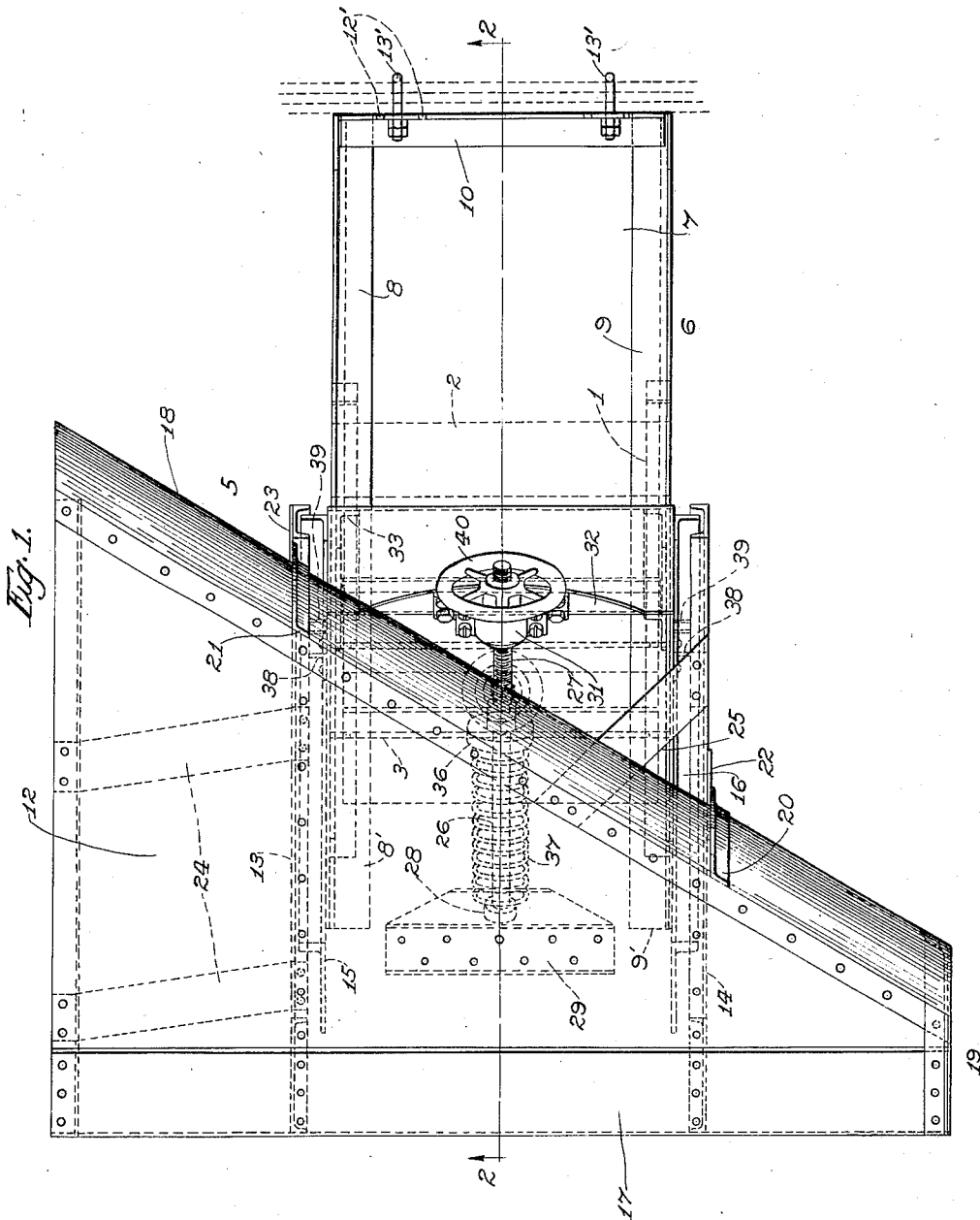


H. P. ANDRESEN.
 SNOWPLOW.
 APPLICATION FILED FEB. 27, 1920.

1,358,046.

