

(No Model.)

B. F. DENHAM.
AUTOMATIC SNOW PLOW AND SCRAPER.

No. 469,682.

Patented Mar. 1, 1892.

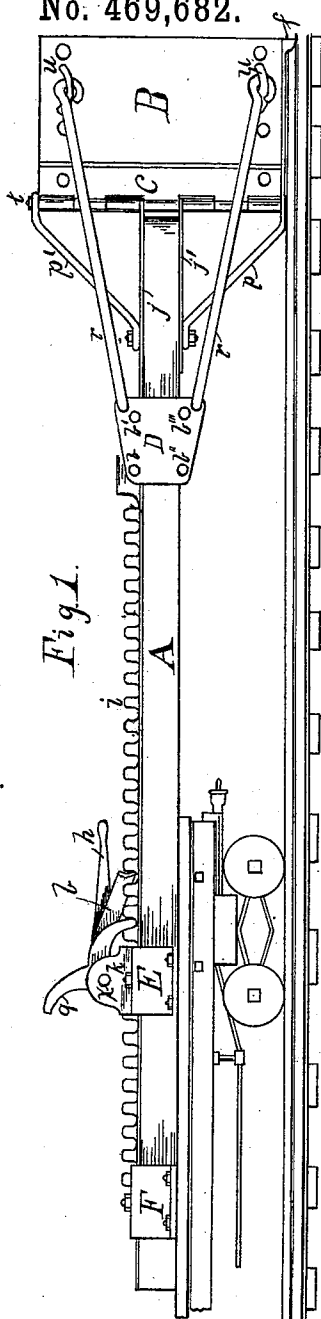


Fig. 1.

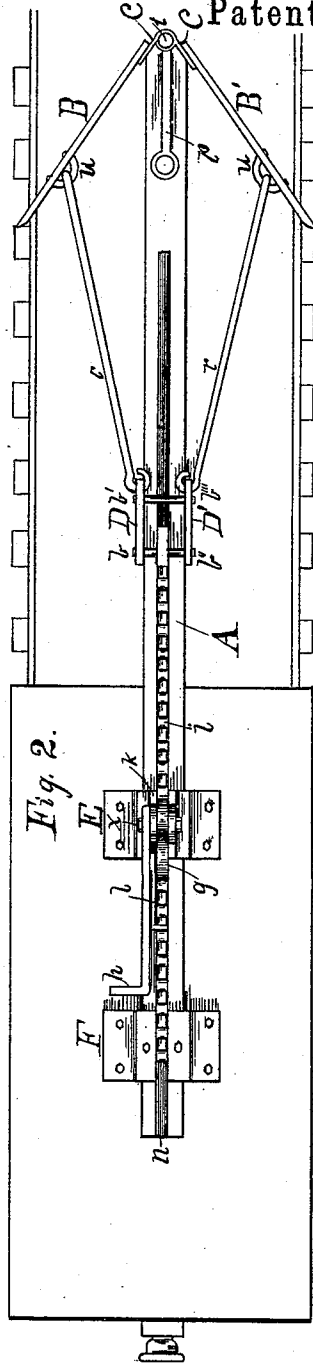


Fig. 2.

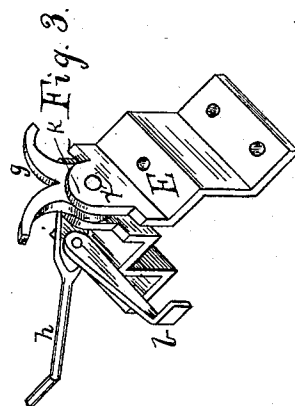


Fig. 3.

WITNESSES:

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TO RICHARD BELT, OF SAME PLACE.

AUTOMATIC SNOW PLOW AND SCRAPER.

SPECIFICATION forming part of Letters Patent No. 469,682, dated March 1, 1892.

Application filed October 1, 1891. Serial No. 407,380. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. DENHAM, a citizen of the United States, residing at Sanford, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Automatic Snow Plows and Scrapers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to improvements in a combined snow plow and scraper which is used in clearing snow from railroad tracks; and the objects of my invention are to provide a snow plow and scraper that will work in both directions equally well, also one that can be conveniently and easily operated and at a low expense. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the plow and scraper, mounted upon a flat car, and with the plow-shares extended forward. Fig. 2 is a top view of the plow and scraper, mounted upon a flat car, and showing the plow-shares extended backward. Fig. 3 is a perspective view of the clamp E and the lever and ratchet which it carries.

Similar letters refer to similar parts throughout the several views.

In the drawings, the letter A indicates a long heavy strong wooden beam.

The letter *n* indicates a long rectangular groove, which is made at the middle of the upper face of the beam A, and extends from the rear end of the beam to within a few feet of the forward end of the beam. A strong metallic facing *j* is fastened upon the upper side of the beam. This facing is provided with a slot which corresponds with and is co-incident with the groove in the beam. A long flat metallic toothed rack *i* fits loosely in the slot *n* and slides lengthwise in the same.

