

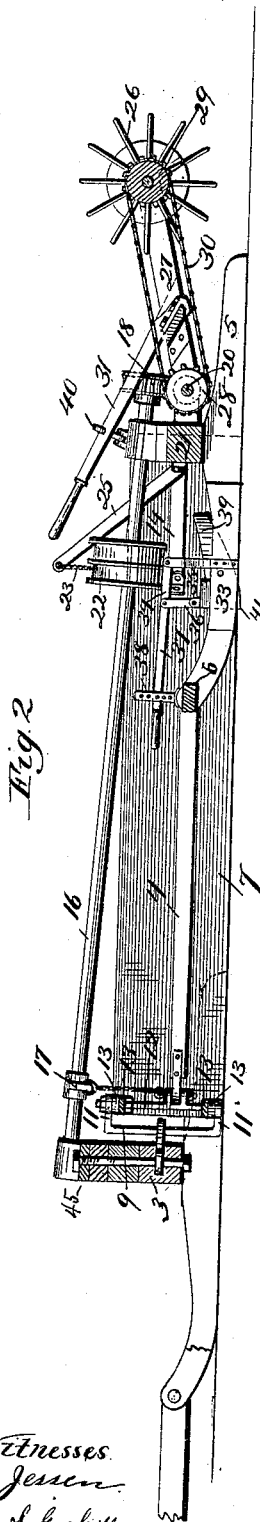
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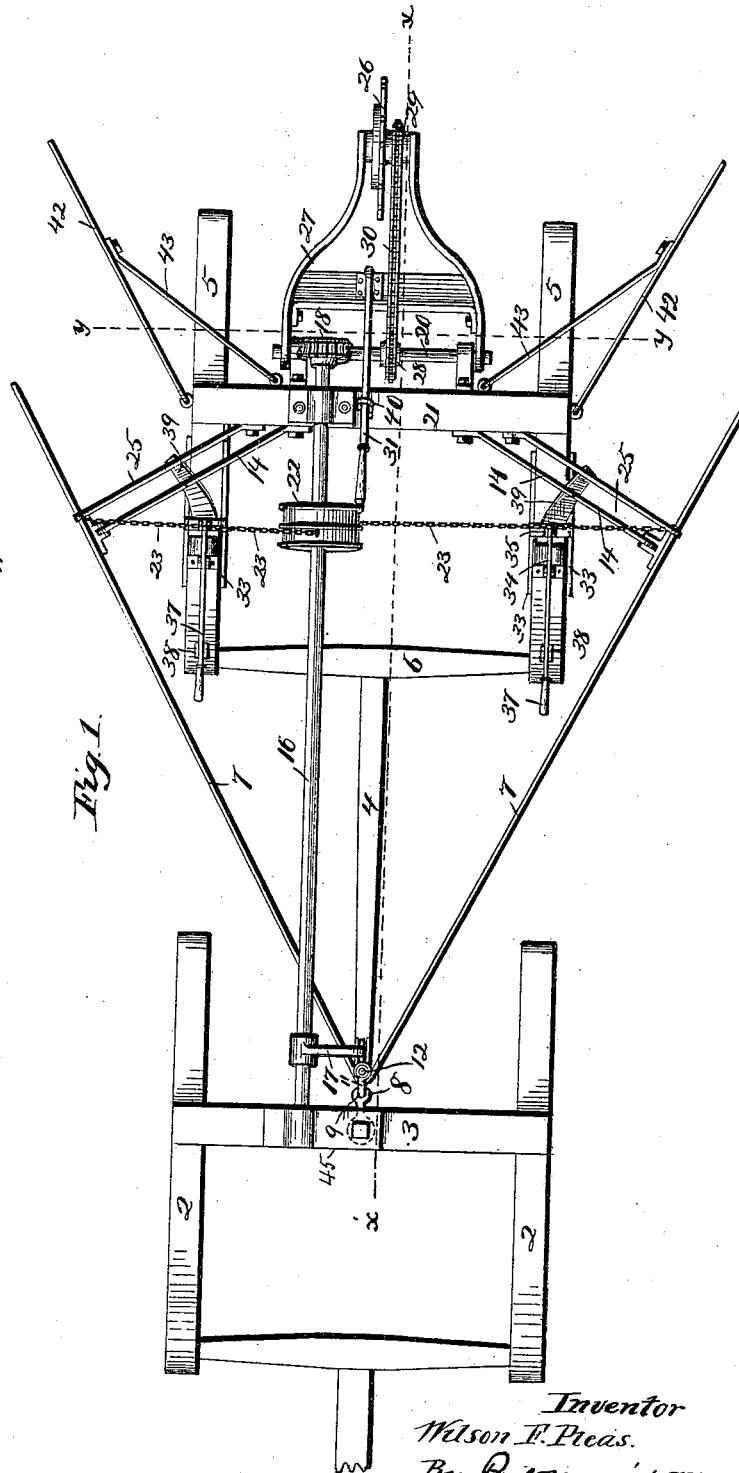
W. F. PLEAS.  
SNOW ROAD MACHINE.

