Dec. 15, 1931. D. WANDSCHEER 1,837,087

SNOW REMOVING APPARATUS

Filed Aug. 23, 1928 2 Sheets-Sheet 1

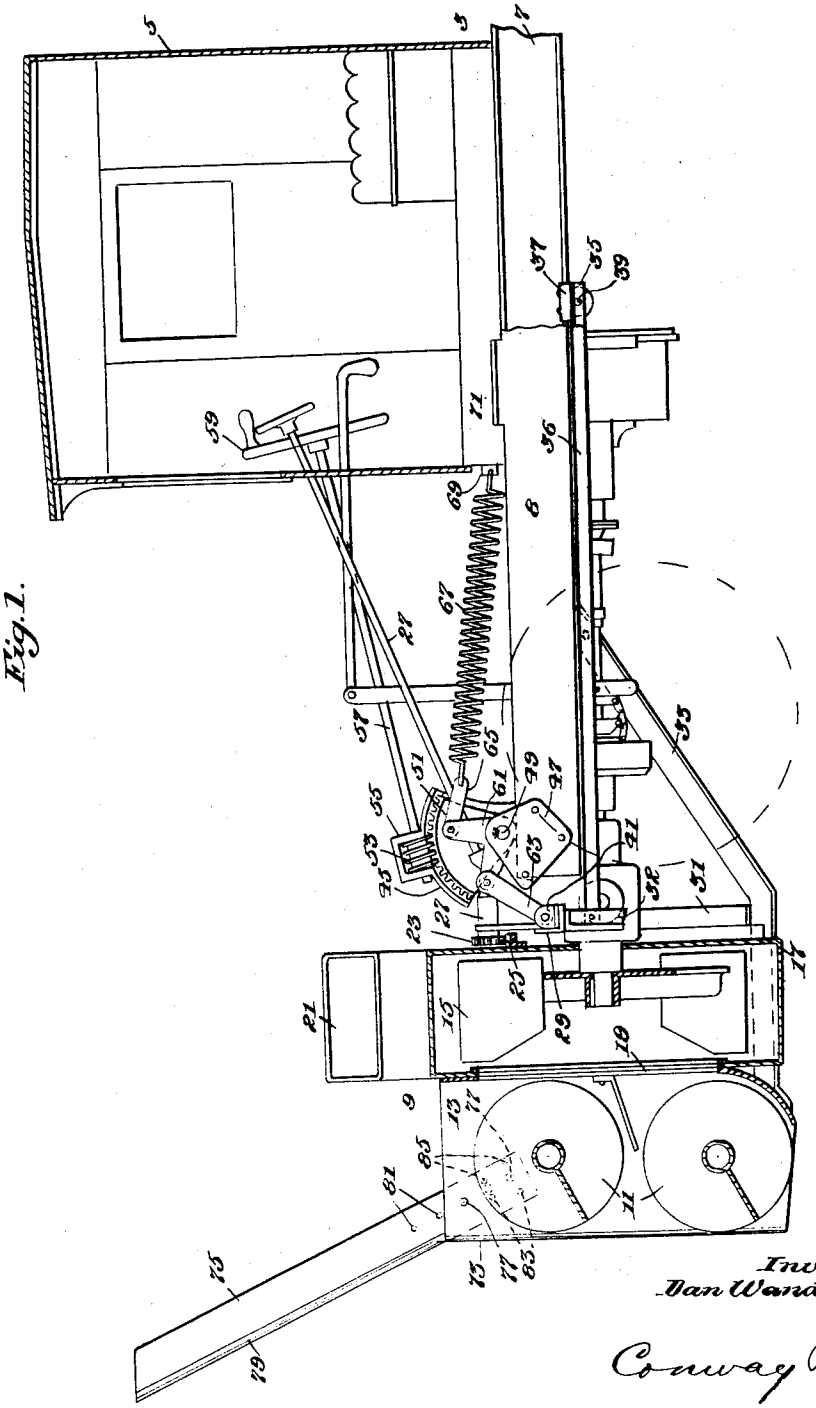


Fig. 1.

