March 11, 1941. C. B. JENSEN 2,234,176

SNOWPLOW

Filed Dec. 15, 1938 3 Sheets-Sheet 1

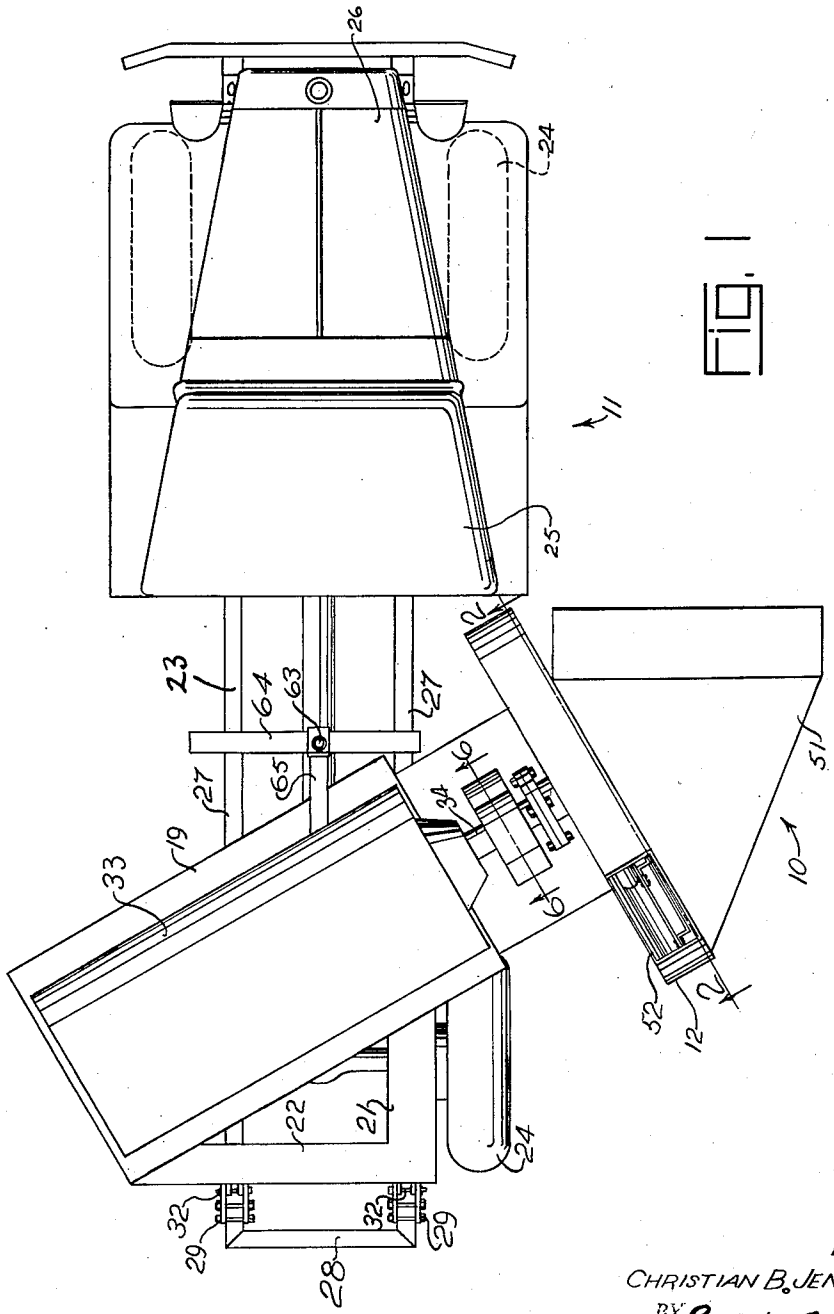


Fig. 1

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SNOWPLOW

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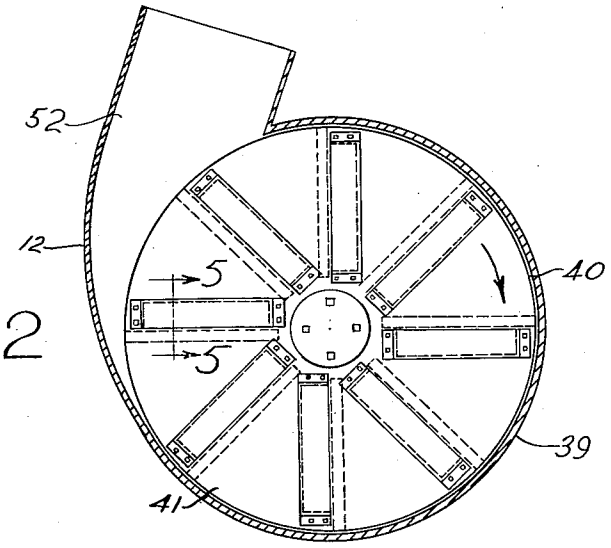


