

(No Model.)

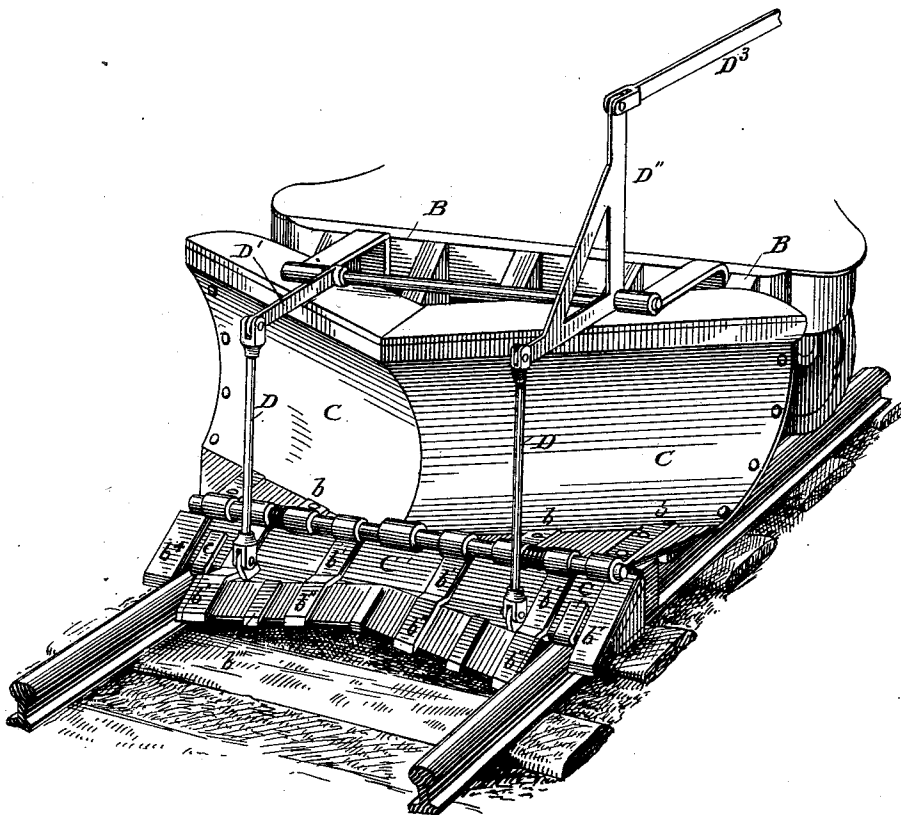
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A. P. FARRAR.
Snow Plow.

No. 241,947.

Patented May 24, 1881.

Fig. 1.



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(No Model.)

