

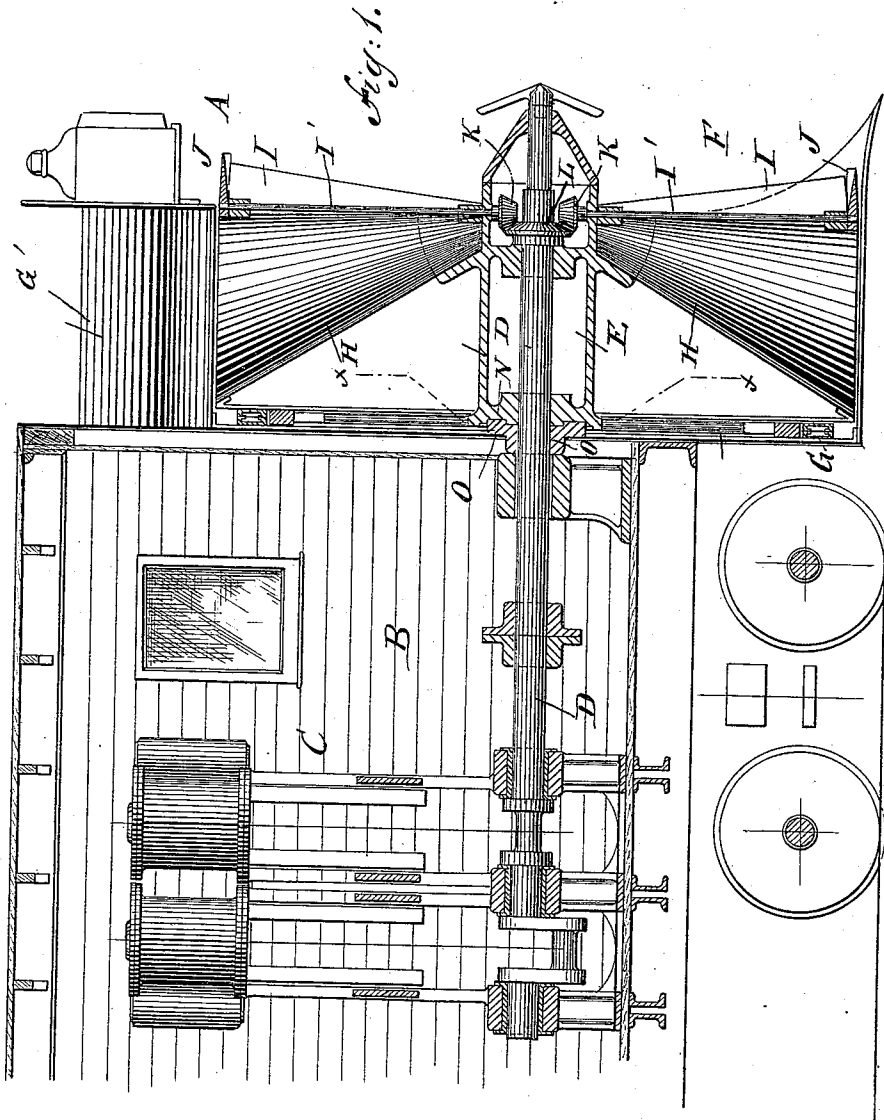
(No Model.)

2 Sheets—Sheet 1.

J. W. HAUGHAWOUT.  
ROTARY SNOW PLOW.

No. 450,487.

Patented Apr. 14, 1891.



WITNESSES:

*Chas. Viola.*  
*C. Sedgwick*

INVENTOR

*J. W. Haughawout*  
BY *Munn & Co.*  
ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

J. W. HAUGHAWOUT.  
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*Fig: 2.*

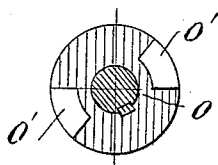
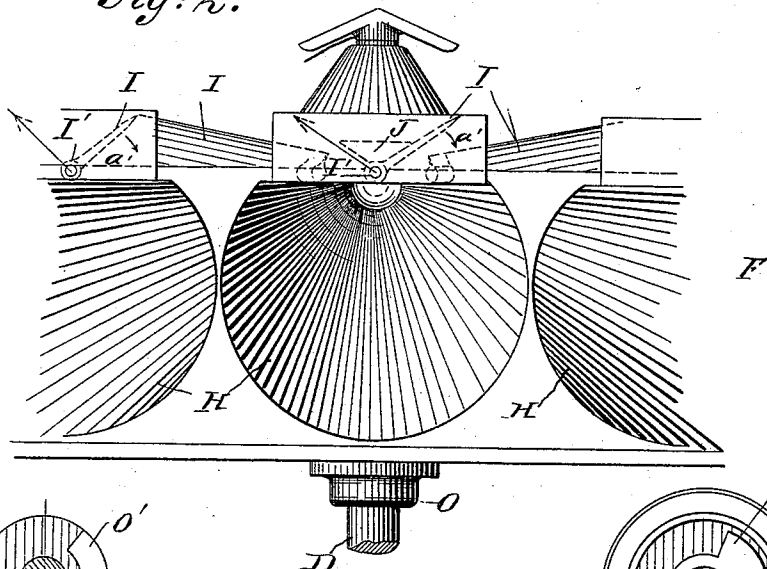


