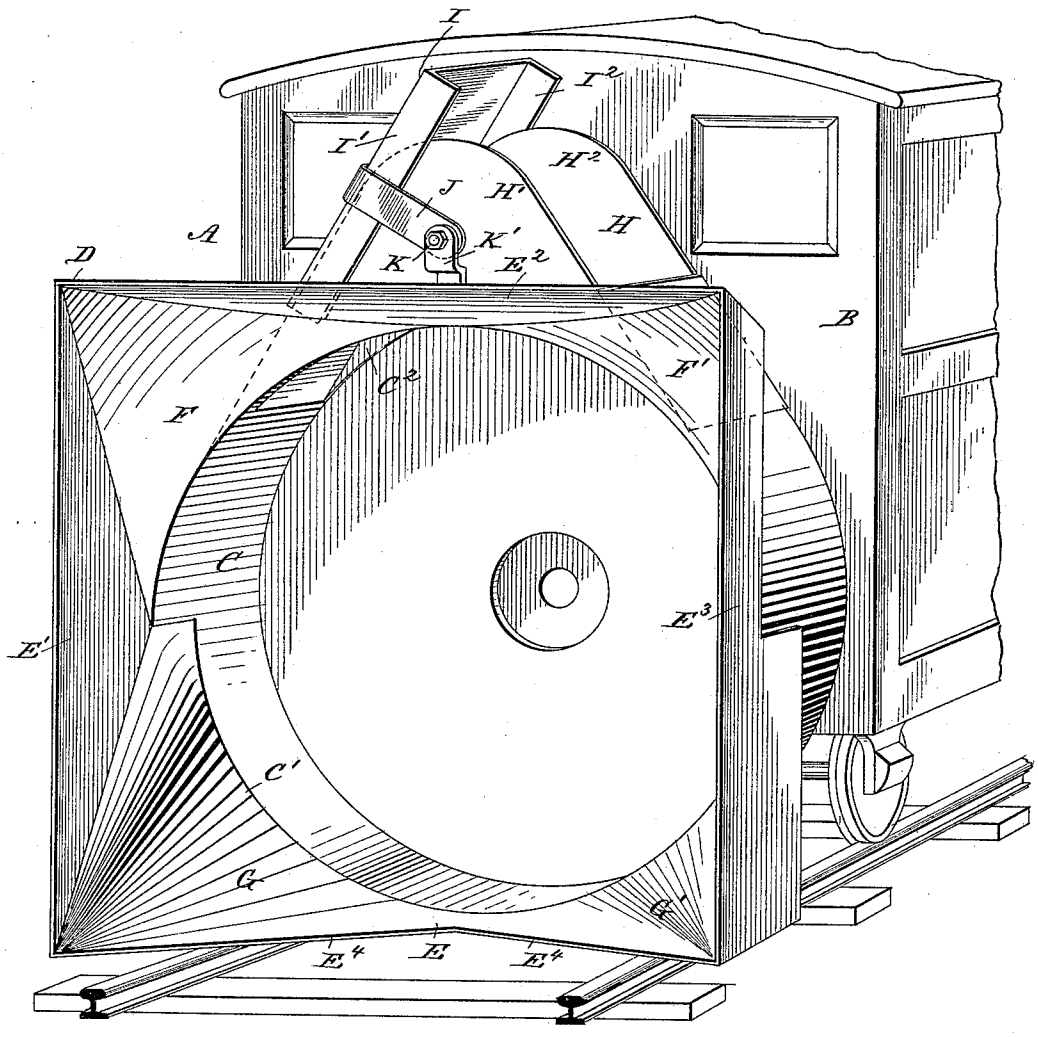
(No Model.) 2 Sheets—Sheet 1.

E. LESLIE.

CASING FOR ROTARY EXCAVATORS.