Fig. 2

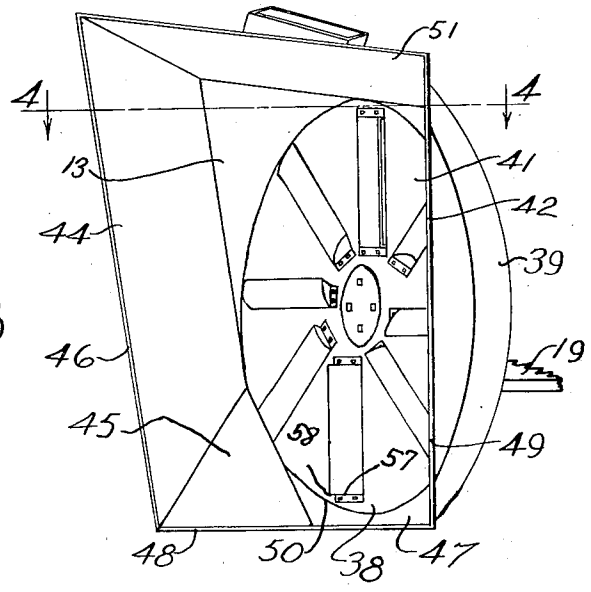


Fig. 3

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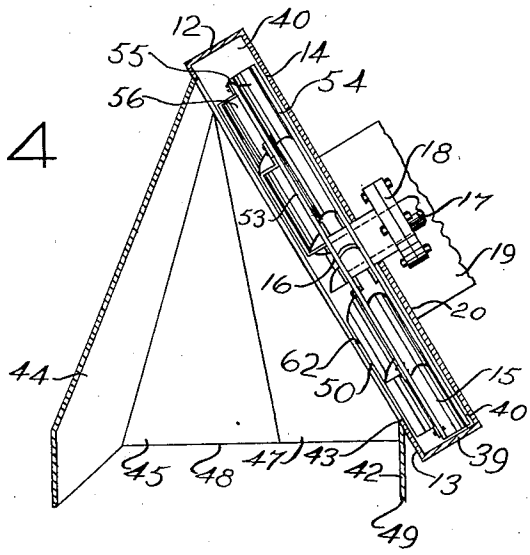
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March 11, 1941. C. B. JENSEN 2,234,176

SNOWPLOW

Filed Dec. 15, 1938 3 Sheets-Sheet 3

FIG. 4



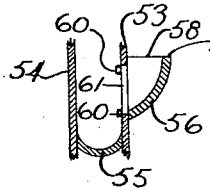


FIG. 5

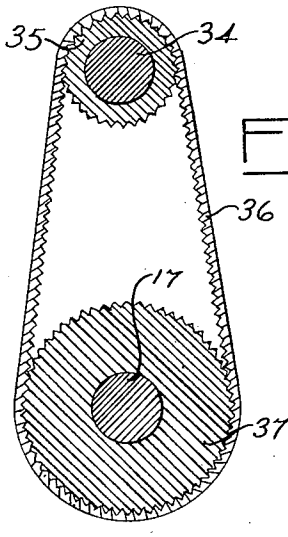


FIG. 6

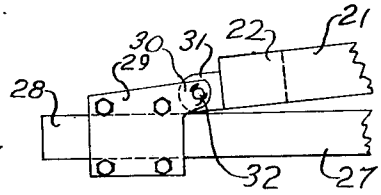


FIG. 7

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Patented Mar. 11, 1941 2,234,176

UNITED STATES PATENT OFFICE

2,234,176

SNOWPLOW

Christian B. Jensen, St. Paul, Minn.

Application December 15, 1938, Serial No. 245,900

20 Claims. (Cl. 37—43)

This invention relates to a snowplow, and has for its general object to provide a machine for removing or handling snow wherein will be incorporated various improved features and characteristics of construction novel both as individual entities of the machine and in combination with each other.

