

(No Model.)

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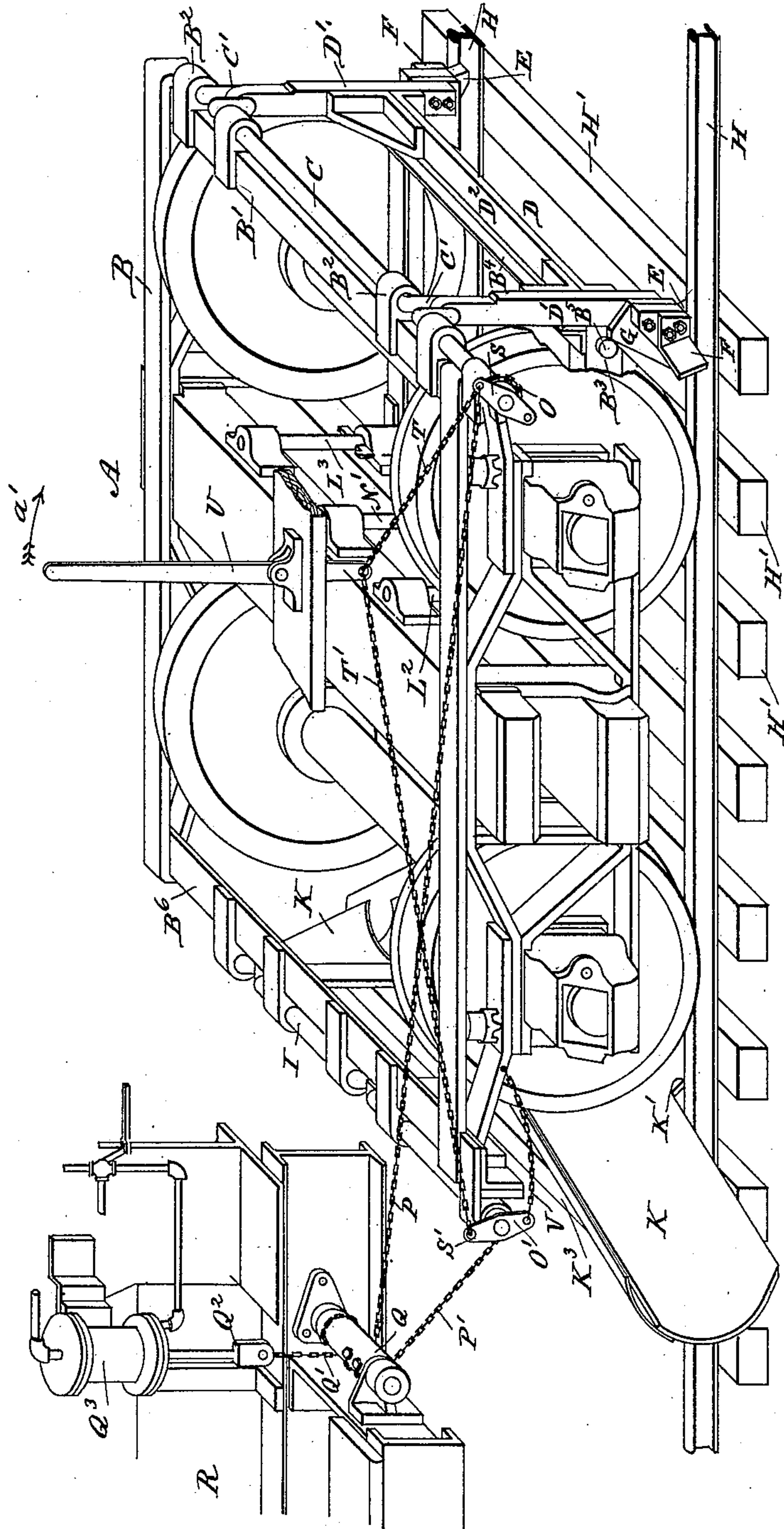
E. LESLIE.

ICE OR SNOW PLOW FOR RAILROAD TRACKS.

No. 405,039.

Patented June 11, 1889.

Fig. 1.



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(No Model.)

