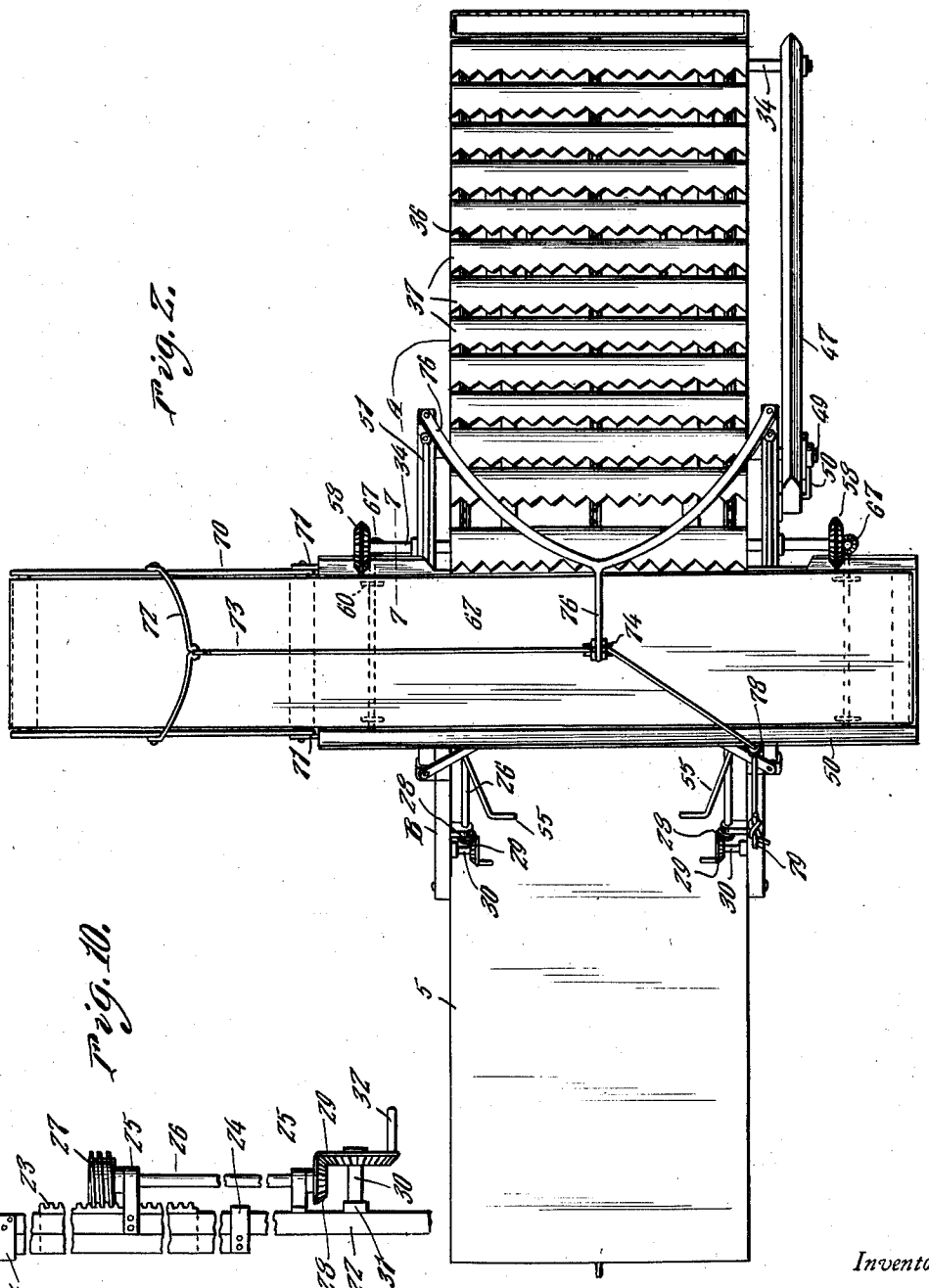

Fig. 4.