A further object is to provide in a machine of the present character, a snow removing or handling entity of novel and improved construction.

A further object is to provide a so-called widening snowplow which will be of novel and improved construction.

A further object is to provide an assembly of widening snowplow, including a snow removing or handling entity, with a propulsion vehicle for the snowplow, which assembly will incorporate novel and improved mechanism for driving a rotatable element of said snow removing or handling entity.

A further object is to provide a widening snowplow and novel and improved devices or mechanism for mounting the snowplow upon a propulsion vehicle therefor.

And a further object is to provide novel and improved mechanism for mounting a widening snowplow upon a propulsion vehicle, such as a truck or tractor, for the snowplow.

With the above objects in view, as well as others which will appear as the specification proceeds, the invention comprises the construction, arrangement and combination of parts as now to be fully described and as hereinafter to be specifically claimed, it being understood that the disclosure herein is merely illustrative and intended in no way in a limiting sense, changes in details of construction and arrangement of parts being permissible so long as within the spirit of the invention and the scope of the claims which follow.

In the accompanying drawings forming a part of this specification,

Fig. 1 is a top plan view of a widening snowplow made according to the invention and applied to or mounted upon a propulsion vehicle for the snowplow, ready to be put to use;

Fig. 2 is a detail sectional view, taken on line 2—2 in Fig. 1;

Fig. 3 is an enlarged front elevational view, partially broken away, of the widening snowplow;

Fig. 4 is a detail sectional view, taken substantially on line 4—4 in Fig. 3;

Fig. 5 is a detail sectional view, taken as on line 5—5 in Fig. 2;

Fig. 6 is a detail sectional view, taken on line 6—6 in Fig. 1; and

Fig. 7 is an enlarged fragmentary elevational view detailing the manner in which the widening snowplow is pivotally secured upon the propulsion vehicle.

With respect to the drawings and the numerals of reference thereon, 10 represents a widening snowplow, and 11 indicates a propulsion vehicle for the plow. As disclosed, the propulsion vehicle is a truck, but could be a tractor, or, in fact, any type of propelled vehicle, automotive or otherwise.

The widening snowplow 10 is adapted to be mounted upon a propulsion vehicle, such as the vehicle 11, to be transported thereby. A frame for said widening snowplow 10 includes an upright rear wall 12, and upright, suitably spaced apart parallel side walls 13 and 14. The side walls 13 and 14 are integrally connected to the rear wall 12 in any suitable and convenient manner, as by welding or riveting.

The rear wall 12 and the side walls 13 and 14 cooperate with a rotatable element 15 of the snowplow to provide, together with additional elements to be described, a snow removing or handling entity for said snowplow. Said rotatable element 15 is situated between the side walls 13 and 14, and is fixed, as at 16, upon a horizontal shaft 17 adapted to be rotated. A bearing 18 for the horizontal shaft 17 is suitably and conveniently supported upon the side wall 14.

The frame of the widening snowplow is adapted to be disposed at one side of the propulsion vehicle which transports said plow. As disclosed, said frame is at the right side of the propulsion vehicle. A carrier for the plow frame includes a motor support of said widening plow constituted as a rectilinear member 19 extending obliquely and crosswise of the propulsion vehicle and transversely of the plow frame, and integrally connected, as at 20, as by welding or otherwise, to the inner side wall 14 of said plow frame. Said carrier for the plow frame includes a girder member 21 extending longitudinally of the propulsion vehicle and rearwardly from the member 19 and a girder member 22 extending transversely of said propulsion vehicle and rearwardly from said member 19. The girder members 21 and 22 are in the plane of the member 19, are integral therewith, and are disposed in oblique relation to said member 19. The girder member 21 meets the member 19 at or near the midlength of said member 19, and the girder member 22 meets the member 19 at or adjacent to

the end thereof which is spaced from, or opposite, the plow frame. As disclosed, the girder members 21 and 22 are in right angle relation to each other. The ends of said girder members 21 and 22 which are spaced from the member 19 are integrally connected to each other.

Said propulsion vehicle 11 may be of any ordinary or preferred construction. As disclosed, it includes a chassis 23 upon wheels 24 and carrying a body 25, ordinary motor 26, etc., at the forward portion of the vehicle. At the rear of the body 25, the chassis 23 includes spaced apart, horizontal, longitudinally extending vehicle frame members 27 which connect at their rear ends with a transverse rearward vehicle frame member 28.

