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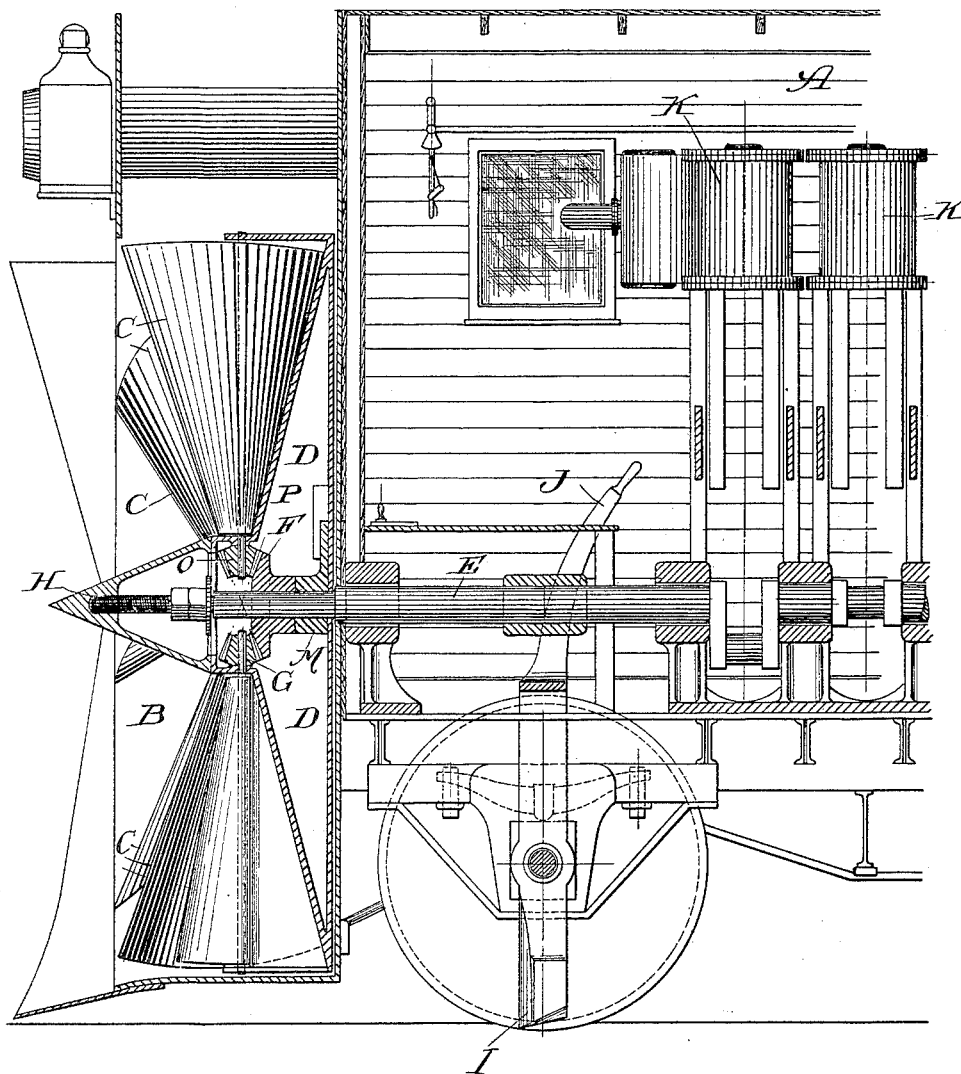
4 Sheets—Sheet 1.

J. W. HAUGHAWOUT.
ROTARY SNOW PLOW.

No. 419,149.

Patented Jan. 7, 1890.

Fig. 1.