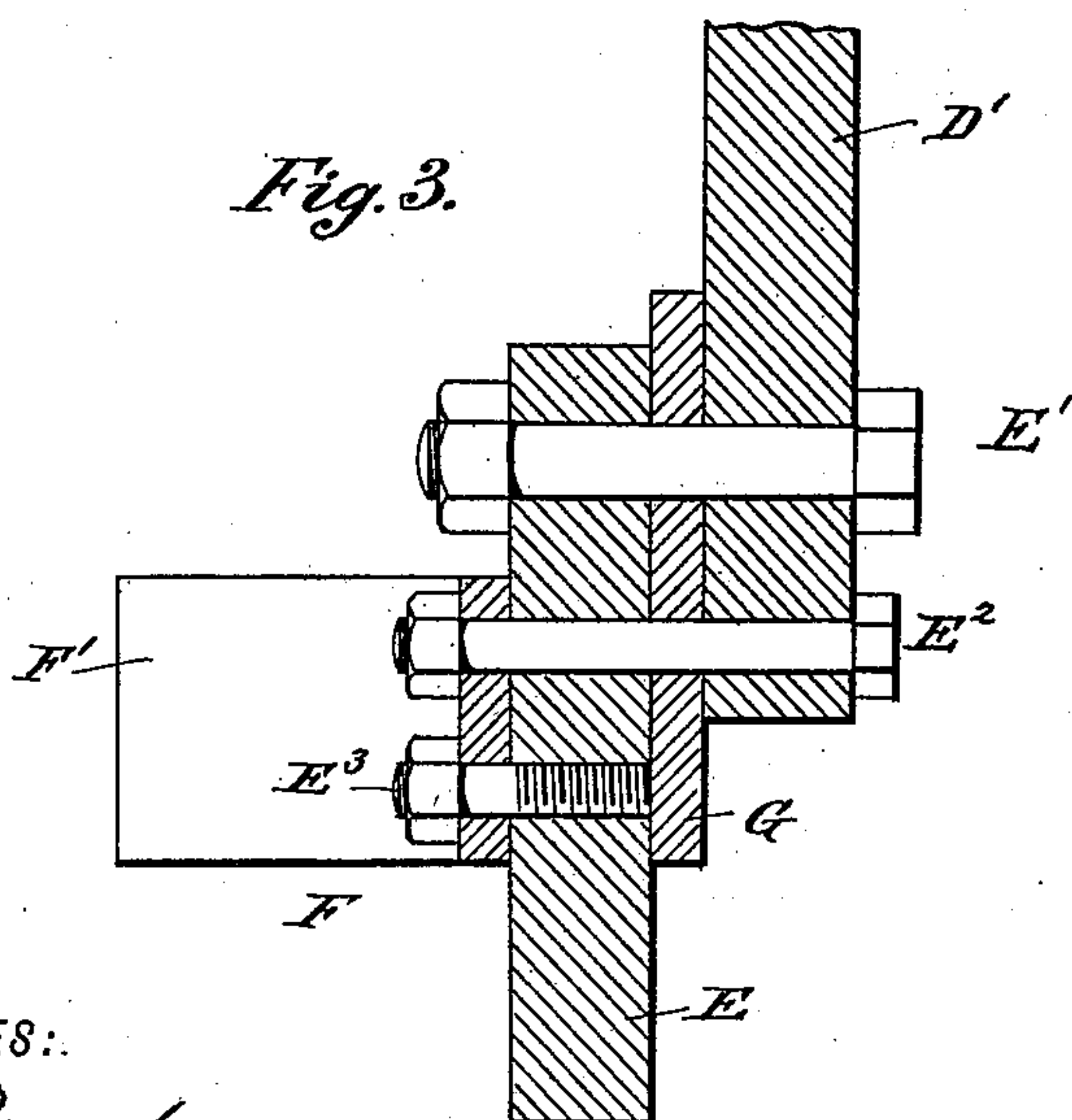
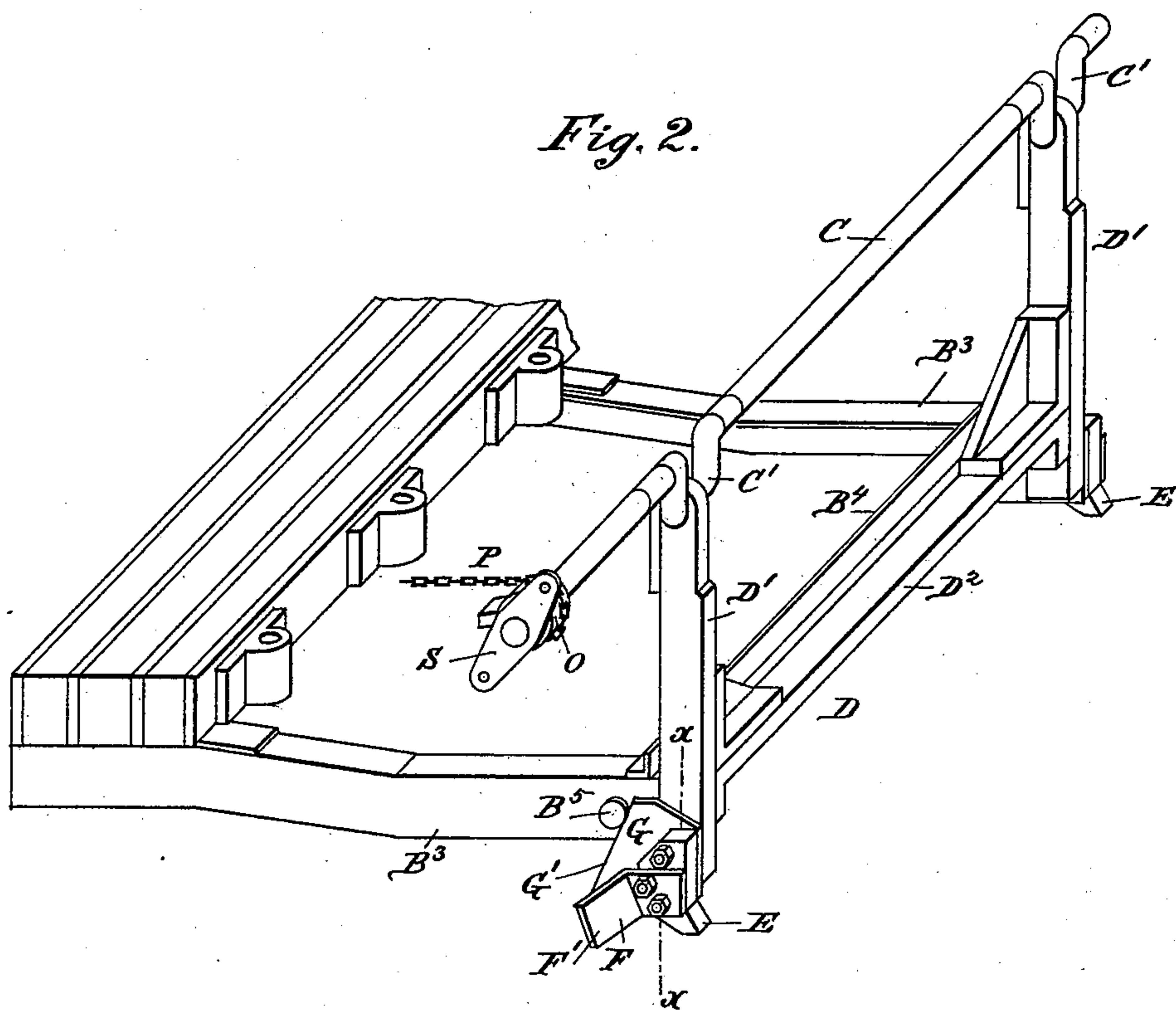
