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SNOW PLOW

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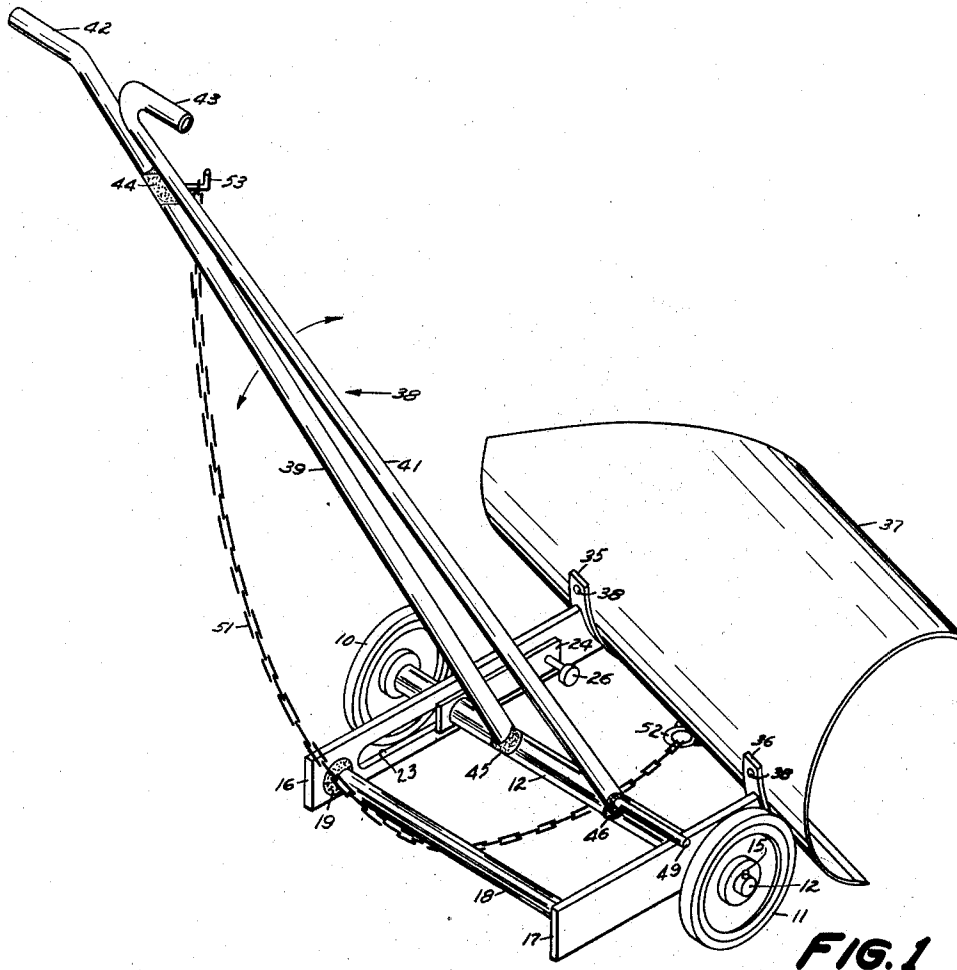


FIG. 1

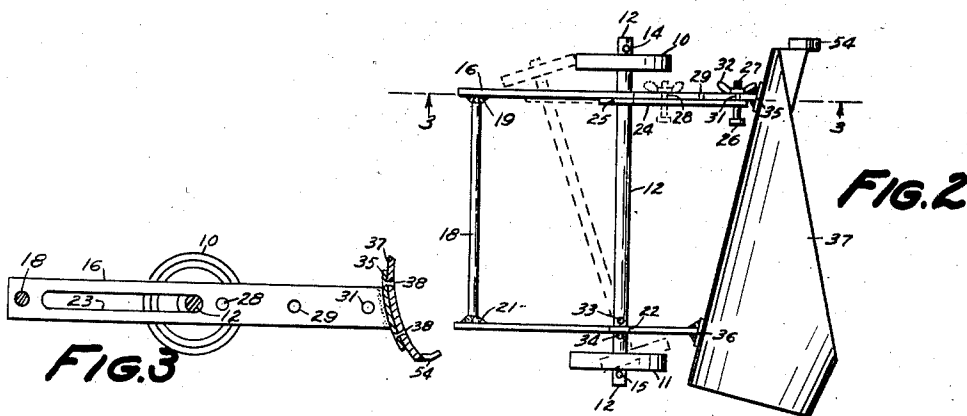


FIG. 2

FIG. 3

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SNOW PLOW

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5 Claims. (Cl. 37—53)

This invention relates generally to snow plows, and more particularly to an improved snow plow of the manually operated type intended for cleaning sidewalks, paths, driveways, pavements, and the like.

The purpose of this invention is to provide a manually operated snow plow embodying various novel improvements over prior devices.

An object of this invention is the provision of a hand operated snow plow that will roll the snow to one side as distinguished from pushing it aside.

Another object is to provide a snow plow blade that will roll the snow when said plow is moved along at the velocity of an ordinary walk.

