

(No Model.)

6 Sheets—Sheet 1.

J. SCULLY.

MACHINE FOR UNLOADING CARS.

No. 394,727.

Patented Dec. 18, 1888.

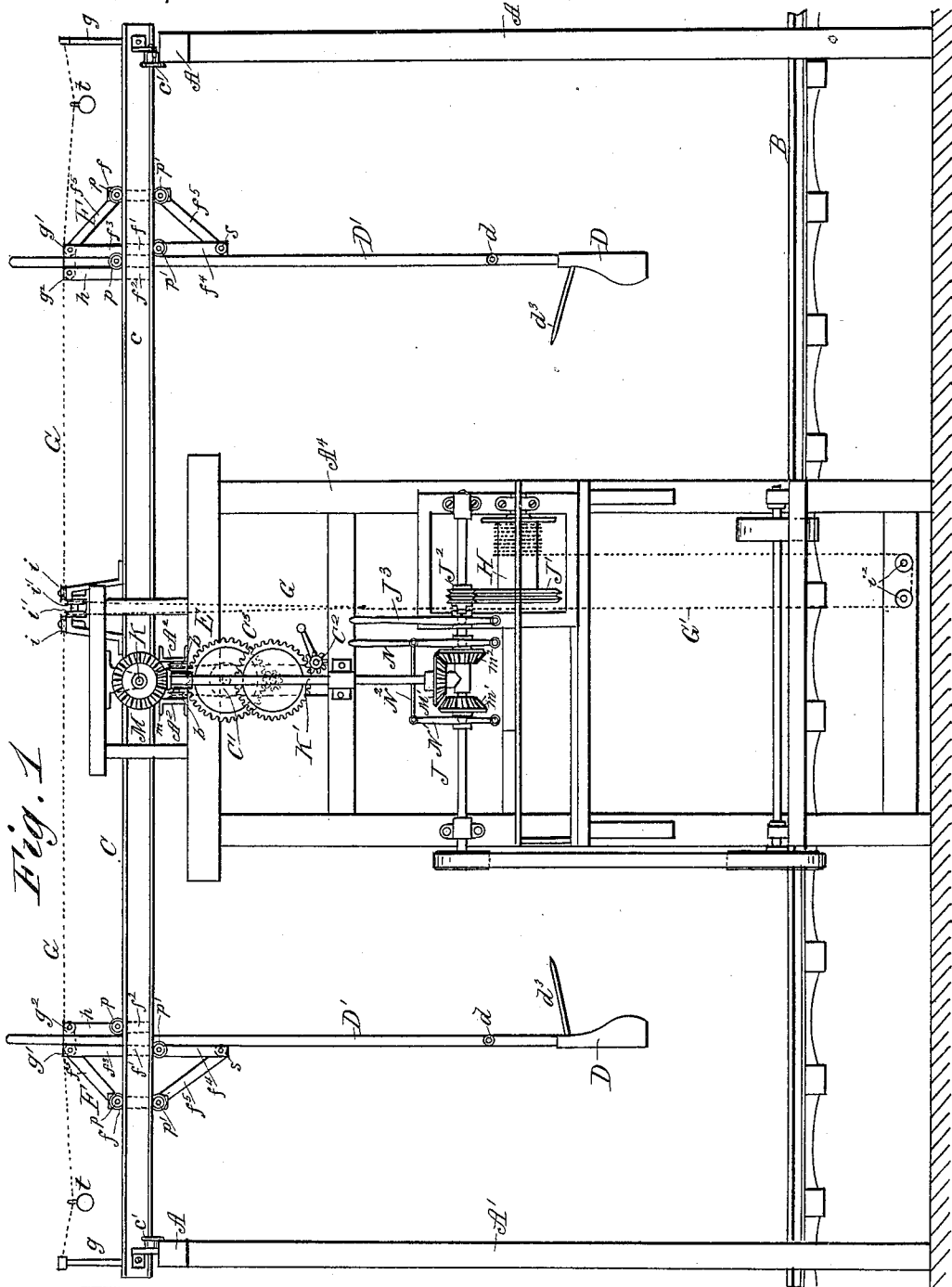


Fig. 1

WITNESSES:

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C. Sedgwick

INVENTOR:

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BY Munn & Co  
ATTORNEYS.

(No Model.)

