May 8, 1951 P. E. HEDLEY 2,552,426

SNOW AND SOIL REMOVER

Filed April 8, 1946 3 Sheets-Sheet 1

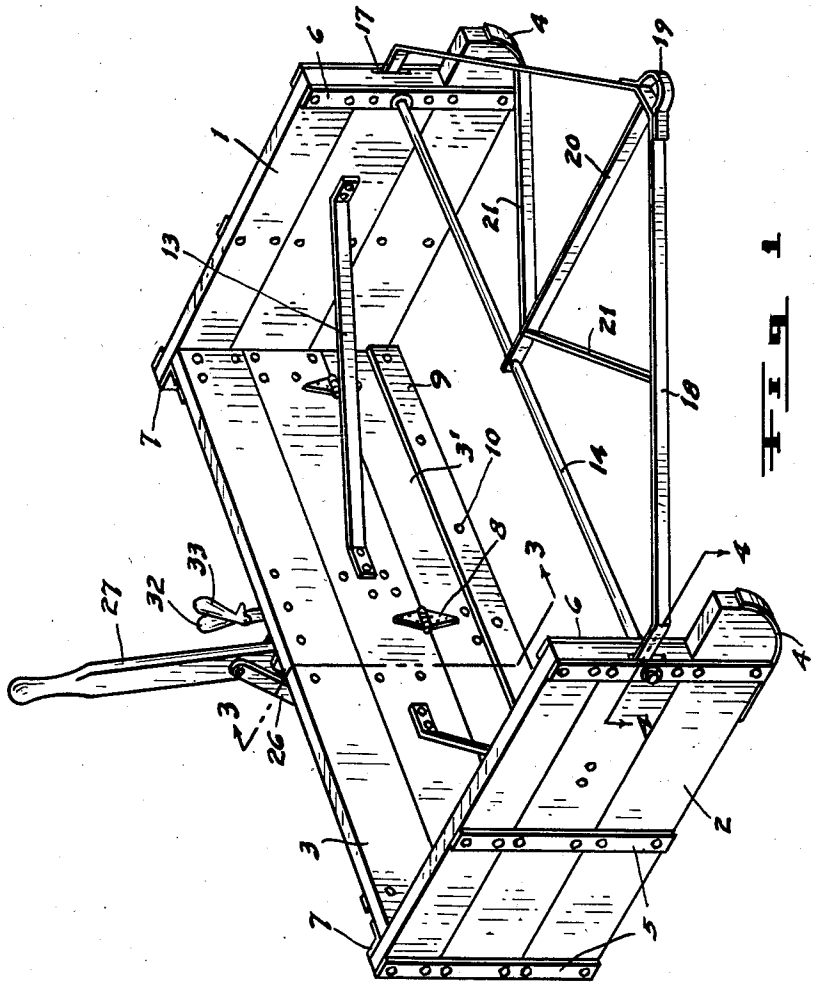


FIG. 1

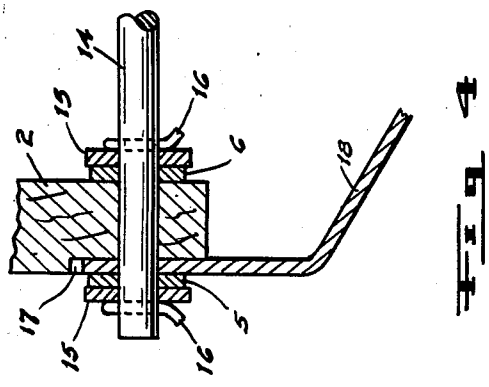


FIG. 4

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SNOW AND SOIL REMOVER

