Feb. 13, 1923. 1,445,183

J. L. STEBBINS.

SNOWPLOW.

FILED OCT. 6, 1920. 5 SHEETS—SHEET 1.

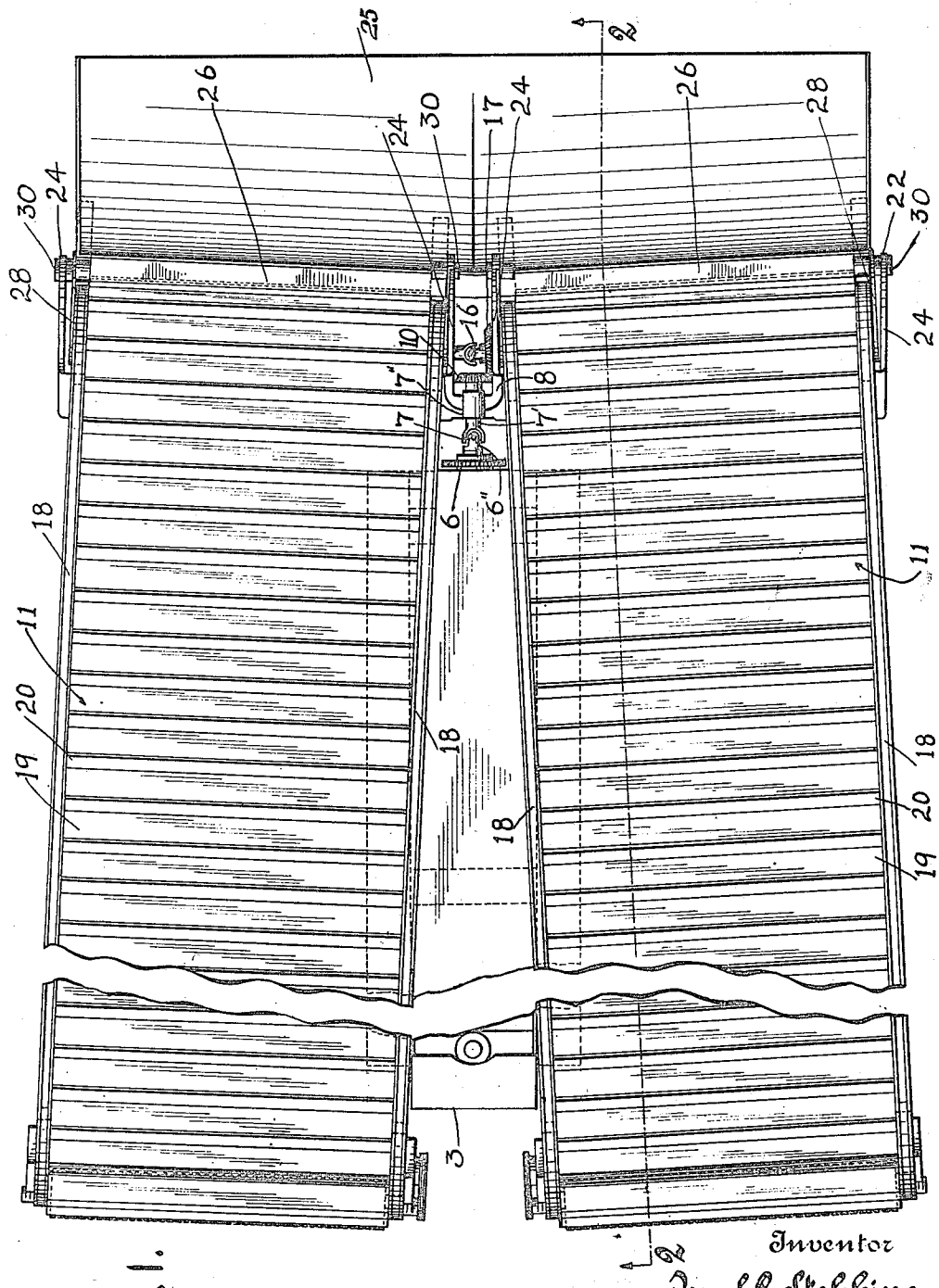

Fig. 1.