The transverse girder member 22 is adapted to be detachably pivoted upon the rearward portions of both of the longitudinally extending vehicle frame members 27 in such manner that the members 19, 21 and 22 constituting the carrier for the plow frame can rest squarely upon both of said longitudinally extending frame members with said plow frame and the rotatable element 15 therein situated in proper and intended operative position at a side of and relatively to the propulsion vehicle. To this end, the rearward portion of each vehicle frame member 27 rigidly supports a bracket 29, said brackets as shown being in proximate relation to the transverse rearward vehicle frame member 28, and each bracket 29 integrally supports one or more ears 30 disposed adjacent the transverse girder member 22. In turn, said girder member 22 integrally supports ears 31 complemental to the ears 30, and each set of ears 30 and 31 is pivotally connected together, as by a rod or pin 32 which extends through the complemental ears. While the construction and arrangement as illustrated and described makes provision for supporting the widening snowplow upon the longitudinal frame members 27, the pivotal or hinged connection between said longitudinal frame members and the snowplow makes provision for swinging said snowplow upwardly of the vehicle in any instance where this is desirable, as when the vehicle is to be made to travel to or from a job to be accomplished.

The rectilinear member 19 supports an internal combustion engine 33 of the widening snowplow which is adapted to the purpose of driving or turning the rotatable element 15. As shown, the shaft 34 of said engine 33 rigidly supports a gear or sprocket 35. A chain or belt 36 which rides on the gear or sprocket 35 also rides on a second gear or sprocket 37 fixed upon the horizontal shaft 17. Upon operation of the engine or motor 33, the rotatable element 15 will be driven or turned through the instrumentality of the gear or sprocket 35, the chain or belt 36, the gear or sprocket 37 and the horizontal shaft 17.

The inner side wall 14 of the plow frame is closed, while the outer side wall 13 of said plow frame is cut away, as at 38, to be substantially open. The plow frame and the rotatable element therein are disposed obliquely of the propulsion vehicle, slanting outwardly and rearwardly therefrom, so that the open front of said plow frame is situated diagonally relatively to said propulsion vehicle. As shown, the cut-away portion 38 of the plow frame is generally circular, and the material of the outer side wall 13 surrounding said cut-away portion provides, together with the rear wall 12, inner side wall 14 and a circumferential wall 39 of said plow frame extending between the margins of said side walls 13 and 14 and merging in said rear wall 12, an annular pocket or way 40 of the plow frame which is constituted as the outer part of a cylindrical passageway or slot 41 with which the open front of the outer side wall 13 communicates.

A mold board of the snowplow includes an inner upstanding side wall 42 adjacent the forward portion of the outer side wall 13 which extends forwardly from said outer side wall 13 and is connected thereto, as at 43, at location in advance of the cut-away portion 38. Said mold board also includes an outer upstanding side wall 44 adjacent the rearward portion of said outer side wall 13 which extends forwardly and outwardly and merges at its lower portion in a forwardly extending, downwardly and inwardly slanting snow guiding surface 45. The upstanding side wall 44 and the snow guiding surface 45 are disposed to the rear of the cut-away portion 38, and the lower portion of said snow guiding surface 45 is situated below the elevation of said cut-away portion. The forward, upright edge of the side wall 44 includes a knife edge 46. The snow guiding surface 45 is adapted to the purpose of causing snow and ice to be directed toward the open front of the plow frame. A lower snow guiding surface 47 of the mold board is disposed below the cut-away portion 38 and between the snow guiding surface 45 and the upstanding side wall 42. The lower edges of the snow guiding surfaces 45 and 47 provide a continuous knife edge 48 at ground level, which knife edge 48 meets the knife edge 46 and a knife edge 49 provided by the forward edge of the side wall 42. The inner edge of the snow guiding surface 45 merges in the outer edge of the snow guiding surface 47, and said snow guiding surface 47 slants upwardly and rearwardly from its knife edge 48 to the lower part of the cut-away portion 38. That is, the snow guiding surface 47 is connected to the outer side wall 13 at a lower part of the cut-away portion 38. The union between said outer side wall 13 and said snow guiding surface 47 provides a knife edge 50. The upper portions of the walls 13, 42 and 44 are interconnected by a downwardly and rearwardly extending wall 51. A rearward portion of the annular pocket or way 40 which is constituted as the outer part of the passageway or slot 41 opens to an outlet passageway 52 leading from said passageway or slot 41.

