(No Model.) 2 Sheets—Sheet 1.

O. JULL.

SNOW PLOW.

No. 393,240. Patented Nov. 20, 1888.

Fig. 1.

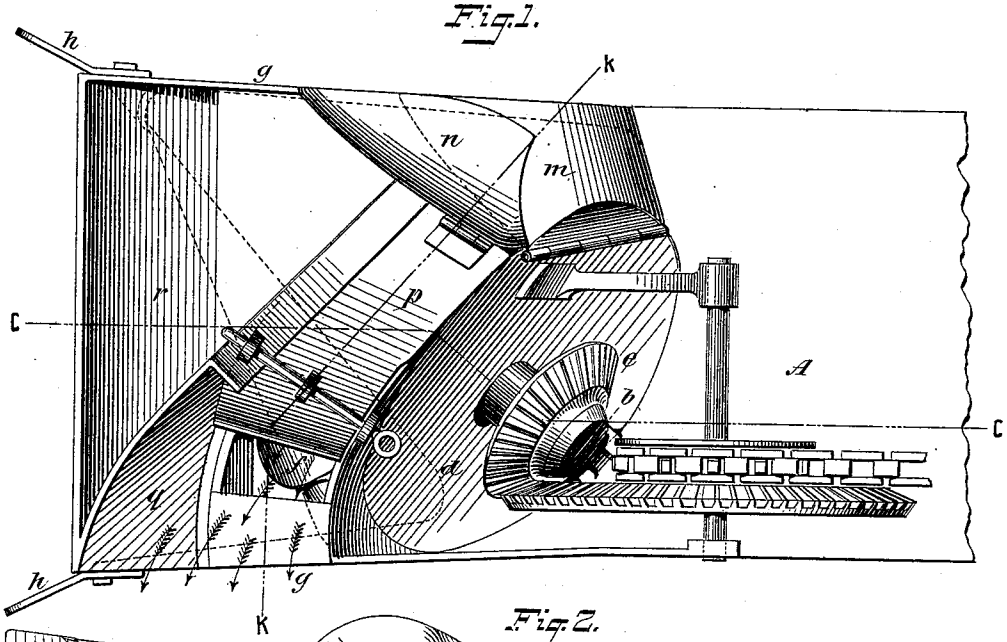
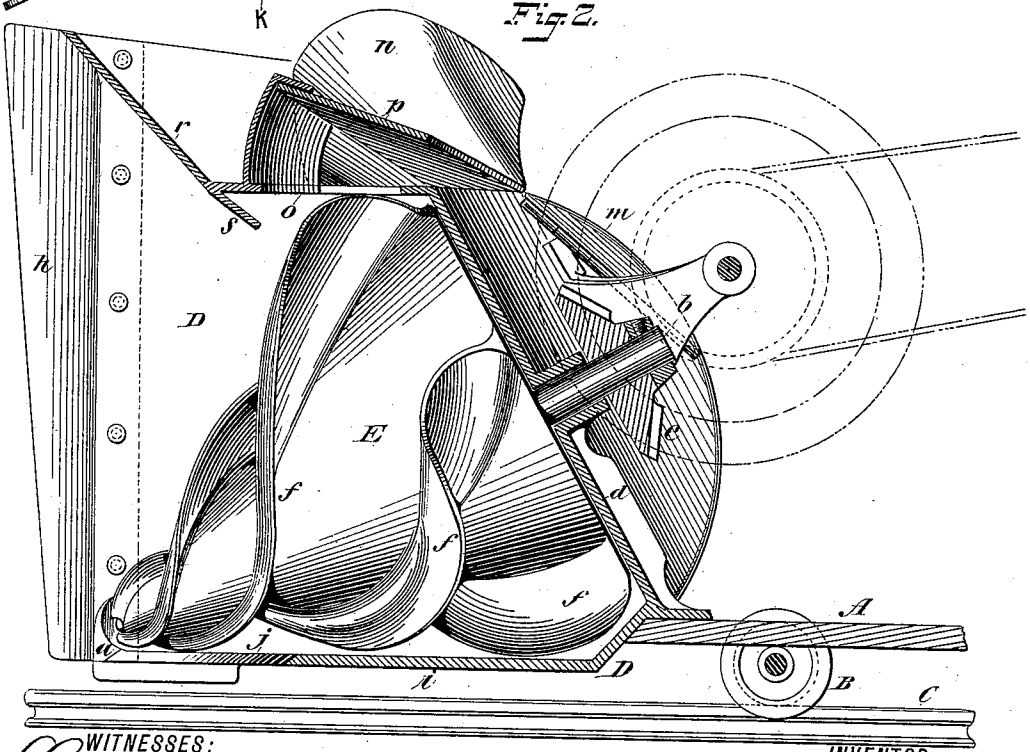


