

[54] HAND OPERATED WHEELED V-BLADE SNOWPLOW

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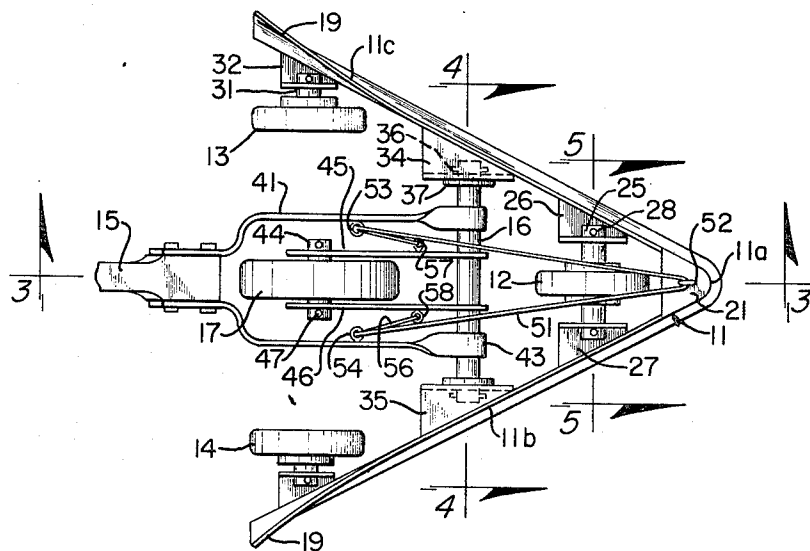
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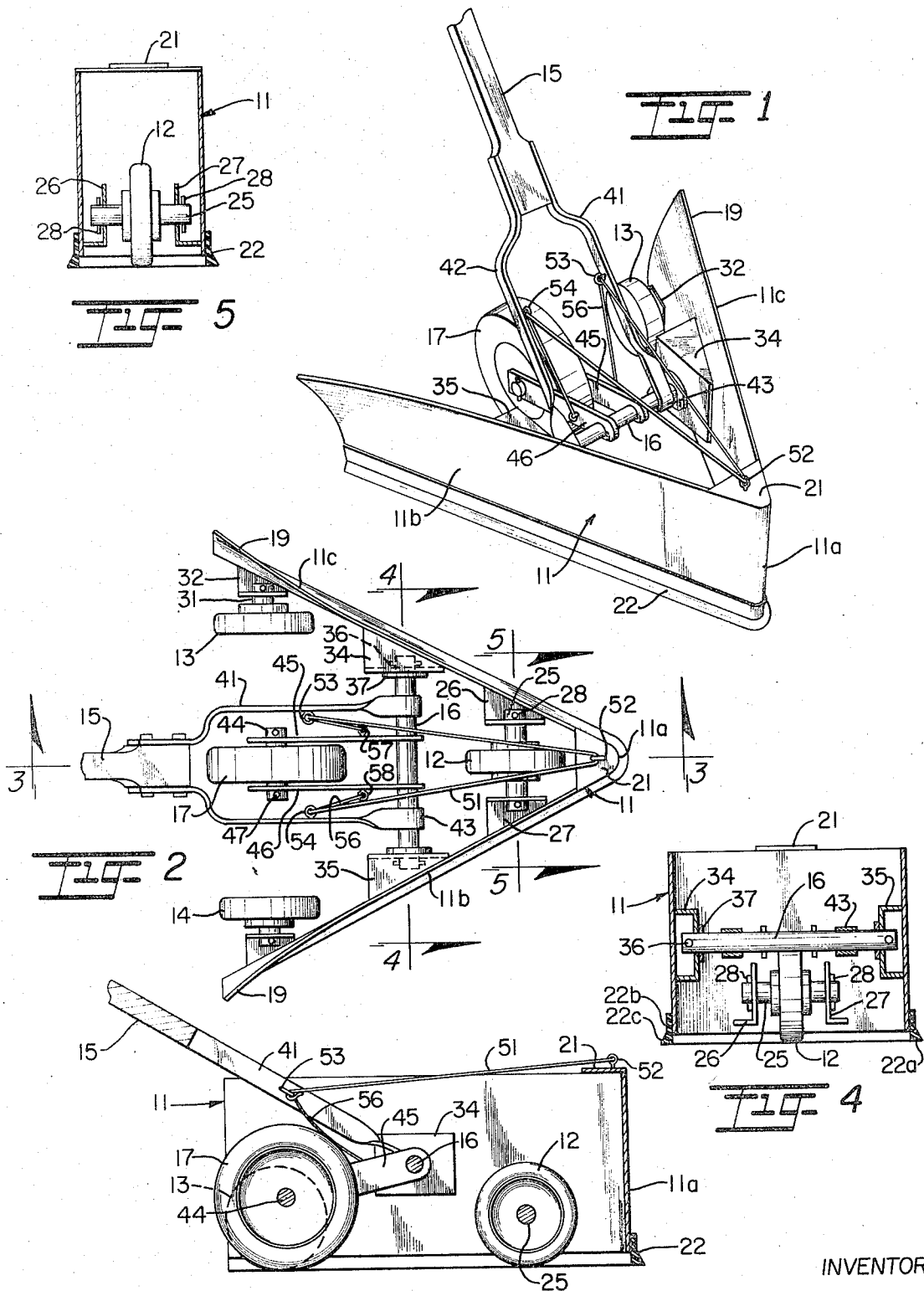
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[57] ABSTRACT