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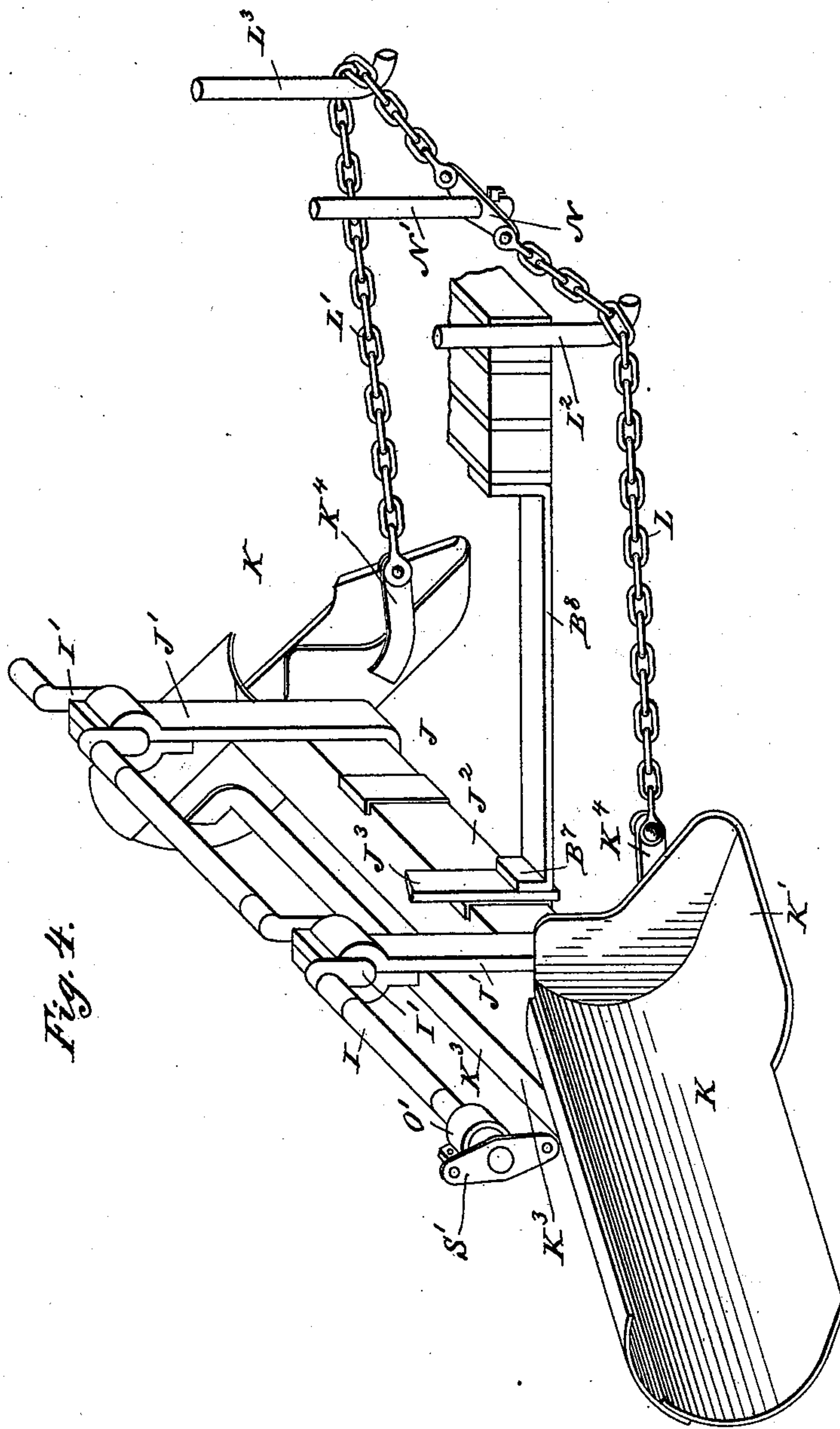
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ICE OR SNOW PLOW FOR RAILROAD-TRACKS.