*Fig: 4.*

*Fig: 3.*

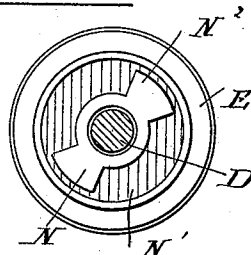
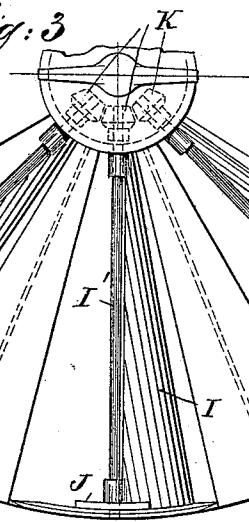


*Fig: 5.*

WITNESSES:

*Chas. Nida.*  
*C. Sedgwick*

INVENTOR

*J. W. Haughawout*  
BY *Munn & Co.*

ATTORNEY.

# UNITED STATES PATENT OFFICE.

JOHN W. HAUGHAWOUT, OF OMAHA, NEBRASKA, ASSIGNOR TO THE LESLIE BROTHERS MANUFACTURING COMPANY, OF PATERSON, NEW JERSEY.

## ROTARY SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 450,487, dated April 14, 1891.

Application filed May 21, 1890. Renewed March 9, 1891. Serial No. 384,198. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. HAUGHAWOUT, of Omaha, in the county of Douglas and State of Nebraska, have invented a new and Improved Rotary Snow-Plow, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved rotary snow-plow which is simple and durable in construction and can be quickly and readily reversed by simply reversing the main driving-shaft.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a plan view of the wheel. Fig. 3 is a face view of part of the same. Fig. 4 is a face view of the shaft-clutch, and Fig. 5 is a sectional face view of the clutch mechanism on the line *xx* of Fig. 1.

The improved rotary snow-plow A is mounted on the front end of a suitably-constructed car B, in which is located a motor C, connected with the main driving-shaft D, extending longitudinally through the front end of the car B and adapted to be turned in either direction from the said motor C. On the outer end of the main driving-shaft D is mounted loosely the hub E of the wheel F, preferably of the construction shown, and mounted to turn in a suitable casing G, having on top the usual outlet G' and secured on the front end of the car B. The wheel F is preferably provided with the cone-shaped augers H, arranged radially and having their front open ends partly covered by angularly-arranged knives I, each secured on a radially-extending shaft I', located in the middle of the opening of the respective auger H.

The knives I are held in either a right or left hand position by abutting against the triangular offset J, secured on the front of the wheel F in the middle of the auger-opening and near the outer end of the same. On the inner end of each shaft I' is secured a bevel-pinion K, meshing into a bevel gear-

wheel L, secured on the main driving-shaft D, the latter, as well as the pinions K, being inclosed in the hollow hub E, as is plainly illustrated in Fig. 1, so as not to come in contact with the snow passing into the wheel F.

The rear end of the hub E is provided with a clutch N, adapted to be engaged by a clutch O, secured on the main driving-shaft D. The face of the clutch O is provided with two lugs O', adapted to pass into recesses N', formed in the clutch N and arranged in such a manner that the lugs O' can travel a suitable distance in the said recesses N' before abutting against the projections N<sup>2</sup> of the clutch N in order to carry the wheel F around.

The operation is as follows: When the car B is moved forward, the motor C is set in motion, so that the main driving-shaft D is turned in one direction, and the clutch O, by its lugs O' abutting against the lugs N<sup>2</sup> in the recesses N', turns the hub E of the wheel F, so that the latter revolves in the casing G. The knives I then stand in the direction in which the wheel is rotated, so that the said knives cut the snow passing into the casing G and deliver the snow to the augers H, from which it is thrown out by centrifugal force through the opening G' to one side of the track. When it is desired to throw the snow to the other side of the track, the motion of the main driving-shaft D is reversed by reversing the motor C, so that the motion of the wheel F ceases for a moment. The clutch O, held on the main driving-shaft D, turns with the latter in an opposite direction, so that the lugs O' travel empty in the recesses N' until they strike the lugs N<sup>2</sup> at the opposite sides. During this movement the wheel F remains stationary; but as the main shaft D revolves the gear-wheel L rotates the pinions K, so that the shafts I' revolve and change the positions of the knives I, which latter swing rearward in the direction of the arrows *a'* (see Fig. 2) until they strike against the opposite side of the triangular offset J. When the knives I have moved into this position, the lugs O' strike the lugs N<sup>2</sup>, so that the hub E is now carried around in an opposite direction from the one in which it turned before, whereby the wheel F is reversed, and the knives I now stand in the di-

recession in which the wheel is rotated, thus cutting the snow in a manner similar to that above described and delivering the snow to the augers H, to be discharged by centrifugal force at the other side of the track.