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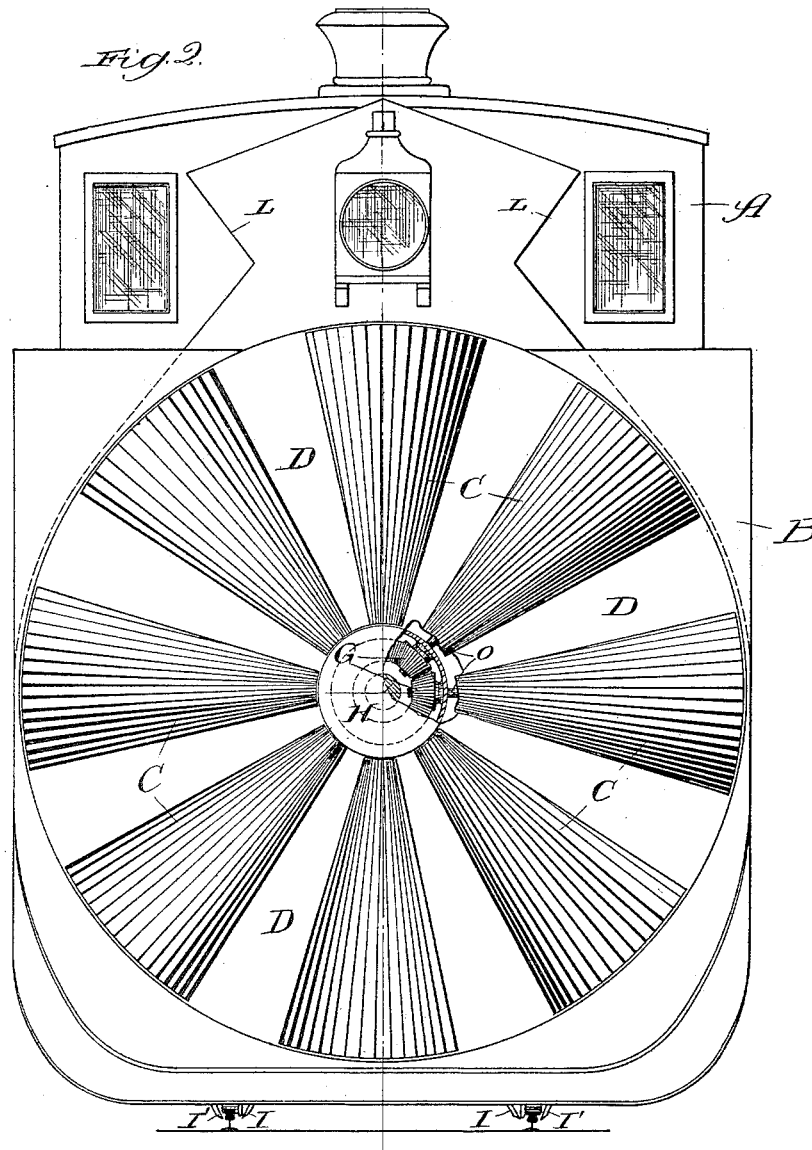
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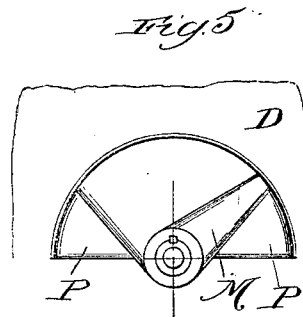
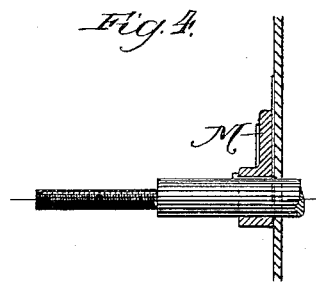
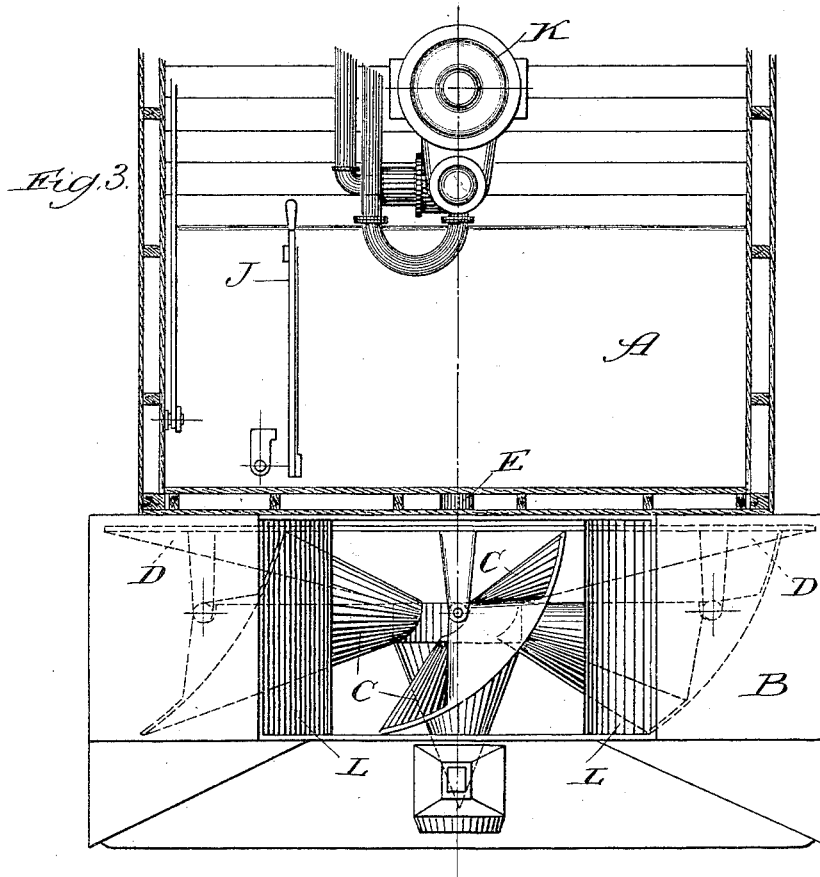
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J. W. HAUGHAWOUT.
ROTARY SNOW PLOW.

