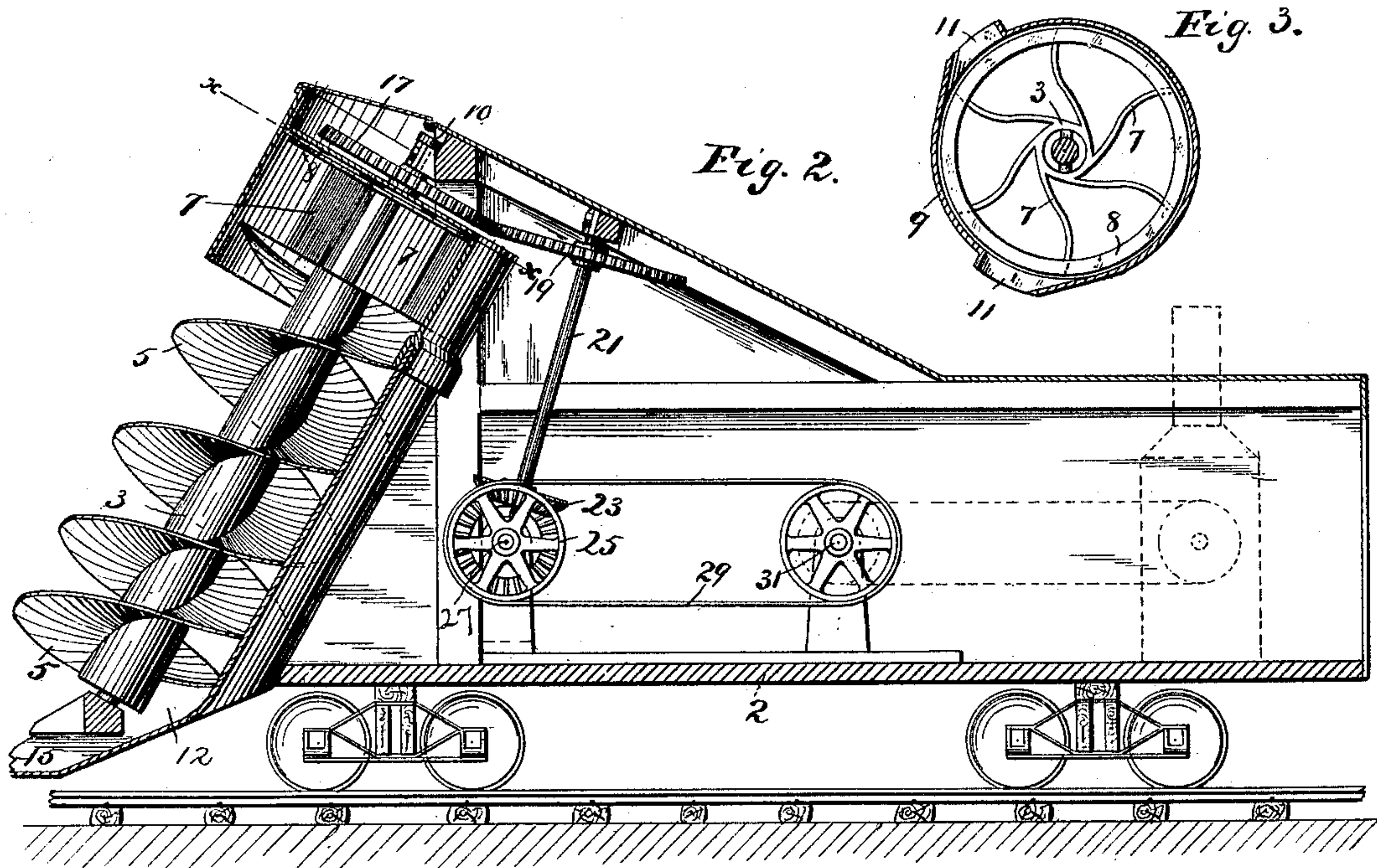
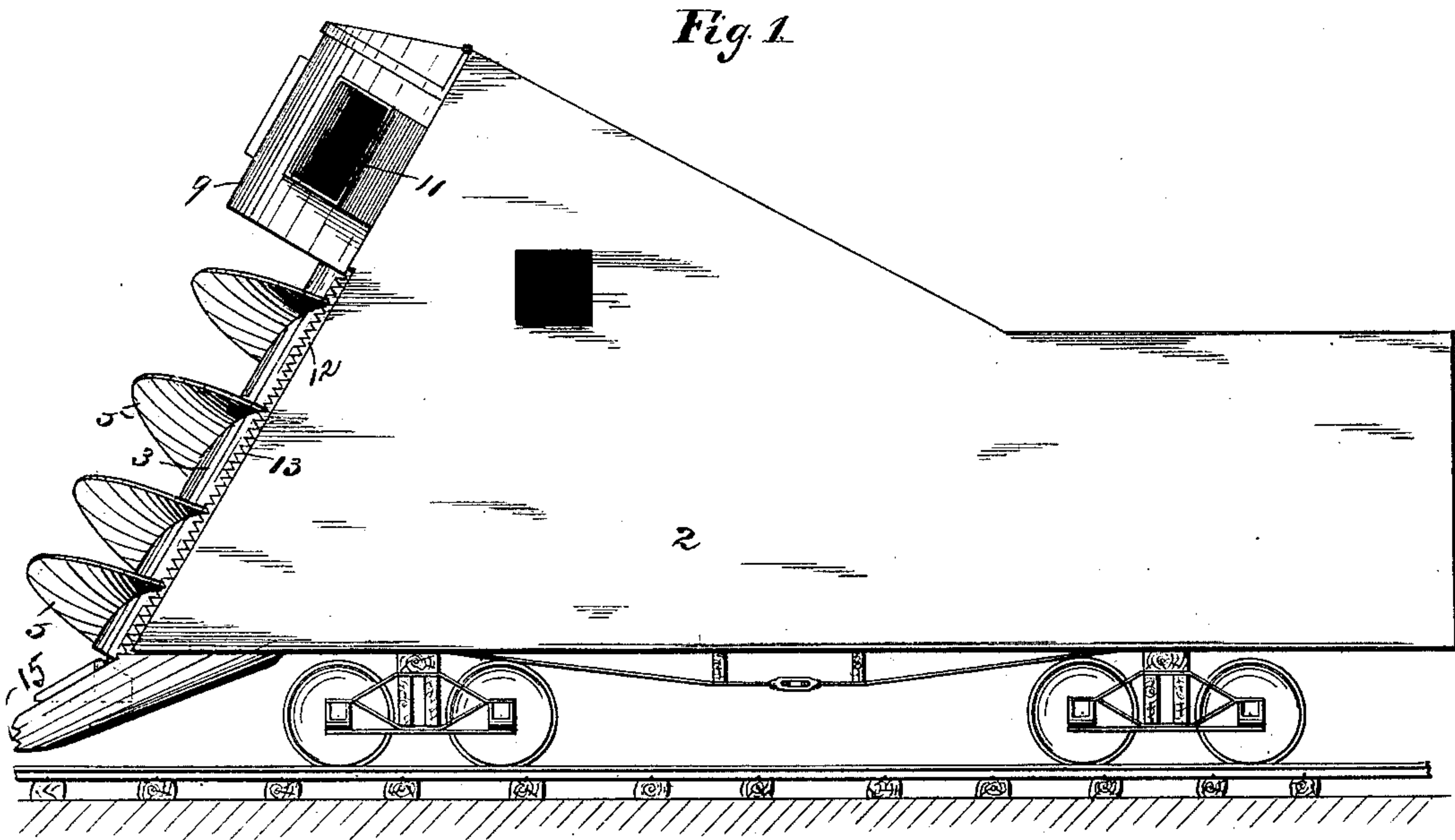


