

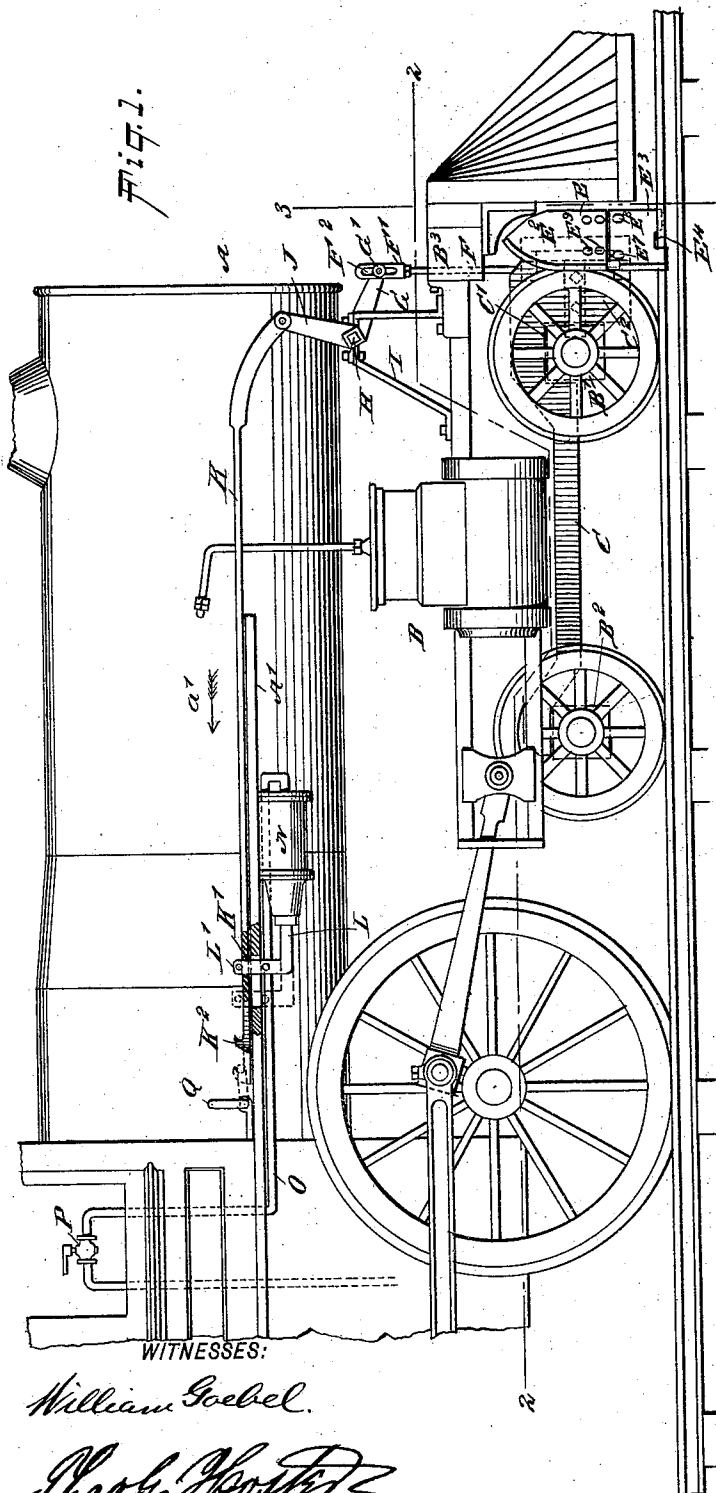
(No Model.)

2 Sheets—Sheet 1.

A. F. PRIEST.
LOCOMOTIVE SNOW OR ICE FLANGER.

No. 544,120.