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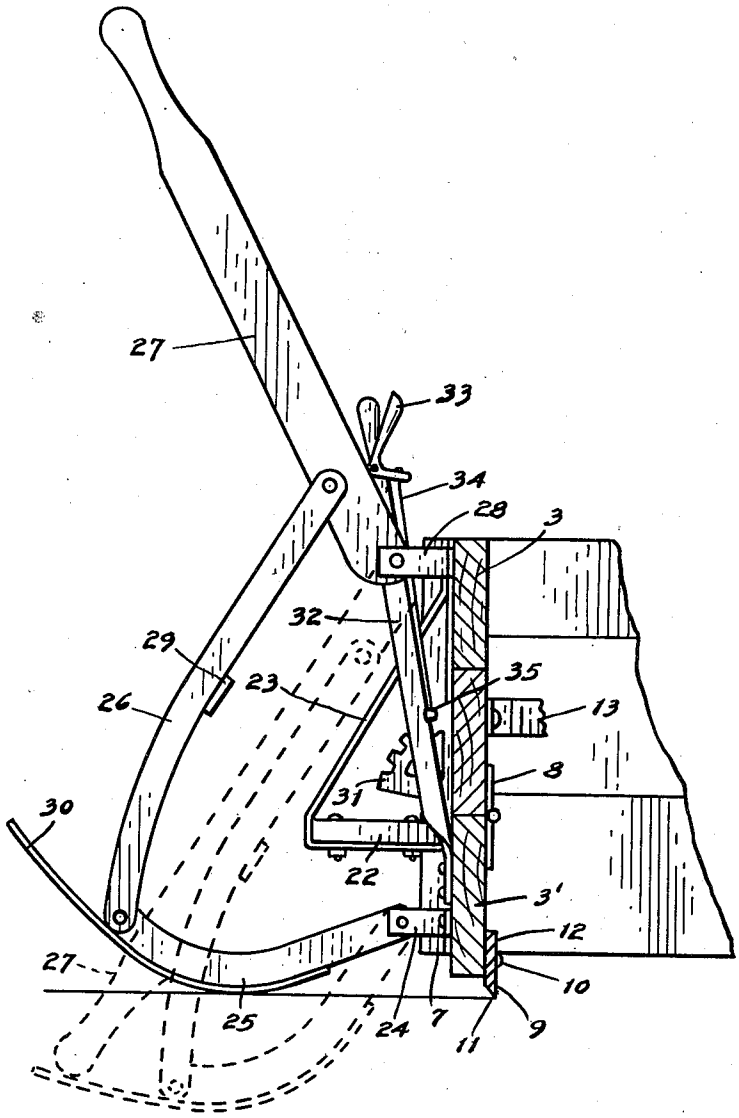


Fig 3

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SNOW AND SOIL REMOVER

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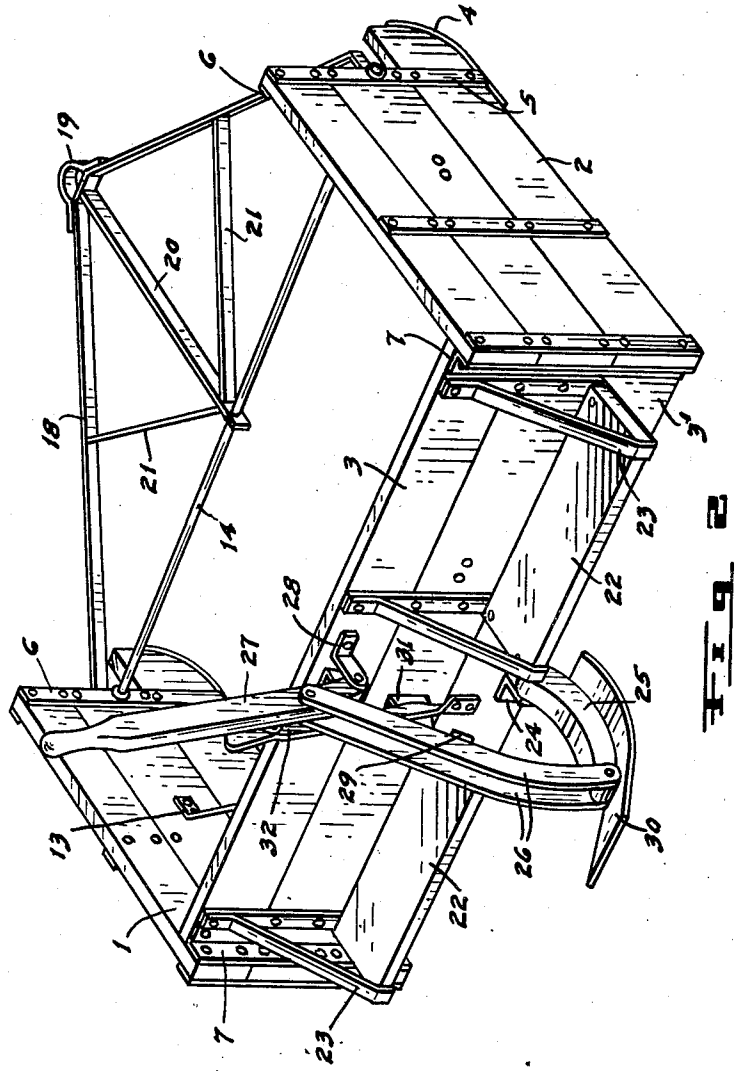