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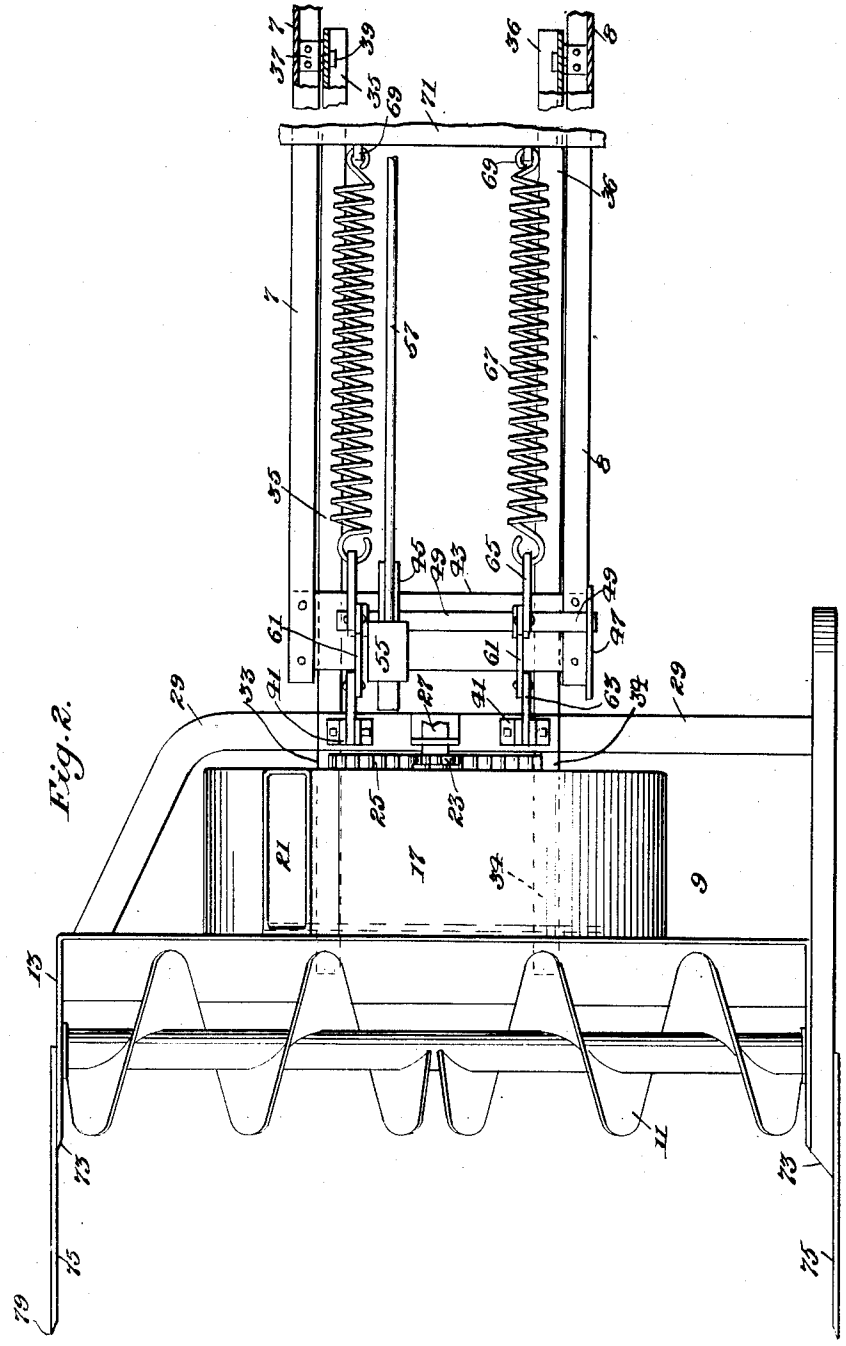


Fig. 2.

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Patented Dec. 15, 1931

1,837,087

UNITED STATES PATENT OFFICE

DAN WANDSCHEER, OF DUBUQUE, IOWA

SNOW REMOVING APPARATUS

Application filed August 23, 1928. Serial No. 301,554.

This invention relates to snow removing apparatus and has particular reference to apparatus of this type which is especially designed for mounting upon the front end of a motor vehicle or similar propelling devices.