No. 419,351.

Patented Jan. 14, 1890.



Witnesses  
J. Jensen.  
Roy. S. Luskitt.



Inventor  
Wilson F. Pleas.  
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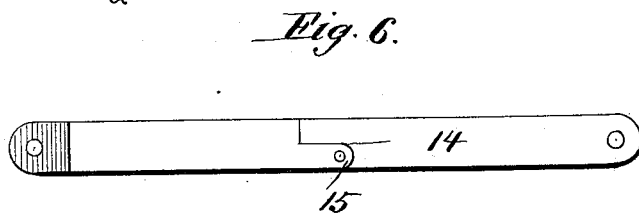
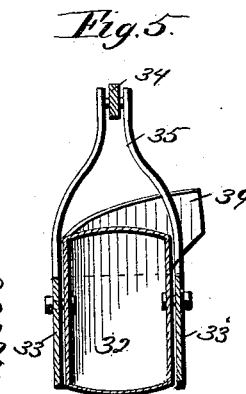
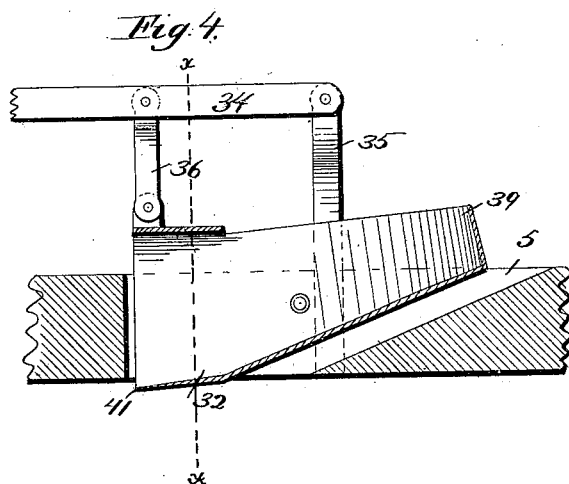
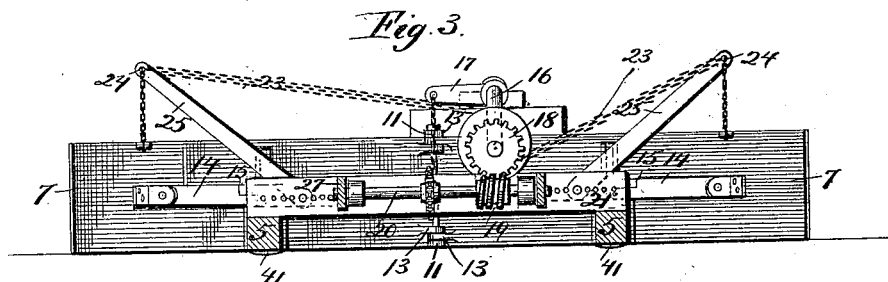
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No. 419,351

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Witnesses:  
*J. Jensen*  
*Ray S. Laskill*

*Inventor:*  
*Wilson F. Pleas.*  
*By Paul A. Munn Attys*

# UNITED STATES PATENT OFFICE.

WILSON F. PLEAS, OF EAU CLAIRE, WISCONSIN.

## SNOW-ROAD MACHINE.

SPECIFICATION forming part of Letters Patent No. 419,351, dated January 14, 1890.

Application filed July 23, 1889. Serial No. 318,399. (No model.)

### *To all whom it may concern:*

Be it known that I, WILSON F. PLEAS, of Eau Claire, Eau Claire county, Wisconsin, have invented certain new and useful Improvements in Snow-Road Machines, of which the following is a specification.