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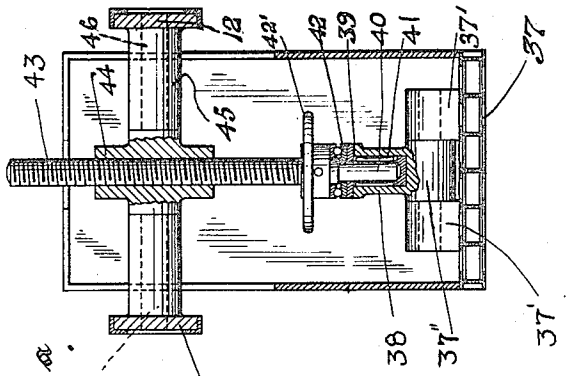

Fig. 2a.

Fig. 2.

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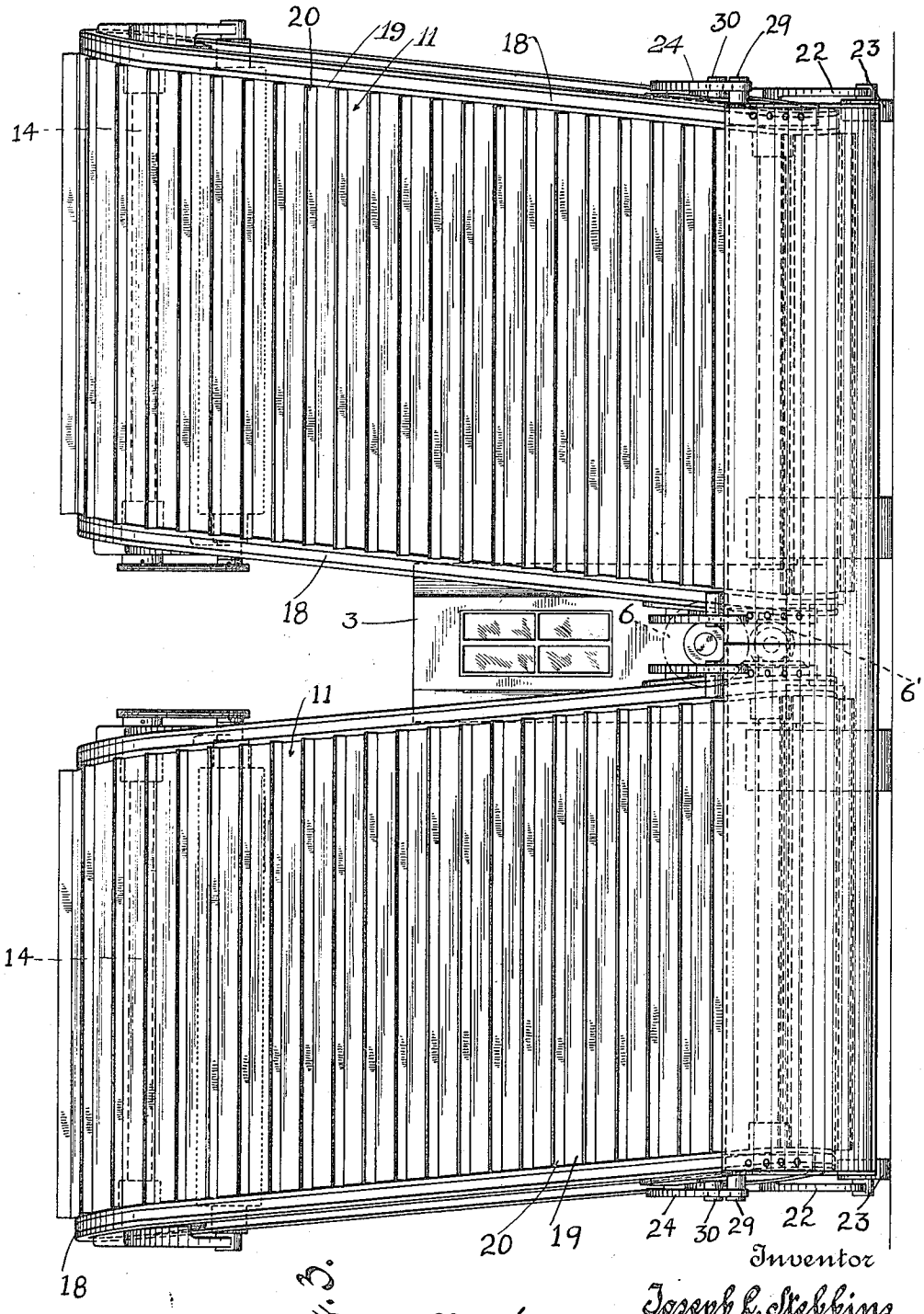

Fig. 3.