No. 391,904. Patented Oct. 30, 1888.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

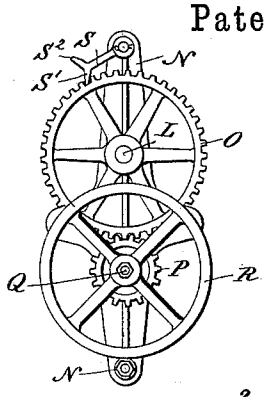
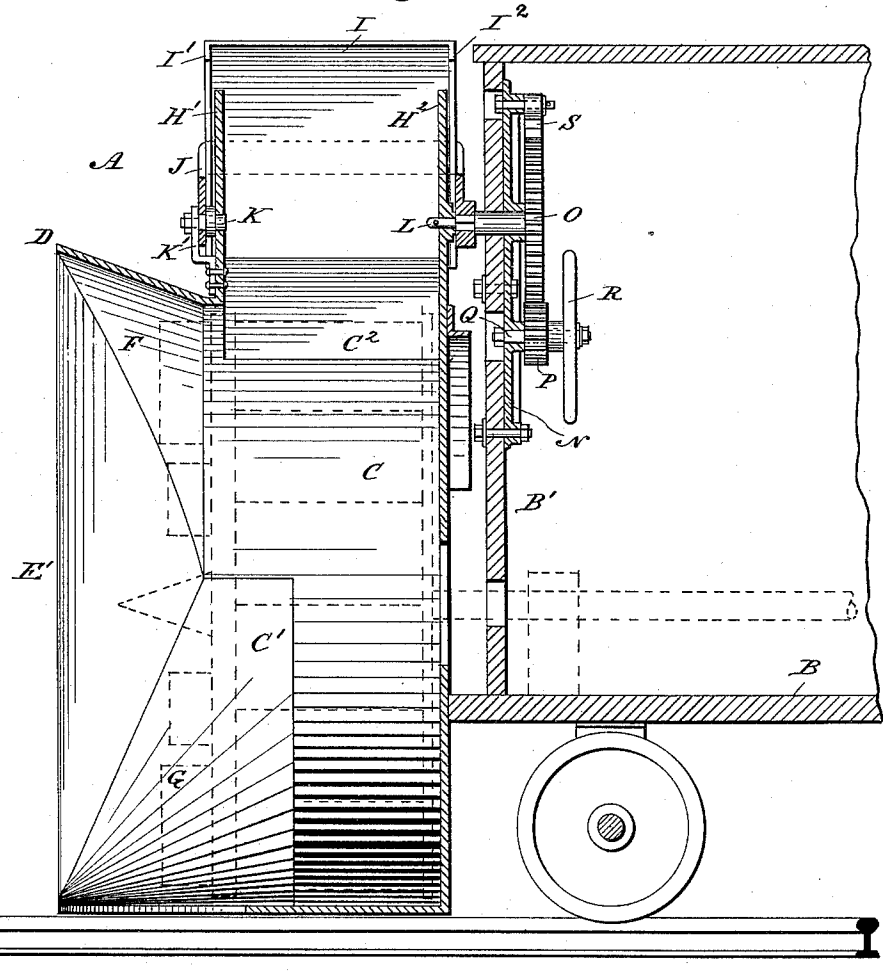


Fig. 2.



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UNITED STATES PATENT OFFICE.

EDWARD LESLIE, OF ORANGEVILLE, ONTARIO, CANADA.

CASING FOR ROTARY EXCAVATORS.

SPECIFICATION forming part of Letters Patent No. 391,904, dated October 30, 1888.

Application filed May 22, 1888. Serial No. 274,687. (No model.)

To all whom it may concern:

Be it known that I, EDWARD LESLIE, of Orangeville, in the county of Dufferin, Province of Ontario, and Dominion of Canada, have invented a new and useful Improvement in Rotary Excavators, of which the following is a full, clear, and exact description.

The invention relates to improvements in rotary excavators for removing snow, such as shown in Patent No. 317,809, granted to me May 12, 1885.