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

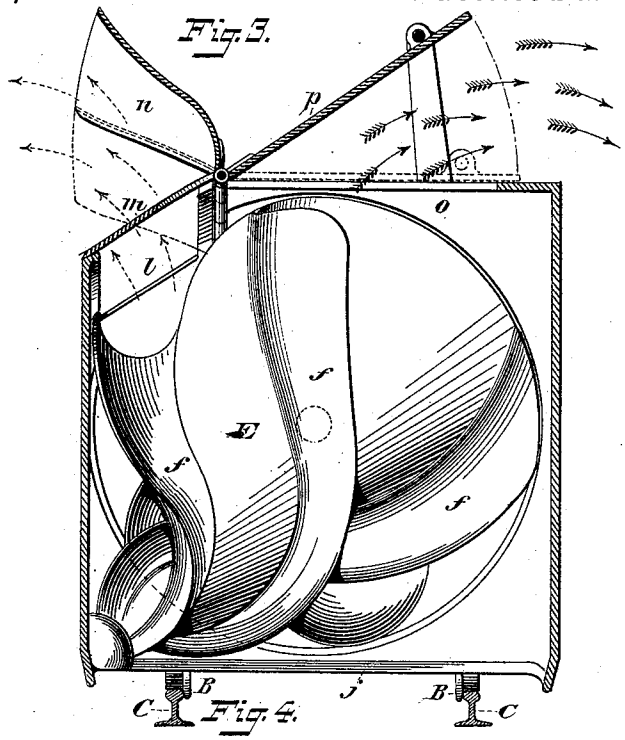
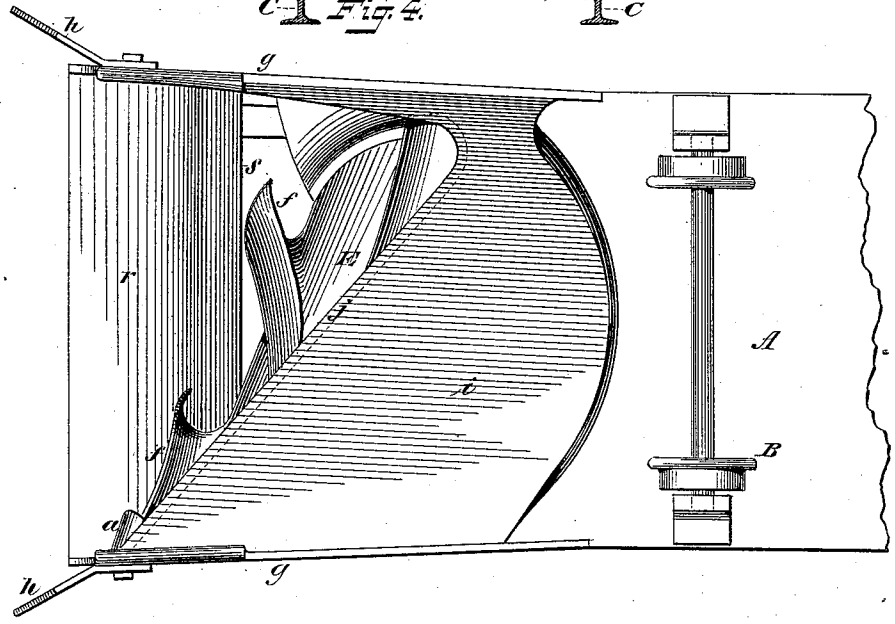


Fig. 4.



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UNITED STATES PATENT OFFICE.

ORANGE JULL, OF ORANGEVILLE, ONTARIO, CANADA.

SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 393,240, dated November 20, 1888.

Application filed October 19, 1888. Serial No. 288,571. (No model.)

To all whom it may concern:

Be it known that I, ORANGE JULL, of the town of Orangeville, in the county of Dufferin, in the Province of Ontario, Canada, have invented a new and Improved Snow-Plow, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of the said snow-plow. Fig. 2 is a vertical longitudinal section on the line *c c*, Fig. 1. Fig. 3 is a cross-section on the line *k k*, Fig. 1; and Fig. 4 is a bottom view of said snow-plow.