(No Model.)

A. S. BAKKETHUN.  
ROTARY SNOW PLOW.

No. 415,317.

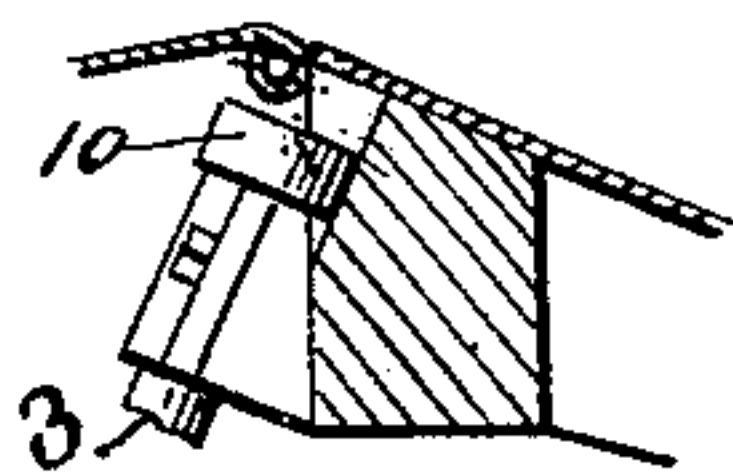
Patented Nov. 19, 1889.



Witnesses

J. Jensen.  
C. L. Nachtrieb

*Fig. 4.*



Inventor

Andrew S. Bakkethun.  
By Paul, Sanford & Merwin attys.



# UNITED STATES PATENT OFFICE.

ANDREW S. BAKKETHUN, OF WATERTOWN, DAKOTA TERRITORY.

## ROTARY SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 415,317, dated November 19, 1889.

Application filed September 4, 1888. Serial No. 284,528. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW S. BAKKETHUN, of Watertown, in the county of Codington, Territory of Dakota, have invented certain  
5 Improvements in Rotary Snow-Plows, of which the following is a specification.

The object of my invention is to provide a snow-plow by means of which a railway-track may be cleared from snow readily and  
10 rapidly and without an expenditure of a great amount of power in operating the machine.