Patented Nov. 9, 1920.
 3 SHEETS—SHEET 1.



Inventor.
 Herman P. Andresen.
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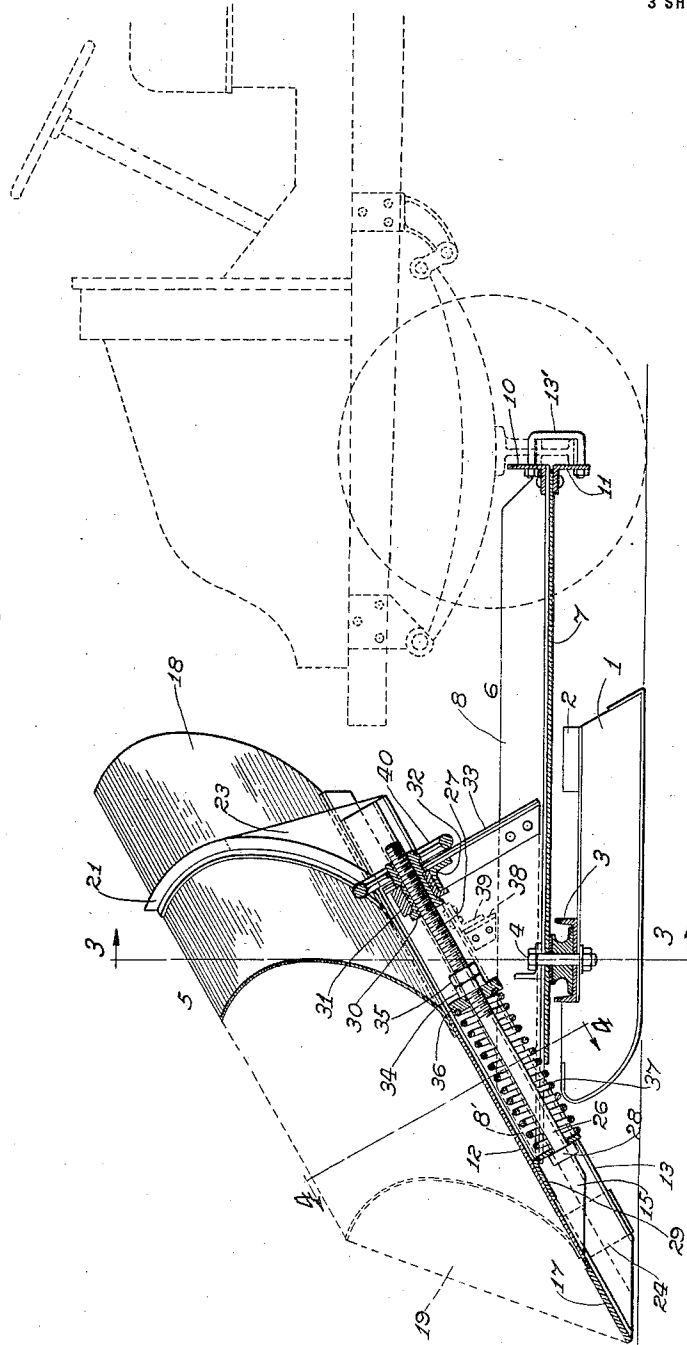
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3 SHEETS—SHEET 2.

Fig. 2.