SPECIFICATION forming part of Letters Patent No. 405,039, dated June 11, 1889.

Application filed May 2, 1888. Serial No. 272,552. (No model.)

To all whom it may concern:

Be it known that I, EDWARD LESLIE, of Orangeville, in the county of Dufferin, Province of Ontario, and Dominion of Canada, have invented a new and Improved Ice or Snow Plow Flanger for Railroad-Tracks, of which the following is a full, clear, and exact description.

The invention relates to ice or snow-plows such as shown and described in Letters Patent No. 380,042, granted to me under date of March 27, 1888.

The object of the invention is to design an effective ice or snow plow, which will loosen any hardened snow or ice immediately next to the track, and a flanger that will remove the snow and ice in proximity to the inside rail and discharge the same at a sufficient distance from the track to prevent it from falling back.

The invention consists in an independent raising and lowering mechanism whereby the preceding snow or ice plow or the following flanger may be put into operation either separately or to co-operate, as desired.

The invention further consists in providing the snow or ice plow mechanism and the flanger mechanism with an independent device, whereby the shock or strain consequent upon either the snow or ice plow or the flanger striking an obstruction—such as a switch—which invariably results in either tearing out the obstruction or demolishing the snow plow or flanger, or both, will break, shear off, or tear out such device, thus permitting the obstruction and the above-mentioned mechanism to remain unharmed.

The invention also 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 figures.

Figure 1 is a perspective view of the improvement as applied. Fig. 2 is a like view of the ice-plows and rail-scrapers. Fig. 3 is an enlarged sectional end elevation of part of the same on the line xx of Fig. 2, and Fig. 4 is a perspective view of the flangers and their immediate connections.

The truck A, of any approved construction, is provided with a frame B, having at its front upper end a cross-beam B', carrying the bearings B², in which is journaled the transverse shaft C, provided with the crank-arms C', pivotally connected with the vertical posts D' D', secured to each other by a transverse brace D², so as to form a frame D, carrying the ice-plows E and the scrapers F.

The frame D rests with its rear end against the front ends of the longitudinal beams B³ of the truck-frame, and the front ends of the said beams B³ are connected with each other by the brace B⁴, and form a guide for the vertically-sliding frame D.

On the lower end of each post D' is held a plate G, having a beveled rear edge G', resting against a pin B⁵, secured to the respective longitudinal beam B³ of the truck-frame B. Next to this plate G is placed the ice-plow E, which extends below the plate G and the post D', and is held close to the inside of the respective track-rail H, and when in its lowermost position extends with its bottom end to within a short distance of the railroad-ties H'.

On the outer face of each plow E is held a scraper F, formed of an L-shaped plate, and extending, with its arm F', across the top of the respective rail H when the post D' is in its lowermost position. The arm F' of the scraper F is slightly inclined toward the rear, so as to facilitate the removing of the snow or ice scraped up by the lower edge of the said arm F'. By means of the said inclined face G' of the plow G and the pin B⁵ the ice-plow E and the scraper F are prevented from coming in contact with the tread of the truck-wheels.

The plate G and the plow E are secured to the lower end of the respective post D' by a heavy bolt E', and the scraper F is secured by the smaller bolts E² and E³ to the plow E; but the bolt E² passes through the plow E, and the plate G and is held into the post D', while the other bolt E³ is shorter, and only screws into the plow E without passing into the plate G or the post D', as shown in Fig. 3. Thus when the frame D is in its lowermost position and the apparatus is in operation and the plows E strike against a switch-rail or other obstruction in the track, then the force of forward movement of the truck A causes the shearing off of the small bolt E², and the

plow E, scraper F, and plate G swing rearwardly and upwardly, turning on the heavy bolt E' as a pivot. A breaking of the switch-rails is thus prevented. The bolt E² is then
5 replaced by a new one to secure the several pieces together, as above described.

On the rear upper end of the frame B is held a transverse beam B⁶, provided with bearings in which is journaled a transverse
10 shaft I, having crank-arms I', pivotally connected with the upright posts J', connected with each other near their lower ends by the transverse beam J², so as to form the frame J, the latter supports at the ends of the beam
15 J the flangers K K, held at an angle to the said beams and formed like a scoop, with the outer open ends extending rearward. The inner closed end of each flanger K is provided with a downward projection K', extending
20 below the top of the respective rail H, so as to gather up the snow and ice between the rails H and loosened by the plows E, before mentioned. The outer ends of the two flangers K are connected with each other at their back
25 by a brace K³. The outer ends of the flangers K extend a considerable distance beyond the outside of the rails H, so as to deliver the snow and ice a suitable distance to each side of the track. On the inner edge of the transverse beam J² are held the vertical guide-plates J³, against which rest the upwardly-turned ends B⁷ of the longitudinal beams B⁸, secured to the truck-frame.

To the inner ends of the flangers K K are secured the brackets K⁴ K⁴, connected with
35 one end of the chains L and L', respectively, extending forward and passing over the lower curved ends of the vertical rods L² and L³, respectively, held in suitable keepers on the truck-frame B, as is plainly shown in Fig. 4.
40 The other ends of the chains L and L' extend inwardly toward each other, and are secured to the ends of the plate N, pivoted in its middle to the vertical rod N', held in suitable
45 keepers on the front of the middle beam of the truck-frame B, between the rods L² and L³.

