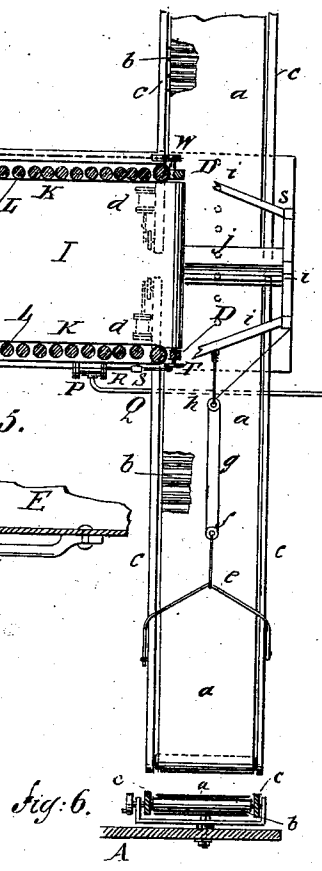
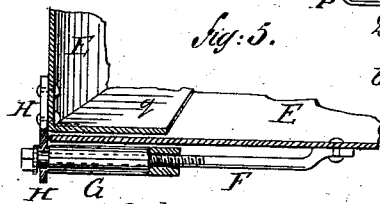
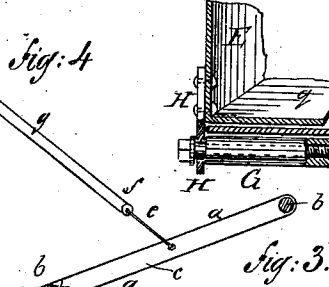
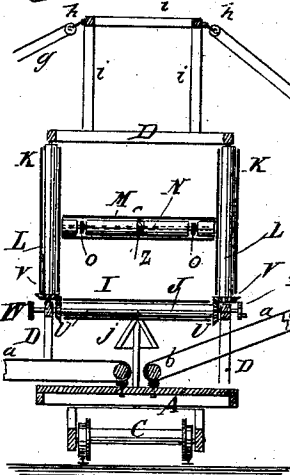
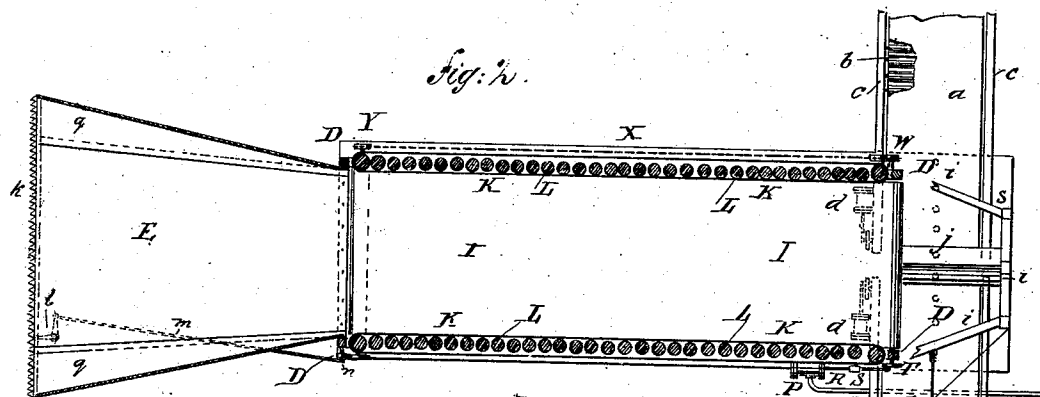
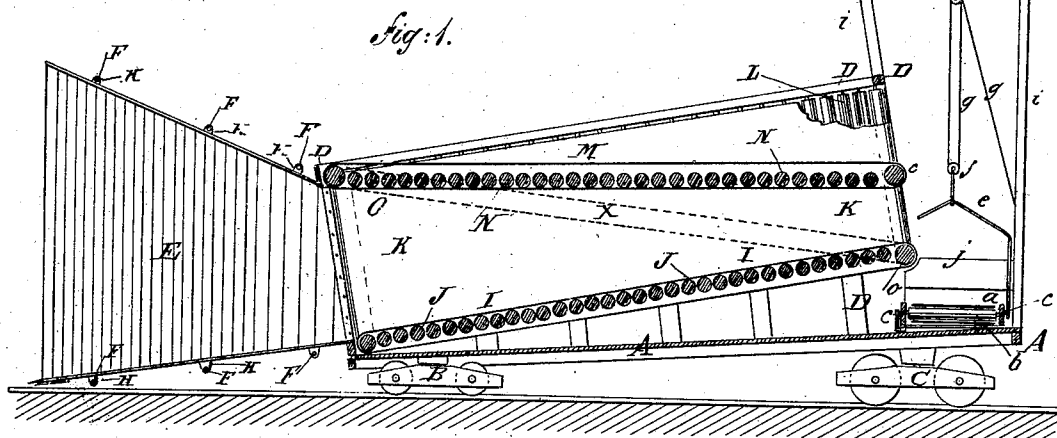


(No Model.)