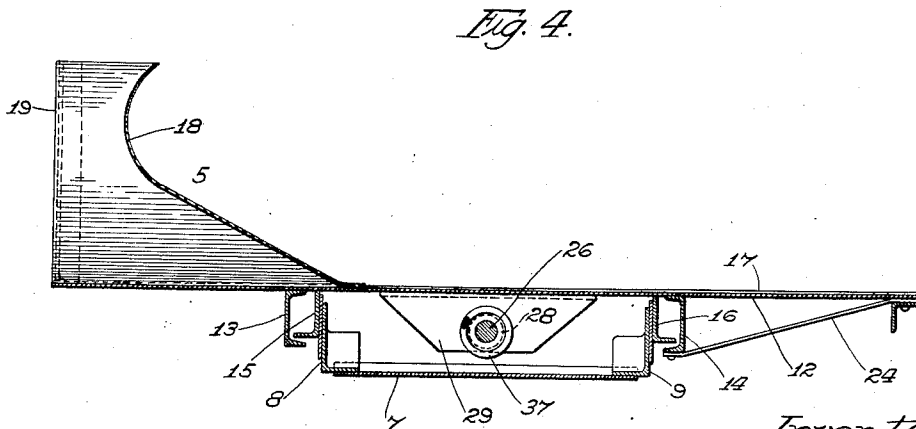
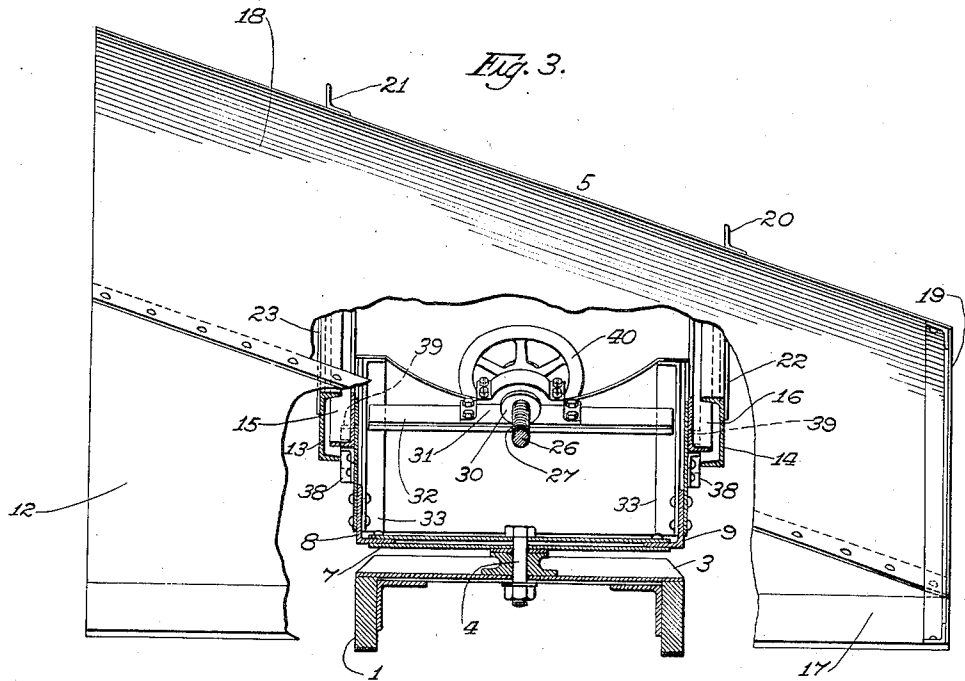


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UNITED STATES PATENT OFFICE.

HERMAN P. ANDRESEN, OF CHICAGO, ILLINOIS.

SNOWPLOW.

1,358,046.

Specification of Letters Patent.

Patented Nov. 9, 1920.

Application filed February 27, 1920. Serial No. 361,800.

To all whom it may concern:

Be it known that I, HERMAN P. ANDRESEN, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Snowplows, of which the following is a specification.

My invention relates generally to apparatus for removing snow from streets, roads, highways, walks and the like, and relates more particularly to apparatus adapted to remove snow by mere forward movement thereof.

The general object of my invention is to provide apparatus which can be operated readily upon roads, walks, and the like, and which shall be of such construction that it can pass over irregularities or obstructions in the course of its travel without the necessity of stopping the movement of the apparatus and without danger of damaging it.