My invention relates to improvements in attachments for logging-sleds, designed to remove the superfluous snow from the pathway, and to furrow out in the ice ruts to guide the runners; and it consists in arranging between the bobs of a sled an adjustable V-shaped snow-plow, which by suitable attachments may be raised or lowered and adjusted in suitable position for clearing away the accumulated snow on the pathway, and also in an attachment to the sled-runner, whereby a groove or rut may be cut out through the accumulated snow and ice beneath to form a track for the runners.

My invention further consists in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a sled equipped with my improved attachments; Fig. 2, a longitudinal vertical section of the same on line *xx* of Fig. 1. Fig. 3 is a vertical cross-section on line *yy* of Fig. 1. Fig. 4 is a detail longitudinal vertical section of the rut-cutter. Fig. 5 is a vertical cross-section of the same on line *xx* of Fig. 4, and Fig. 6 is a detail of the jointed arm or brace of the snow-plow mold-board.

In the drawings, 2 represents the runners of the forward bobs; 3, the cross-beam of the same; 4, the reach connecting the forward and rear bobs 5 by means of the cross-roll 6.

7 are the wings or mold-boards of the snow-plow, which meet to form an acute angle extending forward, being hinged or jointed at the angle and secured to the cross-beam 3 by means of suitable link or other connection. While any suitable loose connection may be employed for this purpose, I prefer to use a clevis or loop 9, having a straight vertical bar, which passes through the eye 8, rigidly secured to the cross-beam, by means of which the position may be vertically adjusted in the eye 8.

The ears or lugs 11 of the clevis receive a

suitable bolt or pin 12, which passes also through the similar ears or lugs 13 of the wings 7, thus forming a vertical hinge, about which the plow can oscillate horizontally, and by means of which the wings are jointed together. The rear ends of the wings are held laterally extended by means of the pivoted arms 14, which are provided with a knife-joint 15, so that they can be folded up and raised, and thus allow the wings to be swung inward into proper supports when not in use. These braces are secured, preferably, to the inner face of the wings, and at their other ends to the cross-beam 21 of the rear bob. The arms 14 are of sufficient length to spread the wings of the plow so as to drop outside of the runners of the rear bob, as shown in Fig. 1.

In order to raise and lower the plow when desired, I prefer to arrange in suitable bearings, supported preferably on the cross-beams of the forward and rear bobs, the shaft 16, arranged above the snow-plow and slightly to one side of the middle line and in a vertical plane parallel therewith and sloping toward the rear, the forward bearing 45 being preferably pivoted centrally on the sled-beam to allow the sled to turn. This shaft is provided at its forward end with a lateral arm 17, rigidly secured thereto, and pivotally connected at its outer end to the snow-plow. The rear end of the shaft 16 is provided with the worm-wheel 18, which meshes with the screw 19 of the cross-shaft 20, journaled in suitable bearings to the cross-beam 21; also rigidly secured to the shaft 16 is the pulley wheel or drum 22. Attached to this drum are the lifting chains or ropes 23, which are attached at their outer ends, respectively, to the wings of the snow-plow, and by means of which the wings may be lifted when the drum is rotated to wind the chains upon it. I prefer to pass these chains or ropes through the eyes 24 of pivoted arms 25, by means of which the chains give a vertical pull to the wings of the snow-plow when operated, the arms 25 rising as the wings are lifted in the operation.

In order to partially rotate the shaft 16, so as to raise the plow, I prefer to provide the spider 26, journaled in the bail-shaped support 27, the ends of which are arranged to turn upon the shaft 20, and the spider rests upon the ground in the rear of the sled.

Suitable sprocket-wheels 28 and 29, arranged, respectively, on the shaft 20 and the spider 26, and carrying the link-belt 30, serve to transmit the motion of the spider to the shaft 20, which in turn operates the shaft 16 by means of the screw and worm-wheel, as described. A lever 31, pivotally secured to the sled and its outer end secured to the bail 27, serves to raise and lower the bail and its spider, as desired, the handle end of the lever being hooked down to the beam of the sled, so as to support the spider when in raised position, as shown in Fig. 2.