The object of the invention is to facilitate the entrance of the snow or other material into the excavating-wheel, and also to vary or regulate the tangent line on which the snow or material is discharged from the machine.

The invention consists in a new form and construction of the hood and in a novel form and arrangement of a tangent deflector upon the spout of the casing.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, 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 front perspective view of the improvement. Fig. 2 is a sectional side elevation of the same, and Fig. 3 is a rear end view of the mechanism for adjusting the tangent deflector.

The casing A is secured in any suitable manner to the front end of a car, B. The said casing A is provided with the cylindrical part C, which is cut out at its front lower end, C′, as is plainly shown in Figs. 1 and 2. Within the casing A rotates a wheel for throwing the snow, which wheel is similar in construction to that shown in my patent above referred to, and therefore needs no special description here. The position of the wheel is indicated in dotted lines in Fig. 2.

To the front end of the cylindrical part C is secured a hood, D, provided with four flaring sides, E, E′, E^2, and E^3, of which the bottom or floor E is made in the form of a V, with straight cutting-edges that extend inwardly and meet or form the apex of the V in the center of the floor of the hood. The upper corners of the hood are composed of beveled corner pieces or gussets F and F′, which extend to the outer upper edge of the cylindrical part of the casing, and the lower corners of the hood D are composed of beveled corner pieces or gussets G and G′, extending from the front ends of the corners to the edges of the lower part, C′, of the cylindrical part C. These gussets G G′ form inclines having straight surfaces, up which the snow is passed free from packing, and the V-shaped front edge of the floor of the hood exerts a straight drawing cut in reverse inclined directions, which facilitates the operation and avoids all tendency of the snow to clog in the bottom of the hood.

The front rim of the wheel in the casing A is held in advance of the front end of the cylindrical part C. By the cutting out of the lower part, C′, of the casing, as before described, an opening is formed in the casing beneath the lower part of the wheel, under which opening the floor E extends and joins the casing C. The snow entering the hood D thus passes easily over the beveled floor E and gussets G G′ into the interior of the casing C and to the fan of the wheel. By making the floor E of the hood V-shaped I form two straight cutting-edges on the said floor, and I also give a long or gentle slope to said floor, so that the floor of the hood, when it enters a snow-drift, cuts the snow loose, and it passes easily up the gentle incline of the floor into the casing and the wheel therein. Heretofore, as in Jull's patent, No. 297,408, the floor edge of the hood has been made in the form of a deep circle, which necessarily presents a blunt slope, against which the snow packs and greatly impedes the advance of the machine.

In the upper part of the casing A is formed an opening, C^2, which leads to a discharge-spout, H, formed by the two upwardly-extending side pieces, H′ and H^2, rounded at their upper ends, as shown in Fig. 1. Above the spout H is held adjustably a circularly-movable tangent deflector, I, having flanges I′ and I^2 fitting over the sides of the discharge-spout H. The deflector I is fastened to a U-shaped arm, J, fulcrumed at its front end on a bolt, K, secured to the front side, H′, of the spout H, and also having its bearing in a plate or bracket, K′, fastened to the said side H′. The rear end of the U-shaped arm J is secured to a shaft, L, having its bearing in the side H^2 and in the plate N, secured to the inside of the front wall, B′, of the car B, as shown in Fig. 2.

The shaft L carries on its inner end a gear-wheel, O, which meshes into a pinion, P, secured on a shaft, Q, mounted to rotate in suitable bearings formed on the plate N.

On the shaft Q is secured a hand-wheel, R, for turning the said shaft Q so as to rotate the pinion P, which imparts a rotary motion to the gear-wheel O, whereby the shaft L is turned, and imparts a circular motion to the U-shaped arm J, which carries the tangent deflector I, so that by turning the hand-wheel R the tangent deflector I may be instantly swung to any desired position over the discharge-spout H. The upper ends of the sides of the spout H are rounded off upon a circle struck from the centers of the shafts K and L, respectively, the latter being in line with each other.