It is understood that as soon as the hub E revolves with the shaft D then the motion of the gear-wheel L and the pinions K ceases, and the said pinions are actuated only when the shaft D is reversed, and the wheel F remains stationary during the time the lugs O' travel through the recesses N' to engage the lugs N<sup>2</sup> on their opposite sides.

Thus it will be seen that the knives I are automatically reversed from the main driving-shaft D when the latter is reversed, the said knives reversing preparatory to the wheel revolving in an opposite direction. Thus in whichever way the wheel F is revolved the knives I stand in a proper position to cut the snow and deliver the same to the augers.

I am aware that a wheel secured on a shaft and formed with rigid augers or pockets open at the front and top is not new, and I do not broadly claim such construction.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a rotary snow-plow, the combination, with a shaft, of a wheel mounted to turn loosely on the said shaft and provided with a series of radially-arranged augers open at the front, a clutch mechanism, substantially as described, for connecting the said wheel with the said shaft, so as to permit the latter to turn free of the said wheel during part of its turn before carrying the wheel along, and knives held in the front openings of the said augers and adapted to reverse during the free movement of the said shaft on reversing of the latter, substantially as shown and described.

2. In a rotary snow-plow, the combination, with a shaft, of a wheel mounted to turn loosely on the said shaft and provided with a series of radially-arranged augers open at the front, a clutch mechanism, substantially as described, for connecting the said wheel with the said shaft, so as to permit the latter to turn free of the said wheel during part of its turn before carrying the wheel along, knives held in the front openings of the said augers and adapted to reverse during the free movement of the said shaft on reversing of the latter, and intermediate mechanism, substantially as described, for connecting the said knives with the said shaft, as set forth.

3. In a rotary snow-plow, the combination, with a shaft, of a wheel mounted to turn loosely on the said shaft and provided with a series of radially-arranged augers open at the front, a clutch mechanism, substantially as described, for connecting the said wheel with the said shaft, so as to permit the latter to turn free of the said wheel during part of its

turn before carrying the wheel along, knives held in the front openings of the said augers and adapted to reverse during the free movement of the said shaft on reversing of the latter, a gear-wheel secured in the said shaft, and a pinion held on the shaft of each of the said knives and meshing into the said gear-wheel, substantially as shown and described.

4. In a rotary snow-plow, the combination, with a wheel mounted to turn and provided with a series of radially-arranged augers open at the top and front, of a radially-arranged shaft mounted to turn in the said wheel in the middle of the front opening of the said auger, and a single knife secured on the said shaft and adapted to extend to the front of the auger-opening and at angles thereto, substantially as shown and described.

5. In a rotary snow-plow, the combination, with a wheel mounted to turn and provided with a series of radially-arranged augers open at the top and front, of a radially-arranged shaft mounted to turn in the said wheel in the middle of the front opening of the said auger, a single knife secured on the said shaft and adapted to extend to the front of the auger-opening and at angles thereto, and a stop held on the said wheel to limit the outward movement of the said knife, substantially as shown and described.

6. In a rotary snow-plow, the combination, with a wheel mounted to turn and provided with a series of radially-arranged augers open at the top and front, of a radially-arranged shaft mounted to turn in the said wheel in the middle of the front opening of the said auger, a single knife secured on the said shaft and adapted to extend to the front of the auger-opening and at angles thereto, and means, substantially as described, for turning the said auger-shafts on the reversing of the wheel to cause the said knives to swing through the said augers, substantially as shown and described.

7. In a rotary snow-plow, the combination, with a wheel mounted to turn and provided with a series of radially-arranged augers open at the top and front, of a radially-arranged shaft mounted to turn in the said wheel in the middle of the front opening of the said auger, a single knife secured on the said shaft and adapted to extend to the front of the auger-opening and at angles thereto, a stop held on the said wheel to limit the outward movement of the said knife, and means, substantially as described, for turning the said auger-shafts on the reversing of the wheel to cause the said knives to swing through the said augers to butt against the other side of the stop, substantially as shown and described.

JOHN W. HAUGHAWOUT.

Witnesses:

T. S. GRIGOS,  
T. M. JONES.