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Fig. 4.

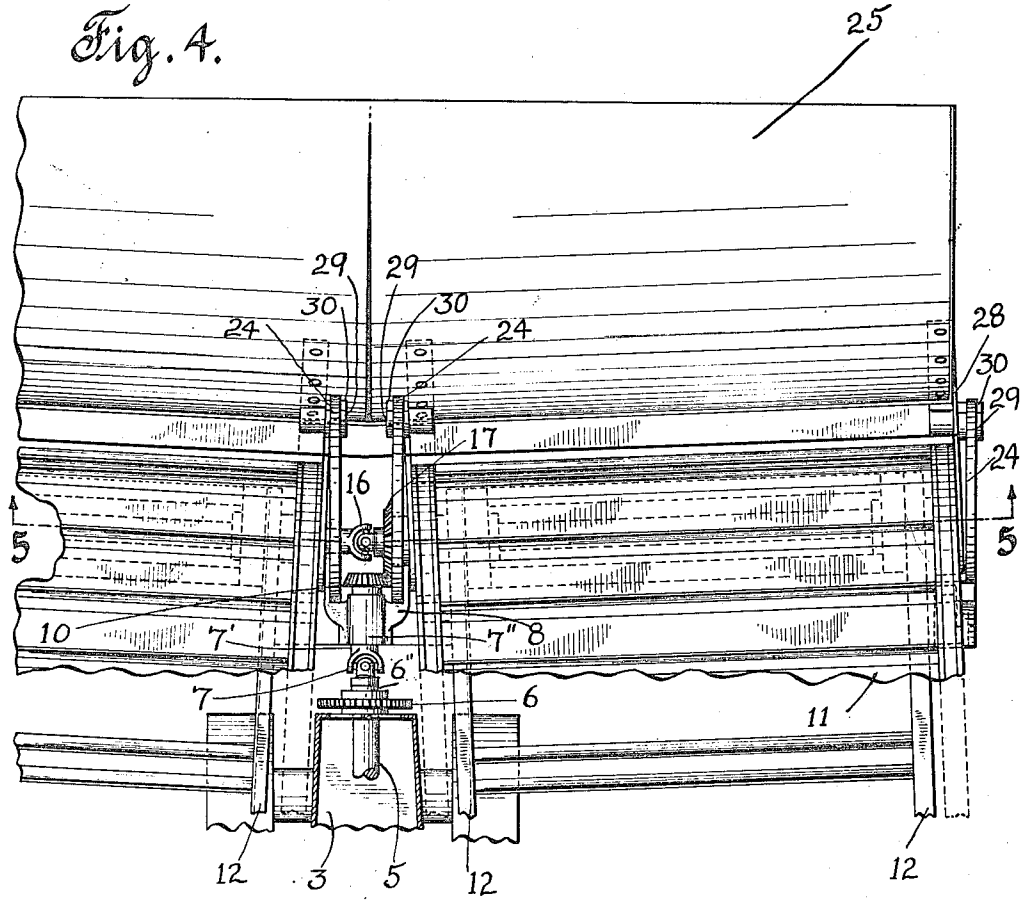
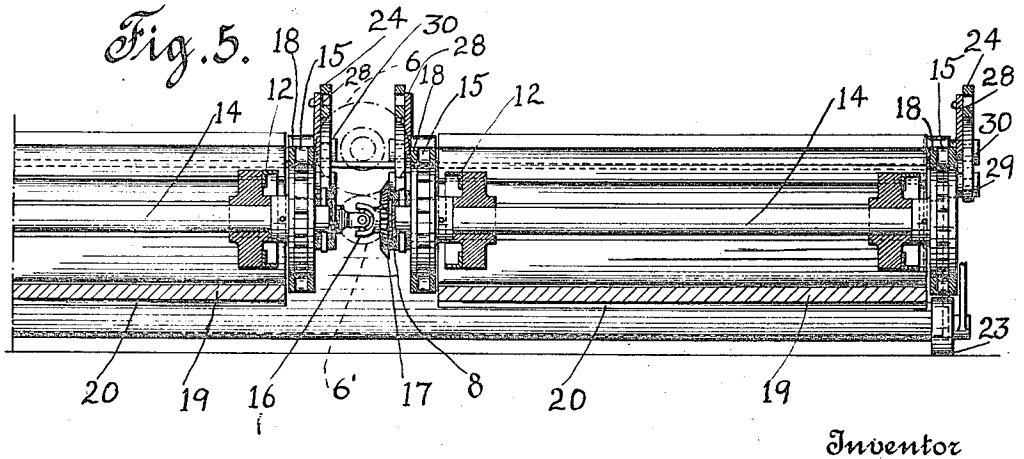