The letters D and D' indicate two flat metallic plates, which are fastened one at either side of the beam A by means of the bolts *b*, *b'*, *b''*, and *b'''*. These bolts are so situated that

the upper set *b b'* will lay upon the upper face of the beam A, while the lower set *b'' b'''* rest close up to the under side of the beam, thus the two plates or guides D and D' can be made to slide along the beam. The bolt *b* passes through a perforation in the front end of the rack *i*. Consequently when the side guides D and D' are moved along the beam the rack is moved along with it in the groove *n*.

C indicates a set of strong metallic plates, which are fastened together like a large hinge, as shown in Fig. 1. The facing *j* and a short but similar facing *j'*, which is fastened upon the lower side of the beam A, are perforated to receive the rod *t*, which fastens the two parts of the hinge together. By this means and the addition of two strong metallic braces P and P', the large hinge C is fastened upon the extreme forward end of the beam A.

B and B' are two strong rectangular shares which are fastened one to either side of the hinge C and open or shut up with the same. These shares may be constructed of wood, metal, or any other desired material, and they form the plow and scraper proper. The shares B and B' extend from the top of the track-rails up to any required height, the height being regulated by the nature of the snow-drifts to be cleared. The bottom edge of these shares, if constructed of wood, are shod with strong metallic bars *f*, which slide upon the rails and cut away any ice or snow that may be crusted upon the same. These bars or scrapers are curved downward at the outer end of the shares and by catching upon the outside of the rail will prevent the shares from closing up to a gage less than that of the track.

The letter U indicates a strong iron staple, two of which are fastened securely into the back of the shares B and B', one at the top and the other at the bottom. Into each of these staples there are fastened strong metal rods *r r*, which are fastened at their other ends into the corresponding forward corners of the two guides D and D', said guides being perforated for that purpose, all as shown in Fig. 1.

E is a strong angle-iron clamp, which fits tightly over the beam A, and being bolted down to the same and also to the car upon

which the beam rests it secures the beam in position upon the car. The clamp E is composed of two similar parts, and from the inner edge of each there is struck up a flange *k*.
 5 Each of these flanges is perforated to receive a bolt *x*, which fastens the two parts of the clamp together.

The letter *g* indicates a V-shaped ratchet, which is perforated to receive the bolt *x* and is thus clamped between the two flanges *k*.
 10 A long lever *h* is carried upon the protruding end of the bolt *x*, and this lever in turn carries a claw-shaped ratchet *b*, all as shown in Fig. 3. One or more clamps F, similar to E,
 15 but without the flanges *k*, may be used to more securely fasten the beam upon the car.

To operate my snow plow and scraper, I mount it upon a flat car, or, if desired, I can cut a hole in the end of a box-car large enough
 20 to admit the beam A and fasten to the floor of the car, as described above. If I wish to clear the track of an ordinary drift in a level country, I set the shares B and B', extended backward, as shown in Fig. 2, opening them
 25 wide enough to clear the snow as far on each side of the track as desired. Then by means of the lever *h* I set the claw-ratchet *b* into the teeth of the rack *i* in front of the clamp E and allow the ratchet *g* to engage the teeth of the
 30 rack in front of the clamp. With the ratchets set thus it is impossible for the rack to be pushed backward by the pressure of the snow upon the plowshares, and consequently when the plow is pushed forward the snow will be
 35 parted in the center of the track and forced aside and beyond the edges of the shares. In cuts where the snow is packed so deep and compactly that it is impossible to push right through it I set the shares as before, but opening
 40 them only as wide as the gage of the track. Then, pushing into the bank as far as can be easily done, the snow is parted and packed at either side of the track. I then loosen the ratchets and open the plowshares
 45 as far as it is desired to clear the snow at the side of the track. Then, setting the ratchets on the side of the clamp opposite the plow, I back out, and the edges of the shares dig into the

snow at the sides of the track, thus forcing it into the track before the shares, which scrape
 50 the snow along with them until open ground is reached. When open ground is reached, I raise the ratchets, and the pressure of the snow within the plow will force the shares outward, as shown in Fig. 1, and the snow
 55 will then be plowed off the track to either side. Having taken one load of snow from the cut, I simply repeat the operation, going farther each time, until all the snow is removed or the plow is able to force its way
 60 straight through the cut. In working a cut or heavy bank it will be seen that if the ratchets are fastened up from the rack the pressure of the snow upon the plowshares will set the same in their proper position at each stage
 65 of the operation. Thus the plow will operate automatically if simply pushed forward and in turn withdrawn by the locomotive.

Having thus described my combined snow plow and scraper, what I claim as my invention,
 70 tion, and desire to secure by Letters Patent, is—

In a combined snow plow and scraper, the combination of a grooved beam A, faced upon the upper side with strong metallic facing, a
 75 metallic toothed rack sliding in the groove *n*, the clamp E, the flanges of which bear the lever *h* and the ratchets *g* and *l*, and the guide-plates D and D' with two strong plowshares or scrapers B and B', said shares being mounted
 80 upon two metallic plates C and C', which are hinged together upon a strong metallic rod *t*, said rod and hinge being braced by means of strong metallic braces P and P', which are fastened to the beam A, and said
 85 shares being connected by means of strong iron rods *r r* with the guide-plates D and D', all substantially as and for the purposes set forth and specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

BENJAMIN F. DENHAM.

Witnesses:

GEORGE M. DAVIS,
 S. W. REYNOLDS.