The rotatable element 15 includes a pair of spaced apart, parallel disc plates 53 and 54 which are retained in fixed relation to each other by a plurality of snow transporting elements 55. As disclosed, the snow transporting elements 55 are arranged between the disc plates and are disposed radially of said disc plates. Each snow transporting element 55 is straight in the direction of its length and is curvilinear in cross-section, and the opposite side edges of the snow transporting elements are integrally secured to the inner surfaces of the disc plates, as by welding or riveting. The inner end of each snow transporting element 55 desirably may terminate in slightly spaced relation to the axis of the rotatable element 15 and the outer end of each of said snow transporting elements desirably may terminate flush with the perimeters or margins of the disc plates 53 and 54. Each disc plate 53 and 54 includes a central opening which receives the horizontal shaft 17 upon which said disc plates are secured.

The disc plates 53 and 54 of the rotatable ele-

ment 15 are arranged concentrically of and in comparatively close proximity to the circumferential wall 39. A portion of the diameter or width of said rotatable element 15 is within the outlet passageway 52.

The inner disc plate 54 is disposed in parallel relation and close proximity to the inner side wall 14 of the plow frame, and the outer disc plate 53 is disposed in parallel and slightly spaced relation to the outer side wall 13. The disc plate 53 carries a series of working blades or shovels 56 at the outer side of the periphery of said disc plate.

Each working blade or shovel 56 extends more or less radially of the disc plate 53, with its width arranged transversely of the snowplow frame. Also, each working blade or shovel 56 is curved in the direction of its width and is straight in the direction of its length. In general outline the working blades or shovels 56 are rectilinear, and the outer or working end of each of said blades or shovels includes an element 57 thereof providing a knife edge 58. Desirably, a side edge 59 of each working blade or shovel is a knife edge.

Each working blade or shovel 56 is adapted to be bolted, as at 60, or otherwise secured, up against the outer surface of the disc plate 53 at the rear of an opening 61, rectangular as shown, through said disc plate 53 and directly in advance of a snow transporting element 55. That is, there is a working blade or shovel corresponding to each snow transporting element 55 and an opening 61 affording communication between each working blade or shovel and its corresponding snow transporting element. Each working blade or shovel 56 has one of its side edges fitted to the disc plate 53 just to the rear of an opening 61 and its cutting side edge 59 arranged in spaced relation to said disc plate 53, so that the working blades or shovels in effect constitute scoops for snow. The knife edge 58 of each element 57 is adapted to travel in close proximity to the knife edge 50, and the arrangement is such that said knife edges 50 and 58 cooperate to cause snow and ice to be cut or severed. The working blades or shovels 56 are adapted to wipe through a space 62 between the disc plate 53 and the outer side wall 13 of the snowplow frame when the rotatable element 15 is in operation.

Said rotatable element 15 is revolved so that its forward portion moves downwardly and its lower portion moves rearwardly, in the direction of the arrow in Fig. 2. Each working blade or shovel 56 has its outer knife edge 58 arranged immediately above the knife edge 50, somewhat within the perimeter of the rotatable element 15. The length of each working blade or shovel is such that the inner end thereof terminates a considerable distance inwardly of said perimeter. The inner end of each snow transporting element 55 and the inner end of each opening 61 may terminate about flush with the inner end of each working blade or shovel 56. As shown, the outer end of each opening 61 terminates at about the location of the corresponding element 57. The width of each working blade or shovel 56 is substantially equal to the width of the space 62. The arrangement is such that the concave surfaces of the working blades or shovels 56 and the snow transporting elements 55 are the working and the transporting surfaces, respectively, thereof. The outer ends or edges 58 of the working blades or shovels 56 rotate in close proximity to the knife edge 50, and the outer ends or edges of the snow transporting elements 55 rotate in close proximity to the circumferential wall 39. The spaces between the disc plates 53 and 54 and defined by said disc plates and the snow transporting elements 55 are open at their outer portions.