Fig. 5.



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FILED OCT. 6, 1920. 5 SHEETS—SHEET 5.

Fig. 6.

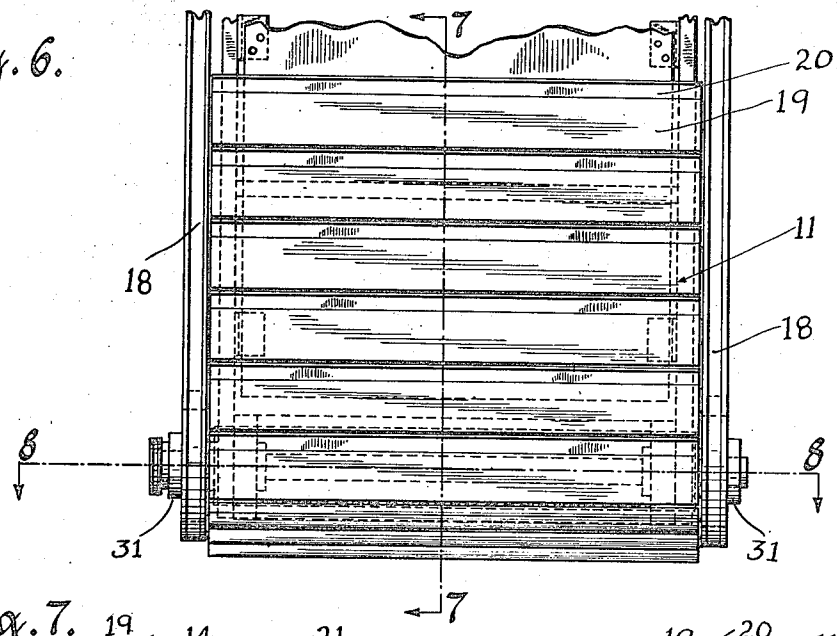


Fig. 7.

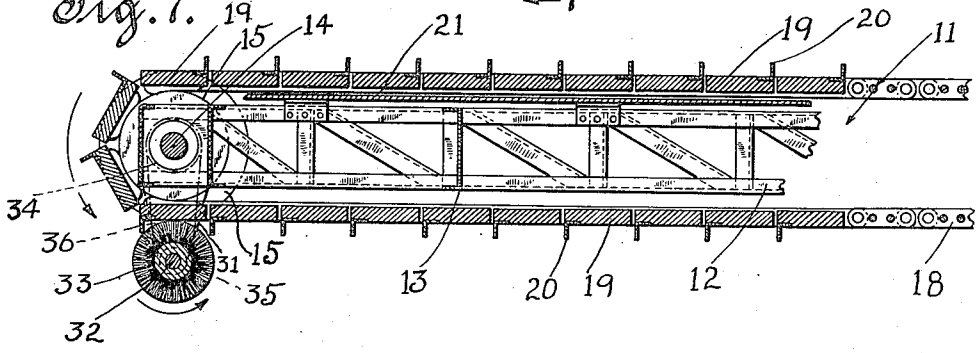
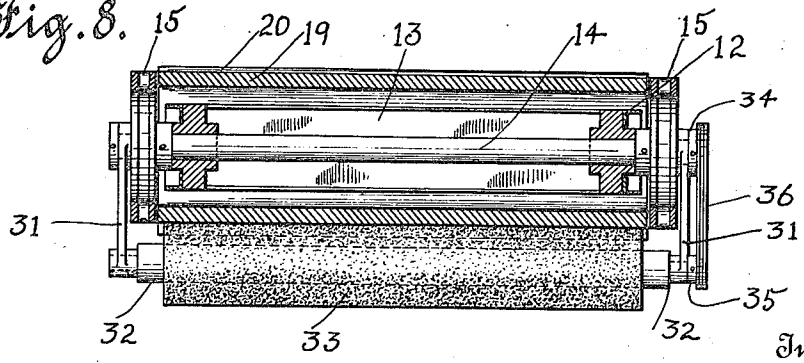