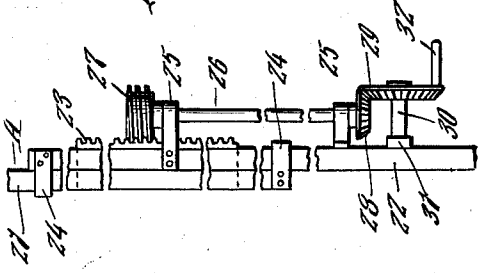

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Fig. 3.

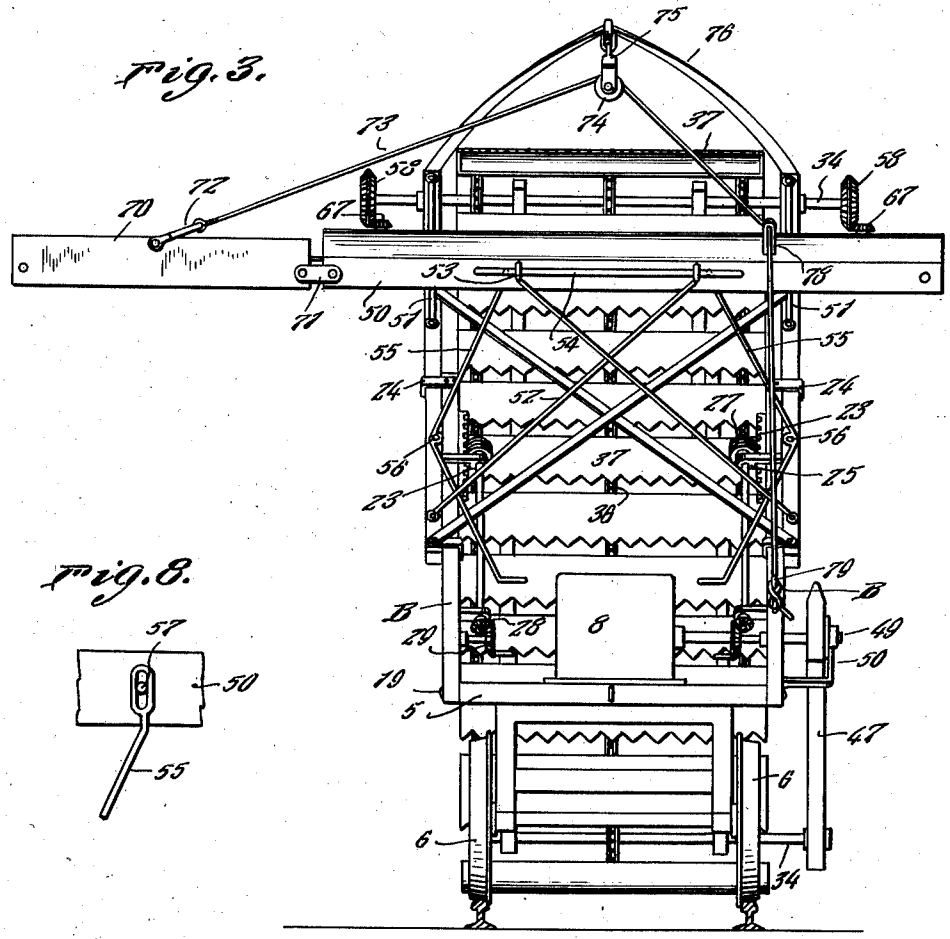


Fig. 8.

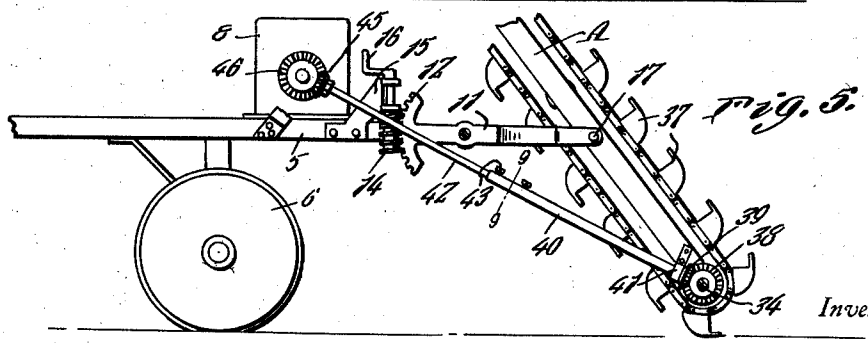
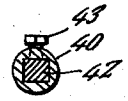


Fig. 5.