The object of this invention is to produce a rotary snow-plow which will slice off the face of the snow-bank, gather the snow thus sliced from near the ground, and discharge it in a practically continuous stream to either side of the track, as may be desired.

The invention consists, essentially, of a cone-shaped blade-carrier placed point or apex forward into a proper support, the point or apex also leaning downward, and the axis of the cone being placed in oblique position when horizontally considered, said cone carrying curved blades or channels that extend from near its apex toward its base, in such manner that as the cone revolves said blades or channels will act against the surface of the snow-bank, constituting lifting-chutes for raising the snow from near the surface of the ground and discharging it from their elevated ends.

The invention also consists in further details of improvement, that are hereinafter more fully specified.

In the accompanying drawings, the letter A represents a platform supported on suitable wheels, B, that are adapted to rest on rails C, or on the ground, if desired. The said platform A supports a certain hood, D, in which is hung the inclined cone E. The apex of this cone is at *a* suitably stepped in the lower part of the hood D. The base of the cone E has a projecting shaft, *b*, which has its bearings in the back plate, *d*, of the hood, and this shaft *b* has a toothed wheel, *e*, which connects with suitable mechanism for imparting rotary motion to the cone. The toothed wheel or pinion *e* is not an essential ingredient of this invention, as other means for revolving the cone E may be employed.

Fig. 2 of the drawings shows the cone E in side view, and shows also that the apex of the cone points forward, and that it is lower than the base of the cone or shaft *b*. In other words, vertically considered the cone is inclined to have its apex lower than the base, or have its axis inclined downward toward the apex. Horizontally considered, as will be seen from the plan view, Fig. 1, in which the cone is represented by dotted lines, the apex is at one side of the hood, while the base reaches to the other side, or thereabout. In other words, the axis of the cone, horizontally considered, is in an oblique position. By this position of the cone, I cause its acting-surface for engaging the snow to face the bank of snow in front, and to be almost horizontally above the bottom of the hood, as appears from an inspection of Figs. 2 and 4. This cone so hung and positioned (and I may here remark that when I speak of a cone for the purposes of this invention I mean a tapering body, whether it be a full cone or a truncated cone or a tapering body with slightly convex or concave faces, whose apex, however, shall be inclined and obliquely placed in manner described) is provided with a series of blades, *f*, which are in fact scooping-blades, being, as the drawings show, lapped to form scoops for taking up the snow. By preference these blades are curved, as in the drawings, the amount of curvature toward the apex of the cone being greater than toward the base, as appears more clearly from Fig. 3 of the drawings. Moreover, the blades are narrower toward the apex than toward the base, which is also clearly shown. By this means, when the cone is rapidly revolved and the platform A advanced toward the bank of snow by suitable motive power, the blades will scoop up the snow from in front and beneath them, and will convey it partly under the influence of centrifugal force toward their outer or upper ends, from which the snow will be discharged. Whether these blades are projections attached to a conical body portion, as in the drawings, or whether they are formed by making helical grooves in a cone, is immaterial for the purposes of this invention, provided that said grooves are limited in depth in such manner as to leave the periphery from which the blades project substantially conical.

The hood D in which the cone has its bearings has sundry characteristics, which I will now proceed to describe. In the first place its upright side walls, *g g*, are set to flare, as in Fig. 1, so as to be farther apart at the front end of the snow-plow than toward the rear. This is for the purpose of enabling the snow-plow to be moved on curves, so it may not be jammed by the banks of snow between which it is being propelled. Moreover, to these flaring sides there may be attached, when occasion requires, additional flaring cheek-pieces *h h*, which cheek-pieces are detachable, so that they may not be in the way when not required, their object, when used, being to gather in a larger proportion of snow and make a wider path than without their use would be possible.

The bottom *i* of the hood D, which is arranged horizontally beneath the cone E, as in Fig. 2, is shown in Fig. 4 to be constructed with an oblique front cutting-edge, *j*, said edge being more or less approximately parallel with the axis of the cone or otherwise placed obliquely to have a shearing action on the snow through which said blade is propelled.