The manner in which the rotatable element 15, including the disc plates 53 and 54 with snow transporting elements 55 and working blades or shovels 56, operate will be evident. The surfaces 45 and 47 of the mold board cooperate to life the snow and ice severed or cut from the ground by the knife edge 48 and direct the snow and ice into the space 62 of the passageway or slot 41. Each working blade or shovel 56 cooperates with the disc plate 53 and with the adjacent, outer side wall 13 of the plow frame to cause snow and ice to be carried through the corresponding opening 61 into the space between the disc plates 53 and 54 in front of a snow transporting element 55, and each snow transporting element 55 carries an individual load or shovel-full of snow up through the outlet passageway 52. The disc plates 53 and 54 rotate at high rate of speed, and the snow and ice leaves the outlet passageway 52 in the form of individual and separate charges of snow and ice each equal in amount to a shovel-full of snow and ice forced out of the machine under considerable momentum by the centrifugal force exerted through the working blades or shovels 56 and the snow transporting elements 55. Said working blades or shovels keep wiping through the space 62 of the snow passageway or slot 41, and the cooperating arrangement among the working blades or shovels, openings 61, snow transporting elements 55, disc plates 53 and 54 and the walls of the plow frame defining said passageway or slot 41 is such that snow and ice once upon a working blade or shovel will be quickly forced or carried out of the machine by a corresponding snow transporting element 55. There is no opportunity for snow and ice when once upon a working blade or shovel or a snow transporting element to fall backwardly of the working blades or shovels or the snow transporting elements.

The working blades or shovels 56 and the openings 61 can obviously have relation to the snow transporting elements 55 to provide snow receiving spaces between the disc plates 53 and 54 and forwardly of said snow transporting elements of any size selected as satisfactory. As shown, each snow transporting element 55 and its corresponding working blade or shovel 56 are parallel. Desirably, the snow transporting elements will be disposed radially of the disc plates, but the working blades or shovels may be out of parallel with said snow transporting elements. The working blades or shovels 56 may be set at a sharper angle to snow and ice than as disclosed, thus better to remove or handle the snow and ice.

It will be seen that the snow and ice is dislodged by the working blades or shovels 56 at location inwardly of the perimeter of the rotatable element 15, while dislodged snow and ice is propelled from the outer ends of the snow transporting elements 55 at the perimeter of said rotatable element. The working blades or shovels are of inexpensive construction, are easily replaceable, and have great strength. Each blade or shovel is bolted to the disc plate 53 independently of all others of the blades or shovels. The snow transporting elements are

subjected to no such hard labor as is required of the working blades or shovels and are not liable to become broken under any, even the severest, conditions of use of the machine.

Mechanism for elevating and lowering the snowplow is denoted generally at 63. As shown, said mechanism is mounted upon and at the midlength of a base member 64 extending transversely of and supported by the longitudinally extending frame members 27 of the propulsion vehicle. A member 65 to be actuated by the mechanism 63 is secured to and extends forwardly from the rectilinear member 19 of the carrier for the plow frame. The actuated member 65 is between and at equal distance from the longitudinally extending frame members 27, and meets the base member 64 at its midlength. Thus, the snowplow is not only squarely supported upon both longitudinally extending frame members of the chassis of the propulsion vehicle when in lowered position, but is also squarely supported upon both longitudinal frame members when in elevated position.

The snowplow illustrated in the drawings and hereinbefore described is more especially useful as a widening snowplow; that is, the propulsion vehicle will transport the snowplow over a surface or roadway which may have been partially cleared of snow, and said snowploy will cause snow to be removed along a line parallel to a cleared or partially cleared strip of roadway to widen said cleared or partially cleared strip, as will be understood. The widening snowplow can be supported upon the propulsion vehicle to be nearer to or farther away from the ground.

The rotatable element 15 will be driven whenever the engine shaft 34 is in operation. Desirably, there will be included as a part of the drive connection between the engine shaft and the rotatable element a member of less strength than is any part of said rotatable element, so that when an obstruction causes breakage, this breakage will disconnect said engine shaft 34 from the rotatable element 15.

The construction and arrangement as illustrated and described makes provision for conveniently supporting the snowplow and its appurtenances clear of the parts of the propulsion vehicle. More explicitly, said construction and arrangement causes the motor 33 to be in spaced relation to the transmission mechanism of said propulsion vehicle rearwardly thereof and the snowplow frame to be in spaced relation to the right rear wheel forwardly thereof.

What is claimed is:

1. In combination, a vehicle, an engine for propelling said vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said vehicle, an engine other than said engine for propelling said vehicle assembled with said carrier, driving connections between said second mentioned engine and said element to be rotated, and means for hingedly securing said carrier upon said vehicle at spaced apart locations disposed transversely thereof.