Fig. 9.



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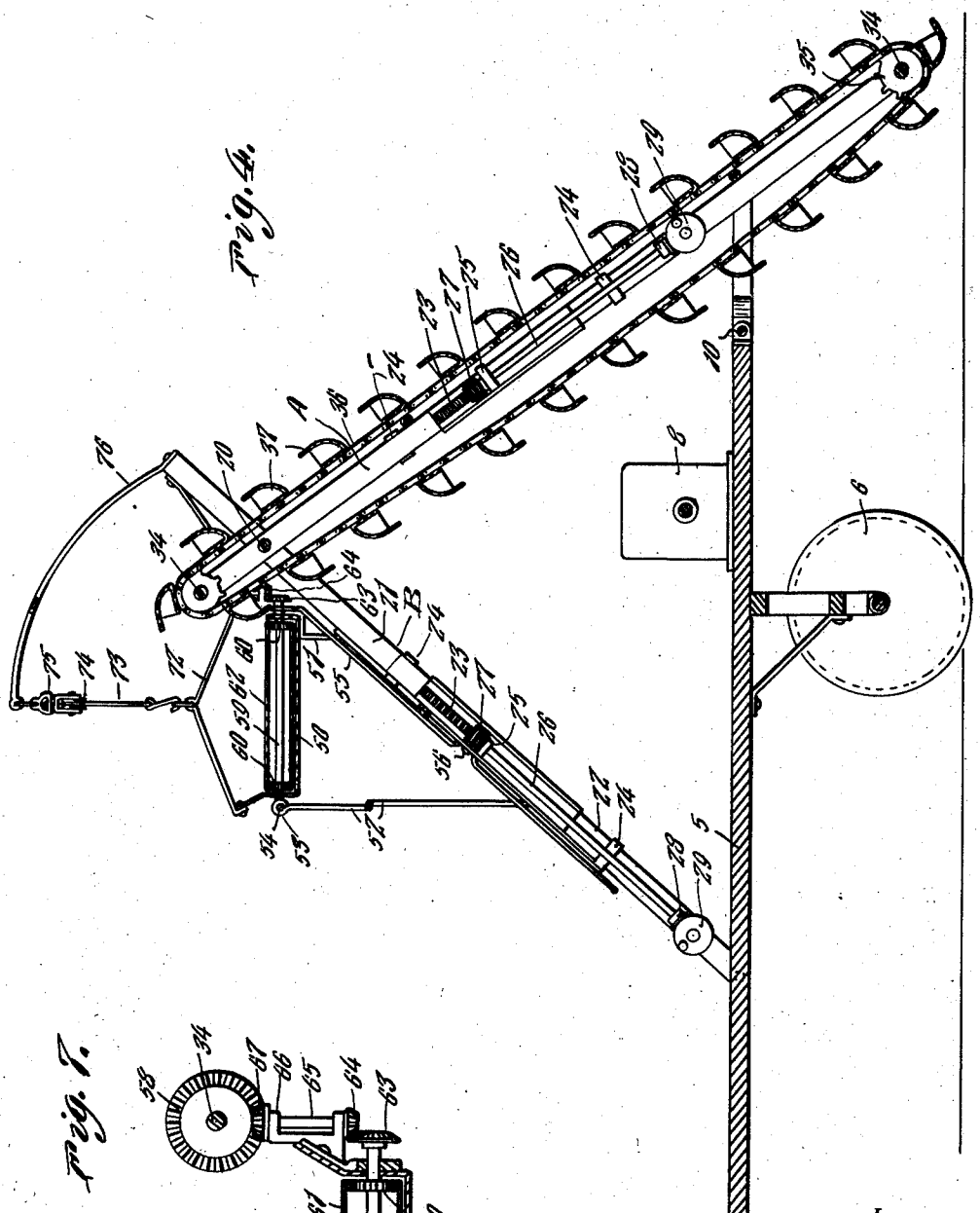

Fig. 4.