When snow removing apparatus is attached to the frames of motor vehicles, it is customary to make some provision for adjusting the apparatus vertically to change the elevation thereof with respect to the ground or road bed and thus compensate for surface irregularities and other unusual conditions encountered in service. To this end, the snow apparatus is secured to the vehicle frame by horizontal pivots which permit vertical movement of the apparatus. In my copending application Serial No. 129,293 filed August 13, 1926, a rotatable drum is carried by the vehicle frame and flexible chains are attached to the drum and portions of the frame of the snow apparatus. Rotation of the drum in opposite directions, accomplished by suitable connections from the vehicle cab, results in a raising or lowering of the snow apparatus as the chains are wound about or unwound from the drum.

It has also been proposed, as illustrated in the patent to Brueggeman, No. 1,334,516, dated March 23, 1920, to support the pivoted snow apparatus upon rollers or wheels adapted to follow the road contour and cause the apparatus to articulate vertically in accordance with irregularities therein.

While such prior constructions provided positive stops against downward movement of the snow apparatus, the latter was free at all times to rise upward, no provision being made for the positive control of the upward movement or the intermediate position. As a result, practical operating difficulties developed, chief among which was the tendency of the snow apparatus to climp toward the top and over the snow instead of cutting into it, and this tendency was, of course, aggravated in hard packed and icy deposits.

A further defect in prior apparatus was that the banks of snow left on the sides of the road after the passage of the apparatus were irregular and, when the drift was deeper than the height of the apparatus, the banks were undercut so as to later develop snow slides and other movement of the snow which covered the previously cleared areas.

A general object of the present invention is to overcome the first-mentioned disadvantage by providing mechanism for positively adjusting the snow apparatus vertically in both directions and to rigidly secure the apparatus in each position of adjustment.

A further feature resides in the provision of a shearing element on the sides of the snow apparatus to insure a clean-cut bank by severing all overhanging edges and to cause the high layers of snow to fall into the path of the apparatus and be properly disposed of.

These and other features of the invention will appear more fully in the following description when read in connection with the accompanying drawings and will be pointed out in the appended claims.

In the drawings:

Figure 1 is a side elevation, parts being in section, of a preferred embodiment of the invention, and

Figure 2 is an enlarged plan view with certain parts removed for the sake of clarity.

Referring more particularly to the drawings, the reference character 3 indicates generally a motor truck having a cab 5 mounted upon a chassis which includes two main frame members or sills 7 and 8 which project a substantial distance in front of the cab.

Snow removing mechanism 9 is mounted upon the front end of the truck. This mechanism may be any one of several well known types, the type illustrated comprising rotating augers 11 inclosed by a suitable casing 13 and a fan or ejecting device 15 arranged within a casing 17 which communicates with the auger casing through the opening 19 located centrally of the latter. The fan casing is provided with the discharge spout and opening 21 and it is rotatably mounted to permit the angular position of the spout to be shifted by cooperating gear members 23 and 25 actuated by the shaft 27 from the cab of the truck.

The construction thus far described is fully disclosed and described in my said copending application and as it forms no es-

sential part of the present invention only such parts have been described as are necessary for an understanding of the present improvements. For a detailed description of the structure and operation, reference may be had to the application referred to, it being sufficient here merely to state the general operation briefly. The rotating augers 11 cut the snow and feed it from each side toward the center and thence through the communicating opening 19 into the fan casing 17. The fan hurls the snow with terrific force through the discharge opening 21 and distributes it to such localities as have been determined by a previous adjustment of the opening.

As previously indicated, the present invention contemplates a novel means for positively and vertically adjusting the snow removing apparatus with respect to the ground. To this end a secondary frame is provided for carrying the auger and fan casings, this frame being oscillatably attached to the main frame of the chassis. The secondary frame comprises a transversely and horizontally disposed member 29 between the ends of the sills and the fan casing; a pair of vertical members 31 and 32 secured to the horizontal member 29 as by welding or riveting and extending downwardly therefrom; a pair of bracket members 33 and 34 underlying and supporting the snow removing apparatus and attached to the lower ends of vertical members 31 and 32 respectively; and a pair of longitudinally and horizontally disposed members 35 and 36, secured at their forward ends to the vertical members 31 and 32 respectively, fastened intermediate their ends to the bracket members 33 and 34 respectively, and pivotally attached at their rearward ends to the main frames 7 and 8 respectively. Each pivotal attachment consists of a bracket 37 riveted to the main frame for receiving a pin 39 which passes through the rear end of a longitudinal member 35 or 36.