No. 419,149.

Patented Jan. 7, 1890.



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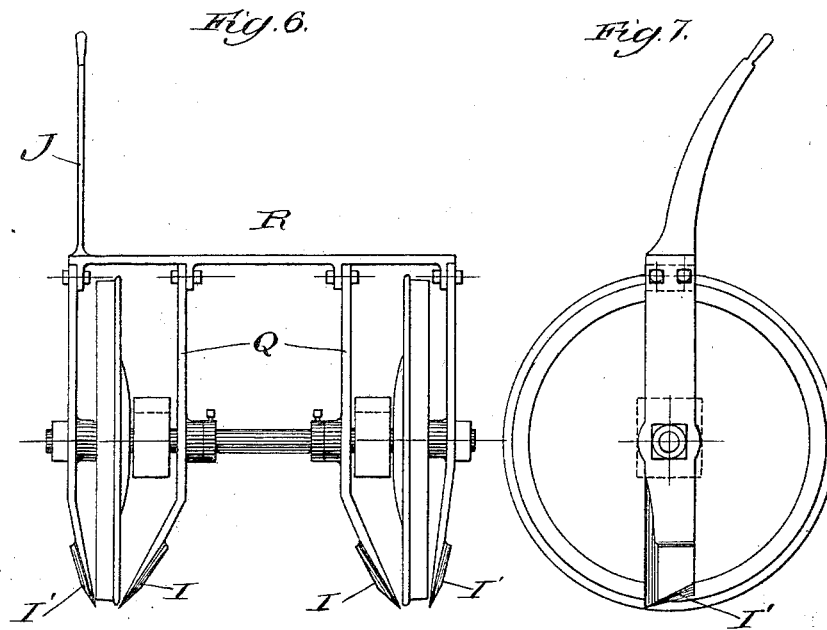
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ROTARY SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 419,149, dated January 7, 1890.

Application filed August 16, 1889. Serial No. 320,985. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. HAUGHAWOUT, a citizen of the United States, residing at Omaha, in Douglas county, Nebraska, have invented a certain new and useful Improvement in Rotary Snow-Plows, of which the following is a specification.

The object of my invention is to construct a rotary snow-plow that shall comprise a series of automatically-reversible scoops or cutting-blades and suitable mechanism for reversing the scoops to enable the wheel to clear the snow from the track when driven in either direction, and, furthermore, in providing suitable flanges to assist the snow-plow in its work; and my invention consists in the features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 represents a vertical longitudinal section of the front end of the snow-plow car, showing the scoops, the driving-shaft, &c.; Fig. 2, a front elevation, partly broken away to show the reversing mechanism; Fig. 3, a plan view of Fig. 1 with the roof of the snow-plow car removed; Fig. 4, a detail view of the shaft and stop; Fig. 5, a front elevation of Fig. 4; Fig. 6, a front elevation of the flanges, and Fig. 7 a side elevation of the same.