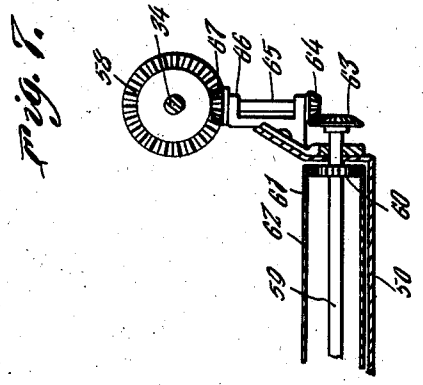

Fig. 5.

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UNITED STATES PATENT OFFICE

WALTER G. BRIGGS, OF STRATTON, NEBRASKA

SNOW-CLEANING APPARATUS

Application filed October 30, 1928. Serial No. 313,810.

The present invention relates to an apparatus for cleaning snow off of tracks, roadways and the like and has for its prime object to provide an endless bucket mechanism for lifting the snow from the trackway, roadway or the like and elevating the same into a trough conveyor so that the snow may be piled up along the trackway, roadway or the like.

Another very important object of the invention resides in the provision of a machine of this nature which is adjustable so that the digging depth of the endless bucket conveyor may be varied.

A still further very important object of the invention resides in the provision of a machine of this nature which is comparatively simple in its construction, strong and durable, thoroughly efficient and reliable in use and operation, and otherwise well adapted to the purpose for which it is designed.

With the above and numerous other objects in view as will appear as the description proceeds, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawing:

Figure 1 is a side elevation of the machine embodying the features of my invention,

Figure 2 is a top plan view thereof,

Figure 3 is a rear elevation thereof,

Figure 4 is a vertical longitudinal section therethrough,

Figure 5 is an enlarged detail section of the front lower portion of the machine showing the fender removed,

Figure 6 is a perspective view of another embodiment of the wheel support,

Figure 7 is an enlarged detail section taken substantially on the line 7—7 of Figure 2,

Figure 8 is a detail view of the upper end of one of the shifting rods,

Figure 9 is an enlarged detail section taken substantially on the line 9—9 of Figure 5,

Figure 10 is a detail view of the adjusting means for one of the frames.

Referring to the drawing in detail it will be seen that the numeral 5 denotes a truck body mounted on wheel supports 6 for riding on tracks or wheel supports 7 for riding on roadways.

The numeral 8 denotes a prime mover mounted on the front of a body 5. Brackets 10 projecting forwardly from the forward end of the body 5 have rockably engaged therewith arms 11 with arcuate racks 12 on their rear ends meshing with worms 14 journaled in brackets 15 on the sides of the body 5 and operable by hand cranks 16.

A frame A is rockably mounted as at 17 between the forward extremities of the arms 11. A frame B is rockably mounted at its lower end as at 19 to the sides of the body 5 to the rear of the center thereof. The frames A and B are pivoted together adjacent their upper ends as at 20. Frames A and B each include a pair of side bars. Each side bar is formed in a pair of sections 21 and 22.

The section 21 has a rack 23 fixed thereto. Straps 24 are fixed to the section 22 and extend about the section 21 so that the sections 21 and 22 may slide in respect to each other. Brackets 25 on the section 21 rotatably support a shaft 26 which is provided with a worm 27 at the upper end meshing with the rack 23. A beveled gear 28 is mounted at the lower end of the shaft 26 and meshes with a beveled gear 29 rotatable on a shaft 30 mounted on the section 22 by suitable means 31.

Thus it will be seen that by turning the gears 29 which have handles 32 thereon sections 21 may be slid on the sections 22 for changing the length of the frames A and B. Shafts 34 are journaled across the ends of the frame A and have sprockets 35 thereon over which are trained chains 36. Buckets 37 are mounted across the chains.

