

(No Model.)

2 Sheets—Sheet 1.

A. F. PRIEST.

RAIL CLEARER.

No. 345,257.

Patented July 6, 1886.

Fig. 1.

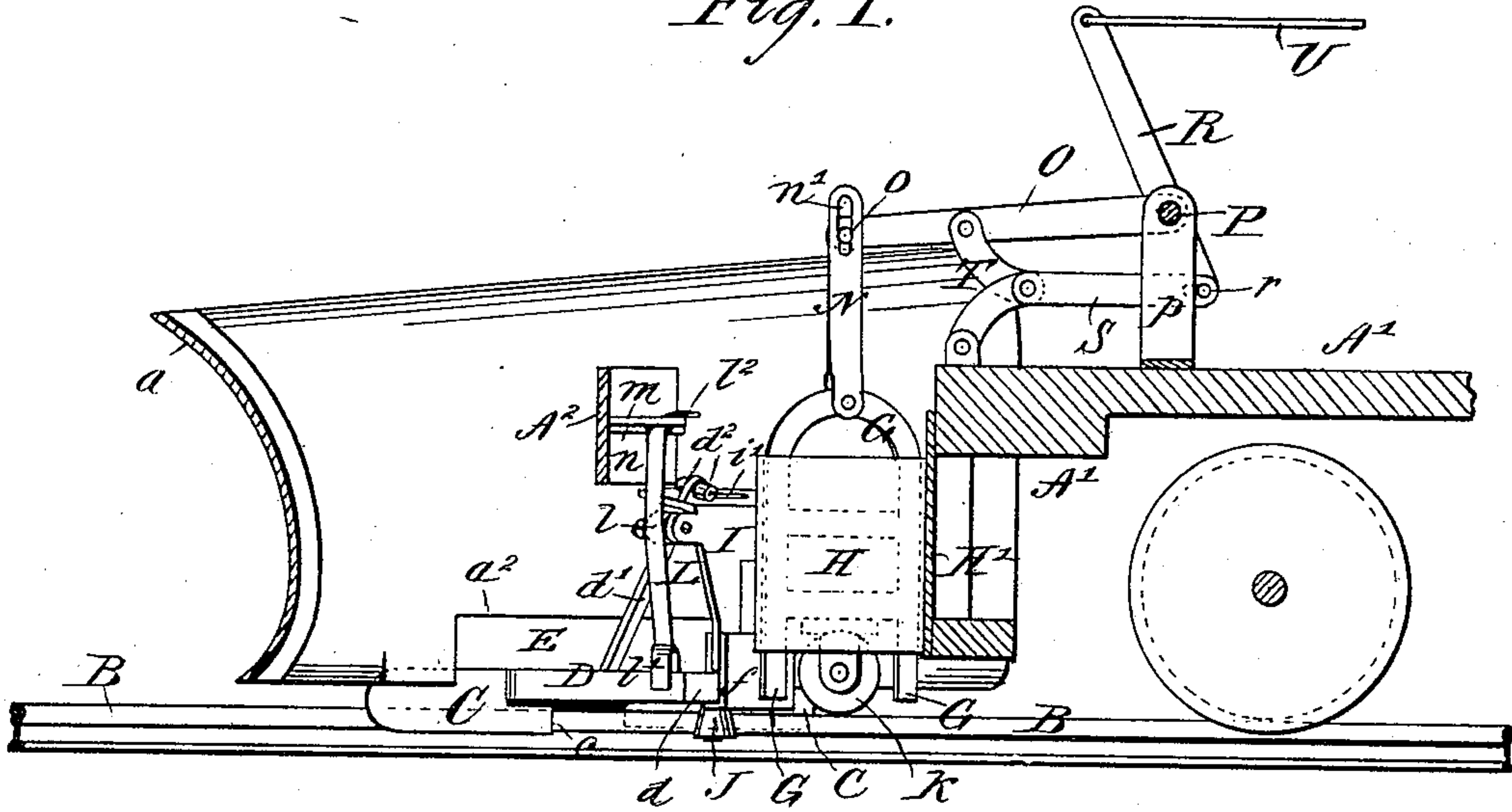
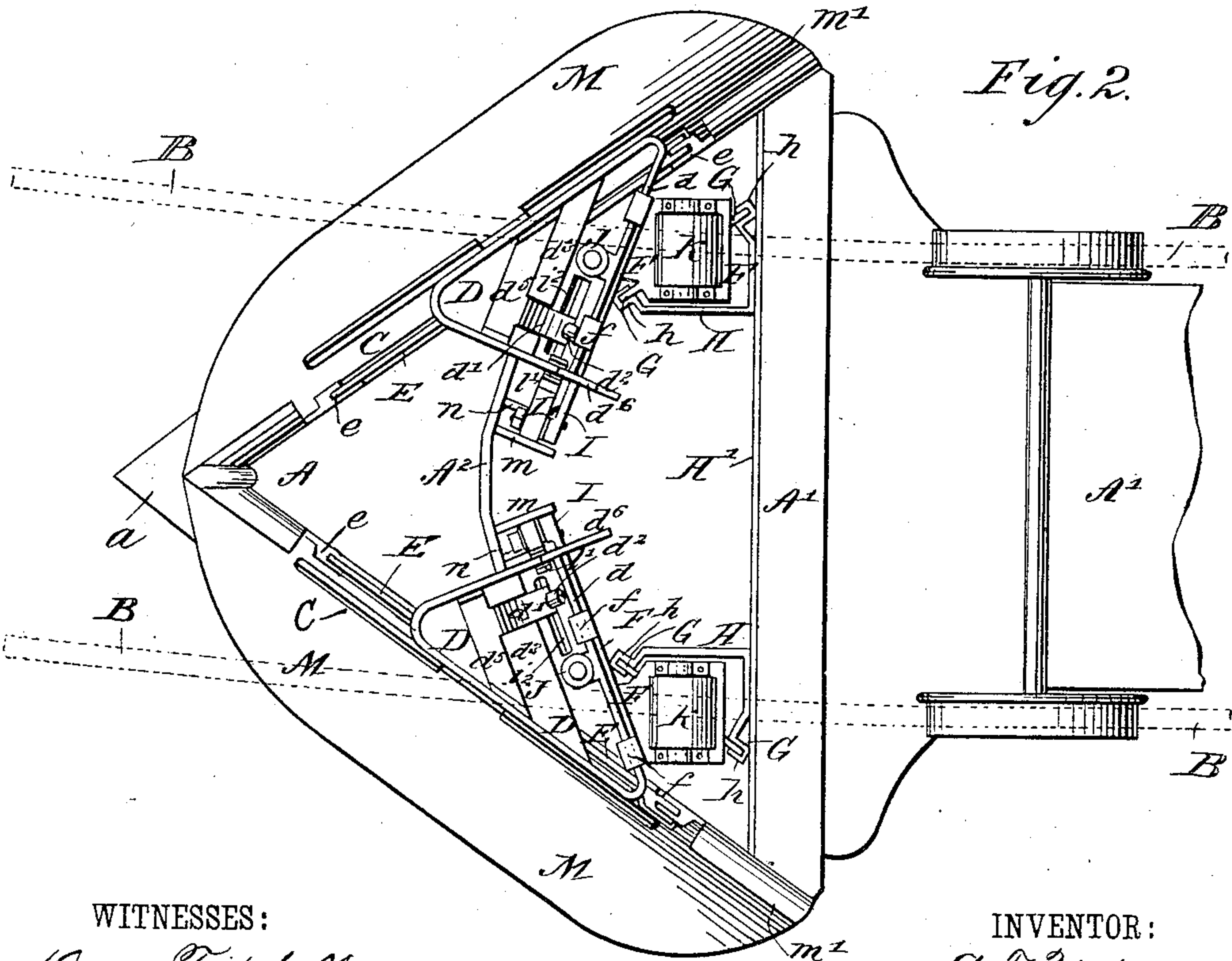