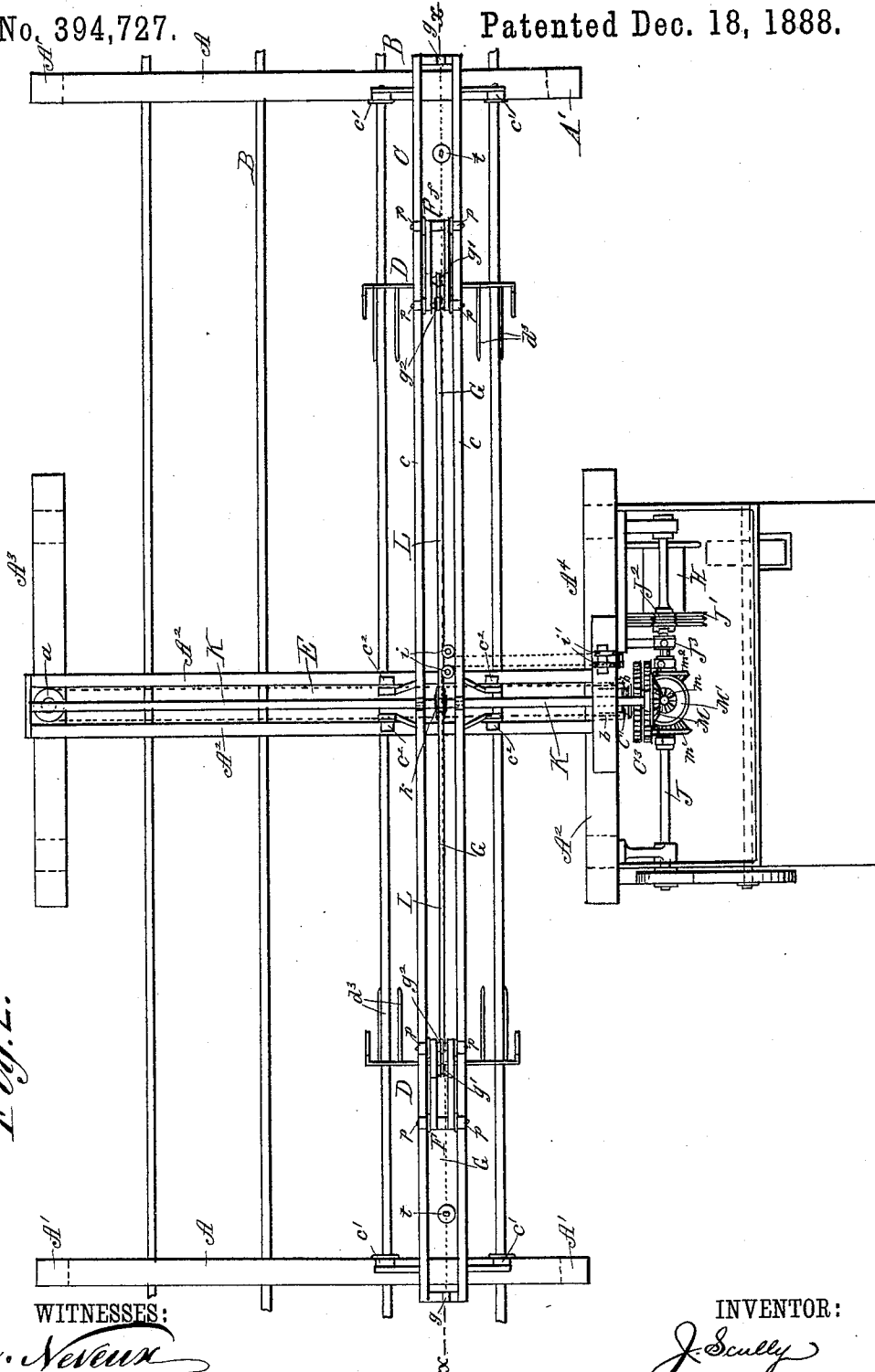
6 Sheets—Sheet 2.

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WITNESSES:

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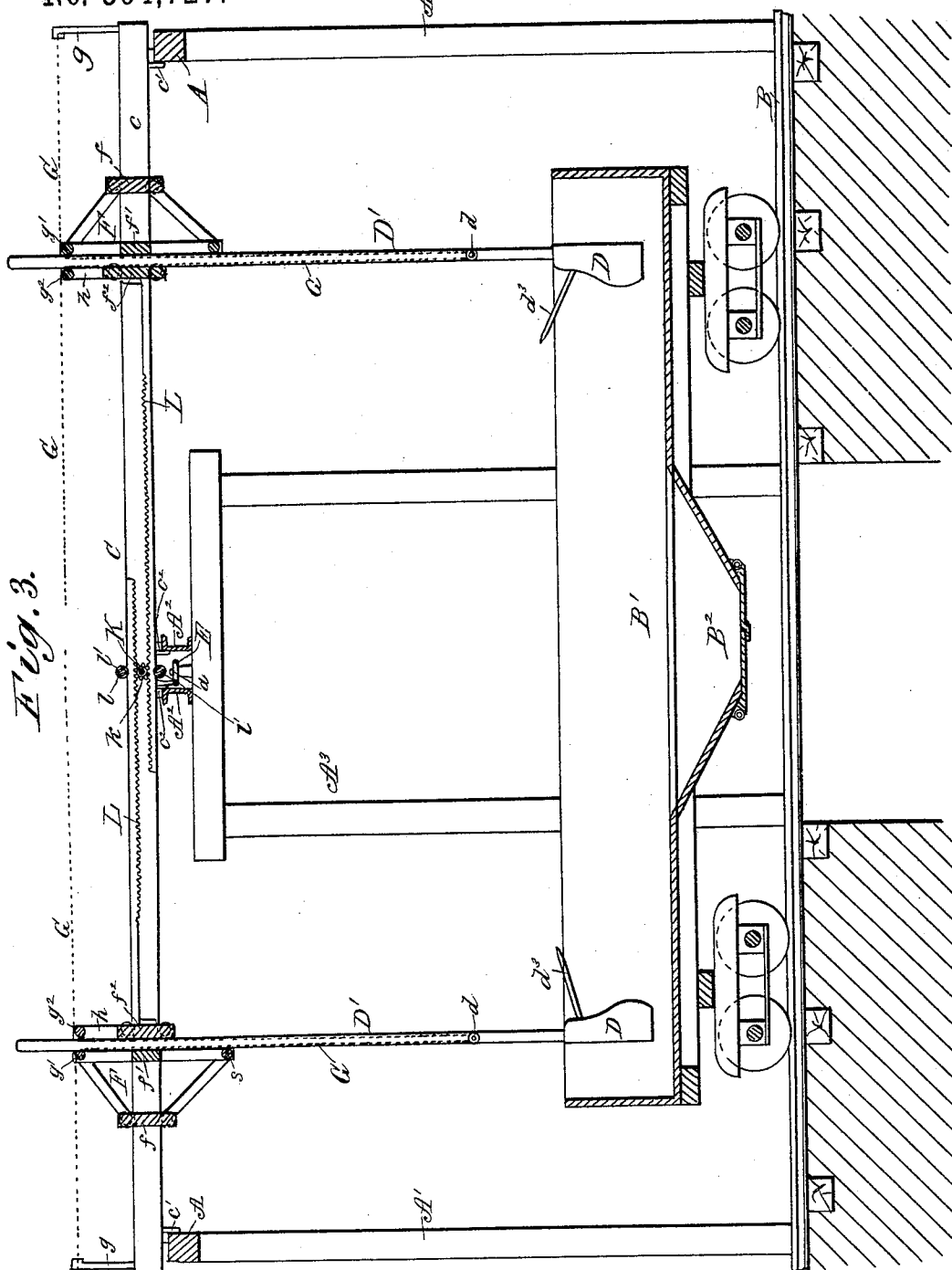


Fig. 3.