A snowplow particularly adapted to be manually propelled includes a wheel-mounted scraper blade arranged to direct snow laterally. The blade has relatively rigid sides with rear portions being curled outwardly at the upper rear end to provide a concavely curved moldboard, a front apex together with a resilient bottom lip portion arranged relative to the plane of the wheels to reduce blade drag and provide a clean scraping action. A shaft connected transversely between the sides of the blade serves as lateral blade support structure and in addition supports both a pivotal handle and a trailing alignment wheel. The handle is cable-connected to the blade and alignment wheel in such a way that the blade may be elevated or the wheel elevated to maneuver the blade.

7 Claims, 5 Drawing Figures





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HAND OPERATED WHEELED V-BLADE SNOWPLOW

This invention relates to improvements in utility-type plows and more particularly to a novel and improved snowplow which is particularly adapted to be manually propelled.

A common snow removal requirement around homes is sidewalks, driveways, patios and the like. A variety of manually propelled and self-propelled snowplows have heretofore been provided which were particularly suitable for home use. The manually propelled snowplows heretofore provided have tended to be difficult to move and maneuver, particularly with a substantial snow depth, and the self-propelled snowplows employing gasoline engines or electric motors have proved to be more cumbersome due to their weight and also difficult to start in cold weather. Although attempts have been made to provide a manually propelled snowplow which affords advantages over the conventional snow shovel, as yet they have not proved entirely satisfactory for comparatively light snow removal operations.

Accordingly, it is an object of this invention to provide a simple, durable and easily operated snowplow which is especially suited for the manual removal of snow from sidewalks, driveways, patios and the like.

Another object of this invention is to provide a novel and improved snowplow which is more easily moved through the snow by a pushing action, has improved lateral stability and is relatively easy to maneuver.

A further object of this invention is to provide an improved snowplow blade characterized by having wheels which carry the weight of the blade together with a resilient bottom surface-engaging portion arranged relative to the bottom surface of the wheels to provide a clean scraping action with a minimum of drag.

In accordance with the present invention in a preferred embodiment shown herein, there is provided a generally V-shaped scraper blade preferably made of a rigid, lightweight sheet material and shaped with a front apex and concavely curved rear side portions which curl outwardly at the upper rear of the blade with increasing curl from front to rear to provide a moldboard which will move the snow laterally of the blade together with a resilient surface-engaging bottom portion. Front and rear wheels support the weight of the blade so that the blade may be wheeled along with the resilient portion in engagement with or in close proximity to the surface to afford a minimum of blade drag. A shaft extends transversely between the sides of the blade to serve as a lateral support for the blade and pivotally supports a handle and a trailing alignment wheel. Cables are connected between the handle and the front of the blade and between the handle and the support arms for the wheel to facilitate maneuvering the blade.

Other objects, advantages and capabilities of the present invention will become more apparent as the description proceeds taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a snowplow embodying features of the present invention;

FIG. 2 is a top plan view of the snowplow shown in FIG. 1;

FIG. 3 is a sectional view taken along lines 3—3 of FIG. 2;

FIG. 4 is a sectional view taken along lines 4—4 of FIG. 2; and

FIG. 5 is a sectional view taken along lines 5—5 of FIG. 2.