Fig. 2.



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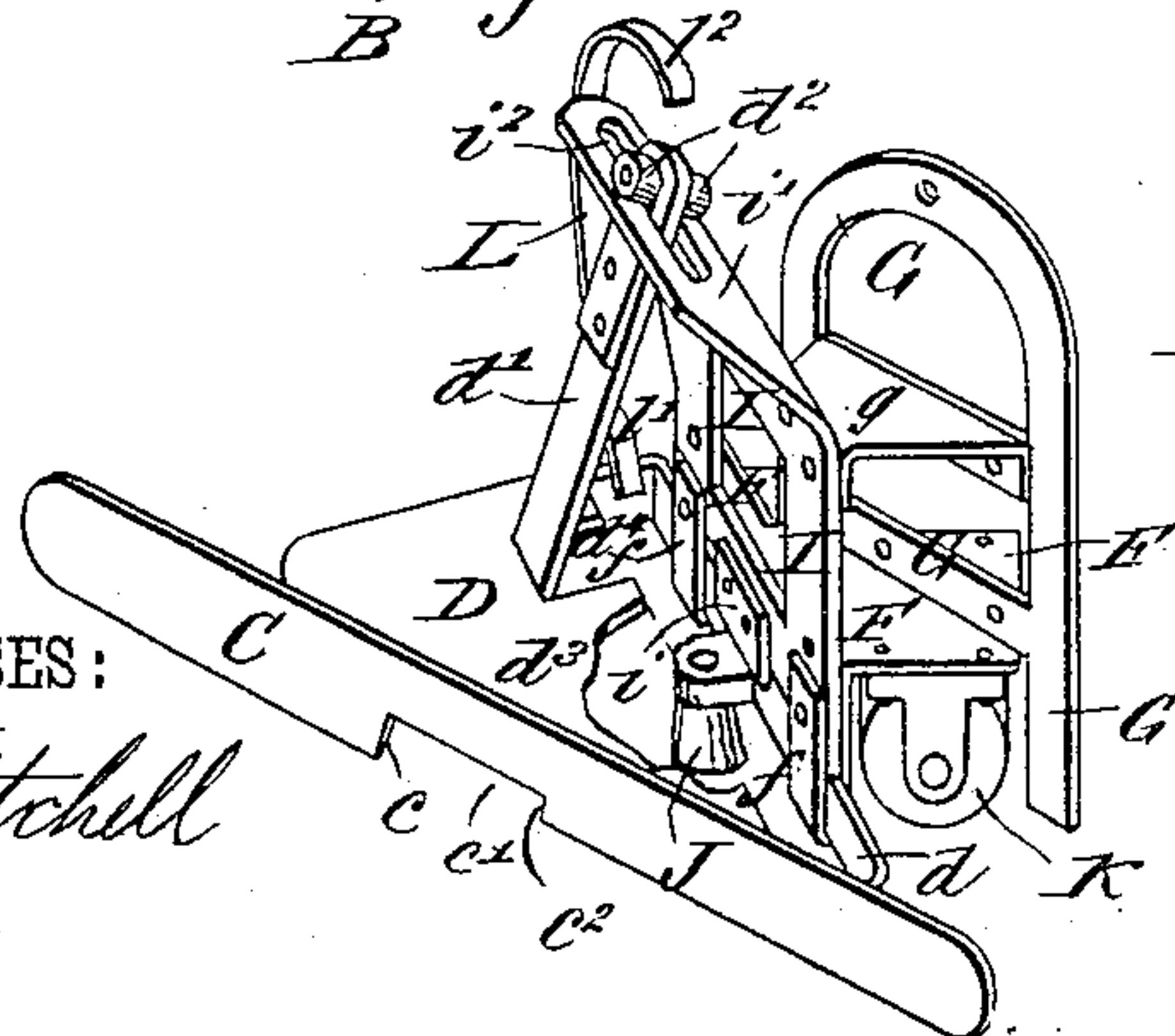
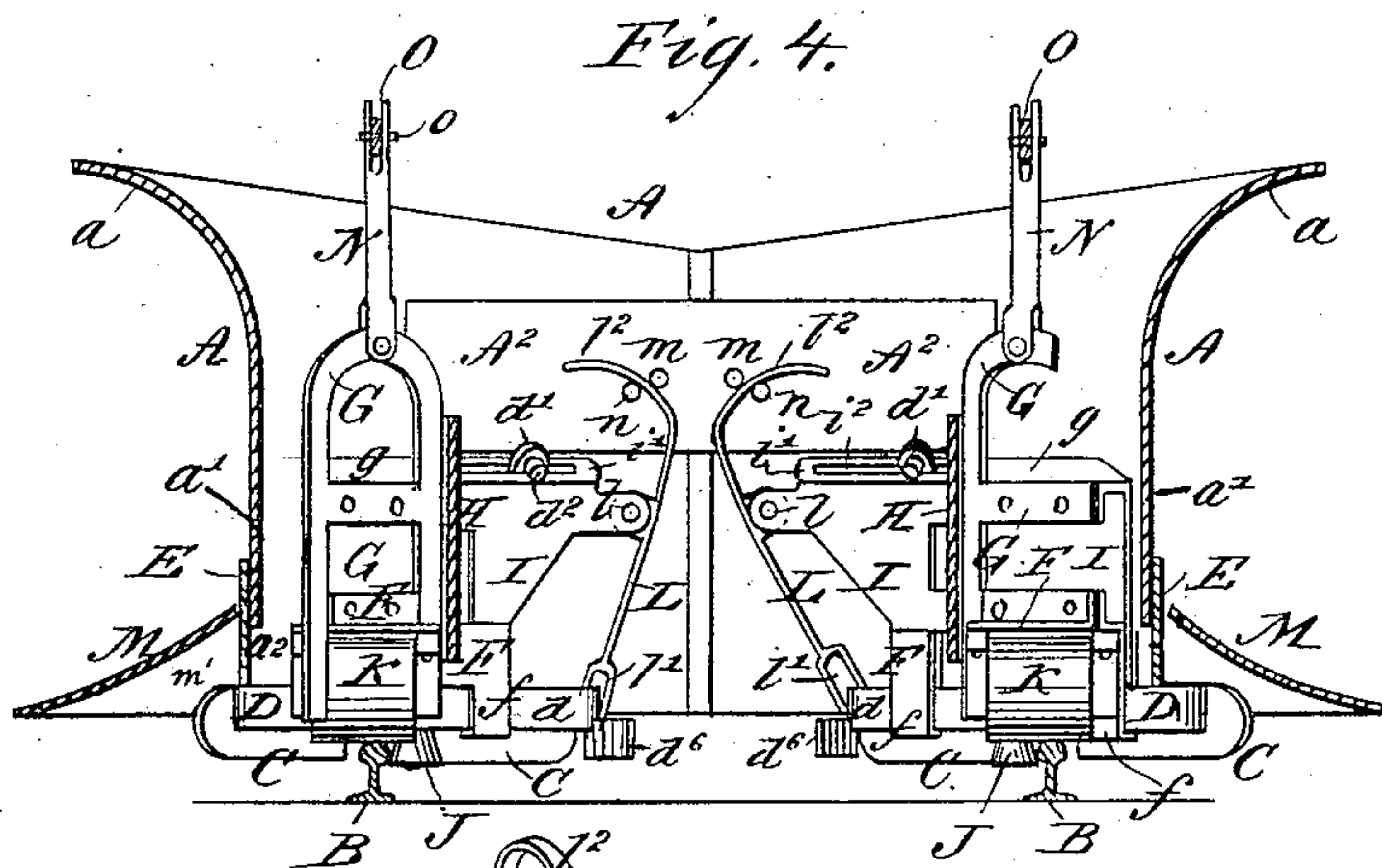