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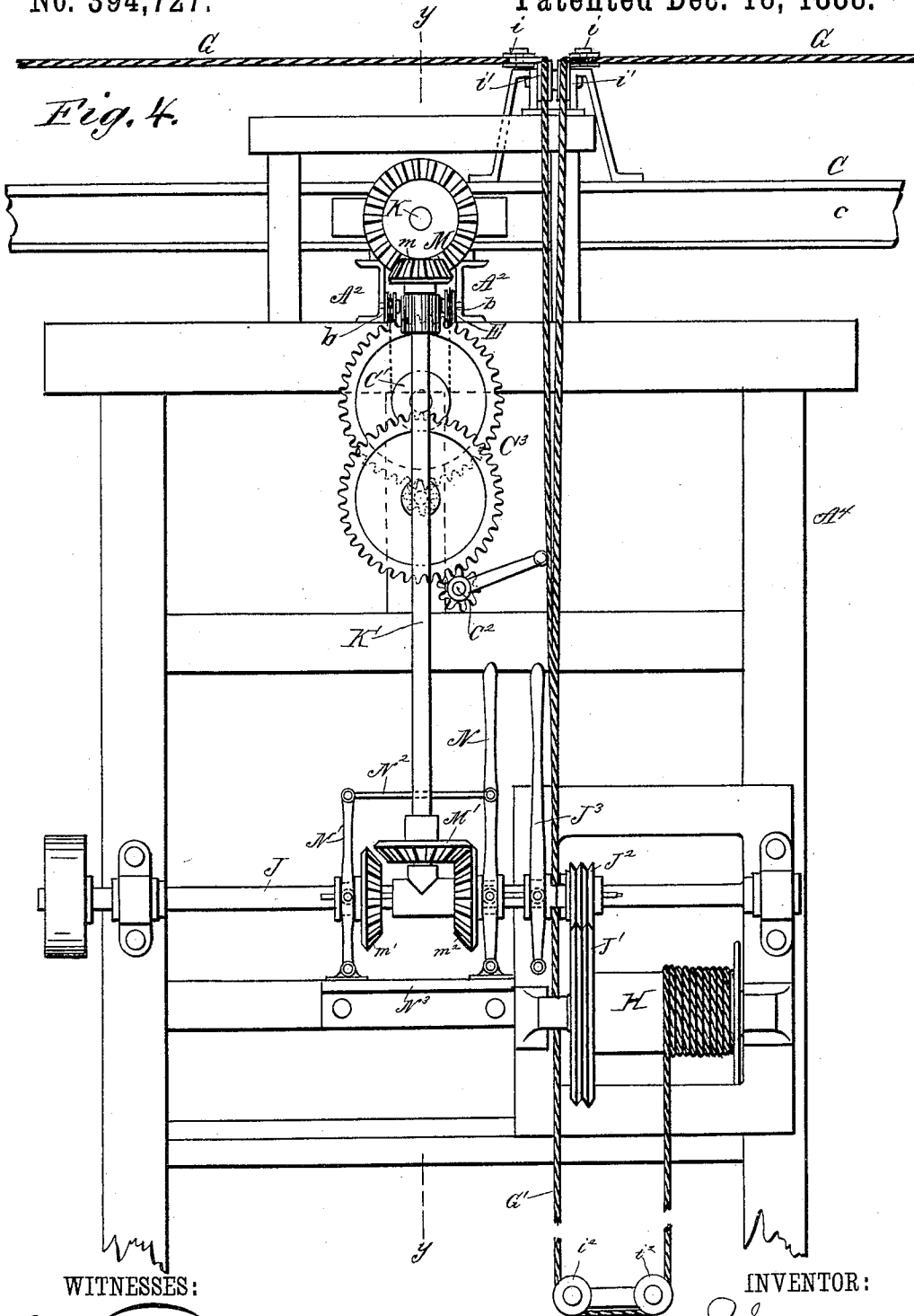
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Fig. 4.



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Fig. 6.