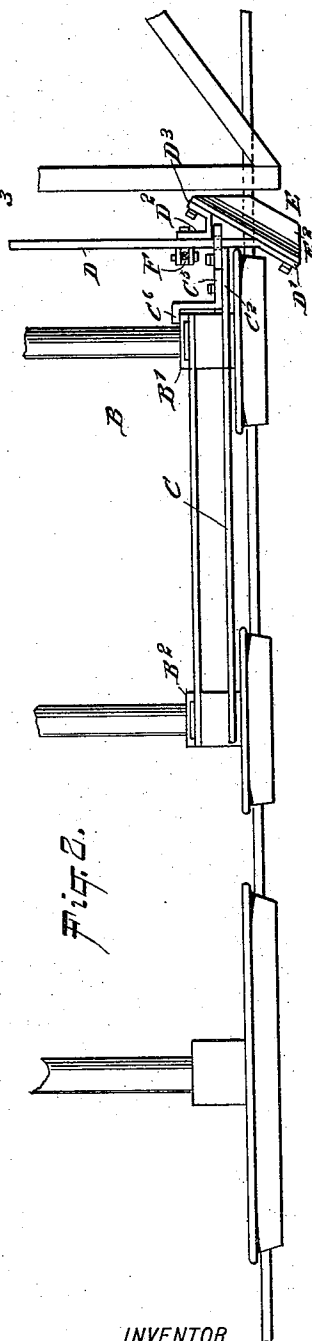
Patented Aug. 6, 1895.



WITNESSES:

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Thos. G. Foster.



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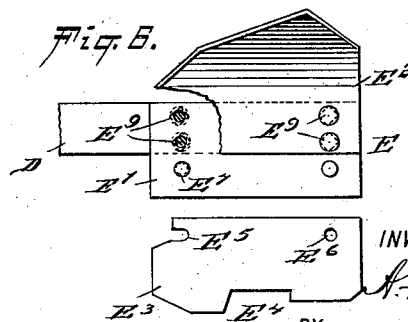
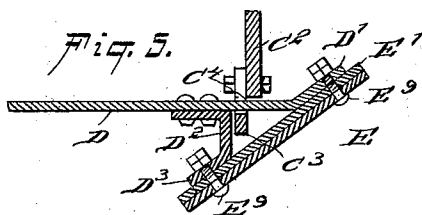
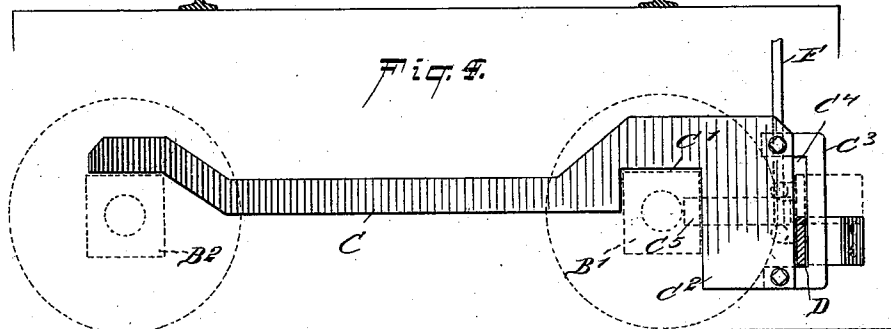
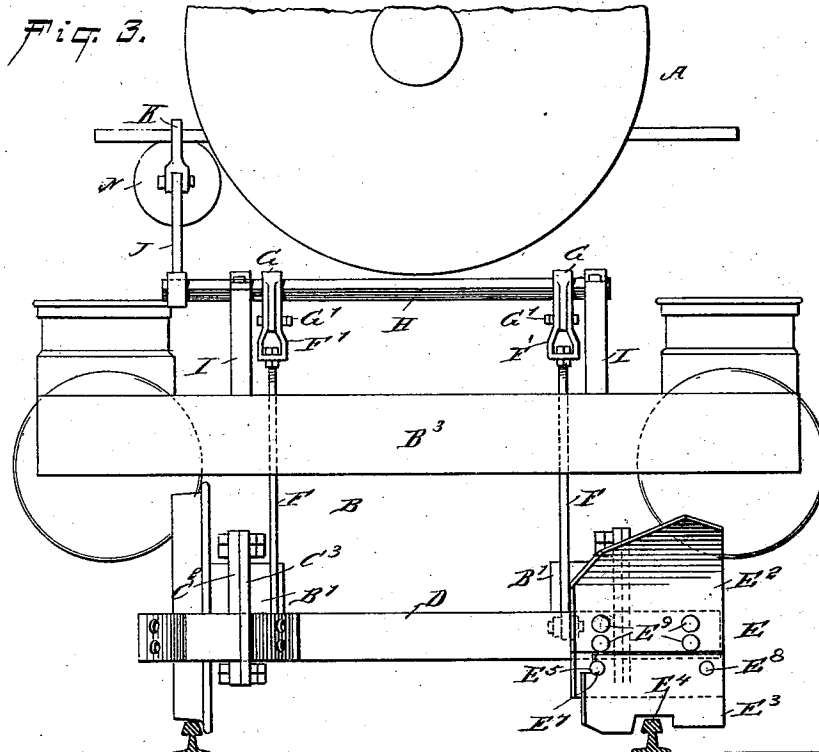
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WITNESSES:

William Goebel.

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UNITED STATES PATENT OFFICE.

AUGUSTUS F. PRIEST, OF DULUTH, MINNESOTA.

LOCOMOTIVE SNOW OR ICE FLANGER.

SPECIFICATION forming part of Letters Patent No. 544,120, dated August 6, 1895.

Application filed December 18, 1894. Serial No. 532,158. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS F. PRIEST, of Duluth, in the county of St. Louis and State of Minnesota, have invented a new and Improved Locomotive Snow or Ice Flanger, of which the following is a full, clear, and exact description.

The invention relates to track cleaners and flangers such as shown and described in Letters Patent of the United States No. 398,347, dated February 19, 1889; No. 455,724, dated July 7, 1891, and No. 467,394, dated January 10, 1892.

The object of the invention is to provide a new and improved locomotive snow and ice flanger, which is comparatively simple and durable in construction, very effective in operation, and arranged to permit the engineer in the cab to conveniently raise or lower the flanger-blades and to properly guide the same in their up and down motion, and to hold the knives in proper position relative to the rails to effectively clean the snow, ice, sand, or other material therefrom.

The invention 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 views.

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is a sectional plan view of part of the same on the line 2 2 of Fig. 1. Fig. 3 is an enlarged transverse section of the same on the line 3 3 of Fig. 1 with parts removed. Fig. 4 is an enlarged side elevation of the guideways and cross-bar, the latter being in section. Fig. 5 is a sectional plan view of the same, and Fig. 6 is a front view of one of the flanger-blades with part broken out and the knife in a detached position.

The locomotive A, on which the improvement is applied, is of the usual construction and is provided at the front truck B with equalizer-bars C extending from the front truck-box B' to the rear truck-box B², as is plainly illustrated in the drawings. Each equalizer-bar C is formed at its front end with a notch C' fitting over the front truck-box B'.

(See Fig. 4.) The head C² of the equalizer-bar is provided with guideways formed by U-shaped bars C³, forming with the front edge of the head C² a vertically-disposed slot C⁴, on which is fitted to slide vertically the cross-bar D, carrying on each end a flanger-blade E. From the rear of each head C² extends an angle-iron C⁵, engaging with its inner end C⁶ the rear face of the corresponding truck-box B' (see Fig. 2,) so that the head C², formed with the guideways for the cross-bar D, is protected against lateral outward motion, while the notch C' in the equalizer guards against longitudinal motion and causes the strain on the flanger-blades E to be taken up by the front truck-box B'. Each flanger-blade is provided with a reinforcing-plate E', a deflecting-plate E², and a cutter-knife E³, the latter formed at its lower edge with a notch E⁴ for the passage of the rail-head, as is plainly indicated in Fig. 3. Each flanger-blade E stands at an angle to the truck-rail, as is plainly illustrated in Fig. 2, (see also Fig. 5,) so that the snow and ice or other obstruction is moved to the outer side of the rail on the forward motion of the locomotive.

The cross-bar D, supporting at each end one of the flanger-blades E, is provided at its extreme outer end with an angular extension D' and with an angle-iron D², bolted or otherwise fastened to the cross-bar D at the front face thereof. This angle-iron D² is provided with the end D³ in alignment with the extension D', as is plainly shown in Fig. 2, and on the end D³ and extension D' is bolted the reinforcing-plate E', previously mentioned. The latter extends a short distance below the lower edge of the cross-bar D, (see Fig. 6,) and on this depending end is held the cutter-knife E³, while on the upper end of the reinforcing-plate extends upward and forward the deflecting-plate E².