Fig. 8.



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Patented Feb. 13, 1923. 1,445,183

UNITED STATES PATENT OFFICE.

JOSEPH LOUIS STEBBINS, OF HANOVER, PENNSYLVANIA.

SNOWPLOW.

Application filed October 6, 1920. Serial No. 414,952.

To all whom it may concern:

Be it known that I, JOSEPH LOUIS STEBBINS, a citizen of the United States, and resident of Hanover, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Snowplows, of which the following is a specification.

This invention relates to improvements in snow removing machine.

An object of this invention is to provide in conjunction with a supporting tractor or vehicle of similar nature driven by suitable means, a pair of endless moving platforms or carriers disposed at either side of the tractor in such manner that their front or forward ends meet.

Another object of this invention is to provide means for varying the inclination of said platforms.

Further objects of this invention are to provide a unitary shovel or scoop at the front of said platforms and means attached to the latter and said shovel for facilitating the adjustment of the shovel.

Still further objects of this invention are to provide at the rear of said platforms rotary brushes adapted to contact with the passing sections of the platforms and means for transmitting rotary motion from the platforms to said brushes.

A still further object of this invention is to provide means attached at the front portions of the stationary frame of said platforms for facilitating the supporting of the latter.

The above and further objects in view will more fully be understood from the following description together with the accompanying drawings forming part of this specification and in which:

Figure 1 is a top plan view of my invention.

Figure 2 is a cross-sectional side view of same, taken on line 2—2 of Figure 1.

Figure 2^a is a detail cross-sectional view of a preferred form of mechanism for varying the inclination of the moving platform, taken on line 2^a—2^a of Figure 2.

Figure 3 is a front view of same.

Figure 4 is a partial plan view of same showing in detail arrangement of the front thereof.

Figure 5 is a detail cross-sectional view taken on line 5—5 of Figure 4.

Figure 6 illustrates the rear portions of one of the moving platforms.

Figure 7 is a cross-sectional view taken on line 7—7 of Figure 6.

Figure 8 is a cross-sectional view taken on line 8—8 of Figure 6 showing the rotary brush arrangement.

In the drawings there is disclosed a supporting tractor or vehicle 1 provided with suitable caterpillar propelling mechanism 2, a housing 3 and suitable driving means 4 contained in housing 3.

Connected to driving means 4 is transmission shaft 5 which has connected thereto just outside the front end, cog gear 6 which engages smaller gear 6′ keyed on shaft 6″ which is rotatably mounted in a stationary bearing in the casing. Shaft 6″ protrudes through gear 6′ and has at its end a universal joint 7. Extending from joint 7 is shaft 7′.

Shaft 7′ is rotatably mounted in bearing 7″ which forms the joining part of a bifurcated bearing support 8 which is swingably connected upon the near ends of the platform shafts. Shaft 7′, having passed through bearing 7″, receives a beveled gear 10 which is keyed thereto. This arrangement permits the driving of the platforms at any desired angle as will be explained later.

The endless moving platforms or conveyers 11 are disposed on either side of tractor 1 in such manner that they form an angle and meet in front of the latter. Each moving platform has a frame 12 provided with stiffening cross-pieces 13 and constructed from suitable material. Rotatably mounted at the front and rear of platforms 11 are shafts 14 upon which are secured sprocket wheels 15. The front shafts 14 of platforms 11 are coupled by means of the universal joint 16 and are made to rotate through beveled gear 17 engaging beveled gear 10.