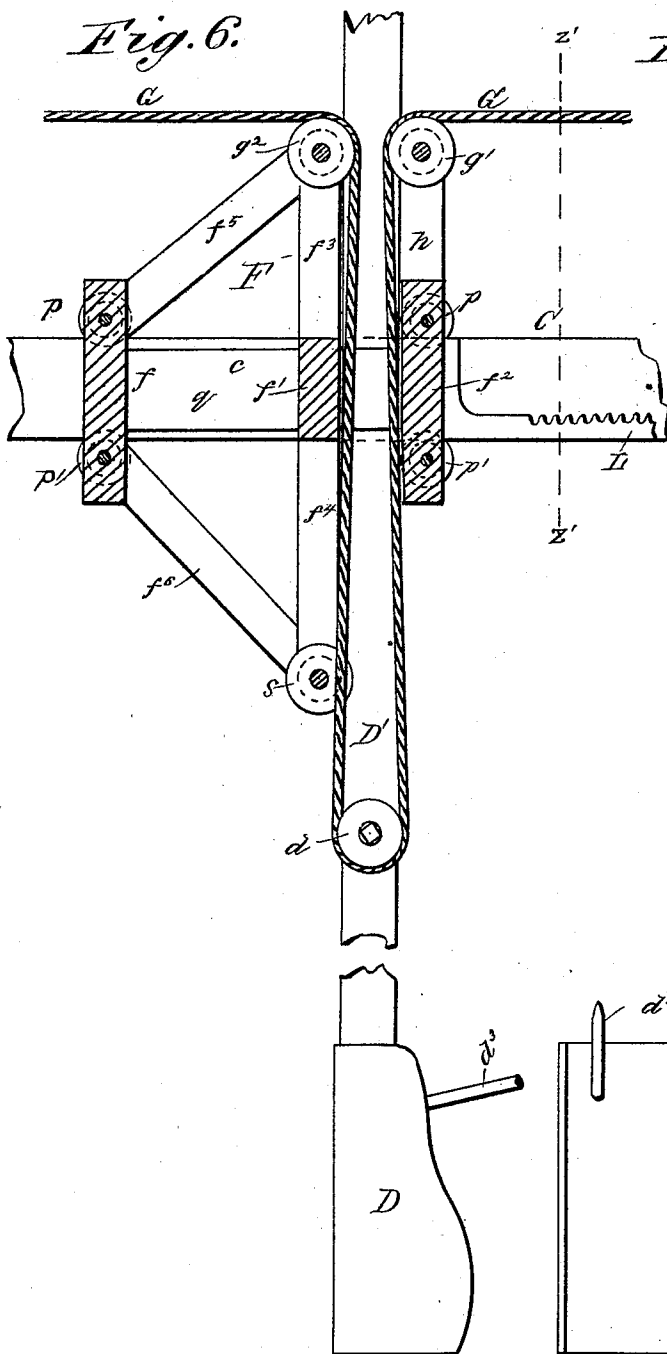
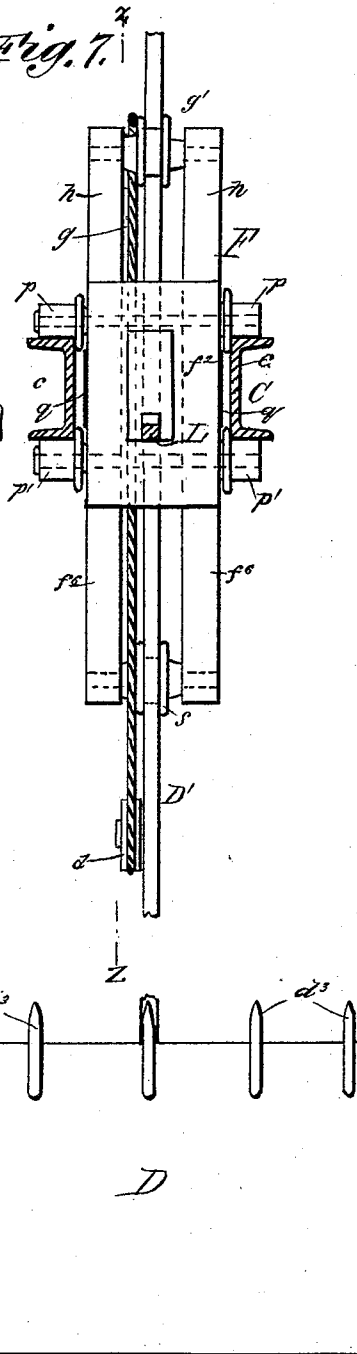


Fig. 7.



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INVENTOR:

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(No Model.)

6 Sheets—Sheet 5.

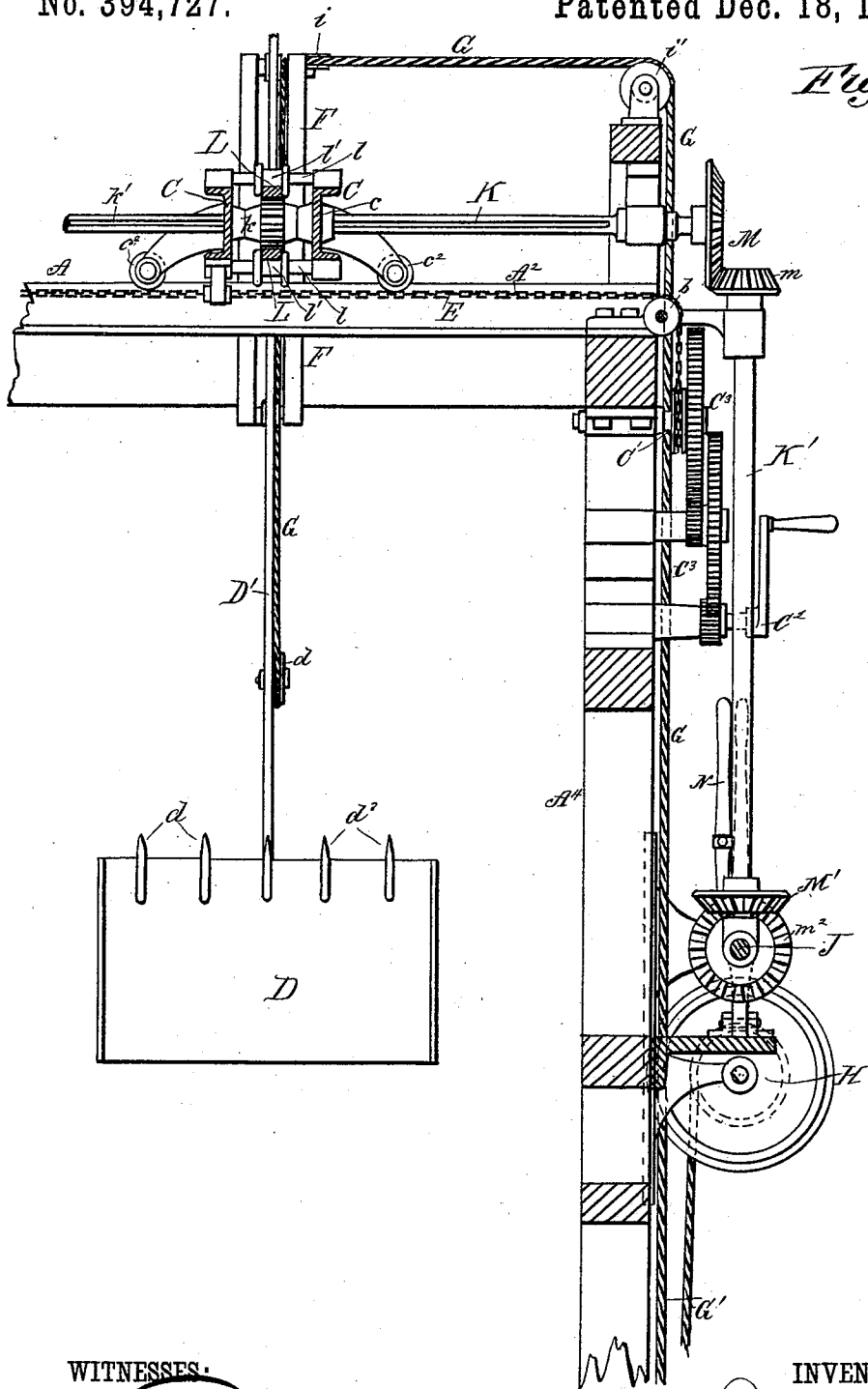
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*Fig. 5.*