Again it is an object of my invention to provide a street or road snow plow of such construction that, if desired, it can be propelled by a motor vehicle, and which shall be of such construction that the snow can be removed with little resistance to the forward movement of the apparatus, thus enabling the motor vehicle to propel the apparatus, at relatively high speed, through deeper snows than plows heretofore devised.

Snow plows heretofore used have not been able to clear snow of any considerable depth because of the forward and side resistance offered by the snow on the ground, they being push plows pure and simple, *i. e.* the snow was scraped and pushed against snow on the road in front and shifted sideways where further resistance was offered by snow bounding the side of the path of travel. This side resistance might be considerably augmented as where a ridge of snow had been deposited by a previous cut.

I aim to provide a construction in which the snow removing element shall first cut the snow, then elevate it upon a gently inclined surface and finally discharge it at one side and above the snow on the ground.

This is of particular advantage when plowing close to a curb, as is necessary in busy city streets where full width is required for traffic. This also has the advantage of cleaning the gutters so that adja-

cent snow when melting will readily find its way to the sewer.

A further advantage resulting from this construction is that practically all side thrust caused by operating the device is eliminated, inasmuch as the snow is raised on the inclined surface and then dropped on the top of the snow at the side of the apparatus instead of being pushed transversely against it. Therefore, less power is required to operate the device because less resistance to operation is offered than in the usual type of push plows.

I aim also to provide an apparatus which can be readily attached, through the use of few parts, if desired, to any automotive vehicle no matter how widely the structural features thereof may vary; to provide apparatus which shall be simple in construction and capable, in use, of withstanding for a long time the severe strains imposed during operation.

My invention consists generally in the form, arrangement, construction and coöperation of the parts whereby the above named objects, together with others that will appear hereinafter, are attainable and my invention will be more readily understood by reference to the accompanying drawings which illustrate what I consider, at the present time, to be the preferred embodiment thereof.

In said drawings:

Figure 1, is a plan view of apparatus embodying my invention.

Fig. 2, is a longitudinal section taken substantially on the line 2—2 of Fig. 1.

Fig. 3, is a front elevation of the apparatus, parts thereof being broken away, better to disclose the interior construction; and

Fig. 4, is a detailed view taken substantially on the line 4—4 of Fig. 2.

In large cities, the removal of snow from streets or roads imposes a great burden upon the department having such work in charge because it is quite necessary to remove the snow as shortly after it falls as possible for a number of reasons. If the snow is not promptly removed traffic is slowed up to such an extent as to result in seriously handicapping the business of the community, and the longer the snow is per-

mitted to remain upon the roads, the more difficult is its removal, due to the compacting action of vehicles and the natural tendency of the snow to pack. For the above and other reasons, it is desirable so soon as snow fall starts, to commence and as far as possible continuously work at the removal of snow until it is, at least, cleared from the roads. It is frequently desirable to bank the snow along a zone inside of the curb for removal later.

I have provided an apparatus of such construction that it can be operated over roadways at high speed, *i. e.*, practically at such speed as the traffic ordinarily moves, thus enabling the continuous use of the apparatus during the period of snow fall without, in any sense, delaying or interrupting vehicle travel.

Referring now to the drawings for the details of construction 1 represents the plow support. This may vary considerably in form, and in substance is essentially the only means which can readily pass over the usual road, and which will permit of the easy swinging movements of the apparatus. As here shown, the support takes the form of a sled (which I prefer to use as the apparatus is not used unless there is snow on the ground) comprising spaced runners, cross-connected at the rear by a member 2 and at the forward end by a channel member 3. The super-structure is pivotally united to the support 1 by means of a bolt or pivot 4 and since this is well forward of the support, a caster-like action is secured such as facilitates swinging movement required for turning the device. The super-structure of the apparatus, as here shown, comprises, generally, what I term a cutting, lifting and discharging element which, as a whole, bears the number 5, and a supporting frame work 6. While the element 5 is rigidly mounted in the sense that it is built to withstand the normal resistance to which it is subjected when cutting, lifting and discharging snow, it is nevertheless yieldable and movable upon encountering a rigid obstruction such as a manhole cover or other bump or elevation. The supporting framework 6, comprises a substantially rectangular plate 7 which normally will be substantially horizontally disposed. This plate 7 is reinforced longitudinally along its edges by means of the angle members 8 and 9 which have portions 8' and 9' projecting forwardly of the plate 7. At the rear of the plate 7, and transversely arranged thereon, will be found upper and lower angle members 10 and 11, respectively. The vertical flanges of the angle members 10 and 11 are each provided with a plurality of holes 12' for reception of the U-bolts 13'. These U-bolts serve to clamp the frame work to the front axle of the automotive vehicle which