Referring now to the drawings, a preferred form of snowplow constructed in accordance with the present invention as shown broadly comprises a scraper blade 11 mounted for movement on a forward wheel 12 and a pair of spaced rear wheels 13 and 14 with the wheels being mounted inside the blade. A handle 15 is pivotally connected to a shaft 16 extending transversely between the sides of the blade and a rearwardly extending alignment wheel 17 is also pivotally attached to and extends rearwardly of shaft 16.

The blade 11 shown is generally V-shaped with a forward rounded apex 11a and has rearwardly divergent side portions 11b and 11c. The blade body preferably is made of a lightweight sheet metal or like relatively thin, rigid plate material which may be bent into the desired shape shown and

be relatively lightweight for ease of movement. The blade is shaped with the side portions 11b and 11c being concavely curled outwardly along the upper rear end portion with progressively increasing curl from front to rear to provide a moldboard 19 to turn the snow in a lateral direction at the rear of the blade as the blade moves forward. A reinforcing plate 21 is secured across the top of the side portions at the apex 11a to give the blade additional strength. The blade 11 is provided with a resilient skirt molding portion 22 which is affixed to and extends along the bottom of the plate material and is positioned in relation to the plane of the bottom surface of the support wheels so as to be in close proximity to or in contact with the surface being cleared. Although the bottom surface of the blade skirt molding is shown as approximately coplanar with the bottom of the blade wheels, the skirt material is sufficiently resilient so that the weight of the blade and associated parts is carried by the wheels as it is moved along. The skirt molding portion may be made of rubber or a rubberized material which will readily yield when it comes into contact with irregular surfaces and the like. The skirt molding portion 22 extends throughout the lengthwise extent of the blade body and has a uniform cross section. The cross section of the skirt molding portion shows that it is solid and formed with a flat bottom 22a and has an upper vertical outer surface 22b and a lower downwardly and outwardly inclined outer surface or lip 22c which serves as a wedge to move the snow upwardly while at the same time bearing against or in close proximity to the surface being cleared.

The wheels 12, 13 and 14 are of the same diameter and mounted with their axes in the same plane so that the lower peripheral surfaces are in the same plane as the bottom of the molding portion and provided for the even rolling movement of the blade. The forward wheel 12 is shown as being mounted for rotation on an axle 25 journaled in a pair of bearing housings 26 and 27 fixedly secured to the inside of the blade as by welding. An axial locking pin 28 extends radially through each end portion of the axle 25 within the bearing housing to hold the axle against lateral displacement. In turn, the rear wheels 13 and 14 are mounted between the side portions of the blade in a similar manner by an axle 31 supported by a bearing housing 32 fixedly secured along the inner face of the blade just forwardly of the trailing edge thereof. The front wheel is shown as being centered rearwardly of the apex and the rear wheels are located equal distances on opposite sides of the longitudinal axis of the blade. The support shaft 16 is also journaled in bearing housings 34 and 35 fixedly secured to opposed sides of the blade approximately midway between its front apex and rear ends of the sides, and again locking pins 36 are used within the housing and a washer 37 outside the associated bearing housings 34 and 35 to support the shaft 16 in place and at the same time this arrangement serves to prevent the sides of the blade from spreading or contracting.

The handle 15 has a bifurcated lower end including a pair of laterally spaced arms 41 and 42 each having lower end portions which are bent over shaft 16 as represented at 43 to provide for the pivotal movement of the handle up and down on the shaft. This bifurcated arrangement increases the ease of turning the blade. The alignment wheel 17 is essentially a trailing idler, it being supported for rotation on an axle 44 carried by spaced support arms 45 and 46 disposed inwardly of the handle arms 41 and 42 which pivot freely at their forward ends on shaft 16. Again radial locking pins 47 are provided at the ends of shaft 44 to prevent lateral displacement thereof.