To the upper end of the plate N is pivoted a pawl, S, provided with the double ends S' and S^2, adapted to engage the teeth of the gear-wheel O at the right or left, so as to lock the said gear-wheel in position whenever the tangent deflector I is adjusted to a desired place over the discharge-spout H.

When the operator turns the hand-wheel R, the tangent deflector I moves over the open end of the discharge-spout H to any desired position, and the snow thrown outward by the wheel in the casing A passes against the under side of the said tangent deflector I, and by it is deflected, the tangent line assumed or taken by the outgoing snow being thus governed by the position in which the tangent deflector is placed, which position is subject at all times to the will of the operator, who can thereby govern the discharge of the snow in passing through towns and cities. As the tangent deflector I can be adjusted to either side of the discharge-spout H, the snow can be delivered on whichever side of the track may be desired. When the deflector I is swung into a horizontal position—that is, on the top of the spout H—the snow discharged by the wheel in the casing will be deflected, so as to fall within a short distance of the track; but when the tangent deflector is placed in an angular position, as shown in Fig. 1, the snow forced out by the wheel in the casing will fly off on a longer tangent line and fall at a greater distance from the side of the track. The distance at which the snow is discharged at either side of the track can thus be conveniently regulated by adjusting the tangent deflector I on the discharge-spout H by turning the hand-wheel R, and locking the gear-wheel O in position by the double pawl S. This capacity of the circularly-movable tangent deflector I over the spout to vary or regulate the tangent line in which the snow is discharged from the machine I believe to be a novel and important improvement in this class of machines.

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

1. In a rotary excavator, a hood constructed with four sides, of which the lower side has a straight V-shaped front edge, and beveled corner-pieces, substantially as shown and described.

2. In a rotary excavator, the cylindrical casing constructed with a section of its lower part cut away, in combination with the sloping floor of the hood extended under the said cut-away section, as herein described, whereby the entrance of the snow or other material is facilitated, as set forth.

3. In a rotary excavator, the combination, with a cylindrical casing having part of its lower front end cut out, of a hood formed on the front end of the said casing and provided in its bottom corners with corner-pieces or gussets leading to the lower cut-out end of the casing, substantially as shown and described.

4. In a rotary excavator, the combination, with the casing and delivering-spout, of a tangent deflector made adjustable on and over said spout, substantially as shown and described, to direct the stream of snow to any desired point and in different tangential lines at either side of the track, as set forth.

5. In a rotary excavator, the combination, with the delivery-spout and the tangent deflector mounted to move circularly over the spout, of gearing, arranged and operated essentially as described, for adjusting the position of the tangent deflector, as set forth.

6. In a rotary excavator, the combination, with the casing and delivering-spout, of the tangent deflector mounted to move circularly on or over the spout-gearing, essentially as described, for imparting a rotary motion to the said deflector, and a locking device for holding the said deflector in any desired position on or over the said spout, thereby governing the tangent line of discharge, as set forth.

7. In a rotary excavator, the combination, with the casing and a delivery-spout, of a tangent deflector held on top of the said spout, arms extending from the said deflector and pivoted on the said spout, a shaft on which one of the said arms is secured, said shaft forming one of the pivots, a gear-wheel held on the said shaft, a pinion meshing into the said gear-wheel, and a shaft carrying the said pinion and provided with a flange-wheel, substantially as shown and described.

8. In a rotary excavator, the combination, with the casing and delivery-spout, of a tangent deflector held on top of the said spout, arms extending from the said deflector and pivoted on the said spout, a shaft on which one of the arms is secured, said shaft forming one of the pivots, a gear-wheel held on the said shaft, a pinion meshing into the said gear-wheel, a shaft carrying the said pinion and provided with a gear-wheel, and a double pawl adapted to engage the said gear-wheel to lock it in position, substantially as shown and described.

EDWARD LESLIE.

Witnesses:
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