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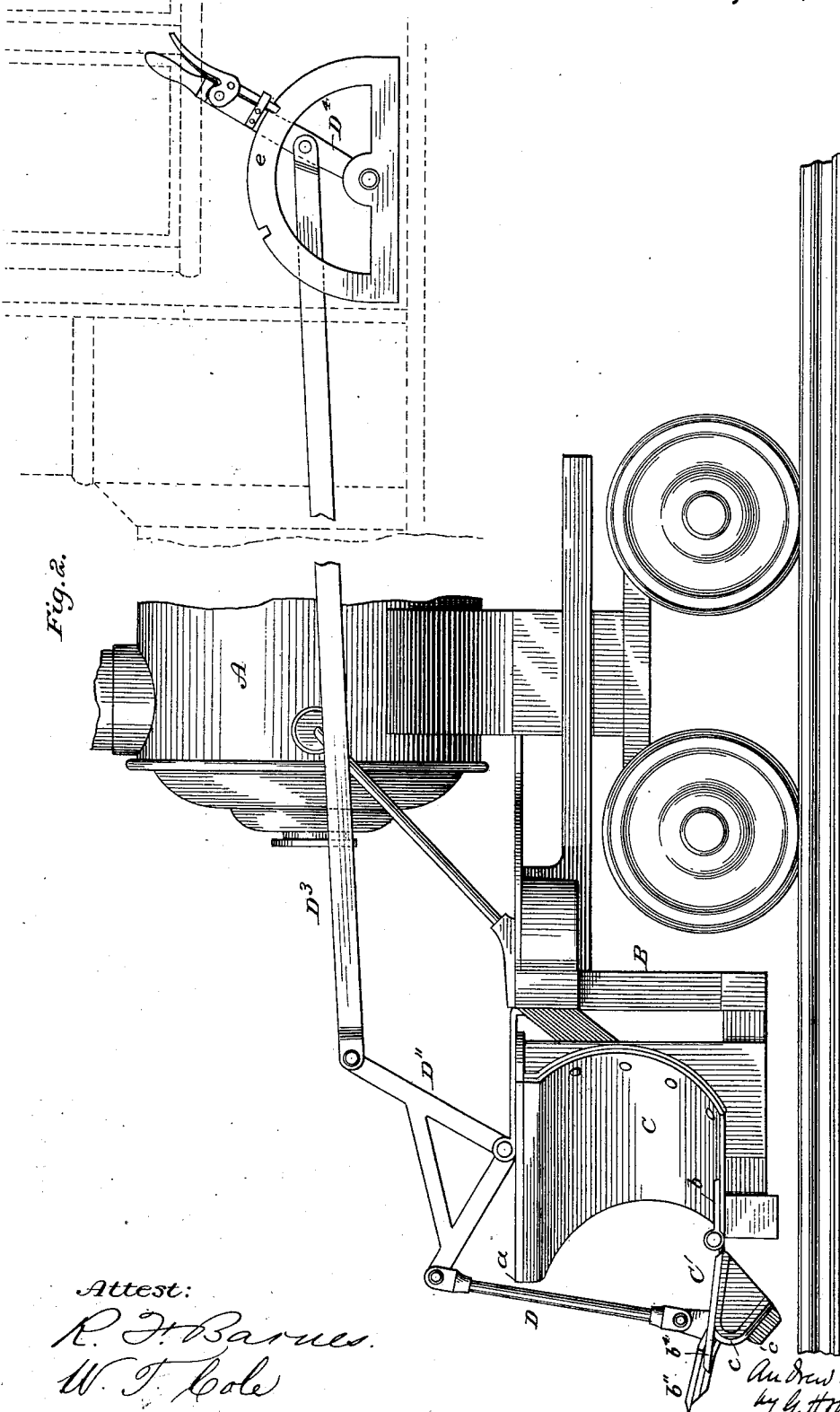
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Fig. 2.



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3 Sheets—Sheet 3.

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Fig. 3.

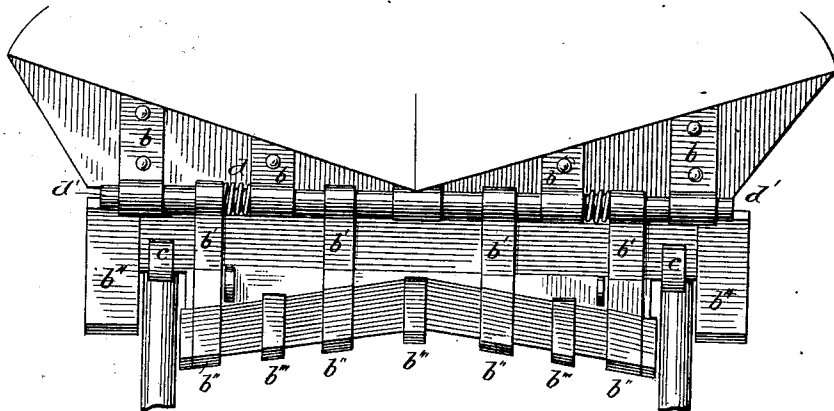
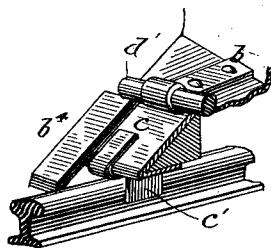


Fig. 4.



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UNITED STATES PATENT OFFICE.

ANDREW P. FARRAR, OF BRAINERD, MINNESOTA.

SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 241,947, dated May 24, 1881.

Application filed March 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, ANDREW P. FARRAR, of Brainerd, in the county of Crow Wing and State of Minnesota, have invented certain Improvements in Snow-Plows or Track-Clearers for use on Railroads and Street-Railways, of which the following is a specification.

The invention is designed for flanging and clearing snow and ice from between and from the outside of the rails, as also for clearing the road-bed.