The upper part of the hood D, where the same extends over and above the cone, has an opening, *l*, (see Fig. 3,) on one side—that is to say, on the side toward which the blades rise during the revolution of the cone—and this opening can be closed by a gate or door, *m*, above which is a deflector, *n*. When the gate *m* is open, the snow will be thrown by the cone through the opening *l* and discharged on that side of the machine toward which the apex of the cone is pointed; but the top of the hood has also another opening, *o*, near the opposite side, which opening *o* can be closed by a gate, *p*, (see dotted lines, Fig. 3,) and in addition to this gate *p* there is a deflector, *q*, on the upper front portion of the hood on the side toward which the base of the cone is placed, as appears from Fig. 1 of the drawings. When the gate *m* is closed and the gate *p* is opened the snow will be thrown in the direction indicated by full arrows in Fig. 3 of the drawings; but when the gate *p* is closed and the gate *m* is opened the snow will be thrown in the direction of the dotted arrows which are represented in Fig. 3.

The front of the hood D at its upper portion has an inclined shield, *r*, (see Fig. 2,) which enables the plow to gather in a higher bank of snow, and prevents the snow from being thrown over the hood onto the driving-gear. The lower lip, *s*, of this shield *r* approaches closely to the base portion of the cone, and helps to confine the snow which is being actuated by the operation of the machine to the cone until expelled therefrom in proper manner. The inclined shield *r* serves also (as Fig. 1 shows) to hold the deflector *q* in the proper position.

It will be perceived that by the peculiar position of the cone E the blades *f* practically extend from side to side of the plow (see Figs. 2 and 4,) so that they act on the entire front of the snow-bank, serving to slice off the snow and conduct it away through the openings *l* or *o* by centrifugal force. The lower parts of the blades assume positions substantially parallel with the level of the track or ground on which the plow moves. This appears also from Fig. 2 of the drawings.

By the term "scoop-shaped blades," as employed in the claims, I intend to include such blades or projections upon the conical body portion of the plow as are provided with edges, so bent, turned, or inclined with respect to the main portion of the blades as to form slicing-shares and (in combination with the conical body portion) lifting-chutes for the snow, and whether the bent, turned, or inclined portion is formed by fashioning or shaping the same integrally with the main portion of the blade by casting or otherwise, or whether it is formed by an auxiliary flange secured to said main portion.

I claim as my invention and desire to secure by Letters Patent—

1. In a snow-plow, the excavating and lifting cone E, placed in an inclined position and obliquely to the vertical and horizontal planes, so that its apex points forward and downward and laterally, substantially as described.

2. In a snow-plow, a cone having curved blades, which are narrower toward the apex of the cone than toward its base, substantially as described.

3. In a snow-plow, the cone E, provided with curved scoop-shaped blades for lifting and throwing the matter excavated by centrifugal force.

4. In a snow-plow, the inclined cone E, provided with curved scoop-shaped blades *f* for lifting and throwing the matter excavated by centrifugal force, as described.

5. The cone E, having curved lifting-blades *f*, the curvature of said blades being greater toward the apex than toward the base of the cone, as described.

6. The combination of the cone E and its blades with the hood D, having openings *l o* and gates *m p*, substantially as and for the purpose described.

7. The combination of the cone E and its lifting-blades with the hood D, having opening *o*, door *p*, and top deflector, *q*, substantially as and for the purpose specified.

8. The cone E, having scooped blades *f*, that are narrower toward the apex than toward the base of the cone, as and for the purpose described.

9. The hood D of the snow-plow, the same being provided with the downwardly and backwardly inclined front shield, *r*, and overhanging lip *s*, as and for the purpose specified.

10. In a snow-plow, the hood D, having inclined front shield, *r*, snow-discharge opening *o*, and deflector *q*, said deflector being connected to said shield, as described.

11. A rotary snow-plow consisting of the cone E, having a series of scoop-shaped curved blades, said cone being located to have its apex

point downward and forward, said blades forming slicing-knives and lifting-chutes, substantially as and for the purpose described.

12. The combination of the rotary cone E, having slicing and lifting blades *f*, with a hood, D, having oblique-edged bottom plate, *i*, opening *l*, and door *m*, as and for the purpose specified.

13. The combination, with the cone E, which is placed diagonally downward and forward across the forward end of the truck, of blades *f*, carried by said cone and arranged to extend from side to side transversely across the face of the truck, as specified.

14. The combination of the hood D, having discharge-opening, with a revoluble cone, E, and blades *f*, carried by said cone, said blades being arranged so that they will assume positions transverse to the track, as specified.

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Witnesses:
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