Near the outer end of the two transverse shafts C and I are formed drums O and O',
50 respectively, on which are secured the chains P and P', respectively, passing rearward and over a drum Q, on which they are secured. This drum Q is mounted to rotate in suitable bearings formed on the car R in the rear of
55 the truck A, and the drum is operated by a chain Q', connecting the said drum with one end of a piston-rod Q², supporting a piston working in the cylinder Q³, operated by steam or air and under the control of the engineer.
60 On the outer ends of each of the two shafts C and I is also secured an arm S and S', respectively, held inclined to each other and connected with the chains T and T', secured to the lower end of the vertical lever U, fulcrumed in the middle of the truck A. A short
65 chain V is secured to the other end of the arm S', and is connected with the frame B, serv-

ing to prevent the arm S' and its shaft I and the flangers K returning to their former position after the flangers are raised.

The operation is as follows: When the machine is in the position shown in Fig. 1 and the truck A is pushed forward by suitable means, then the plows E loosen the ice next
70 to the inside of the rails H, so as to form a clear space for the flanges of the following car-wheels to prevent a derailing of the cars. The scrapers F, held on top of the rails H, remove all snow and ice from the same, so as to clear the rails for the tread of the following
75 car-wheels. The flangers K K at the rear of the truck A gather up a large amount of snow and ice located between the rails and at their outside, and at the forward motion of the truck the snow and ice pass through the
80 open ends of the scoop-shaped scrapers and are delivered a suitable distance beyond the sides of the track. When the plows E strike an obstruction in the track, the bolts E² are sheared off, as above described, and the plows
85 are thrown upward and rearward above the rails H. The truck A is moved beyond the obstruction, the bolts E² are replaced by new ones, and then the apparatus is again moved forward, as above described. When
90 the flangers K strike an obstruction, the plate N, connected by the chains L L' with the said flangers, is broken, and the latter are free to swing rearwardly, turning with their frame J on the crank-arms I' of the shaft I.
95 When the obstruction is removed or passed, then the plate N is replaced by a new one. The plate N is purposely so made that when the flangers or either of them meet an abnormal obstruction the plate N will break about
100 the shaft N', thus leaving both flangers free and avoiding any twist being thrown upon the frame-work of the flanger, which would be the case were one flanger free and the other held fast. I purposely make the chains L L'
105 and their connections with the plate and flangers much stronger than the plate N where the same is pierced by the shaft N', and in this way when an obstruction is met it results in freeing both flangers.

When the operator desires to raise the plows E and scrapers F, he throws the lever U forward in the direction of the arrow a', whereby the chain T pulls on the arm S, thereby turning the shaft C, so that the crank-arms
110 C' swing upward and raise the frame D, carrying the plows and scrapers. The latter are thus raised above the track-rails H, and can clear switch-rails or frogs located between the rails. When the obstruction is passed, the
115 lever U is moved to a vertical position, whereby the frame D by its own weight slides downward to its former position. The flangers K K are raised above the track by moving the lever U in the reverse inverse direc-
120 tion of the arrow a', so that the chain T' pulling on the arm S' turns the shaft I, and the latter, by the crank-arms I', raises the frame J and the flanger K connected with the said
125
130

frame. By moving the lever U forward or backward I am enabled to throw either the plows E and scrapers F or the flangers K upward out of contact with the rails and hold them in this position, so that only the plows E and scrapers F or the flangers K, as desired, are at work.

When the operator desires to raise the plows, scrapers, and flangers simultaneously, then steam or air is admitted to the cylinder Q³, so as to raise its piston and piston-rod Q², whereby the drum Q is turned and the chains P and P' are wound up on the said drum Q. As the chains P and P' are connected with the shafts C and I, the latter are consequently turned and raise the frames D and J in a similar manner to that above described in reference to the lever U.

It will be seen that the several devices are fully under the control of the operator, and if the plows E or flangers K should strike an unseen obstruction they operate automatically and without injuring or destroying the obstruction. Instead of using crank-arms C' and I' on the shafts C and I, I may employ similar devices—such as cams, levers, or eccentrics—for raising the frames D and J.

