

(No Model.)

3 Sheets—Sheet 1.

C. J. MALONE.  
SNOW SCRAPER FOR RAILROAD TRACKS.

No. 419,532.

Patented Jan. 14, 1890.

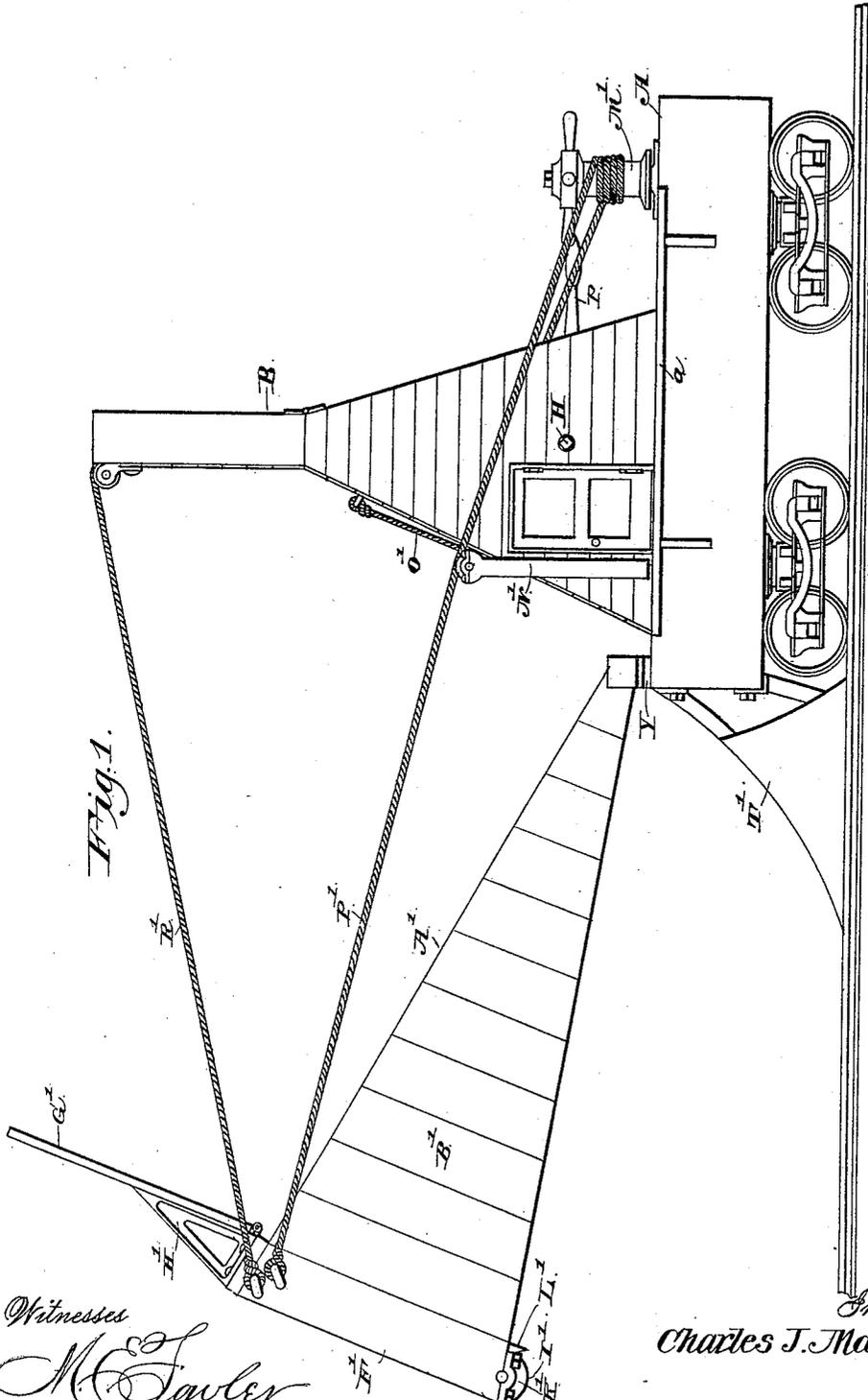


Fig. 1.