**WITNESSES:**

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C. Sedgwick

INVENTOR:

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# UNITED STATES PATENT OFFICE.

JOHN SCULLY, OF SOUTH AMBOY, NEW JERSEY.

## MACHINE FOR UNLOADING CARS.

SPECIFICATION forming part of Letters Patent No. 394,727, dated December 18, 1888.

Application filed June 20, 1888. Serial No. 277,630. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN SCULLY, of South Amboy, in the county of Middlesex and State of New Jersey, have invented a new and Improved Machine for Unloading Cars, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in Letters Patent No. 366,033, which were granted to me July 5, 1887; and it consists, principally, in such construction of the machine that the shovels may be shifted sideways upon a stationary supporting-frame for carrying them to different positions in the car, and for carrying them from one track to another in case the machine is used on a double-track road.

The invention also consists of the construction, arrangement, and combination of the different parts of the machine, all as hereinafter described and claimed.

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 front elevation of the machine. Fig. 2 is a plan view. Fig. 3 is a sectional elevation taken on the line  $x x$  of Fig. 2, showing a car in position and the shovels partially lowered therein. Fig. 4 is an enlarged detailed front elevation showing the gearing for shifting the shovels laterally and showing the mechanism for raising and lowering and moving the shovels to and from each other. Fig. 5 is a transverse sectional elevation on the line  $y y$  of Fig. 4. Fig. 6 is an enlarged detailed and sectional view of one of the traveling frames or carriages and shovels, the section being taken on the line  $z z$  of Fig. 7; and Fig. 7 is a sectional elevation taken on the line  $z' z'$  of Fig. 6.

A A represent two elevated and parallel bars supported above and across the railway track or tracks B by the uprights or posts A', so that said bars constitute an overhead track for the traveling frame C to move upon for shifting the shovels D, held by said frame, to different lateral positions in the car B' to be unloaded, and for shifting said shovels to either tracks. The said frame C is composed of the two parallel beams  $c c$ , mounted at

their ends upon the trucks  $c' c'$ , and it is moved along the bars A A on said trucks by suitable mechanism under the control of the attendant, and hereinafter described, and the shovel-bars D', to which the shovels D are attached, are connected to the said traveling frame C, and are adapted to be raised and lowered and moved to and from each other by suitable mechanism, also under the control of the attendant and also hereinafter fully described.

About midway between and parallel with the bars A A are the central bars, A<sup>2</sup> A<sup>2</sup>, supported by the standards or frame A<sup>3</sup> A<sup>4</sup>, one at each side of the railway-track. The bars A<sup>2</sup> form a central support for the traveling frame C, (on which it is supported by the trucks  $c^2 c^2$ ), and this frame also supports or incloses an endless chain, E, by which the frame C is shifted sidewise. (See Fig. 5.) The said chain E is attached to the frame C and passes over the pulley  $a$  at the support A<sup>3</sup> and over the two pulleys  $b b$  at the other end, and around the drum C', which is revolved in either direction by the crank-shaft C<sup>2</sup> through the medium of a train of gearing, C<sup>3</sup>. (Shown clearly in Fig. 4.)