It will be seen that by supporting the frames D and J from the truck-frame, instead of the car-body, I am enabled to clear the rails perfectly on curves, as the said frames are not affected by the swaying of the car-body or the lateral motion of the car-springs when the car passes over the curve.

One of the objects of my present invention is to support an ice-plow, scraper, and flanger solely from the truck, and in such a way that the devices do not receive any motion from the movement of the car-body when the same may move in relation to the truck.

My invention is illustrated and is best carried out with the truck-frame and journal-boxes for the wheels so arranged that the frame and journal-boxes always move together; but it can be used on either form of trucks, although on trucks where there is a movement between the frame and journal-boxes as close an adjustment of the scrapers and flangers to the top of the rail cannot be had as can be made in the case where the truck is so constructed that there is practically no movement between the frame and the journal-boxes.

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

1. In an ice or snow plow, the combination, with the truck-frame, of front and rear frames adapted to be raised simultaneously or independently, and plows and scrapers secured to the said front frames, and flangers secured on the said rear frames, substantially as shown and described.

2. In an ice or snow plow, the combination, with the truck-frame provided with a shaft having crank-arms, and which is adapted to turn, of a frame pivotally suspended upon

said crank-arms, and plows secured on the said frame, substantially as shown and described.

3. In an ice or snow plow, the combination, with the truck-frame provided with a shaft having crank-arms, and which is adapted to turn, of a frame pivotally suspended upon said crank-arms, and scrapers secured to the said frame, substantially as shown and described.

4. In an ice or snow plow, the combination, with the truck-frame provided with a shaft having crank-arms, and which is adapted to turn, of a frame pivotally suspended upon said crank-arms, and flangers supported on the said frame, substantially as shown and described.

5. In an ice or snow plow, the combination, with a truck-frame, a shaft mounted on the said truck-frame and having crank-arms, and a lever held on the said truck-frame for turning the said shaft, of a frame hung on the said shaft, and plows and scrapers held on the said frame, substantially as shown and described.

6. In an ice-plow, the combination, with a truck-frame, of a shaft journaled in the said truck-frame and provided with crank-arms, and a frame hung on the said crank-arms and guided on the said truck-frame, substantially as shown and described.

7. In an ice-plow, the combination, with a truck-frame, of a shaft journaled in the said truck-frame and provided with crank-arms, a frame hung on the said crank-arms and guided on the said truck-frame, and plows and scrapers held on the said frame, substantially as shown and described.

8. In an ice-plow, the combination, with a truck-frame, of a shaft journaled in the said truck-frame and provided with crank-arms, a frame hung on the said crank-arms and guided on the said truck-frame, and flangers secured to the said frame, substantially as shown and described.

9. In an ice or snow plow, a drum carried upon a car-body and adapted to be turned, in combination with shafts carried by a truck-frame having crank-arms and adapted to turn, frames pivotally suspended upon said crank-arms, and plows, scrapers, and flangers held on the said frames, the said drum and shafts being operatively connected by means of chains, substantially as shown and described.

10. In an ice or snow plow, the combination, with the post or device which carries the ice-plow, and the ice-plow, of two bolts of unequal strength, substantially as shown and described, whereby the weaker bolt will be sheared off in case of contact with a solid obstruction, as set forth.

11. In an ice or snow plow, the combination, with two bolts of unequal strength, of an ice-plow held on the said two bolts, and a scraper secured to the said ice-plow, substantially as shown and described.

12. In an ice or snow plow, the combination, with a post, of two bolts of unequal strength and secured to the said posts, an ice-plow held on the said bolts, and a scraper secured to the said ice-plow, substantially as shown and described.

13. In an ice or snow plow, the combination, with flangers, of chains connected with the said flangers, and a fixed plate, to which the said chains are secured, and which will break centrally when the flangers receive an abnormal strain, substantially as shown and described.

14. In an ice or snow plow, the combination, with a frame mounted to swing, and

flangers held on the said frame, of chains connected with the said flangers, and a fixed plate, to which the said chains are secured, and which will break when the flangers receive an abnormal strain, substantially as shown and described.

15. In an ice or snow plow, the combination of the flangers and the plate N, connected with the flanger-chains and weakened at the center, substantially as shown and described.

EDWARD LESLIE.

Witnesses:

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EDGAR TATE.