Witnesses  
*M. Fowler*  
*E. Siggins*

Inventor  
*Charles J. Malone*

By his Attorneys  
*C. Snowdon*

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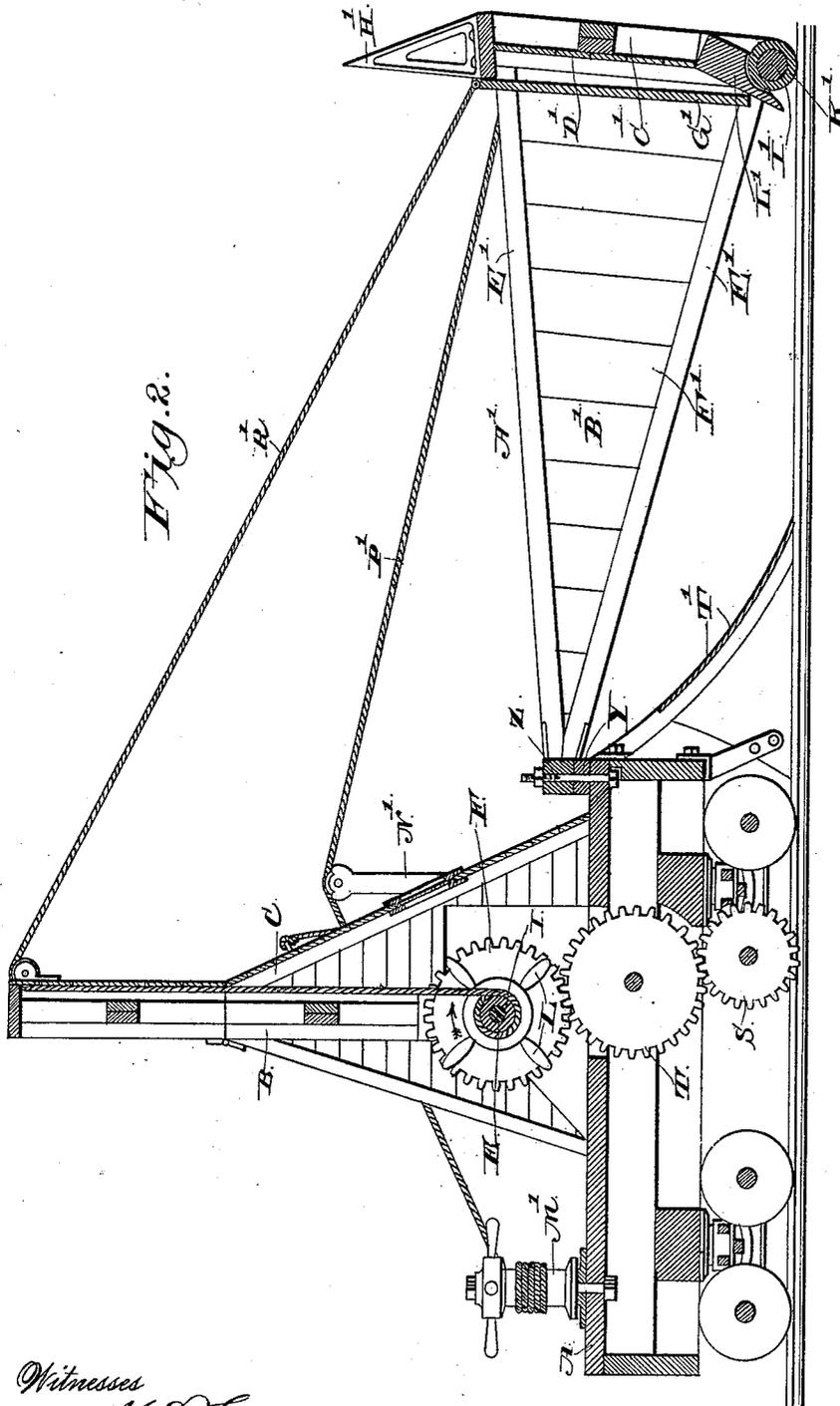


Fig. 2.