D. E. GROVE.
SNOW PLOW.

No. 261,339.

Patented July 18, 1882.



WITNESSES:

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UNITED STATES PATENT OFFICE.

DAVID E. GROVE, OF DALLAS, TEXAS.

SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 261,339, dated July 18, 1882.

Application filed April 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, DAVID E. GROVE, of Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Snow-Plows, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming 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 my improvement. Fig. 2 is a sectional plan view of the same. Fig. 3 is a front elevation of the funnel. Fig. 4 is a sectional rear elevation of the improvement. Fig. 5 is a sectional view of a part of the funnel. Fig. 6 is a sectional detail view, showing the means for shifting the point of hinging of the frame which carries the apron.

The object of this invention is to facilitate the removal of snow from railway-tracks, and also to prevent the removed snow from being blown back upon the track.

The invention relates to a snow-plow constructed with a car having an adjustable funnel at its forward end to raise the snow from the track. Endless aprons carried upon rollers are arranged at the bottom and sides of the car to carry the snow back. A swinging frame carrying an endless apron and its rollers is arranged above the car to compress or pack the snow while being carried back, and hinged frames carrying endless aprons and their rollers, and provided with an adjustable mechanism, are arranged at the rear end of the car to carry the snow to the side of the track and clear of the track and ditches. The funnel is provided with a vibrating cutter-bar for separating ice and packed snow from the track in advance of the funnel. The cutter-bar and the various endless aprons are driven by small engines carried upon the car, all constructed and operating as will be hereinafter fully described.

A represents a flat car, the forward truck, B, of which is provided with smaller wheels than the rear truck, C, to give an upward inclination to the car-floor and bring the forward end of the said floor as near as possible to the track.

To the car A is attached an upright frame, D, to the forward end of which is attached a funnel, E. The top and bottom plates of the

funnel E are stationary, and the bottom plate is arranged with its forward edge close to the track. The side plates of the funnel E are bent inward or flanged, the said flanges overlapping the top and bottom plates, as shown in Figs. 3 and 5.

To the top and bottom plates of the funnel E are attached the inner ends of rods F, the outer ends of which have screw-threads cut upon them to fit into the threads of the long nuts G. The outer ends of the long nuts G have tenons formed upon them to pass through and fit into holes in the lugs H, where they are secured in place, and swiveled to the said lugs by nuts screwed upon their outer ends, as shown in Fig. 5, so that the funnel E can be expanded and contracted laterally by turning the said swiveled nuts G. With this construction, as the car A moves forward the snow upon the track slides up the inclined bottom plate of the funnel E and passes upon the endless apron I, which passes around a series of rollers, J, pivoted to the frame D in such a position that the endless apron I will have an upward inclination toward the rear of the car A.

The snow is kept in place upon the endless apron I by the endless aprons K, which pass around series of vertical rollers L, pivoted to the frame D.

As the snow passes back along the inclined apron I it is compressed and packed by the endless apron M, the series of rollers N, around which the said endless apron M passes, and the frame O, to which the rollers N are pivoted, and which is hinged to the forward roller N of the series, the said roller being also pivoted to the upright frame D.

To the side of the rear part of the car C is attached a small engine, P, Fig. 2, which receives steam, through the flexible pipe Q, from the locomotive-boiler.

The piston-rod R of the engine P is connected by a hinged connecting-rod, S, with a crank or crank-wheel, T, attached to the end of the rear roller J, to drive the endless apron I.

To the ends of the rear roller J are attached beveled-gear wheels U, Fig. 4, the teeth of which mesh into the teeth of the beveled-gear wheels V, attached to the lower ends of the rear rollers L, so that the endless aprons K will be driven from the rear roller J.

To the end of the rear roller J is also at-

tached a chain-wheel, W, around which passes an endless chain, X.

The endless chain X also passes around a chain-wheel, Y, attached to the end of the forward roller N.