The shovel-bars D' are each held or rather sustained in vertical position by a carriage, F, placed upon and adapted to move or slide upon the traveling frame C. The said shovel-bars D' are each supported upon and operated vertically by a rope, G, permanently secured at its outer end to a standard,  $g$ , and passed thence over the outer upper pulley,  $g'$ , of the carriage F, thence down under a pulley,  $d$ , at the side of the bar D', thence up over the opposite upper pulley,  $g^2$ , thence around the two pulleys  $i i'$  on suitable standards, near the center of the carriage C, down to the rope G'. (See Fig. 4.) The two ropes G (one from each of the shovel-bars) are connected to the rope G', which passes from the point of connection down under the pulleys  $i^2$  at the base of the frame A<sup>4</sup>, and thence up to the drum H, journaled in suitable bearing attached to the upright frame A<sup>4</sup>, as shown clearly in the figures. In this manner only a single rope passes around the drum H, and by the revolution of this drum to wind up the rope the shovels and shovel-bars D D' will be lifted vertically

in the carriages F, and by reversing the drum to let out the ropes G' G the said shovels and bars may be lowered into the car B' to rest upon the bottom thereof or upon any load or body of coal or other material contained therein.

The drum H is revolved from the power-shaft J, through the medium of the friction-wheel J', secured to the drum, and the smaller friction-wheel, J<sup>2</sup>, attached to the shaft J by a spline, so that the said wheel J<sup>2</sup> is adapted to be moved upon the shaft. When the wheel J<sup>2</sup> is at its normal position upon the shaft J, no motion will be transmitted to the drum H, but when the said wheel is moved to the right or left by the lever J<sup>3</sup> the grooves of the wheel J<sup>2</sup> will impinge upon the grooves of the wheel J' and cause the drum H to revolve and cause the elevation of the shovels. By releasing the lever J<sup>3</sup> the wheel J<sup>2</sup> will release the wheel J', and thus permit the shovels to drop of their own weight. The lateral movement of wheel J is but slight, covering only what slight space there may be between the surfaces of the grooves when there is no pressure on the lever J<sup>3</sup>.

The shovels D, besides having the vertical movement just described and the sidewise movement caused by the traveling of the frame C upon the cross bars or tracks A A, have also a back-and-forth movement to and from each other for shifting the load from the ends of the car to the discharge-opening B<sup>2</sup>. (See Fig. 3.) This back-and-forth motion is produced by the shaft K, pinion k, secured thereto by a feather, k', and the two opposite rack-bars L L, secured to the carriages F F, as shown clearly in Fig. 3. The rack-bars L engage with opposite sides of the pinion k, so that the revolution of said pinion imparts opposite motion to the said racks, causing them to move the carriages F and shovel-bars and shovels simultaneously to or from each other, according to the direction of revolution of the shaft K. The said rack-bars L are held in firm engagement with the pinion k by the rods l l, secured to the upper and lower edges of the plates c c and the flanged anti-friction rollers l' l', secured upon said rods, as shown clearly in Figs. 3 and 5, and the shaft K is revolved in this instance from the power-shaft J by the vertical shaft K', beveled gear-wheels M m at the top, and the beveled gear M' and reversing beveled gears m' m<sup>2</sup> at the bottom. The gears m' m<sup>2</sup> are arranged on opposite sides of the gear-wheel M', and are connected to the power-shaft J by feathers, and are adapted to slide on said shaft, so that one or the other may engage the gear-wheel M', according to the direction it may be desired to move the shovels D'. The gear-wheels m' m<sup>2</sup> are moved simultaneously by the hand-lever N and lever N', engaging the hubs of the said wheels and connected together by the rod N<sup>2</sup>, as shown in Fig. 4, so that the movement of the hand-lever in either direction will engage one

wheel with the gear-wheel M' and disengage the other from said gear.

The carriages F, placed upon the traveling frame C, are each composed of the three united blocks, f f' f<sup>2</sup>, placed between the plates c c, (which constitute the carriage C,) the blocks f f<sup>2</sup> being provided with wheels p at the top and p' at the bottom, to run against the upper and lower edges of the said plates c c, as shown clearly in Figs. 6 and 7. The two blocks f f' are united by the pairs of arms f<sup>3</sup> f<sup>4</sup>, reaching above and below the block f' and the pairs of diagonal braces f<sup>5</sup> f<sup>6</sup>, and the block f<sup>2</sup> is connected to the blocks f f' by the side plates g g. (Shown in Figs. 6 and 7.) The blocks f' and f<sup>2</sup> are spaced from each other to form a channel to receive and hold the shovel-bars D', and yet permit them to have free vertical movement. At the top of the block f<sup>2</sup> are secured the two uprights h, between which the pulley g' for the rope G is journaled.