Witnesses

*M. Fowler*  
*E. Siggers*

Inventor

*Charles J. Malone*

By his Attorneys

*C. A. Snowden*

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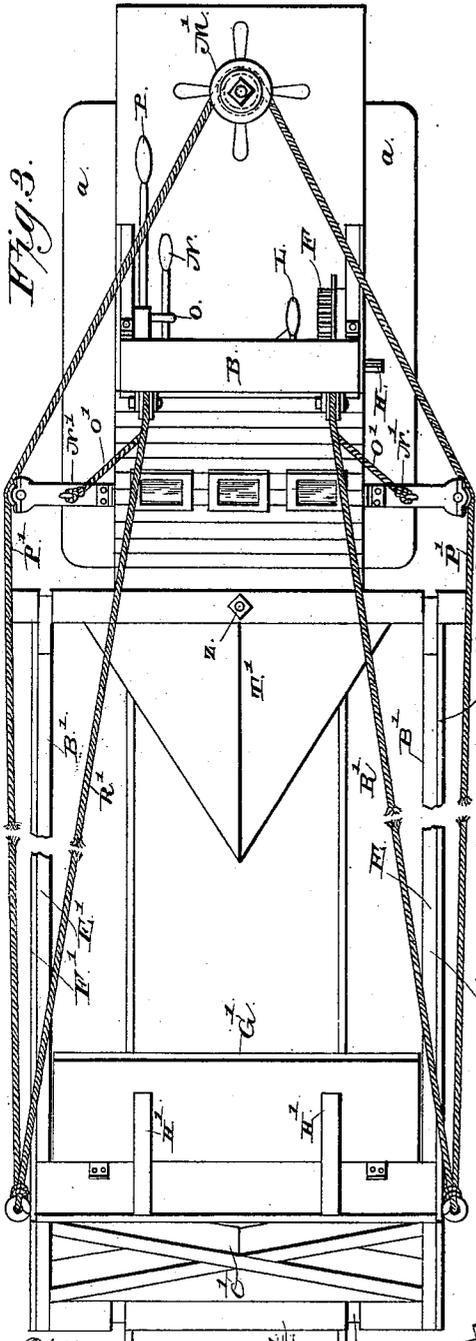


Fig. 3.

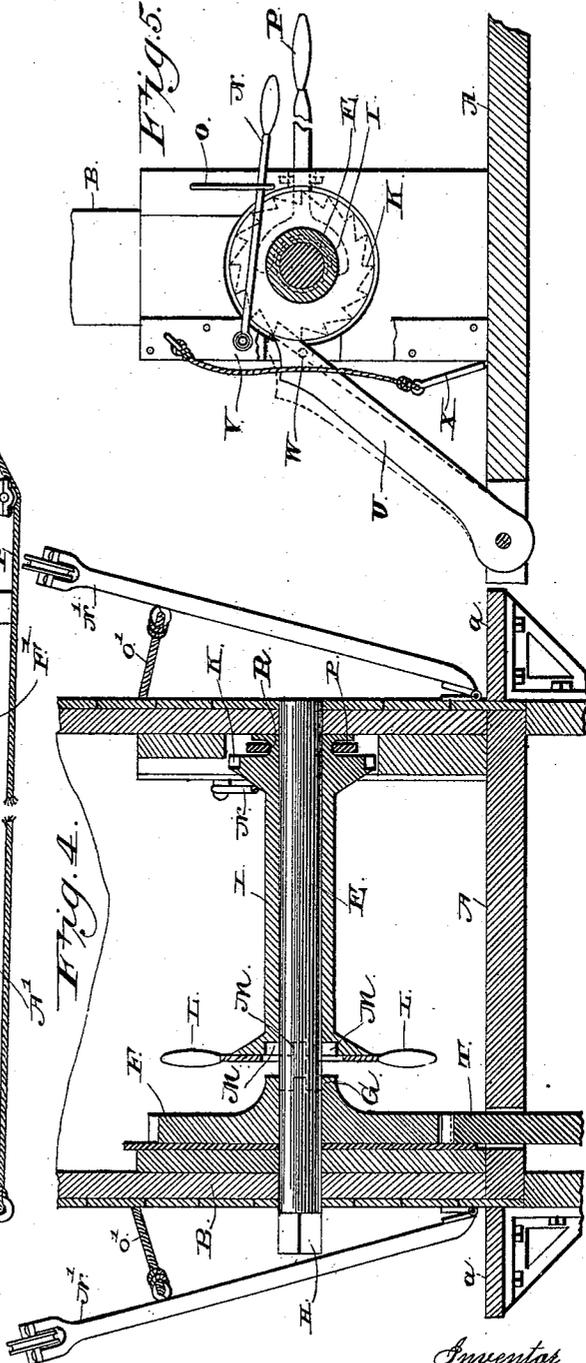


Fig. 4.

Fig. 5.

Witnesses  
*M. J. Fowler*  
*J. S. Rogers*

Inventor  
*Charles J. Malone*

By his Attorneys  
*C. Snow & Co.*

# UNITED STATES PATENT OFFICE.

CHARLES J. MALONE, OF BALA CITY, KANSAS, ASSIGNOR OF ONE-HALF TO  
ANDREW O. CHRISTENSON, OF SAME PLACE.

## SNOW-SCRAPER FOR RAILROAD-TRACKS.

SPECIFICATION forming part of Letters Patent No. 419,532, dated January 14, 1890.

Application filed March 28, 1889. Serial No. 305,129. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES J. MALONE, a citizen of the United States, residing at Bala City, in the county of Riley and State of Kansas, have invented a new and useful Improvement in Snow-Scrapers for Clearing Snow-Drifts from Railroad-Tracks, of which the following is a specification.