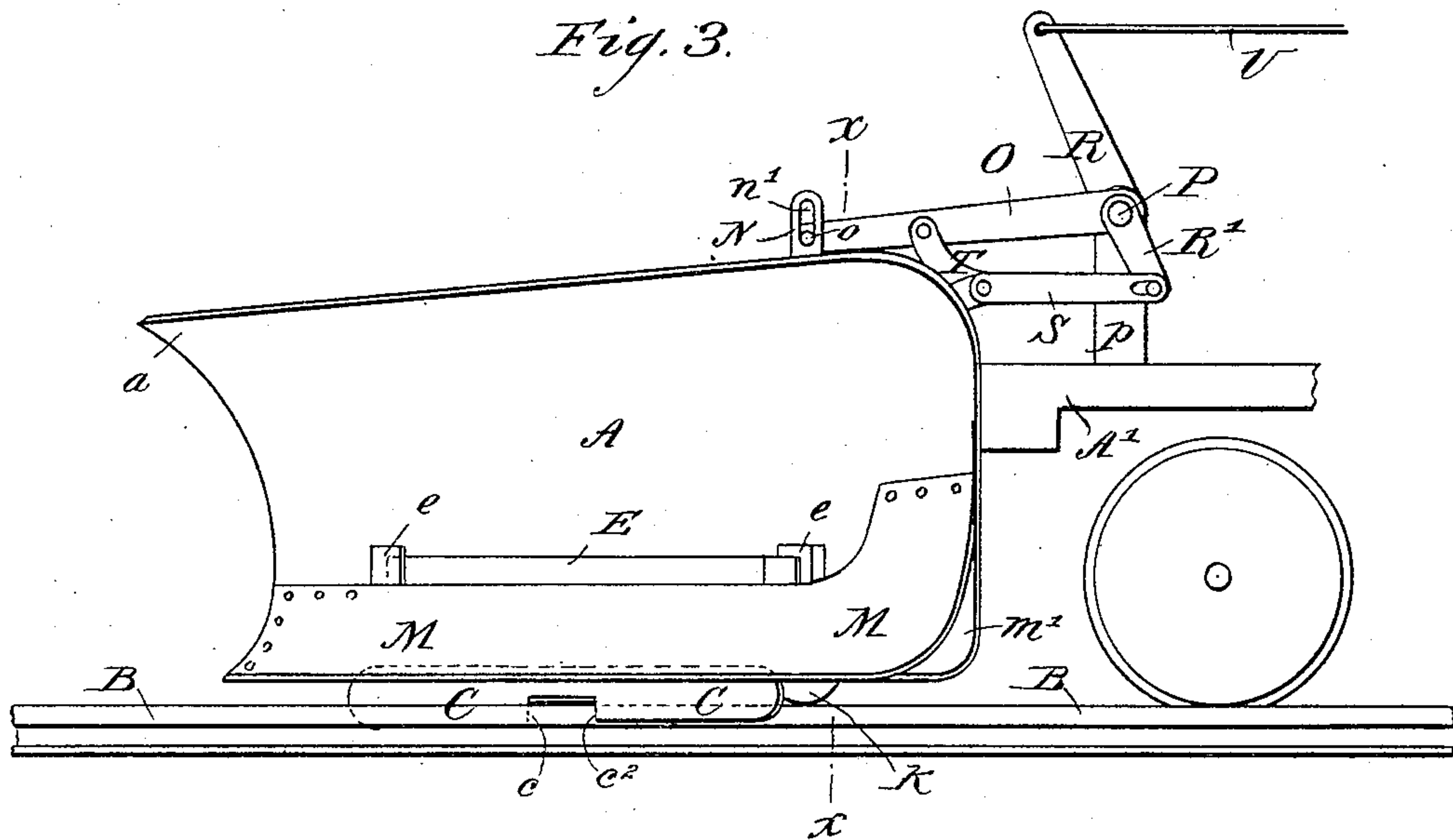
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UNITED STATES PATENT OFFICE.