The lower shaft 34 has a beveled gear 38 thereon which meshes with a beveled pinion 39 on shaft section 40 which is journaled in a bracket 41 on the side of the lower end of the frame A. A shaft section 42 has a sliding fit in the shaft 40 to rotate therewith as is clearly illustrated in Figure 9 and is held in different adjusted positions in respect thereto by set screws 43.

The upper extremity of the shaft section 42

has thereon a bevel gear 45 meshing with a bevel gear 46 operatively connected with a prime mover 8. A fender 47 is disposed over the gearing just described which connects the lower shaft 34 with the prime mover 8. The upper end of this fender is provided with a slot 48 for receiving a pin 49 projecting from a bracket arm 50 on one side of the body 5 while the lower end of the fender is mounted on the extremity of the lower shaft 34 which projects therethrough.

The pin and slot connection 49, 48 compensates for adjustment which may be made when the cranks 16 are operated.

A trough 50 is mounted transversely of the machine to receive snow from the bucket as they pass over the top of the frame A. This trough is supported on a ledge 51 transversely disposed of the frame B below pivotal connection 20 and by rods 52 which are secured to the lower intermediate portions of the bar sections 21 of the frame B, cross each other and terminate at their upper ends in eyes 53 for slidably receiving a bar 54 on the rear side of the trough.

Thus the trough is free to slide transversely of the machine a limited distance. The sliding movement is accomplished by levers 55 pivotally mounted as at 56 on the frame B and having pin and slot connections 57 with the front side of the trough 50.

The upper shaft 34 has beveled gears 58 at its ends. Shafts 59 are journaled in the end portions of the trough 50 and have sprockets fixed thereon over which are trained endless chains 61 with an endless belt 62 extending therebetween. The forward ends of the shaft 59 have beveled gears 63 thereon meshing with beveled gears 64 on shafts 65 journaled in brackets 66 on the forward side of the trough 50.

Beveled gears 67 are provided at the upper ends of the shafts 65 and these gears 67 may be brought into mesh with gears 58 by sliding the trough 50 from right to left and may be disengaged therewith by sliding the trough from left to right. This sliding movement of the trough, of course, is accomplished by the levers 55.

A chute 70 is hingedly engaged as at 71 on the left hand side of the trough 50. A bridle 72 is engaged with an intermediate portion of the chute and has a cable 73 attached thereto and trained over a pulley 74 in a bracket 75 depending from the center of a bracket 76 which is attached to the upper end of the frame B and inclines upwardly and rearwardly therefrom to terminate approximately over the center of the chute 70. The cable 73 is trained over a pulley structure 78 on the trough 50 and may be tied as as 79 or in any other suitable manner to the lower portion of the frame B.

Before starting out the operator of this machine should first loosen the set screws 43 and then manipulate the cranks 16 so that the buckets 37 will dig and scrape into the snow at the desired depth. In this connection it will be noted that when the arms 11 are swung by the worm 14 and worm gear segment 12 the frame A rocks on the pivot 17, the frames A and B rock in respect to each other on pivots 20 and the frame B rocks on the pivots 19.

When the desired adjustment has been made the set screws 43 will be tightened. This one adjustment should be sufficient for an entire trip. Now as the machine progresses along and the prime mover 8 is in operation it will be seen that the buckets move downwardly to the rear of the frame A and upwardly forwardly of said frame A so as to dump the snow picked up therein into the trough 50.

The endless conveyor belt in this trough is in operation whenever the operator has shifted said trough to engage gears 67 with gears 58 so as to move the snow to the left hand side of the machine into the chute 70 and this chute 70 may be inclined as desired by the cable 73 as will be quite apparent.

Should it be desired to dump the snow to the right hand side of the machine the hinge connection 71 is made at the opposite end of the trough 50 and the chute 70 is shifted so as to engage the other sides so that the beveled gears 67 engage the other sides of the beveled gears 58, the latter bevel gears being of the double type. In making this shift of the chute 70, the same will have to be moved rearwardly so that the gears 67 clear the gears 58 before being brought into mesh with the other sides thereof.