Around chain-wheels formed upon the forward roller N pass one or more endless chains, Z, (see Fig. 4,) to which the endless apron M is attached, and which pass around chain-wheels formed upon the rear roller N, so that the endless apron M will be driven by the rear roller N, and the said rear roller will be driven from the rear roller J.

As the packed snow falls from the rear end of the endless apron I it is received upon the inner parts of the endless aprons *a*, Figs. 1 and 4, which pass around series of rollers *b*, pivoted to the frames *c*, and driven from small engines *d*, Fig. 2, attached to the rear part of the car, and receiving steam from the locomotive-boiler in the same manner as the engine P. The inner ends of the frames *c* are hinged to the rear part of the car C, and to the outer parts of the said frames are attached bails *e*, to which are attached pulley-blocks *f*, the ropes *g* of which pass around the pulleys of blocks *h*, attached to the top bars of a vertical frame, *i*, attached to the rear part of the car C, so that the outer ends of the frames *c* can be adjusted at any desired inclination by means of the ropes *g*.

To the rear end of the car A, between the inner ends of the endless aprons *a*, is attached a V-shaped board or knife, *j*, the side edges of which project over the said inner ends of the endless aprons *a*, as shown in Fig. 4, so as to divide the mass of packed snow as it passes off the endless apron I, so that a half of the said mass will be carried off by each endless apron *a*.

The endless aprons *a* are made of such a length that the snow will be discharged from their outer ends at the outer sides, and clear of the roadway, ditches, or cuts.

The hinges at the inner ends of the frames *c* should be detachable, (see Fig. 6,) so that in places where the snow must all be discharged at one side of the track the said hinges can be detached and one of them attached to the car A at one side of the rear end of the endless apron I, so that all the snow from the said endless apron I will be carried off by one endless apron *a*.

In bearings beneath the forward edge of the lower plate of the funnel E is placed a cutter-bar, *k*, so that the said cutter-bar can be vibrated in the manner of a mowing-machine cutter-bar to cut away ice or packed snow from the track in front of the lower plate of the funnel E, and thus allow the said funnel to move forward freely.

To the cutter-bar *k* is pivoted the end of a crank-lever, *l*, which is pivoted at its angle to the bottom plate of the funnel E. To the other end of the crank-lever *l* is pivoted the end of a connecting-rod, *m*, the other end of

which is pivoted to a crank-wheel, *n*, geared to the end of the rear roller J, so that the cutter-bar *k* will be vibrated from the engine P.

The car A is designed to be connected with the forward end of a locomotive, the pilot being removed.

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

1. In a snow-plow, the combination, with the flaring top and bottom plates and the flaring and flanged side plates of the funnel E, of the screw-rods F, the long swiveled nuts G, and the lugs H, substantially as herein shown and described, whereby the said funnel can be expanded and contracted, as set forth.

2. In a snow-plow, the combination, with the car A and the funnel E, of the bottom and side endless aprons, I K K, and their rollers J L L, the engine P, and the connecting gear-wheels U V, substantially as herein shown and described, whereby the snow received from the funnel is carried back to the rear end of the car, as set forth.

3. In a snow-plow, the combination, with the car A and the bottom and side endless aprons, I K K, and their rollers J L L, of the swinging frame O, the endless apron M and its rollers N, the chain-wheels W Y, and the endless chain X, substantially as herein shown and described, whereby the snow will be compressed or packed while being carried back through the car, as set forth.

4. In a snow-plow, the combination, with the car A, the endless aprons I K K M, and their rollers J L L N, of the hinged frames *c*, the endless aprons *a*, the rollers *b*, and the engines *d*, substantially as herein shown and described, whereby the snow is discharged outside and clear of the track and cuts, as set forth.

5. In a snow-plow, the combination, with the car A, the hinged frames *c*, that carry the endless aprons *a*, and their rollers *b*, of the upright frame *i*, the bails *e*, and the pulley-blocks and ropes *f h g*, substantially as herein shown and described, whereby the said hinged frames can be readily adjusted at any desired elevation, as set forth.

6. In a snow-plow, the combination, with the car A, the endless apron I, and the endless aprons *a a*, of the V-shaped divider or knife *j*, substantially as herein shown and described, whereby the compressed or packed snow will be divided into two parts, as set forth.

7. In a snow-plow, the combination, with the funnel E and the rollers J, that carry the endless apron I, of the cutter-bar *k*, the bent lever *l*, the connecting-rod *m*, and the crank-wheel or crank *n*, substantially as herein shown and described, whereby ice and packed snow will be separated from the track, as set forth.

Witnesses: DAVID E. GROVE.

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