FIG 2

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2,552,426

UNITED STATES PATENT OFFICE

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SNOW AND SOIL REMOVER

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Application April 8, 1946, Serial No. 660,549

1 Claim. (Cl. 37—149)

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The wide use of automobiles, trucks, tractors and other types of vehicles has necessitated the smoothing of roads, lanes, driveways et cetera. In the winter time, heavy snows tie up traffic on these highways and in a short time, uneven surfaces and dangerous holes result. Heavy snow, covering a farmer's yard in the winter time, interferes with the farmer's passage from one building to another and slows up the necessary activity therein for the proper running of the farm. In the summer time, rains and heavy traffic create similar conditions and hazards. The moving of soil or snow and the levelling off process, due to uneven surfaces, creates a problem for both the road maintenance men and the farmer. Normally, and with inefficient facilities, the moving of the soil or snow is expensive and the work takes up too much valuable time. The collection of loose material, such as vegetables, small rocks, stones or rubble and removal of same to a suitable deposit, is also a time consuming, and therefor expensive operation.

The principal object of the present invention is to construct a power or horse drawn machine for the removal or packing of the snow in a quick and efficient manner.

A further object of the invention is to provide a construction which may be utilized for removing or levelling off of soil or for the collection and removing of various loose materials such as vegetables, small boulders and refuse.

A further object of the invention is to construct the device for the collection and removal of material and also provide means for quick release of said material from the device at the desired disposal location.

A further object of the invention is to provide means for cutting a smooth surface through the snow, ice or soil and with adjustable means for varying the degree of cut.

A further object of the invention is to provide means for adding weight to the cutting blade of the machine to hold same to the work.

A still further object of the invention is to design the machine in a simple manner for ease of operation, cheaply for low cost of manufacture and at the same time provide a strong, sturdy and durable construction which will stand up under hard usage and give satisfactory service for many years.

With the above important and other minor objects in view which will become more apparent as the description proceeds, the invention consists essentially in the construction and arrangement of parts hereinafter more particularly described reference being had to the accompanying drawing in which:

Figure 1 is a perspective view of the invention from the front.

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Fgure 2 is a perspective view of the invention from the rear.

Figure 3 is an enlarged vertical sectional view taken on the line 3—3, Figure 1.

Figure 4 is an enlarged horizontal view taken on the line 4—4, Figure 1.

In the drawings like characters of reference indicate corresponding parts in the several figures.

The invention proper comprises a U-shaped framework having sides 1 and 2 and a rear wall 3. The sides comprise three members one above the other, with the lower member projecting ahead a short distance. The lower front corners are curved and provided with metal runners 4 and the sides are held together on the outside by three vertical metal straps 5 bolted thereto. The front inner sides are reinforced by a strap 6, similar to straps 5, and they are fastened by the same bolts which pass through the front outer strap 5. The two upper members of the rear wall 3 are held to the sides by vertical angle-irons 7 bolted to the rear of these members and the other flanges of the angles are fastened to the side by the bolts fastening the rear side straps. The lower member 3' of the rear wall is pivoted to the upper members by hinges 8 positioned on the front of the wall. The lower edge of this hinged member, carries a steel blade 9 by suitable bolts 10. The lower edge of the blade which projects slightly below the rear wall, is provided with an acute point 11 for cutting purposes while the upper edge is curved at 12 for a purpose later described. The rear and side walls are suitably and interiorly braced with angular positioned bars 13.

A rod 14 passes across the front part of the machine with the ends passing through the sides and the front straps 5 and 6. Washers 15 are positioned on the rod at either side of the side members and cotter pins 16 pass through holes in the rod at the side of the washer to prevent end movement. The middle members of the sides are cut away at the front and the outside as shown at 17 to receive the ends of a V-shaped bail bar 18. This bar has the ends thereof pivoted on the rod 14 and the center of the V is provided with a looped strap 19 for hitch purposes. A central bar 20 is pivoted on the rod 14 with the other end welded to the center of the bail bar directly behind the hitch. Braces 21 are positioned at an angle and welded to the center bar 20 and to the bail bar.

The rear side of the rear member 3, (see Figure 2) is provided with a pair of steps or footboards 22 supported from the rear wall by angular shaped brackets 23 which are bolted thereto. These footboards are for the operator to stand on to give weight to the cutting blade and hold

it to the work. If desired, and especially if the machine is tractor drawn and used for soil removal these footboards could be made into boxes for holding stones or gravel and so provide a semi-permanent weight for the purpose. A suitable space is left between these footboards for the lifting and operating mechanism now to be described.