AUGUSTUS FRANKLIN PRIEST, OF FORT WILLIAM, ONTARIO, CANADA.

RAIL-CLEARER.

SPECIFICATION forming part of Letters Patent No. 345,257, dated July 6, 1886.

Application filed November 19, 1885. Serial No. 183,276. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS FRANKLIN PRIEST, of Fort William, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Rail-Clearers, of which the following is a full, clear, and exact description.

My invention relates to rail-clearers adapted more especially for connection to the snow-plows of locomotive-engines, and for the purpose of clearing the heads of railway-rails of snow and ice to promote greater safety and speed in railway-travel.

The present invention is an improvement on the rail-clearer for which United States Letters Patent No. 326,917 were granted to me September 22, 1885, and has for its special objects to insure the safety of the rail-clearers by arranging their supports behind the mold-board of the snow-plow; also, to afford relief and protection to the clearer-knives by guard-plates fixed to the plow over the knives; also, to provide for correct positions of the clearer-knives when lowered for use and when raised out of use.

The invention consists in certain novel features of construction and combinations of parts of the rail-clearers, all as hereinafter fully set forth.

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 is a central longitudinal vertical section of a snow-plow and the forward end of a locomotive-engine to which it is attached, and shows the right-hand track-clearer in inside view. Fig. 2 is an under side view of the snow-plow and its track-clearers. Fig. 3 is a side elevation thereof. Fig. 4 is a transverse vertical section taken on the line $x x$, Fig. 3; and Fig. 5 is an outside perspective view of the left-hand track-clearer removed from the snow-plow.