The cutter-knife E³ is formed at its upper inner corner with a notch E⁵, and on the outer upper corner with an opening E⁶, as is plainly shown in Fig. 6. The notch E⁵ is adapted to engage a shoulder-bolt E⁷ screwing in a depending end of the reinforcing-plate E', while the aperture E⁶ is adapted to be engaged by a bolt E⁸ held on the reinforcing-plate E'. Now it will be seen that when it is desired to remove the cutter-knife E³ it only requires

the removal of the bolt E⁸, as the knife can then be pulled outward by disengaging the notch E⁵ from the bolt E⁷, which remains stationary in the reinforcing-plate E'. By the arrangement described the cutter-knife can be readily removed when worn out or broken and replaced with a new one without much difficulty by simply manipulating the one bolt E⁸. The lower ends of the deflecting-plate and the reinforcing-plate are fastened by the same bolts E⁹ to the extension D' and the angle-iron D², as is plainly illustrated in Fig. 5. The cross-bar D is connected with the lower ends of the links F, extending upwardly through apertures in the buffer-beam B³, and the upper threaded end of each link F carries a head F', formed in its forked ends with vertically-disposed slots F², engaged by a pin G', carried by an arm G, secured on a transversely-extending shaft H, mounted to turn in suitable bearings I, secured on the frame of the truck B. (See Figs. 1 and 3.) One outer end of the shaft H is provided with an arm J, pivotally connected with a longitudinally-extending sliding-bar K, arranged alongside the boiler of the locomotive and resting on a suitable guideway A', as is plainly illustrated in said Fig. 1. The end of the bar K nearest the cab of the locomotive is provided with an aperture K', engaged by the upwardly-projecting end L' of a piston-rod L, held on a piston mounted to slide in a cylinder N, connected at its outer end with an air-pipe O, extending through the cab of the locomotive to a suitable compressed air supply, the said pipe being provided within the cab of the locomotive with a valve P, under the control of the engineer, to permit the latter to charge the cylinder N with compressed air to force the piston in the cylinder N inward to move the bar K in the direction of the arrow a' to raise the flanger-blades E. When the engineer turns the valve P to cut off the air-supply and to permit the air in the cylinder end to escape, then the flanger-blades E are lowered to bring the cutter-knives E³ in proper relation to the rails to clean the latter of snow, ice, and other obstructions. Now when the bar K moves in the direction of the arrow a', then the knife-edge is turned by the connection of the knife with the bar K, and the shaft H causes an upward swinging of the arms G, so that their pins G' travel to the upper ends of the slots F² to then pull the heads F' and links F in the proper direction to cause the cross-bar D with the flanger-blades E to move vertically upward, the said cross-bar traveling in the guideways of the equalizer-bars C. When it is desired to lock the flanger-blades E in this uppermost position the engineer connects the link Q with the hook end K² of the bar K to hold the latter in a locked rearward position, as indicated in dotted lines in Fig. 1. A link Q is pivoted on the support A' near the cab of the locomotive, so that the engineer in charge of the

locomotive can throw the link down to engage the hook K² whenever desired.

It is understood that when the flanger-blades E are moved into the lowermost position their downward motion is limited by the cross-bar D resting on the bottom of the slots C⁴ formed by the bars C³, (see Fig. 4,) thus bringing the lower edge of each flanger-blade in opposite relation with the head of the rails to prevent the sides and top of each notch E⁴ from striking the sides and top of the rail-head during the time the locomotive travels over the track.

It is understood that the blades are raised by the engineer in charge of the locomotive whenever the locomotive approaches guide-rails, crossings, &c., to prevent the cutter-knife from striking the fixed obstructions on the track. Should the cutter-knives, however, be struck and broken, then the rest of the device is not seriously affected, it being understood that the damage can be easily and quickly repaired by fastening new cutter-knives in position on the reinforcing-plate E' in the manner above described.

It will be seen that by the construction described the flanger readily conforms to all irregular surfaces in the track, whether vertical or lateral, and gives an even depth of cut everywhere, doing exactly the same work on curves as on straight lines, and throughout the cutting operation the knives do not, under any circumstances, touch the rails.