A pair of slotted lugs or brackets 41 are fixed upon the transverse member 29 of the secondary frame and it is obvious that, by raising or lowering these lugs, the secondary frame and snow remover is caused to oscillate about pins 39.

At the forward end of the sills and upon the cross member 43 of the main truck frame is mounted a housing 45, and adjacent this housing a plate 47 is riveted to the forward end of sill 8. Journaled through housing 45 and plate 47 is a shaft 49. A segment 51 of a worm wheel is disposed within housing 45 and keyed to or otherwise fixed to rotate with shaft 49. A worm 53 engages the teeth of the segment and is housed in a casing 55 formed upon the main housing 45. The worm may be rotated from the cab by means of a shaft 57 and hand wheel 59, thus oscillating the shaft 49 in either direction as desired. Keyed to the shaft 49 at each side of the center line of the truck frame is a bell crank 61. A link 63 pivotally connects one arm of the bell crank with a bracket 41. A link 65 connects the other arm of the crank with a spring 67 which is in turn secured as at 69 to a portion 71 of the chassis frame. The weight of the snow remover thus acts downwardly through link 63 upon one end of the bell crank and the spring 67, of such strength that two of them substantially counterbalance the weight of the snow apparatus, acts through link 65 upon the other arm of the bell crank. The worm gear drive positively prevents oscillation of the auger and fan casings except by actuation of hand wheel 59, and the counterbalancing arrangement so reduces friction between the elements of the adjusting mechanism that easy and noiseless operation is assured.

The front upright edges 73 of the auger casing are sharpened as in my aforesaid copending application to facilitate cutting and the provision of a clean side surface in the banks of snow as the remover cuts its swath. A cutting bar or blade 75, preferably one on each side of the auger casing, is mounted forwardly of the snow apparatus by means of bolts 77 which pass therethrough and into the side faces 13 of the casing. Each cutting bar may be sharpened as at 79 and is preferably arranged at such an angle with the casing that it slices into the upper layers of snow in advance of the time that the auger casing will cut into the corresponding lower layers. In this manner, immediately that the augers cut away the lower snow, the upper layers will tumble down and be swept back into the fan casing and thence out of spout 21. The bars 75 may be removed when the snow is not deep enough to warrant their use, and they may be adjusted to various heights by removing the bolts and replacing them in auxiliary holes 81. Should it be found desirable to change the inclination of the cutting bars, further sets of spaced holes 83 and 85 are provided, each of these sets being in alignment with the hole through which the uppermost bolt 77 passes. The sharp edges 79, like those indicated at 73, serve to leave a clean path and smooth bank behind the snow remover.

Having described my invention with particularity, I wish it to be understood that various changes in the shape, arrangement, and combination of parts may be made, such changes to be limited only by the scope of the appended claims.

What I claim is:

1. In a snow remover, a vehicle, snow removing mechanism mounted forwardly thereof, and cutting bars or plates arranged at the sides of said mechanism in substantially vertical planes, said cutting bars extending up-

wardly for a substantial distance above the snow removing mechanism.

2. In a snow remover, a vehicle, snow removing mechanism mounted forwardly thereof and vertically adjustable cutting members arranged adjacent to and on each side of the snow removing mechanism.

3. In combination, a casing, snow removing apparatus in said casing, and cutting bars at the sides of said casing extending a substantial distance thereabove.

4. In a snow removing apparatus, a casing having vertical sides formed with cutting edges and cutter bars secured to the said sides.

5. In combination, a snow removing mechanism having its front edge located in a vertical plane, and cutter bars mounted at the sides of said mechanism, each of said cutter bars having at least one part of its cutting edge in the same vertical plane as the front edge of said mechanism.

6. In combination, a snow removing mechanism, and forwardly and vertically inclined cutter bars located at the sides of said mechanism.

7. In combination, a snow removing mechanism, and forwardly and vertically inclined cutter bars located at the sides of said mechanism, said bars extending a substantial distance above said mechanism.

In testimony whereof, I have hereunto set my signature.

DAN WANDSCHEER.