As has been said above the shaft of gear 10 is rotatably mounted in a bearing which is swingably connected to shafts 14 by suitable means, by which a permanent engagement between gears 10 and 17 is accomplished.

Sprocket wheels 15 cooperate with endless sprocket chains 18. Secured to sprocket chains 18 are series of cross members 19 made preferably from suitable boards, and attached to one of the ends of cross-boards

19 is an equal series of angle irons 20, disposed transversely of said platforms, said cross pieces and angle irons forming a series of carriers. Disposed between said carriers and the upper face of frames 12 and extending over the latter's entire length is a smooth unitary glide plate 21 adapted to prevent the carriers from sagging and coming in contact with frame 12.

Attached to the outer sides of frames 12 at their front, are brackets 22 which extend downwardly, and rotatably mounted at the lower ends thereof are wheels or rollers 23 adapted to rollingly support the front portion of platforms 11, and forming a fulcrum for the latter.

Secured at one of their ends to the upper front part of frames 12 are the arcuated slotted guide-brackets 24. Unitary shovel or scoop 25 detachably connected to guide-brackets 24 is curved upwardly from its bottom and terminates in a flat delivery seat 26 disposed over the upper front ends of platforms 11. At both sides of shovel 25 walls 27 are provided having shields 28 extending beyond seat 26 and disposed above platforms 11. Rollers 29 and 30 provided at the upper ends of shovel 25, near seat 26, are adapted to rollingly engage the slot of brackets 24. By using suitable clamping means, not shown, shovel 25 may be raised or lowered and fixed in any desired position.

Secured at the rear ends and on both sides of frames 12 are bearing brackets 31 in which are rotatably mounted shafts 32. Upon each of these shafts there is fixed a rotary brush 33. Keyed to rear shafts 14 are small sprocket wheels 34 and keyed to shafts 32 are small sprocket wheels 35. Motion is transmitted from sprocket wheel 34 to sprocket wheel 35 by means of sprocket chain 36 cooperating therewith.

The inclination of moving platform 11 may be desirably varied by means of the mechanism shown in detail in Fig. 2[a].

At the rear end of and within housing 3 is secured to vehicle frame 37 (see Fig. 2[a]) a pair of horizontal bearings 37′ in which is swingably lodged a T-shaped bearing member 38. Its upwardly turned leg 39 forms an upright bearing for spindle end 40 and is equipped with anti-friction rollers 41. Resting upon a ball thrust bearing 42 is the spindle operating wheel 42′ which is keyed or otherwise secured to threaded spindle 43.

The latter engages the threaded hub 44 of frame support 45 which again forms horizontal bearings for pins 46 attached in convenient manner to frames 12.

By turning wheel 42, and thereby spindle 43, the frame support 45 may be raised or lowered. In that manner the inclination of the moving platforms 11 is varied.

The above is descriptive of a particular means for varying the inclination of the moving platforms. However, any other suitable means may be employed so long as the desired result is attained.

Operation.

The moving platforms are caused to operate by means of the transmission gears described above connected to driving means 4. Shovel or scoop 25 is adjusted so that it is just above the ground, and the inclination of platforms 11 adjusted to the proper angle by operating hand wheel 42′. As the tractor is driven forward the snow in front thereof is scooped up by shovel 25 and forced upon carriers of the moving platforms 11. The snow is thereby carried to the rear of the platforms and dumped into suitable means (not shown in the drawings) provided thereat. The latter means may consist of trucks which when filled may be removed and others supplied in their stead.

My device may not only be used for scooping up snow but also for the purpose of loading material such as coal, sand, etc. When used for any of such purposes the inclination of the platforms should be varied to the proper angle of repose for the particular material to be loaded.

By means of rotary brushes 33, snow or any other matter remaining in or adhering to the carriers may be removed as they pass thereover.

When the operation of my device is suspended, shovel 25 may be raised out of the way in the manner described above. Since the wheels or rollers 23 form the pivotal point for the frames when their inclination is being changed, the driving mechanism of the front shafts 14 must necessarily be adapted to follow the swinging motion. For this reason I have provided universal joint 7 and swinging bearing support 8 by means of which gears 10 and 17 are always kept in proper engagement no matter at which angle the platforms are set. It is obvious, however, that my device may be designed in such a way that the fulcrum is formed at the center of the front platform shaft or shafts 14, which would eliminate the universal joint 7.