The runner attachment (shown in details, Figs. 4 and 5) is designed to cut a groove or pathway in the ice underneath the runner. This consists of a sharp-edged scoop or plow 32, which is arranged in the body of the runner, the runner itself being preferably cut away, and metallic side plates 33, arranged on each side of the runner, between which the scoop is pivoted, and is moved by means of a pivoted lever 34. This lever has one end fulcrumed upon a suitable support 35, secured to the sled-runner, and is connected by the link 36 to the forward end of the rut-cutter, by means of which the cutting end of the rut-cutter may be raised or lowered, the handle end 37 of the lever being adjusted at any desired height by means of a pin inserted in holes in the guide 38, in which the handle of the lever moves. The rut-cutter is provided, preferably, with an outwardly-curved wing 39, which extends backward and outward from said runner, so that the particles of ice and snow which are cut away and gathered by the rut-cutter are discharged outside of the sled-track. The body of the rut-cutter is preferably formed with a slightly-curved bottom and top with parallel straight sides, as shown in cross-section in Fig. 5. This is employed in the constructing of a sled-road, where the superfluous snow is cleared away by the plow, the remainder being wet down to form ice and then cut into a regular and uniform rut by means of the rut-cutter, in which the sled-runners are guided.

Operation: It being desired to clear loose fallen snow from the roadway, the snow-plow is lowered to the position shown in Fig. 1 by turning the spider backward by hand until the plow is as low as desired, so as to ride upon the surface of the ground, and the sled being drawn over the roadway the superfluous snow is thrown aside in the usual manner by the plow. When the work of clearing is finished, the lever 31 is unhooked from its support 40, allowing the spider 26 to drop upon the ground. With the continued forward movement of the sled the spokes of the spider sinking into the snow cause it to act as a drive-wheel operating the belt 30, and through it the shaft 20 and the shaft 16, whereby the forward end of the snow-plow is raised by the arm 17, and the lifting-chains 23 are rolled upon the drum 22, whereby the

wings of the snow-plow are raised, their jointed arms folding together and allowing the wings to swing inward and to rest upon the sled. The lever 31 is then depressed, so as to raise the spider from the ground, when the plow can be transported upon the sled. When in forming the ice-path it is desired to cut a runner-rut in the ice, the lever 34 is lowered so as to depress the cutting-edge 41 of the rut-cutter below the under face of the runner. This then serves, like the chisel of a plane, to cut an even groove in the ice, the particles of ice being discharged from the rut-cutter by means of the wing 39 outside of the sled. The operation of cutting the rut being completed, the lever 34 is again raised sufficiently to bring the cutting-edge of the rut-cutter above the bottom of the runner, and is secured in that position by a pin being inserted in the guide 38. In case it is desired to cut ruts simply and not to use the snow-plow, the forward bobs may be disconnected and the snow-plow and its attachments taken off from the rear bob and a team attached to the rear bobs to draw it over the roadway and cut the ruts. In this case I prefer to attach to the ends of the cross-beam of the bobs outwardly-extending wings 42, which are held in position by check or brace rods 43, which thus serve as track-clearers to throw the fragments of ice discharged from the rut-cutter out of the path.

I claim—

1. In a device of the class described, the combination, with a bob-sled, of a snow-plow arranged between the forward and rear bobs of the sled, having the wings 7 7 jointed together and loosely connected to the forward bobs, jointed braces secured to said wings, and the rear bobs adapted to hold said wings extended laterally, and suitable means operated by the forward movement of the sled to automatically raise said plow from the ground and deposit it upon the sled, substantially as described.

2. In a device of the class described, the combination, with a snow-plow having the wings 7 7 jointed together at their forward ends and loosely connected to the sled, of the jointed arms 14, secured to said wings and adapted to extend them laterally, the rock-shaft 16, arranged longitudinally of the sled above said snow-plow and having the arm 17 connected to the forward end of said snow-plow and provided with the drum 22, the lifting-chains 23, secured to said drum and to the wings 7 7 and provided with the pivoted arms 25, and the spider 26, supported in suitable bearings in the rear of the sled and having suitable connection with said shaft 16, and adapted as rotated upon the surface of the ground to operate said shaft 16 and to raise said plow, substantially as described.

3. The combination, with the runners of a sled, of a rut-cutter arranged in the body of the sled-runner and pivotally supported therein, having the cutting-edge 41, adapted to be

lowered beneath the under surface of the sled-  
runner, and the outwardly-turned wing 39,  
adapted to discharge the fragments of ice  
outside of the track of the sled, and the lever  
5 34, pivotally connected to said rut-cutter and  
adapted to raise and lower the same, substan-  
tially as described.

In testimony whereof I have hereunto set  
my hand this 24th day of June, 1889.

WILSON F. PLEAS.

In presence of—

CHARLES H. SAWYER,  
WM. H. TRAWLEY.