is shown only in dotted lines as it forms no part of the invention except to indicate the adaptability of the apparatus to be propelled thereby. I might add that the front axles of vehicles vary in shape, size and construction, and that it has been difficult heretofore properly to attach snow removal apparatus to various axles.

By providing the plurality of spaced holes in the angle members 10 and 11, I am enabled to place the U-bolts in the position best adapted to clamp the particular type of axle with which the apparatus is to be used.

The element 5 is arranged preferably at an angle of about 30° to the horizontal, *i. e.* the part which engages, cuts, elevates and discharges the snow. This is composed, generally of the flat plate member 12, which is riveted to two spaced channel members 13 and 14, respectively which channel members inclose angles 15 and 16, respectively, that are rigidly supported from the frame 6 by means to be described shortly. Suffice it for the present, to state that this construction forms a sliding way whereby the element 5 can move in a straight inclined line, upward and downward.

The cutting edge of the element 5 is composed of a separate easily renewable cutting plate, 17.

At the upper end, the plate 12 is secured to an upwardly and forwardly curved plate member 18 which is the discharging element, the lower end thereof being provided with a plate 19 to prevent discharge of snow at that end. This end plate also serves admirably to reinforce and support the cutting edge.

The snow cutting, elevating and discharging member is rigidly braced at the back by the curved angle members 20 and 21, which, in turn, are secured to gusset members 22 and 23, respectively, which are secured to and which upstand from the channel members 13 and 14. The discharging end or side of the element 5 is further supported by means of the strap members 24 best shown in Figs. 1 and 4. A further bracing member 25 is provided supporting the upper central part of the snow cutting, elevating and discharging element.

The lower ends of the channel members 13 and 14 and the angle members 15 and 16 are cut off at an angle such as to cause the lower edges thereof to be in a substantially horizontal plane, and the members 15 and 16 terminate some distance above the lower end of the snow cutting, elevating and discharging element when in its working position. By cutting the members 13 and 14, 15 and 16 at the angle shown, the cutting element can be brought into close proximity to the ground and yet be properly braced. This construction also provides a relatively sharp

edge well adapted to cut under the snow or other material to be removed. In the event of the element 5 striking an obstruction in the course of its travel it slides upwardly along the inclined ways a distance sufficient to clear the obstruction, at which time it returns to its normal lower or operating position. It might be feasible to rely upon gravity to return the element to its operative position, but I much prefer to provide means for assisting the return of the element to its operative position. The means which I have here shown for this purpose comprises a shaft 26 which is arranged under the snow cutting, elevating and discharging element. A considerable part of one end of the shaft, as indicated at 27, is threaded and the opposite end is provided with a head 28 which is positioned on the lower side of the depending flange of the angle member 29 that is secured to the plate 12. At the upper end, the shaft co-acts with the threaded rotatable bushing 30, which is carried by the box 31, which, in turn, is mounted on an angle member 32 secured to the transverse bridge member 33. The bridge 33 also serves to support the angle members 15 and 16 on which the element 5 slides. Intermediate of the ends, the shaft 26 is provided with a nut 34 and a lock nut 35 which limit the movement of the washer 36. Between the washer 36 and the angle 29 I interpose a compression spring 37, the action of which obviously is to tend to thrust the snow cutting, elevating and discharging element downwardly. In other words, this spring resists the upward movement of the element 5 and thereby holds it in working position against all normal forces tending to displace it. Obviously, when the end of the element strikes a solid obstruction such as a manhole cover or the like, the resistance of the spring is overcome and the element slides upwardly a distance sufficient to free the obstruction and then returns instantly to working position. Inasmuch as it may be desirable, under certain circumstances, to hold the element in its working position with more or less force, I provide for the adjustment of the compression spring as by means of the washer 36, nut 34 and lock nut 35.