A bracket 24 is carried from the rear member 3'. These brackets span and pivotally carry a curved member 25 which extends rearwardly of the machine. The rear end of this member is pivotally connected to a pair of links 26 one on either side and these links have the upper end spanning and are pivoted to a movable control lever 27 pivotally carried by brackets 28 on the upper rear face of the rear wall 3. By manually lowering the lever 27, the member 25 is pressed downward into the position shown in the dotted outline in Figure 3 while the lever 27 is received between the links 26 and against the cross bar 29 carried thereby. When this operation is completed, the pivot points are positioned on the other side of dead center and accordingly the mechanism is held in that position. The lower part of the member 25 also carries a wide metal runner 30 which slides on the ground surface or the snow and projects past the end of the member to protect the lever handle 27 from being released when in the position shown in the dotted outline. Obviously when this member and runner are operated as above mentioned the rear end of the machine will be lifted up with the front end being supported by the front runners 4 so that a three point support is provided.

While I have shown and described a manual operated mechanism for the lifting of the rear part of the machine, it will be understood that if the machine is tractor drawn, it would be very easy to equip this mechanism with hydraulic power controlled from the tractor driver's seat and so simplify the device for one man operation.

On the back of the rear wall 3 and slightly to the side of the lifting mechanism, a quadrant 31 is provided and the circular edge of this quadrant is centered on the pivot line of the hinges 8. A lever 32 is fastened to the lower member 3' and extends upwardly at a slight rearward angle. The handle of the lever is provided with a pivoted detent 33 having a wire 34 extending downward to a locking device 35 which holds the lever to the notches in the quadrant. By operating the detent and moving the lever rearwardly the member 3' can be pivoted on the hinges and vary the cutting angle of the blade 9.

In operation, the loop 19 can be connected to a hitch for either horses or tractor draft and the machine drawn over the ground or snow on the runners 4 while the runner 30 controls the cut of the blade 9. If the blade 9 is held vertically as shown in Figure 3 and snow is being removed, the snow will collect within the machine while a certain amount will pass under the blade and be packed thereby. By reversing the blade 9 and using the curved edge 12, more snow will pass thereunder and a good hard surface can be packed which is ideally suited for a farm yard which is used a great deal by a farmer in passing from one building to another. When the machine is filled, it can be drawn to a suitable disposal area and the lever 27 can then be operated to lift the rear end. As the machine continues to move, the collected snow will pass thereunder. If a sharp cut is desired while the acute blade is in use the lever 32 can be operated to pivotally advance the member 3'. This will accordingly project the blade ahead and the snow will be sheared clean with no packing. If the machine is to be used for levelling soil the same operations are used but the machine would be made of sturdier construction than those made for snow. The front framework, all being pivoted on the rod 14, allows for variations of the tractor with the machine as it passes over uneven surfaces. The rear corner angles being at the rear of the member 3 act as a backing for the blade to reinforce same when pressure of material is exerted against the lower member 3'.

From the above construction and method of operation it will be apparent, that this machine can be used effectively to smooth the surface of soil roads, lanes or farmyards by removing small elevations and filling in hollows. It can also be used to pack surfaces, or material can be removed and released where required. It can be used for removal of snow from roads and open spaces in the winter time. The snow can be packed to form a solid walking surface for man or animals. Being simple, efficient and inexpensively constructed, it can be made very cheaply and may also be used for collection and depositing various small loose material which is so often found on the farm.

What I claim as my invention is:

A snow and soil remover, comprising: a U-shaped frame adapted to be drawn over the ground to receive and collect material through the open side thereof; said U-shaped frame formed from a pair of runner side members rigidly secured to a cross rear wall; a blade member hingedly suspended from the bottom of said rear wall and projecting below said frame for cutting contact with said ground; a lever secured to the rear of said blade member and operable over a quadrant; said quadrant carried by the back of said rear wall and curved on the centre point of the hinge of said blade member, for regulating the cutting angle of said blade member; a curved runner having one end pivotally secured to the rear central part of said blade member and trailing behind said frame; a secondary lever centrally pivoted to the back of said rear wall; a link pivotally connecting said secondary lever with said curved runner; and said secondary lever swingable downwardly, by manual pressure, to rock said curved runner on said ground and elevate the rear part of said frame for passage of said contained material under said blade member.

PERCY E. HEDLEY.

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