In applying the invention to a locomotive a heavy wooden frame is secured to the front of the engine. This frame supports a pair of mold-boards, which, preferably, extend to about the height of the pilot-platform. The mold-boards, uniting in a point at the central line of the engine, incline back at opposite angles in a manner heretofore common. At the base of the mold-boards is hinged an apron provided with parts which, with the apron itself, constitute the snow and ice clearing devices, the whole operating to clear the inside and outside of the rails, as well as the road-bed. The apron, with its accompanying parts, is constructed to be lifted to clear obstructions on the rails, such as frogs, switches, &c., by means of mechanism connected with a lever within reach of the engineman. The apron, with its adjuncts, is also capable of lateral play, either to the right or to the left on the rod, to which it is hinged, which play allows the apron to adapt itself to the curves of the road. The apron is automatically adjusted to a central position by springs surrounding the hinging-rod in a manner hereinafter explained. The apron is further provided with shoes, which, when the apron is in its depressed or working position, rest upon the tops of the rails and relieve the hinge from weight. The general shape or outline of the working edge of the apron and its clearing devices is concave, to cause it to fit the convex formation of the road-bed.

In the further description of the invention which follows reference is made to the accompanying drawings, in which—

Figure 1 is a perspective view of the front part of a locomotive-engine provided with the invention. Fig. 2 is a side elevation of the invention, showing the apron raised so as to

clear obstructions on the track. Fig. 3 is a plan view, on an enlarged scale, of the apron and its attachments, showing the construction and arrangement of the various parts. Fig. 4 is a detail of the invention, as hereinafter described.

Similar letters of reference indicate similar parts in the different views.

A is the front portion of a locomotive-engine, to the pilot-platform of which the frame B is attached. On this frame are mounted the mold-boards C C. These consist of a solid wooden backing sheathed with iron. The mold-boards meet in the central line of the engine, at the point *a*, and from this point incline backward at opposite angles, as shown, so that snow, ice, or other matter swept up against the mold-boards will be carried to the right and left of and beyond the road-bed. In this respect, as also in the concave shape of their faces, the mold-boards are similar to others heretofore used. From the point *a* to the end of each mold-board the sheathing rests horizontally on and is secured to the frame B, the front edge of the sheathing being in line with the front edge of the frame. Attached to the frame or to the sheathing, as may be preferred, are hinge-sections *b*, to which the apron is hinged.

U is the apron, which is preferably a stout wooden structure steel-clad. The lower or operating edge of the apron is made concave, as shown, particularly in Figs. 2, 1, and 3, which adapts the apron to fit over the convex road-bed, as above mentioned. The apron is provided with hinge-sections *b' b' b' b'*, the lower extremities of which are steel-pointed, and form knives *b''*, projecting about one inch beyond the edge of the apron. These are designed for cutting ice and hardened snow in the bed of the road. The edges of the knives *b''* are placed at an angle so as to be parallel with the concave edge of the apron. The two outer knives, *b''*, serve the further purpose of flanging or clearing the inner sides of the rails, and for this purpose their outer parts form straight cutting-edges. Smaller steel-pointed knives, *b'''*, are attached to the apron between each pair of the knives *b''*. At each end of the apron is a knife, *b⁴*, the inner edge of which is straight and serves to clear the outer side of its

rail. The points of all the knives are beveled, as shown.

Attached to the apron, in positions to bring them directly over the rails, are heavy chilled cast-iron or steel shoes *c*, which, when the apron is in position for work, rest on the rails and relieve the hinge from the weight of the apron and its mountings. The shoe is shown more particularly in Fig. 4, from which it will be seen that it is provided with a flange or guide, *c'*, which rests against the inner side of the rail, and by bearing against it serves to move the apron laterally when curves are reached. The wooden structure forming the backing of the apron fits against the beam of the frame, and serves to take the back strain as the apron is pushed forward against the obstructing matter.

Fig. 3 shows, on an enlarged, scale the means whereby the apron is automatically kept in a central position with respect to the center line of the engine. These consist of two spiral springs, *d*, each of equal strength and each placed on the hinge-rod *d'* between a pair of hinge-sections of the apron and frame respectively, on opposite sides of the center of the engine. Each spring, when the apron is unaffected by any lateral pressure, as in turning curves, neutralizes the effect of the other, and the effect is to keep the apron in a central position, as stated, and yet to adapt it to be shifted laterally, either to the right or left, where curves or irregularities in the track are encountered.

The entire apron may be raised by means of links *D*, one of which connects with a crank, *D'*, and the other with a bell-crank, *D''*, the latter having attached to it a rod, *D³*, reaching to a lever, *D⁴*, placed in the cab. The lever works and locks, in connection with a quadrant-bar, *e*, in the ordinary manner. As shown in Fig. 1 the apparatus is in position for work. On an obstruction being reached the lever *D⁴* is thrown back and locked, when the apron is brought to the position shown in Fig. 2.