Depending upon the particular use to which my machine may be put its design will obviously be changed.

In the drawings I have shown the combination of a caterpillar propelled vehicle or carrier and a pair of angularly disposed endless platforms moving in divergent directions and having a single receiving shovel and two delivery stations. In order to increase its efficiency, however, a plurality of such moving platforms may be constructed, and the design of the vehicle, and that of the mechanism for changing the working angle of the conveyors, may be changed accordingly.

Such and other similar constructions I

have omitted in the drawings, since anyone skilled in the art may readily understand how a multiple conveyor may be developed, based upon the foregoing description of the device shown, and involving the principal idea of a single receiving station and a plurality of delivery stations.

Having thus described my invention and reserving for myself the right to make alterations and amendments within its purview, I claim:

1. In a snow removing machine provided with a supporting tractor, means for driving said tractor and transmission gears, the combination of endless moving platforms each comprising a frame, endless sprocket chains, carriers secured to said sprocket chains, sprocket wheels rotatably mounted at the front and rear of said frame adapted to engage said sprocket chains, those at the front adapted to receive rotary motion from said transmission gears, means connected to the rear of said tractor and said platforms for varying the inclination of the latter, brackets connected at the front end of each of said platforms and rollers rotatably mounted in said brackets adapted to rollingly support the front portions of said platforms, an adjustable shovel, having side walls, adjustably secured to said platforms, said shovel being curved upwardly from its bottom and terminating in a flat seat disposed over the upper front ends of said platforms, said side walls extending beyond said flat seat, and rotary brushes extending transversely of and connected to said platforms at their lower rear ends, substantially as described.

2. In a snow removing machine having a supporting tractor, means for driving said tractor and platform transmission gears, the combination of endless moving platforms disposed on either side of said tractor, said platforms being driven by said transmission gears, means for inclining said platforms at any desired angle, brackets connected at the front portions of said platforms, wheels rotatably mounted in said brackets, bracket guides connected at the upper front portion of said platforms, a detachable snow scoop provided with side walls and rollers, said latter being adapted to engage said bracket guides, and means disposed at the rear under side of said platforms for cleaning the latter.

3. In combination with a tractor provided with means for driving said tractor and platform transmission means, a pair of endless conveyers provided with sprocket wheels disposed at their front and rear ends, said conveyers being disposed on either side of said tractor in such manner that their front ends meet, said front sprocket wheels being operatively connected to said transmission means, means attached at the front portions of said conveyers for facilitating the latter being supported, arcuated bracket-guides attached at one of their ends to the front portions of said conveyers, a unitary shovel provided with rollers, said rollers being adapted to guidedly engage said bracket-guides thereby facilitating said shovel being adjusted, brackets secured at the rear of said conveyers, brushes rotatably mounted in said brackets and means for transmitting rotary motion from the rear sprocket wheels to said brushes.

4. In a snow removing machine having a supporting vehicle and means for driving said vehicle, the combination of a pair of endless moving platforms adjustably disposed on either side of said vehicle in such manner that they meet in front of the latter, said platforms being provided with a series of carriers, downwardly projecting side-brackets secured near the front ends of said platforms, rollers mounted in said brackets, a unitary snow scoop provided with side walls detachably and adjustably secured at the upper front ends of said platforms, said scoop being curved upward from its front end and terminating in a flat seat just over the front ends of said platforms, means provided in said scoop for facilitating its being raised or lowered, and rotary brushes extending transversely of said platforms at their lower rear ends adapted to free said carriers of their remaining contents as they pass thereover, substantially as described.

5. In combination with a carrier propelled by endless belts, a double conveyor supported by said carrier and means for adjusting the delivery ends to a desired height.

6. The combination with a vehicle propelled by endless belts, of a double conveyor supported by said vehicle and driven therefrom, means for adjusting to desired height the rear or delivery ends of said conveyors without altering the position of their receiving ends.

Signed at New York, in the county of New York, and State of New York, this 21st day of September, A. D. 1920.

JOSEPH LOUIS STEBBINS.