2. In combination, a vehicle including spaced apart, longitudinally extending frame members adjacent the opposite sides thereof, an engine for propelling said vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said longitudinally extending frame members, an engine other than said engine for propelling said vehicle assembled with said carrier, driving connections between said second mentioned engine and said element to be rotated, and means for hingedly securing said carrier upon said vehicle at spaced apart locations disposed transversely thereof.

3. In combination, a vehicle including spaced apart, longitudinally extending frame members adjacent the opposite sides thereof, an engine for propelling said vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said longitudinally extending frame members, an engine other than said engine for propelling said vehicle assembled with said carrier, driving connections between said second mentioned engine and said element to be rotated, and means for hingedly securing said carrier upon said spaced apart, longitudinally extending frame members for swinging movement in a vertical plane.

4. In combination, a vehicle including spaced apart, longitudinally extending frame members adjacent the opposite sides thereof and a rear transversely extending frame member, an engine for propelling said vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said longitudinally extending frame members, an engine other than said engine for propelling said vehicle assembled with said carrier, driving connections between said second mentioned engine and said element to be rotated, and means for hingedly securing said carrier upon said spaced apart, longitudinally extending frame members at location adjacent said rear transversely extending frame member for swinging movement in a vertical plane.

5. In a snowplow, a vehicle, a snow removing entity having an open outer side wall in oblique relation to said vehicle and comprising an element to be rotated, an inner side wall in spaced relation to said open outer side wall and a rear wall, said open outer side wall, said inner side wall and said rear wall defining a passageway to which the opening in said outer side wall leads, said element to be rotated being disposed in said passageway and including a disc member, spaced apart snow transporting elements secured to said disc member and disposed between the disc member and said inner side wall and spaced apart working blades secured to said disc member and disposed between the disc member and said outer side wall, said working blades being adapted to deliver snow to said snow transporting elements, and means for directing snow past said open outer wall to said working blades.

6. The combination as specified in claim 5, wherein said snow transporting elements are arranged substantially radially of said element to be rotated.

7. The combination as specified in claim 5, wherein said disc member and said outer side

wall are in parallel relation and outer portions of said working blades are in proximate relation to said outer side wall.

8. The combination of a widening snowplow with a propulsion vehicle therefor, comprising a snow removing entity adapted to be positioned at a side of said propulsion vehicle in adjacent relation to a lower portion thereof, said snow removing entity including a shaft, a rotatable element upon said shaft and having a working blade and a structure including a passageway through which said working blade is adapted to wipe, a carrier for said snow removing entity adapted to rest upon said propulsion vehicle in supporting relation to said snow removing entity, an engine assembled with said carrier for driving said rotatable element, and means for mounting said widening snowplow upon said propulsion vehicle in oblique relation thereto, said propulsion vehicle including longitudinally extending frame members adjacent the opposite sides thereof and said carrier being hingedly mounted upon said longitudinally extending frame members for swinging movement in a vertical plane.

9. The combination of a snowplow with a propulsion vehicle therefor, comprising a snow removing entity adapted to be positioned at a side of said propulsion vehicle in adjacent relation to a lower portion thereof, a carrier secured to said snow removing entity and adapted to be supported by said propulsion vehicle, means assembled with said carrier for driving said snow removing entity, and means for mounting said carrier upon said propulsion vehicle in oblique relation thereto, said propulsion vehicle including spaced apart, longitudinally extending frame members adjacent the opposite sides thereof and said carrier being hingedly mounted upon said longitudinally extending frame members for swinging movement in a vertical plane.

10. The combination of a snowplow with a propulsion vehicle therefor, comprising a snow removing entity adapted to be positioned at a side of said propulsion vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said propulsion vehicle in oblique relation thereto, an engine rigid with said carrier and including a driving shaft, an operative connection between said driving shaft and said element to be rotated, said propulsion vehicle including spaced apart, longitudinally extending frame members, and means for hingedly mounting said carrier at spaced apart locations upon said longitudinally extending frame members for swinging movement in a vertical plane.

11. In combination, a vehicle, an engine for propelling said vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said vehicle, an engine other than said engine for propelling said vehicle assembled with said carrier, driving connections between said second mentioned engine and said element to be rotated, said vehicle including spaced apart, longitudinally extending frame members, and means for hingedly securing said carrier at spaced apart locations upon said longitudinally extending frame members for vertical swinging movement.