The apron can be made with or without a series of cutting-knives. The lower edge of apron itself can be made to serve as cutting-edge, instead of the series of knives; also, the edge of apron can be made either concave, as in drawings, or to cut straight across track, according as the shape of the road-bed requires.

In applying my invention to the uses of street-railroads it would be attached to the frame-work of the truck or car. Some changes in the shape and arrangement of the rail-knives and other parts might be necessary, but the general features of the invention would remain as above described.

It is to be understood that in practice the use of this invention is to follow that of a plow adapted to clear the greater mass of snow from the track.

I am aware that on snow-plows mold-boards, scrapers, and ice cutting and removing knives have been heretofore employed, and also that certain of such scrapers and clearing devices

have been made to lift to pass obstructions on the track, and, further, that the lateral play of such devices have been provided for, and therefore I do not claim, broadly, these devices or movements; but

I claim as my invention—

1. An apron extending across and beyond the track and provided with knives for clearing the bed of the road and both sides of the rails, the said apron being hinged to a frame-work of the engine or car and adapted to be raised outward to pass obstructions on the track, substantially as specified.

2. An apron extending across and beyond the track and provided with devices for clearing the bed of the road and both sides of the rail, and, further, with shoes for riding on the top of the rails, the said apron being hinged to a frame-work of the engine or car and adapted to be raised to pass obstructions on the track, substantially as specified.

3. A pair of mold-boards combined with an apron hinged at the base of the mold-boards, the said apron carrying devices for clearing the bed of the road and both sides of the rails, and adapted to be raised to pass obstructions on the track, substantially as specified.

4. Combined with the frame-work of an engine or a car, an apron provided between the rails with a clearing-edge and a series of knives whose edges, with that of the apron, are concave to conform to the convexity of the road-bed, substantially as specified.

5. Combined with a frame-work of an engine or a car, a pair of mold-boards, and an apron having between the rails a concave clearing-edge, and knives whose edges are parallel with the edge of the apron, substantially as specified.

6. Combined with the frame-work of an engine or a car, an apron extending across and beyond the track and provided with devices for clearing both sides of the rail, and having between the rails a concave clearing-edge, and a series of knives whose edges are parallel with the edge of the apron, substantially as specified.

7. A frame-work of an engine or a car provided with a series of hinge-sections, combined with an apron having corresponding hinge-sections, and a hinging-rod uniting the respective sections, the outer ends of the hinge-sections of the apron projecting beyond the outer edge of the apron, and forming cutting-knives to act on ice in the road-bed, substantially as specified.

8. A frame-work of an engine or a car, provided with a series of hinge-sections, an apron having corresponding hinge-sections, and a hinging-rod uniting the hinge-sections of the frame and apron respectively, combined with spiral springs surrounding said rod, one spring being placed thereon in a space left between any pair of the hinge-sections of the frame and apron respectively, at each side of the center line of the engine or car, substantially as specified.

9. In a track-clearer, a hinged apron mounted with clearing devices and capable of a lateral movement on its hinge, combined with shoes riding on the top of the rails, and flanges or guides attached so as to run inside the rails for directing the apron laterally when curves are encountered, substantially as specified.

10. Combined with a supporting-frame, a hinged apron provided with a backing extending across the road-bed, and having a square shoulder, which, when the apron is in its depressed or working position, bears at all points in the length of the apron against the front timber of the supporting-frame, and effects the bracing of the apron and its mountings when pushed forward against the obstructing matter, substantially as specified.

11. Combined with a hinged apron extending across and beyond the track, a system of rods, $D D^3$, and compound levers D'' and D^4 , communicating with the rear of the engine or car, and an automatic locking device, constituting means whereby the apron may be raised or lowered, locked or released, substantially as specified.

12. In a track-clearer, the combination of a pair of mold-boards, a vertically and laterally movable apron extending across and beyond the track, and provided with devices for clearing the bed of the road and both sides of the rails, and means for elevating and depressing the apron, substantially as specified.

13. In a track-clearer, the following elements in combination: a pair of mold-boards, a vertically and laterally movable apron extending across and beyond the track, and having devices for clearing the bed of the road and both sides of the rails, and shoes for riding on the top of the rails, springs for maintaining the normal position of the apron in the center line of the engine or car, and means for elevating and depressing the apron, substantially as specified.

In testimony whereof I have hereto subscribed my name this 18th day of March, A. D. 1881.

ANDREW P. FARRAR.

Witnesses:

A. MAHLUM,
J. BURBANK.