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

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation, and Fig. 2 a longitudinal section, of a snow-plow constructed in accordance with  
20 my invention. Fig. 3 is a detail view of a section taken on line *x x* of Fig. 2. Fig. 4 is a detail of the journal or collar of the inclined shaft-bearing on the cross-bar.

In the drawings, 2 represents the car, upon  
25 which the operating parts of the mechanism are mounted. This car is also designed to carry a suitable engine by which the mechanism may be driven.

Secured in suitable bearings at the front  
30 end of the car is an inclined shaft 3, which is preferably arranged at an angle of about sixty degrees. A double-spiral blade or knife 5 is secured to the shaft, extending from its lower to its upper end, the two parts of  
35 the spiral blade being preferably opposite to each other. At its upper end the shaft is provided with a series of radial blades or wings 7. The upper end of the shaft is surrounded by a casing 9, having openings 11  
40 upon opposite sides thereof. This casing is open at its lower end, through which the spiral blades project, but is closed at its upper end, so that the snow carried up by the spiral knives and passing into the spaces between the radial wings 7 is thrown out at the  
45 opposite sides of the machine through the openings 11. These openings 11 may be provided with suitable slides or shutters for the purpose of closing or partially closing them  
50 when desired.

From the casing 9 to the lower end of the

shaft an apron 12 is provided, which extends around the rear of the spiral blade and incloses the same. The edges of this apron are preferably provided with teeth or serrations  
55 13, for the purpose of enabling it to more readily enter the snow. This apron extends also beneath the lower end of the shaft, forming a scoop or shovel for taking up the snow that lies near the track, and this part is also  
60 provided with teeth or serrations 15, to enable it to more readily break the ice which may form near the track. The edges of the spiral blades act as cutters and enter the snow as the plow is moved forward. As the  
65 shaft and blades are rapidly revolved, the blades, acting in this way, loosen and break up the snow, which passes upward between the spiral blades and enters the spaces between the wings 7.

It will be seen that the shaft is arranged at such an angle that the edges of the blades act as cutters for loosening and breaking up the snow. In this respect my invention is materially distinguished from a snow-plow  
75 heretofore constructed with a single spiral blade, in which the end of a blade only acted as a cutter and the spiral portion thereof served merely as a conveyer to conduct the snow to the wings at the rear end of the spiral.  
80 The double spiral also serves an important function, as it causes the snow carried up by the blade to be delivered equally at both sides of the machine, and thus to be discharged in substantially equal quantities from both sides  
85 thereof.

Any suitable arrangement of driving mechanism may be used for rotating the shaft and spiral blade. I have shown the shaft provided with a suitable gear-wheel 17, which is  
90 engaged by a gear-wheel 19 upon the shaft 21. The shaft 21 is driven through suitable bevel-gears 23 and 25 from a shaft 27. This shaft may be driven by a belt 29 from a shaft 31, which may be driven in turn directly  
95 from the engine.

I prefer to construct the plow with a shaft 3, which is of smaller diameter at the top than at the bottom, and to arrange the blades of the spiral so that there is a greater difference between them toward the top of the  
100 shaft, and I also prefer to make the blade of



the spiral curved or concave in cross-section, so that the blades hold the snow better as it is carried up by them. By making the shaft 3 of tapering form and increasing toward the top the distance between the blades and the spirals I cause the snow to move more freely as it approaches the top of the shaft, and thus prevent clogging. I also prefer to provide a rim 8, which is secured to the outer edges of the wings 7 for the purpose of stiffening the same. I also prefer to provide a collar 10, that is secured to the upper end of the shaft 3 and forms a bearing on the upper cross-bar in which the shaft is journaled. This causes a part of the weight of the shaft and the downward pressure of the snow to be borne by the upper cross-bar.

I claim as my invention—

1. The combination, with a suitable casing 9 and apron 12, of the shaft 3, inclined, as set forth, and provided with the double-spiral blades 5, oppositely arranged thereon, the radial wings 7, secured to the upper end of said shaft within the casing 9, and means for rotating said shaft, substantially as and for the purposes set forth.

2. The combination, with a suitable casing 9 and apron 12, of the shaft 3, smaller in diameter at the upper than at the lower portion, and the spiral blades set on said shaft with a

greater space between them toward the top than at the lower portion of the shaft, substantially as and for the purposes set forth.

3. The combination, with a suitable casing 9 and apron 12, of the inclined shaft 3, provided with a collar 10 at its upper end bearing on the cross-bar in which the shaft is journaled, the spiral blades secured to said shaft, and wings at the upper end of the shaft above the spiral blades, substantially as and for the purposes set forth.

4. The combination of the apron 12, extended at its bottom to form a scoop and having the edges of its sides and bottom serrated, the inclined shaft 3, mounted in front of said apron and provided with spiral blades 5, the casing 9, arranged at the upper end of said shaft and formed with openings on its opposite sides, the radial wings 7, secured to the upper end of said shaft within the casing above the spiral blades, and means for revolving said shaft, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand this 23d day of July, 1888.

ANDREW S. BAKKETHUN.

In presence of—

JOHN NICHOLSON,  
P. J. BERGEIM.