The snow-plow A has the usual double-mold-board form to throw the snow to opposite sides of the track, and may be secured to the engine-frame A', or to the frame of a car, in any approved way. I make the plow so it overhangs considerably at its upper part at both sides, as at a , whereby a part of the snow and ice lifted from the tracks B by the plow will

be caught and deflected sidewise to the road-bed. At its lower rear parts at each side the mold-boards are made about vertical, as at a' , Fig. 4, to allow the proper working of the track-clearers as presently explained, and about at the center of the plow is fixed to the opposite mold-boards the cross-brace A², and each mold-board has a recess or opening, a'' , made in its lower edge to give space for the rise and fall of the frame D, to which the clearer-knives C are fixed. Plates E, fitted at their opposite ends in slideways $e e$, fixed to the mold-boards, rest on the knife-frames D, and are free to rise and fall with said frames, and serve to close the mold-board openings a'' above the frames and behind the knives C. The outer sides of the frames D of the clearer-knives are about parallel with the faces of the opposite mold-boards to hold the knives C in like positions and at the outer faces of the mold-boards, and the inner sides or bars, d , of the frame D stand at an acute angle with the knives C, or more nearly at right angles to the tracks B, as shown clearly in Fig. 2. These inner bars, d , of the frames D are fitted to slide in the hook-shaped bearings or guides $f f$, which are up-bent ends of plates F, which in turn are fastened to the arched top frames, G, which are fitted to slide vertically in hook-shaped flanges $h h$, formed at the opposite sides of the edges of the angularly-shaped brackets H, which are fixed to the back cross-plate, H', of the snow-plow, or it may be to the front of the engine pilot or car to which the plow and track-clearers are attached.

To and within the hooks $f f$ of the plates F are bolted the lower ends of plates I, which hold the sliding bars d of the clearer-knife frames D down to place, and to the outer faces of plates I preferably are fixed the guide-plates i , which lap upon the outer faces of the bars d of frames D. (See Fig. 5.) The upper parts of the plates I are braced to the sliding frames G by flanged angular plates g , Fig. 5, and the tops of the plates I are bent forward, as at i' , and have slots i'' , through which the upper ends of brace or truss arms d' , connected to the knife-frames D, pass, and above the bent tops i' of plates I are journaled anti-friction rollers d'' , which are adapted to run along the parts i' . With this construc-

tion, as the sliding frames G of the opposite track-clearers are raised, the knife-carrying-frames D and the clearer-knives C also will be raised and the bars d will be free to slide in the hooks f of plates F, and d' in the slots i' of plates I.

I make the knife-carrying frames D with a marginal bar bent into triangular form, and with a top cover-plate, d^3 , extending from the front angle of the frame nearly to the bar at d and having a slot at d^4 for the passage of the brace-bar d' , the foot of which brace-bar is a plate or bar, d^5 , lying flat upon and fixed to the underside of the cover-plate d^3 , and bent downward at the ends which stand at the inner faces of the triangular bar of the frame, and which construction gives maximum strength with lightness to the knife-carrying frames.

To the rear bars, d , of the knife-frames D are journaled on vertical pins the rollers J, which are adapted to run along the inner edges of the heads of the rails B and prevent the cutting-shoulders c of the clearer-knives C from striking the bolt-heads at the joints of the rails, and also to prevent the knives from stripping torpedoes from the rails, and I make the rollers J tapering upward in form, so that if they should by chance come in contact with guard-rails at a crossing of the tracks the pivot-pins of the rollers will be broken short off easily, and heavy strains on the knife-holding frames will be prevented.

To the under sides of the plates F of the clearers are journaled the rollers or wheels K, which run on top of the heads of the rails when the clearers are down in working position, and hold the knives out of contact with the tops of the rails.

To the plate I of each clearer is pivoted at the elastic metal bar L, the lower end of which is forked at l' over the marginal bar d of the adjacent knife-frame D, and the upper end of the bar L is curved, as at l^2 , and passes between a pair of pins, m n , fixed in the cross bar or brace A' of the plow. When the track-clearers are raised at crossings of the track, the curved ends l^2 of the bars L will act against the pins m , whereby their forked ends l' will be drawn inward, and will draw the clearer-knives C inward toward the faces of the snow-plow, and so that the shoulders c of the knives will stand well inside of the heads at the opposite rails, B, in positions to drop inside of the rails, and when the clearers are lowered to working position the action of the curved ends l^2 of the bars L on the pins n will cause the knife-frames D to be thrown or slid outward until the rollers J of the knife-frames come into contact with the inner edges of the heads of the rails, while the rollers K rest on top of the rails.