The rods 52 will give sufficiently for this purpose. Obviously the frame B may be lengthened so as to maintain the frame A at the desired angle as the angle of the frame A will be changed whenever adjustment is made at the worm 14 and worm gear segment 12. The frame A may be lengthened to tighten the chains 36 whenever this becomes necessary.

It is thought that the construction, operation, utility and advantages of this invention will now be quite apparent to those skilled in this art without a more detailed description thereof. In addition to the practical advantages hereinbefore set forth, my novel machine is obviously simple, strong and durable, and thoroughly efficient and reliable in operation.

I have entered into a detail description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear and exact understanding of said embodiment. I do not desire, however, to be understood as confining myself to the specific construction and relative arrangement of parts inasmuch as in the future

practice of the invention various changes and modifications may be made such as fall within the scope of my invention as defined in my appended claims.

Having thus described my invention, what I claim as new is:

1. In combination, a truck, arms rockably mounted on the forward end of the truck, means for rocking the arms, a frame pivotally engaged between the arms, endless conveyor means on the frame, a second frame pivotally mounted on the truck and pivotally engaged with the first frame, said frames being formed in sections, and means for sliding the sections in relation to each other for lengthening and shortening the frames.

2. In combination, a truck, arms rockably mounted on the forward end of the truck, means for rocking the arms, a frame pivotally engaged between the arms, endless conveyor means on the frame, a second frame pivotally mounted on the truck and pivotally engaged with the first frame, said frames being formed in sections, and means for sliding the sections in relation to each other for lengthening and shortening the frames, a ledge across the second frame, a trough transversely disposed to rest on the ledge, rods rising from the second frame, a slidable connection between the rods and the trough, an endless conveyor in the trough.

3. In combination, a truck, arms rockably mounted on the forward end of the truck, means for rocking the arms, a frame pivotally engaged between the arms, endless conveyor means on the frame, a second frame pivotally mounted on the truck and pivotally engaged with the first frame, said frames being formed in sections, and means for sliding the sections in relation to each other for lengthening and shortening the frames, a ledge across the second frame, a trough transversely disposed to rest on the ledge, rods rising from the second frame, a slidable connection between the rods and the trough, an endless conveyor in the trough, means for operating the endless conveyor of the first frame and means operatively connecting the endless conveyor of the first frame with the endless conveyor of the trough.

4. In combination, a truck, arms rockably mounted on the forward end of the truck, means for rocking the arms, a frame pivotally engaged between the arms, endless conveyor means on the frame, a second frame pivotally mounted on the truck and pivotally engaged with the first frame, said frames being formed in sections, and means for sliding the sections in relation to each other for lengthening and shortening the frames, a ledge across the second frame, a trough transversely disposed to rest on the ledge, rods rising from the second frame, a slidable connection between the rods and the trough, an endless conveyor in the trough, means for operating the endless conveyor of the first frame and means operatively connecting the endless conveyor of the first frame with the endless conveyor of the trough, said last mentioned means including beveled gears operatively connected with the endless conveyor of the first frame and beveled gears operatively connected with the trough, and means for sliding the trough to mesh and unmesh said beveled gears.

5. In combination, a truck, arms rockably mounted on the forward end of the truck, means for rocking the arms, a frame pivotally engaged between the arms, endless conveyor means on the frame, a second frame pivotally mounted on the truck and pivotally engaged with the first frame, said frames being formed in sections, and means for sliding the sections in relation to each other for lengthening and shortening the frames, a ledge across the second frame, a trough transversely disposed to rest on the ledge, rods rising from the second frame, a slidable connection between the rods and the trough, an endless conveyor in the trough, means for operating the endless conveyor of the first frame and means operatively connecting the endless conveyor of the first frame with the endless conveyor of the trough, said last mentioned means including beveled gears operatively connected with the endless conveyor of the first frame and beveled gears operatively connected with the trough, and means for sliding the trough to mesh and unmesh said beveled gears, a chute pivotally mounted on one end of the trough, and means for swinging the chute and holding the same in different adjusted positions.

In testimony whereof I affix my signature.

WALTER G. BRIGGS.