Yet another object of this invention is the provision of a hand operated snow plow embodying simple means for applying a downward thrust on the lower or cutting edge of the plow blade, and that will otherwise convert an articulated snow plow construction into a rigid assembly for scraping purposes as distinguished from a prior wheeled plow function.

Still another object is to provide a hand operated snow plow with means for adjusting the angular disposition of the plow blade with reference to the line of travel of the snow plow machine.

A further object of this invention is the provision of a snow removing device of a very simple construction, light in weight yet sturdy, easily stored in a small place, and relatively inexpensive to manufacture.

Other specific objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings in which like reference numerals designate like parts throughout the figures thereof and wherein:

Fig. 1 shows a perspective view of the snow plow invention;

Fig. 2 is a plan view of the apparatus shown in Fig. 1, without the handle member, and showing the dotted and shifted position of the wheels relative to the frame; and

Fig. 3 is a section view taken along line 3—3 of Fig. 2, showing the slotted and apertured frame member adapted for adjusting the position of the wheel assembly.

Referring now to the drawings, wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in Fig. 1 a pair of rubber tired wheels 10 and 11 rotatably mounted on the journaled ends, respectively, of an axle 12, and secured thereon against axial displacement by means of press-fit pins 14 and 15.

A horizontally disposed frame-work comprising a pair of spaced and parallel side members 16 and 17 are joined by a transverse brace 18 disposed rearwardly thereon, and welded thereon as indicated at 19 and 21.

Side member 17 is provided with an aperture 22, intermediate the ends thereof, to somewhat loosely receive one end of axle 12 therein.

Side member 16 is provided with guide means such

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as a slot 23 commencing from a point opposite said aperture 22 and extending rearwardly therefrom, to receive the other end of axle 12 slidably therein.

A shift bar 24 is connected to axle 12 through means of an aperture 25 therein adapted to somewhat loosely receive the axle 12. When operably connected, said axle is disposed forwardly along and adjacent the side member 16. The forward end of the shift bar is provided with a fixed and laterally disposed headed pin 26 having a threaded end 27 projecting through said shift bar and also projectable through any of three spaced apertures 28, 29 and 31 provided along the longitudinal axis of side member 16. A wing nut 32, engageable with the threaded end 27 of pin 26, secures the shift bar in any adjusted position as determined by the spacing of said apertures 28, 29 and 31.

A pair of pins 33 and 34 adjacent the opposite sides of side members 17, press-fitted in diametral bores through the shaft 12, restrain the frame-work against unwanted sidewise displacement relative to axle 12.

The side members 16 and 17 are spaced inwardly from their respective wheels a distance sufficiently great to provide for canting clearance between said wheels and side members when the wheel assembly is angularly shifted to the dotted line position shown in Fig. 2.

The side members 16 and 17 are of unequal length, whereby the forward movement of a snow plow blade, hereinafter described, mounted obliquely across the ends of said members, will cause said blade to gather and thrust snow to one side of the path of travel.

The ends of said side members 16 and 17 are provided with lateral flange elements 35 and 36, welded to said ends, respectively.

A curved snow plow blade 37 operably disposed on the plane on which the wheels rest, the lower edge of the blade being co-planar therewith, is secured to said flanges by any means such as rivets 38, screws, bolts, or the like. While said blade can be of a plane or any curved configuration, it is preferred to be curved on substantially a seven inch radius, and of substantially 180 degrees of curvature. For ordinary walking velocities and snow depths, the above design measures have been found practical for rolling the snow ahead of the blade.

A handle member generally indicated at 38 is provided to transmit pushing forces from the operator to the axle assembly. Said handle comprises a pair of elongated tubular members 39 and 41 having out-turned hand grip end portions 42 and 43. The tubular members are welded together at 44 to form a unit; and have their lower ends welded to axle 12 as indicated at 45 and 46.

The angle at which the handle reposes rearwardly and forwardly is determined by stop bar 49 which is welded to tube 41 and is engageable with the upper edge of side member 17 on both sides of the axle. This construction allows the handle to swing through a limited arc on each side of a vertical positionment. When the snow plow is to be stored, the handle can be positioned at the forward limit of its swing, thereby conserving space. When the snow plow is being readied for operation, the handle can be positioned at the rearward limit of its swing. In the handle's extreme rearward position, the hand grip portions 42 and 43 are disposed approximately 8 inches lower than normally operably convenient for a person of ordinary height. This range of 8 inches adapts the handle to most persons of less than ordinary height. Obviously the stop bar 49 can be located on tubular member 41 so as to accommodate persons of any and all heights.

The stop bar 49 also serves the function of transmitting a pivoting force to the side member 17 for raising the lower edge of the blade over an obstruction such as when a cracked or raised edge of pavement or side-

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walk is encountered. The operator accomplishes this by merely pushing downwardly on the handle member 38 until the stop bar 41 engages the side member 17. Continued downward movement of the handle pivots the frame-work and attached plow blade about the axle as a center, thereby raising the lower edge of the blade above said obstruction, as required. A slight forward movement of the snow plow will then allow the blade to pass over and clear the obstruction, after which the downward pushing force on the hand grips is relieved and the blade allowed to lower to the working surface by action of gravity. Forward progress of the snow plow can then be resumed, with the hand grips held at normal operating height and the stop bar disengaged from the side member 17.