It is desirable to limit the downward movement of the element 5, so that it shall operate ordinarily about an inch above the ground and to this end, I bolt angle members 38 to side plates of the framework 6, and also angle members 39 to each of the channel members 13 and 14 of the element 5. These co-act, as shown, to limit the downward movement of the element 5.

I have provided means for positively withdrawing the element 5 from working position which may be desired, at times—for example—when the apparatus is traveling along a road which it is not desired

to clear. This is accomplished by turning the hand wheel 40 which is attached to or is a part of the bushing 30. Obviously turning the hand wheel in one direction positively slides the element 5 upwardly on its ways, and conversely turning it in the opposite direction forces it positively downward. It should be noted that movement of the element in this manner in no wise effects compression of spring 37.

From the foregoing description, it should be obvious that the entire device is of extremely simple construction, being formed almost entirely of plates and structural shapes which can be purchased in the open market and very readily assembled. At the same time, the parts are so positioned and interconnected as to make an extremely rigid structure such as is able to withstand any strains to which it would be likely to be subjected in use. The many advantages of the apparatus will be apparent to those skilled in this art without further comment.

I claim:

1. A device of the class described embodying therein inclined ways; a snow cutting, lifting and discharging element slidably mounted on said inclined ways; and yieldable means for holding said snow cutting, lifting and discharging element in operative position.

2. A device of the class described embodying therein inclined ways; a snow cutting, lifting and discharging element slidably mounted on said inclined ways; and spring means for holding said snow cutting, lifting and discharging element in operative position.

3. A device of the class described embodying therein inclined ways; a snow cutting, lifting and discharging element slidably mounted on said inclined ways; spring means arranged to thrust said snow cutting, lifting and discharging element downwardly on said ways; and stop means for limiting the downward movement thereof.

4. A device of the class described embodying therein ways inclined acutely to the horizontal; a snow cutting, lifting and discharging element slidably mounted thereon; and yieldable means for holding said snow cutting, lifting and discharging element in operative position.

5. A device of the class described embodying therein inclined ways; a snow cutting, lifting and discharging element slidably mounted thereon; yieldable means for holding said snow cutting, lifting and discharging element in operative position; and means adapted for road travel upon which the aforesaid apparatus is mounted.

6. A device of the class described embodying therein a frame work, inclined ways positioned thereon, a snow cutting, lifting and discharging element slidably mounted

upon said inclined ways, yieldable means for holding said snow cutting, lifting and discharging element in operative position, supporting means adapted for road travel, and
5 a pivot joining the supporting means and the said frame work.

7. A device of the class described embodying therein a frame work, inclined ways positioned thereon, a snow cutting, lifting
10 and discharging element slidably mounted on said inclined ways, yieldable means for holding said snow cutting, lifting and discharging element in operative position, supporting means adapted for road travel, and
15 a pivot arranged adjacent the forward end

of the supporting means and joining it to said frame work whereby said supporting means acts as a caster.

8. A device of the class described embodying therein inclined ways; a snow cutting,
20 lifting and discharging element slidably mounted thereon; yieldable means for holding said snow cutting, lifting and discharging element in operative position; and a
25 sledge upon which the aforesaid apparatus is mounted.

In testimony whereof, I have hereunto set my hand, this 24 day of February, 1920.

HERMAN P. ANDRESEN.