By reference to Fig. 2 it will be seen that the angle-iron D² abuts against the inner faces of the blades E to prevent lateral movement of the cross-bar D in its guideways, so that there is no danger of the sides of the notches E⁴ striking the rails. By making the head F' removable on the link F the latter can readily be passed through a comparatively small hole in the buffer-beam from below, thus obviating the necessity of large holes in the beam and consequent weakening of the same. The head F' is slotted to permit the pin G' to play up and down therein, caused by jars, &c., without affecting the cross-bar and flanger-blades while in a lowermost position. It will further be seen that the device is absolutely safe to operate on any and all trains, as it is properly locked and braced, and it perfectly cleans the rails for every wheel in the train, leaving no snow to absorb the power through contact with the oil-holders. No derailment can possibly occur by reason of engine or truck-wheels mounting or traveling on hard-packed snow on the track. By arranging the device directly behind the pilot it is entirely out of the way and not liable to be accidentally injured by an obstruction on the track moved to one side by the pilot.

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

1. A flanger, provided with a cross bar for

supporting the flanger blades having each end bent to stand at an angle to the bar, and angle irons fastened on the said bar and having their faces in alignment with the faces of the said bent ends, substantially as shown and described.

2. A flanger, provided with a cross bar for supporting the flanger blades and having each end bent to stand at an angle to the bar, angle irons fastened on the said bar and having their faces in alignment with the faces of the said bent ends, and flanger blades secured on the said aligned ends and angle irons, substantially as shown and described.

3. A flanger, comprising slotted guideways formed on the heads of the equalizer bars, a cross bar fitted to slide in the said guideways and having its ends bent to stand at an angle to the bar, angle irons fastened on the bar and having their faces in alignment with the faces of the said bent ends, the said angle irons abutting on the said guideways to prevent lateral movement of the cross bar, and flanger blades supported on the said bent ends and angle irons, substantially as shown and described.

4. A flanger, comprising slotted guideways formed on the heads of the equalizer bars, a cross bar fitted to slide in the said guideways and having its end bent to stand at an angle to the bar, angle irons fastened on the bar and having their faces in alignment with the faces of the said bent ends, the said angle irons abutting on the said guideways to prevent lateral movement of the cross bar, flanger blades supported on the said bent ends and angle irons, each flanger blade comprising a cutter knife and a deflecting and reinforcing plate, substantially as shown and described.

5. A flanger, provided with a fixed and a removable bolt, a cutter knife formed with an aperture and a notch, of which the latter is adapted to engage the said fixed bolt, and an opening adapted to be engaged by the said removable bolt, substantially as shown and described.

6. A flanger, provided with a cutter knife formed with a bolt aperture and a bolt notch, substantially as shown and described.

7. A flanger, provided with an equalizer bar

formed with a recess adapted to fit on the truck box, the said equalizer bar being also provided with vertical guideways for the cross bar of the flanger blades, and an angle iron secured on the head and adapted to engage the inner face of the truck box, substantially as shown and described.

8. A flanger comprising a reinforcing plate, adapted for attachment to the locomotive, a depending cutter detachably secured on the reinforcing plate and an upwardly-extending deflecting plate secured to the said reinforcing plate, substantially as set forth.

9. A flanger, comprising equalizer bars having their front ends provided with notches and having depending heads forming the front sides of the notches, said heads provided with vertical guideways, a bar guided at its ends in said guideways, and flanger blades mounted on the bar, substantially as set forth.

10. A flanger comprising a supporting bar, a reinforcing plate secured thereto, a cutter detachably secured to the front face thereof and extending below said reinforcing plate, and an upwardly-extending deflecting plate secured to said reinforcing plate, substantially as set forth.

11. A flanger, comprising equalizer bars having depending heads at their forward portions, U-shaped bars having their ends secured to said heads and having their central portion spaced apart from the head and parallel thereto, whereby guide-ways are formed, a bar guided in said guide-ways, and flanger blades mounted on said bar, substantially as set forth.

12. In a flanger, the combination of a support having a vertical slotted guide-way, a bar extending through the guide-way and movable along the same, and a flanger blade secured to said bar on opposite sides of the guide-way with its central part separated from the bar by a space adapted to receive one member of the guideway, substantially as set forth.

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Witnesses:

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F. B. SPELMAN.