A link chain 51 has one end connected to a centrally located eye element 52 welded to the lower edge portion of the plow blade 37, and the remaining portion trained under axle 12 and brace 18, and detachably engaged with a hook element 53 centrally welded to the handle assembly in proximity of the hand grips. As noted in Fig. 1 said chain is normally inoperatively loosely disposed with slack. However, should the snow be packed or otherwise encrusted on the sidewalk, the operator can disengage the chain from the hook 53, take up the slack, re-engage the chain to the hook, tautly, and then proceed with the plowing operation. The effect of making the chain taut results in the lower edge of the plow blade being pulled down forcibly against the sidewalk, thereby facilitating the removal of encrusted snow.

It is possible to increase the force of the lower edge of the blade against the sidewalk surface by lifting upwardly on the hand grip portions, with the chain taut, and raising the wheels from the sidewalk surface. This action results in no part of the snow plow, other than the lower blade edge, resting on the sidewalk surface. With the chain having been made taut, the snow plow assembly becomes structurally rigid, and will function as a scraper as distinguished from its normal function as a relaxed wheeled snow plow. Pushing downwardly on said rigid scraper-like assembly enables one to remove even the most difficult encrusted snow.

The leading corner of the blade is provided with a small upturned runner element 54 to prevent the blade edge digging into soft surfaces or catching on obstructions such as the edges of frost heaved slabs.

In operation, to remove snow from a sidewalk, the snow plow is moved longitudinally along the sidewalk at an ordinary walking pace. For all ordinary conditions of snow, the oblique disposition, cant, or skew, of the plow blade, shown in Fig. 2, is sufficient to operate satisfactorily. However, should it be desired to change the angular disposition, or skew, with reference to the line of travel of the plow, one need only back-off the wing nut 32 from the pin 26, remove said pin from aperture 31, and slide the shift bar 24 and attached wheel assembly, rearwardly, in slot 23, to the dotted line position shown in Fig. 2. To secure the wheel assembly in this adjusted position, one inserts the pin 26 in aperture 28 and securely threads the wing nut on the end of pin 26. The snow plow is now ready for operation, with a new increased skew relation.

Some of the characteristic features of this snow plow are, the provision of slotted frame means for varying the angular relation of the wheel assembly relative to the frame-work; the provision of a curved snow plow blade designed to roll the snow ahead of the plow as distinguished from laboriously pushing it aside; the provision of a curved snow plow blade designed to roll snow when said blade is moved forwardly at the velocity of an ordinary walk; and the provision of chain means for converting an otherwise articulated snow plow con-

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struction into a rigid assembly for scraper operation as distinguished from conventional snow plow operation.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood, that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed and desired to be protected by Letters Patent of the United States is:

1. A snow plow, comprising: frame means having a first side, and a second side having guide means thereon; axle means mounted on said first side, and received in said guide means; spaced wheels mounted on said axle means; shift bar means connected to said axle; means for securing said shift bar to said frame means; and a plow blade operably mounted on said frame means.

2. A snow plow, comprising: frame means having first and second spaced side members, said second side member having guide means; axle means mounted on said first member and slidably mounted in said guide means; wheels mounted on the end portions of said axle means, spaced from said side members; a pusher handle; shift bar means connected to said axle means, for positioning said axle means in said guide means; means for disengageably securing said shift bar to said frame means; and a plow blade operably mounted on said frame means.

3. A snow plow, comprising: a pair of spaced parallel frame members, one having an aperture and the other having a longitudinal slot; axle means loosely received in said aperture, and slidably engaged in said slot, the axle ends extending beyond the aperture and slot; wheels mounted on the ends of said axle means, spaced from said members a distance sufficient for axle canting clearance; shift bar means pivotally connected to said axle means, adjacent the slotted member; means for detachably securing said shift bar to said slotted member; a plow blade operably fixed on said frame members; and a pusher handle connected to said axle means.

4. The apparatus of claim 3 and a stop bar mounted on said handle and engageable with one of said frame members, for limiting the forward and rearward swing of the handle.

5. A snow plow, comprising: a pair of spaced parallel frame members, one having an aperture and the other having a longitudinal slot; axle means loosely received in said aperture, and slidably engaged in said slot, the axle ends extending beyond the aperture and slot; wheels mounted on ends of said axle means, spaced from said members a distance sufficient for axle canting clearance; shift bar means pivotally connected to said axle means, adjacent the slotted member; means for detachably securing said shift bar to said slotted member; a plow blade operably fixed on said frame members; a pusher handle connected to said axle means; a lateral brace mounted across the frame members, rearwardly of the axle; and a chain connected to the lower edge portion of the plow blade, trained under said brace, and connected to the handle, said chain being normally slack but tensionable when the handle is raised above its normal operating elevation.

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