For maneuvering the front end of the blade, a cable 51 extends through an eyebolt or hook 52 on the blade plate 21. This cable extends rearwardly of the apex 11a and is secured to spaced apart eyebolts or hooks 52 and 53 mounted inside of handle arms 41 and 42, respectively, as best shown in FIG. 3. Since the handle 15 is normally supported on an incline, as shown, the lowering of the outer end of the handle will thus cause the forward end of the blade to raise via cable 51. Additional cable lengths 56 extend downwardly from eyebolts 54 and 53 to attach to eyebolts 54 and 55 on the alignment wheel

arms 45 and 46, respectively, and this permits the alignment wheel 17 to be elevated by raising the handle 50. In this way the front of the blade may be raised to clear obstructions and the like and the alignment wheel raised when turning around and the like.

While a double-sided rearwardly diverging blade shape has been shown to cover the maximum surface, for some snow removal applications as, for example, against the house wall, one side blade portion may extend straight rearwardly from the apex to illustrate that various changes may be made in the shape of the blade without departing from the spirit and scope of the present invention.

Although the present invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made by way of example and that changes in details of structure may be made without departing from the spirit thereof.

What is claimed is:

1. A snowplow comprising a V-shaped scraper blade having a forward apex and rearwardly diverging side portions, said side portions being curled outwardly along the upper rear end portion with a progressively increasing curl from front to rear thereof to provide a concavely curved moldboard to move the snow laterally outwardly at the rear of the blade, said blade being made of a relatively thin, rigid plate type material, a front wheel and a pair of rear side wheels mounted on said blade between said side portions, said front wheel being rearwardly of the forward apex in a centered position and said rear wheels being located equal distances on opposite sides of the longitudinal axis of the blade at the rear end of the side portions for a balanced support of the blade, said blade having a resilient surface-engaging bottom molding portion with a flat bottom surface and an upwardly and inwardly inclined lip portion forming a wedge-like member to move the snow, said front and rear wheels having bottom peripheral surfaces disposed in substantially the plane of the bottom surface of the molding portion, a lateral shaft extending transversely between said side blade portions having end portions coupled to the inner faces of said side blade portions to limit lateral spreading between said side blade portions, a push handle pivotally connected to said support member and extending rearwardly therefrom, an alignment wheel pivotally connected to said support member and extending rearwardly therefrom, a line connected between the front apex portion of the blade and the handle to elevate the front of the blade by pivoting the handle rearwardly and downwardly, and a line connected between the handle and said alignment wheel to selectively

elevate the wheel by pivoting the handle forwardly and upwardly.

2. A snowplow comprising a V-shaped scraper blade having a forward apex and rearwardly diverging side portions, said side portions being curled outwardly along the upper end portion with a progressively increasing curl from front to rear thereof to provide a concavely curved moldboard to move the snow laterally outwardly at the rear of the blade, said blade being made of a relatively thin, rigid plate type material, a front wheel and a pair of rear side wheels mounted on said blade between said side portions, said front wheel being rearwardly of the forward apex in a centered position and said rear wheels being located at the rear end of the side portion for a balanced support of the blade, said blade having a resilient surface-engaging bottom molding portion with a flat bottom surface, said front and rear wheels having bottom peripheral surfaces disposed in substantially the plane of the bottom surface of the molding portion, a lateral support member extending transversely between said side blade portions having end portions coupled to said side blade portions to limit lateral spreading between said side blade portions, a push handle pivotally connected to said support member and extending rearwardly therefrom, an alignment wheel pivotally connected to said support member and extending rearwardly therefrom, and means connected between the front apex portion of the blade and the handle to elevate the front of the blade by pivoting the handle rearwardly and downwardly.

3. A snowplow as set forth in claim 2 including a line connected between said scraper blade and said handle to selectively elevate the wheel by pivoting the handle forwardly and upwardly.

4. A snowplow as set forth in claim 2 wherein said support member is a shaft and including a bearing plate rigidly secured to each said side blade portion of the blade into which the ends of said shaft are rotatably supported, said shaft having lateral movement restraining members outwardly of said bearing plates.

5. A snowplow as set forth in claim 2 wherein said molding flat bottom and an upwardly and inwardly inclined lip portion forming a wedge-like member to move the snow.

6. A snowplow as set forth in claim 2 wherein said handle includes a lower bifurcated portion pivotally attached to said lateral support member.

7. A snowplow as set forth in claim 6 including a pair of support arms between said bifurcated portion and freely pivotal on said support member to support said alignment wheel.

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