A is the snow-plow car; B, the snow-plow case; C C, the reversible scoops or blades; D, the cone or disk on which the scoops are carried. E is a driving-shaft; F, a cog secured to the driving-shaft; G G, cogs mounted on the inner ends of the reversible scoops, meshing with the cog F; H, a cone secured to the front end of the shaft E; I I', flanges, and J a lever for operating the same.

In constructing my new plow I first make a car of any suitable size, which is intended to be placed at the head of the train. The snow-plow is placed at the front end of this car, its shaft running into the same. Within the car I place the engine or other means of furnishing the power required to drive the plow. In the drawings I have shown two vertical cylinders K K, placed above the snow-plow shaft and driving the latter by means of suitable piston-rods. (Not shown.)

I have not illustrated in detail the means

of driving the plow, inasmuch as it is a matter of no especial importance and not in any way a part of the present invention.

I next construct, preferably of boiler-iron, the case B, which is rigidly secured to the front end of the car A. This case, as is shown more particularly in Figs. 1 and 2, is made cylindrical in form and of a proper size to fit closely to the circumference of the plow and inclose the same. It is provided at the top with an opening the sides of which I incline toward the right and left at an angle of, say, forty-five degrees.

I next construct the shaft E of any suitable length and diameter. This is to be supported in suitable bearings within the car and projects forward out of the same. Over the outer end of this shaft I pass the snow-plow cone D. This cone is preferably made of boiler-iron of a suitable diameter to fit within the case B. The shaft E is provided with a shoulder against which the cone rests, and the latter is then held in place by nuts or in any other suitable manner. At the center the cone is provided with a forwardly-extending projection through which the shafts of the reversible scoops pass, as shown in Fig. 1. I next rigidly secure to the shaft the lug M and the gear-wheel F, as shown more particularly in Fig. 1.

I next construct the reversible scoops C. These scoops are made of boiler-iron or other suitable material, and are curved in such manner that each one of them forms, as it were, a portion of the surface of a cylinder. The shape of these cutting-scoops is more particularly shown in Figs. 2 and 3. These scoops, of which I prefer to use eight, though any other desired number may be employed, are all hinged to the cone D, the hinges being so formed relatively to the surface of the cone D that the shafts or axes of the reversible scoops shall form the radii of the snow-plow and be in a plane substantially parallel to the front end of the car or at right angles to the shaft E. It will be understood that I do not intend to limit myself to this exact method of connecting the scoops and the cone, the object of this part of my invention being to connect the cone and the reversible

scoops to each other in such a manner that the scoops may be turned to present either edge to the snow. Each of these scoops is provided at its inner end with a shaft O, which passes through the forwardly-projecting portion of the cone D and is provided with a cog G, rigidly secured thereto. Each of these cogs G is intended to mesh with the cog F, attached to the driving-shaft. In place of these cogs G a single tooth or lever may be secured to the end of the shaft O, to be operated in like manner by the cog F, the purpose of this part of the invention being to furnish suitable means whereby the movement of the cog F through a portion of a revolution shall operate to revolve the shaft O, thereby turning the reversible scoops.

The lug M simply consists of a suitable piece of metal keyed to the shaft E and moving between two stops P, rigidly attached to the inside of the cone D.

On the outer end of the shaft E, I prefer to screw the cone-shaped point H, resting against the forwardly-projecting portion of the cone D and intended to pierce into and separate the snow when the plow is operated.

I next construct in the following manner the flanges I I': These consist, preferably, of wedge-shaped cutting-tools, of which I prefer to use one on each side of the forward wheels of the snow-plow car, as shown more particularly in Figs. 6 and 7. They are supported by and revolve upon the axle of the car. The shanks or arms Q of these flanges extend upward substantially parallel with the wheels, and are connected just above the latter by means of a bar R. To this bar I attach a lever J, extending up into the car, by which the flanges are to be operated.