To assist in holding the clearer-knives to the inside of the rails, inclined tail-pieces d^6 are fixed to the inner rear corners of the triangular frames D, as in Figs. 2 and 4, so as to offer resistance to the snow between the rails.

I show the clearer-knives C made with

notches at c' behind their shoulders c , which provide rear shoulders, c^2 , which clear the snow from the outside of the rails a little below the tops of the rails; but these shoulders c^2 are not essential, as the shoulders c' clear the snow and ice from the inner edges of the rails to give room for the flanges of the car-wheels, and which alone is required to insure safe travel of the cars on the rails.

As the engine or car to which the track-clearers may be attached rounds a curve to the right hand a roller, J, of the right-hand clearer, as it runs along the rail, will carry the said clearer outward, so its knife moves from the right-hand mold-board of the plow, and the left-hand clearer will move inward, so its knife approaches the left-hand mold-board, and in turning to the left hand the left-hand clearer-knife will move from the plow and the right-hand knife will approach the plow, as will readily be understood. The elasticity of the bars L allows them to yield as either of the clearer-knife frames D are forced inward while turning curves, and when the plow reaches the straight track again the spring-bars L will carry the clearer-knives into proper working position, and hold them there with the rollers J of both clearers against the opposite rails of the track.

In order partly to relieve the clearer-knives C from the pressure of the snow when the clearers are down and at work, and to wholly relieve the knives from the pressure of the snow when the clearers are raised out of action, I fix to each mold-board of the plow an auxiliary mold-board, M, the forward end of which is fixed to the point of the plow, so as to enter the snow easily, and the back end of which is extended upward and fastened at the top to the main mold-board, and so as to leave the space between the mold-board and the inner face of the back end of the mold-board M entirely open, as at m' , for a height about equal to the height of the clearers when raised. Consequently the snow or ice cannot pack between the main and auxiliary mold-boards, and the clearers will not be clogged. The mold-boards M may extend backward but half the length of the main plow, if preferred. The upper edges of the mold-boards M may be slotted, as shown, to allow the plate E to move up and down with the clearer-knife frames, or said edges may be extended upward to entirely cover the plates E. The lower edges of the mold-boards M are about level with the lower edges of the main plow.

Any approved system of rods and levers may be used to raise and lower the clearer-knives. Devices which I prefer for this purpose consist of a rod or bar, N, connected to the top of each of the guide-frames G, and having a forked upper-end to receive the forward end of a lever, O, which has a pin, o , passing through a slot, n' , of the bar N, and is pivoted at its back end to a transversely-ranging shaft, P, journaled in standards p , rising from the engine or car frame A'.

To one end of the shaft P is connected a lever, R, to the lower end of which is attached by a pin-and-slot connection at *r* the back end of a rod, S, the forward end of which is pivoted to the one end of each of a pair of toggle-levers, T T, the other ends of which are pivoted, respectively, to the lever O and engine or car. At the other end of the shaft P is attached a crank arm or lever, R', from which a rod, S, and toggle-levers T T pass to the bar N, connected to the guide-frame at the other side of the plow, and whereby, when a reach-rod, U, is operated from the engine-cab by means of a lever and sector or a small cylinder and piston in control of the engineer, the guide-frames G of the clearers at each side of the plow may be lifted or let down to raise or lower both clearer-knives C C simultaneously. The pin-and-slot connections of the bars N with levers O allow the clearers to rise and fall as the rollers K pass over inequalities of the rails.

One important advantage of the rail-clearers herein described over the rail-clearers shown in my aforesaid Patent No. 326,917 is that the entire supports of the clearer-knives are placed behind the main mold-boards of the snow-plow, and are protected thereby from injury by direct contact with the snow, thus not only making the rail-clearers and snow-plow more serviceable, but keeping the supports of the clearer-knives out of sight.

The rail-clearers are especially designed for use with snow-plows; but it is obvious that the clearers herein shown and described, as also those shown in my prior patent aforesaid, may be fitted to a moving car for clearing the tracks of street and other railways, and independently of a snow-plow.