12. In combination, a vehicle including spaced apart, longitudinally extending frame members, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said longitudinally extending frame members, an engine assembled with said carrier, driving connections between said engine and said element to be rotated, and means for hingedly securing said carrier upon said spaced apart, longitudinally extending frame members for swinging movement in a vertical plane.

13. In combination, a vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said vehicle, an engine assembled with said carrier, driving connections between said engine and said element to be rotated, and means for hingedly securing said carrier upon said vehicle for swinging movement substantially in a vertical plane.

14. In combination, a vehicle including spaced apart, longitudinally extending frame members and a transversely extending frame member, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said longitudinally extending frame members, an engine assembled with said carrier, driving connections between said engine and said element to be rotated, and means for hingedly securing said carrier upon said spaced apart, longitudinally extending frame members at location adjacent said transversely extending frame member for swinging movement in a vertical plane.

15. In a snowplow, a vehicle, a snow removing entity having an open outer side wall in oblique relation to said vehicle and comprising an element to be rotated, an inner side wall in spaced relation to said open outer side wall and a curvilinear rear wall, said open outer side wall, said inner side wall and said curvilinear rear wall defining a passageway to which the opening in said outer side wall leads, said element to be rotated being disposed in said passageway and including a disc member, spaced apart snow transporting elements secured to said disc member and disposed between the disc member and said inner side wall and spaced apart working blades secured to said disc member and disposed between the disc member and said outer side wall, said working blades being adapted to move forwardly and downwardly at location adjacent said open outer side wall and to deliver snow to said snow transporting elements, and means for directing snow past said open outer wall to said working blades.

16. In combination, a vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow including a snow removing entity at a side of said vehicle and having an open outer side wall in oblique relation to the vehicle, and said snow removing entity comprising an element to be rotated, an inner side wall in spaced relation to said open outer side wall and a curvilinear rear wall, said open outer side wall, said inner side wall and said curvilinear rear wall defining a passageway to which the opening in said outer side wall leads, said element to be ro-

tated being disposed in said passageway and including a disc member, spaced apart snow transporting elements secured to said disc member and disposed between the disc member and said inner side wall and spaced apart working blades secured to said disc member and disposed between the disc member and said outer side wall, said working blades being adapted to move forwardly and downwardly at location adjacent said open outer side wall and to deliver snow to said snow transporting elements, and said snow transporting elements and said working blades being adapted to move rearwardly and upwardly through said passageway, and means for directing snow past said open outer wall to said working blades.

17. In combination, a vehicle, an engine for propelling said vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said vehicle, and means for hingedly securing said carrier for swinging movement in a vertical plane upon said vehicle at spaced apart locations disposed transversely of the vehicle.

18. In combination, a vehicle including spaced apart, longitudinally extending frame members adjacent the opposite sides thereof, an engine for propelling said vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said longitudinally extending frame members, and means for hingedly securing said carrier upon said vehicle at spaced apart locations disposed transversely thereof for swinging movement in a vertical plane.

19. In combination, a vehicle, and a snowplow adapted to be transported by said vehicle, said snowplow comprising a snow removing entity adapted to be positioned at a side of said vehicle and including an element to be rotated, a carrier secured to said snow removing entity and adapted to be supported by said vehicle, and means disposed transversely of said vehicle for hingedly securing said carrier upon said vehicle for swinging movement in a vertical plane.

20. In a snowplow, a vehicle, a snow removing entity having an open outer side wall in oblique relation to said vehicle and comprising an element to be rotated, an inner side wall in spaced relation to said open outer side wall and a curvilinear rear wall, said open outer side wall, said inner side wall and said curvilinear rear wall defining a passageway to which the opening in said outer side wall leads, said element to be rotated being disposed in said passageway and including a disc member, spaced apart snow transporting elements secured to said disc member and disposed between the disc member and said inner side wall and spaced apart working blades secured to said disc member and disposed between the disc member and said outer side wall, said working blades being adapted to move forwardly and downwardly at location adjacent said open outer side wall and to deliver snow to said snow transporting elements, and the working blades being adapted to move rearwardly and upwardly adjacent said curvilinear rear wall, and means for directing snow past said open outer side wall to said working blades.

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