At the lower ends of the arms f<sup>4</sup> is journaled the anti-friction wheel s, which braces and takes the strain of the backward thrust of the shovel-bar D' when in operation, and the upper end of the shovel-bar is held firmly between the pulleys g' g<sup>2</sup>, so that the same is braced and held by the carriage both above and below the traveling frame C. When the traveling frame C is moved sidewise by the endless chain E, the pinion k slides upon the long shaft K and feather k', so that there can be no disconnection of the mechanism which operates the shovels to and from each other. Upon each of the ropes G is placed a weight, t, (shown in Fig. 1,) to take up any slack in said ropes.

The shovels D are each provided at their upper edge with a row of tines, t<sup>2</sup>, to prevent the shovels from settling into the load too far.

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

1. In a machine for unloading cars, the traveling frame C and the carriages F, placed thereon and provided with shovel-bars, in combination with the shaft K and connections with the carriages F, and means, substantially as described, for shifting the traveling frame C upon its supports, as and for the purposes set forth.

2. The frame C and carriages F, placed thereon, and the shaft K, racks L, and pinion k, placed upon the shaft K and engaging with the racks L, in combination with the shovel-bars D', ropes G, and winding-drum H, the ropes being made fast at their outer ends, passed over the carriages F, and connected to the shovel-bars below the carriages for supporting and operating the same, substantially as described.

3. The frame C and carriages F, placed thereon, and each provided with a rack, L, in combination with the ropes G and the shovel-bars D', held loosely in the carriages and

braced above and below the frame C, substantially as described.

4. The standards A' A' and traveling frame C and the cross-frame A<sup>2</sup> and its supports, 5 combined with the endless chain E, connected to the frame C and operated by a drum, C', and means for revolving the drum, substantially as and for the purposes described.

5. The traveling frame C and its supports, 10 the cross-frame A<sup>2</sup> and its supports, the carriages F, provided with the shovel-bars D' and racks L, in combination with the shaft K, sliding pinion k, endless chain E, drum C', ropes G, drum H, and gear-wheels for revolving 15 the shaft K in either direction, substantially as described.

6. In a machine for unloading cars, the combination, with an overhead track, of the traveling frame C, the carriages F on frame C, 20 the shovel-bars D', vertically adjustable in the carriages F, and means for operating the frame, carriages, and shovel-bars, substantially as shown and described.

7. In a machine for unloading cars, the combination, with an overhead track, of the traveling frame C, the endless chain E, the drum C', guide-pulleys for the chain, and a train 25 of gearing for revolving the drum C', substantially as shown and described.

8. In a machine for unloading cars, the combination, with an overhead track, the frame C on said track, and means for moving said 30 frame, of the carriages F, traveling on said frame, the racks L, attached to said carriages, the shaft K, the pinion k, fastened on said shaft, and a train of gearing for revolving shaft K from a power-shaft, substantially as 35 shown and described.

9. In a machine for unloading cars, the combination, with the traveling frame C, of the 40 carriages F thereon, the shovel-shafts D', held for vertical movement in said carriages, the rope G for each bar, attached by one end to the frame C, passing over guide-pulleys on the carriage F, under a pulley on the shovel- 45 bar, over guide-pulleys on the frame C to a winding-drum, H, said drum, and gearing for revolving said drum, substantially as shown and described.

10. In a machine for unloading cars, the combination, with an overhead track, of the traveling frame C, the endless chain E, and means 50 for operating said chain, the carriages F, mounted on frame C, the racks L, connected with said carriages, the shaft K, pinion k, 55 and mechanism for operating said shaft from the main shaft, the shovel-bars D', held in the carriages F, and the ropes G, attached to the frame C, passing over pulleys on the carriages F and shovel-bars to the drum H, said 60 drum and mechanism for revolving it from the main shaft, substantially as shown and described.

11. In a machine for unloading cars, the combination, with an overhead track and a traveling frame on said track, of two carriages on 65 said frame, a shovel-bar held in each of said carriages, means for moving said carriages toward and from each other, and means for moving said shovel-bars vertically in said 70 carriages simultaneously, substantially as shown and described.

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Witnesses:

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PATK. DELANY.