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

1. In rail-clearers, the combination, with a snow-plow, A, having openings *a'* at the lower edges of the mold-boards, of knives, as at C, adapted to clear the snow from the heads of the rails, substantially as specified, and said knives held to a frame which is vertically adjustable in supports standing behind the plow mold-boards, substantially as herein set forth.

2. In rail-clearers, the combination, with a snow-plow having openings *a'* in its mold-boards, of knives C, adapted to clear the snow from the heads of the rails, substantially as specified, and said knives held to frames which are vertically adjustable in supports standing behind the plow mold-boards, and said knife-frames being arranged to have horizontal play, allowing the knives to yield either way to the curves of the rails, substantially as herein set forth.

3. In rail-clearers, the combination, with a snow-plow having openings *a'* in its mold-boards, and the clearer-frames D, supporting the knives C outside of said openings, of cover-plates E, fitted to slide on the plow and to rise and fall with the frames D and knives C, substantially as herein set forth.

4. In rail-clearers, the combination, with a snow-plow and knives, as at C, arranged to clear the heads of the rails, substantially as specified, of auxiliary mold-boards or guard-plates M, fixed to the plow and adapted to relieve the knives of the pressure of the snow, substantially as herein set forth.

5. In rail-clearers, the combination, with a snow-plow and knives, as at C, arranged to clear the heads of the rails, substantially as specified, of guard-plates M, fixed to the nose of the plow and adapted to relieve the knives of the pressure of the snow, and said plates M being connected to the plow at the back end, so as to provide a clear space at *m'* behind the clearer-knives, substantially as herein set forth.

6. A rail-clearer comprising a frame consisting of connected parts G F I, adapted to move vertically on a support, as at H, and a frame, D, fitted to slide horizontally in the vertically-sliding frame, and a rail-clearing knife, C, fixed to the frame D, substantially as herein set forth.

7. A rail-clearer comprising a frame consisting of connected parts G F I, adapted to move vertically on a support, as at H, a frame, D, fitted to slide horizontally in the vertical sliding frame, a rail-clearing knife, C, fixed to frame D, a roller, K, journaled to the vertically-sliding frame, and a roller, J, journaled to the frame D, substantially as and for the purposes herein set forth.

8. A rail-clearer comprising a frame consisting of connected parts G F I, adapted to move vertically on a support, as at H, and plate I, having an upper end slotted at *i'*, and an angular frame, D, fitted to slide horizontally at the lower part of the vertically-sliding frame, and having a brace-arm, *d'*, guided in the slot *i'* of the plate I, and a rail-clearing knife, C, fixed to the frame D, substantially as herein set forth.

9. In rail-clearers, the combination, with a vertically-movable support, as at I, and the clearer-knife-carrying frame D, fitted to slide horizontally thereon, of a bar, L, pivoted to the support and connected to the frame D, and having a curved end, as at *l'*, and a pin, as at *m*, engaging the end *l'*, substantially as specified, whereby when the knife-carrying frame is raised it will be drawn inward, as set forth.

10. In rail-clearers, the combination, with a vertically-movable support, as at I, and the clearer-knife-carrying frame D, fitted to slide horizontally thereon, of a bar, L, pivoted to the support and connected to the frame D, and having a curved end, as at *l'*, and a pin, as at *n*, engaging the end *l'*, substantially as specified, whereby when the knife-carrying frame is lowered it will be pushed outward, as set forth.

11. The combination, with the frame D, carrying the clearer-knives C, of the inclined tail-pieces *d'*, fixed to the frames, substantially as shown and described, and for the purpose set forth.

12. In rail-clearers, the combination, with the frame D, carrying the clearer-knife C, of a roller, J, adapted to engage the inner edge of the head of the rail, and said roller being
5 tapered upward, substantially as herein set forth.

13. In rail-clearers, the combination, with the vertically-movable frames to which the knife-carrying frames are held, of bars N, le-

vers O, shaft P, levers R R', bars S S, and a pair of toggle-bars, T T, connecting each lever O with the engine or car, substantially as herein set forth.

AUGUSTUS FRANKLIN PRIEST.

Witnesses:

SIMON FRASER,

EDWARD E. LILLIE.