My device operates as follows: Power is applied to the shaft E to rotate it in the desired direction. As it revolves it carries with it the cog-wheel F, and the latter, meshing, as has above been described, with the cogs or levers on the scoop-shafts, turns each of the scoops until further revolution of the scoops is prevented by their rearward edges coming into contact with the surface of the cone, their forward edges being offered to the snow. The scoops being held rigidly through their contact with the surface of the cone, as the plow is revolved the forward edges of the scoops will cut into the snow with a boring movement and throw it upward and sideways through the opening at the top of the case. If now it be desired to reverse the plow and cut in the contrary direction, all that is necessary is to reverse the motion of the shaft. When this is done, it will be seen that the cog F, being carried in the reverse direction, will operate all of the smaller cogs attached to the scoop-shafts and rotate the scoops until the edges which were formerly presented to the snow shall have come into contact with the surface of the cone and the edges formerly in contact with the cone will

be presented to the snow. It will thus be seen that the mere reversal of the motion of the shaft operates automatically to reverse the scoops, so that in whichever direction the shaft be driven, either to the right or left, the scoops will be turned so as to present a series of cutting-edges to the snow, and so that their rearward edges will be in contact with and supported by the rigid surface of the cone.

In order to prevent too great a strain upon these scoops from their contact with the surface of the cone, I prefer to provide the lug M and the projections P, the construction of which has already been set forth. As the shaft rotates in one direction or the other the projection M is carried along with it until just at the time the rearward edges of the scoops strike the cone the projection M strikes against one of the stops P, and during any further operation of the plow the cutting strain is borne equally by the rearward edges of the scoops resting in contact with the cone and the lug M in contact with one or the other of the projections P.

The operation of the flanges used in connection with this device is very simple, and will be easily understood from an inspection of the drawings. When the lever J is pulled backward, the flanges will be forced into a substantially-vertical position, one on each side of the forward wheels and extending some little distance below these wheels, as shown in Fig. 6. By reason of their being mounted upon the axle of the car they are held constantly in this position with their points about an inch below the surface of the rail. This is more particularly shown in Fig. 2. It will further be seen that, while held very close to the rails, the flanges are prevented from coming in actual contact with them by means of the wheels. In this position the flanges aid the snow-plow very materially by clearing away substantially all of the snow that would otherwise become clogged against the rails. When it is desired in passing a crossing or at any other time to change the position of the flanges, this is accomplished by simply moving the lever J forward, the flanges being then thrown upward and backward, so as to clear the rails. The lever J should of course be provided with suitable means for holding it fixedly in any desired position.

Although I have described a somewhat specific form in which my invention may be embodied, I do not wish to be limited thereto, inasmuch as I consider the gist of my invention to consist in constructing a snow-plow provided with one or more double-edged scoops which engage with the driving-shaft by means of suitable mechanism and are automatically reversed by the reversing of such shaft in such manner as to present the cutting-edges thereof toward the snow whether the shaft be driven in one direction or the other, and any method of construction which accomplishes this automatical reversing of the

scoops by means of their engagement with the shaft I consider within the spirit of my invention; and it will be evident that the disk D need not be cone-shaped, as a hollow hub would answer the purpose and support the scoops.

I claim—

1. In a rotary snow-plow, the combination of a driving-shaft having a cog-wheel mounted thereon, a cone or hub revolving upon such shaft, and a series of reversible scoops hinged to the cone and provided with cogs or levers meshing with the cogs on the driving-shaft, whereby when the revolution of the shaft is reversed the scoops are automatically reversed, so as to cut and throw the snow in whichever direction the shaft is revolved, substantially as described.

2. In a rotary snow-plow, the combination of a driving-shaft, a cone or hub revolving

thereon, a series of double-edged scoops hinged to the cone and adapted to be automatically reversed by the reversal of the shaft, and one or more pairs of flanges mounted upon the axle of the snow-plow car, extending down each side of the wheels to a point below the surface of the rails, and prevented by the wheels from coming into contact with the rails, to aid the plow in clearing the snow from the track, substantially as described.

3. A rotary snow-plow provided with a series of double-edged scoops engaging with the driving-shaft and adapted to be automatically reversed by reversing the revolution of such shaft, substantially as described.

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Witnesses:

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