My invention relates to an improvement in snow-scrapers for clearing snow-drifts from railroad-tracks; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a snow-scraper embodying my improvement. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a top plan view. Fig. 4 is a transverse sectional view. Fig. 5 is a detail view.

A represents a platform-car of suitable construction, and on which is mounted a vertical derrick-frame B. The same is braced on its front side by means of inclined brace-bars C C. Journalled in the lower end of the derrick-frame is a shaft E, to which is rigidly secured a spur-wheel F, the same being provided on its inner side with a clutch member G. The outer end of the said shaft is squared, as at H, and thereby adapted to be engaged and rotated by a crank, and loosely mounted on the said shaft and adapted to move longitudinally thereon is a drum I, which has a ratchet-wheel K at its outer end, and is provided at its inner end with radial arms L. The said inner end of the drum is further provided with notches M, adapted to be engaged by the teeth or offsets of the clutch-section G.

N represents a brake-lever, which is pivoted to one of the bearings at the lower end of the derrick-frame, and is adapted to bear on the drum. The free end of the said brake-lever operates in a guide O.

P represents a lever, which is fulcrumed on a vertical pin in the said bearings, and has its inner end bifurcated and engaging an annular groove R, formed in one end of the drum, the function of the said lever being to

move the drum into or out of engagement with the clutch, and thereby adapt the same to be locked to and caused to rotate with the shaft E or to remain stationary on the said shaft while the latter is in motion.

The second axle of the car is provided with a gear-wheel S, which is keyed thereto, and said gear-wheel engages an idle-wheel T, which is mounted on a bearing secured on the car, and the said wheel T engages the wheel F.

U represents a detent, which is pivoted on the car, and is adapted to engage the ratchet-teeth K, to prevent retrograde rotation of the drum. The said detent has its free end operating in a guide V, and the latter is provided with an opening W, in which a pin X may be inserted and caused to bear under the detent for the purpose of retaining the latter out of engagement with the ratchet-teeth.

Y represents a bolster, which is centrally pivoted by means of a king-bolt Z on the front end of the car.

A' represents a swinging frame, which comprises a pair of triangular sides B', connected at their outer ends by a frame C'. The latter has its inner side covered with sheathing D'. Each of the sides B' comprises a pair of diverging beams E' and sheathing-boards F', which are secured on the outer side of said beams.

On the upper side of the frame C' is hinged a gate G', which is adapted to open upward, and may be maintained in a vertical position against rearward pressure by means of knees H', secured on the upper side of the frame C'. In the lower side of the said frame is journalled a roller I', the same being provided with annular metallic sleeves K', by means of which it is strengthened. At the lower side of the frame C', and arranged on the inner side of the roller I', is an inclined scraper I', which is of the form shown, and may be either entirely composed of iron or may be made of wood and sheathed with plate-steel.

M' represents a windlass, which is erected in a vertical position near the rear end of the car. Hinged to opposite sides of the car and adapted to move in vertical planes are arms

N', the free upper ends of which are connected to the brace bars C by means of ropes or chains O'.

P' represents guiding-ropes, which are attached to the upper corners of the frames C', are passed over guiding-sheaves in the outer end of the arms N', and have their inner ends attached to the windlass M' and coiled thereon in opposite directions. Inasmuch as the  
 5 10 bolster Y, to which the scraper-frame is pivotally attached, is pivoted on the car, it follows that by rotating the windlass one of the guiding-ropes will be coiled thereon and the other simultaneously uncoiled, and hence the  
 15 scraper-frame may be swung laterally from the car and the same thereby adapted to conform to a curved track when the apparatus is employed on such a track. The function of the arms N' is to keep the guiding-ropes  
 20 clear of the derrick-frame.

R' represents a pair of elevating-ropes, which are also attached to the upper corners of the scraper-frame, pass over guiding-sheaves supported at the upper end of the  
 25 derrick-frame, and have their lower ends attached to the drum and adapted to be coiled thereon, so that when the drum is rotated in the direction indicated by the arrow in Fig. 2 the scraper-frame, and hence necessarily the  
 30 scraper, will be elevated.

On the front end of the car is a snow-plow T', of suitable construction.

The operation of my invention is as follows: The car is to be moved on a track by a  
 35 locomotive coupled to the rear end thereof. When a cut filled with drifted snow is encountered, the car is first backed by reversing the locomotive, and the drum is thrown into gear with the wheel F, and the latter being  
 40 in constant rotation when the car is in motion by reason of the gear-wheels which connect it to the front car-axle, the drum is caused to rotate therewith and to wind up the elevating-rope until the scraper is hoisted the  
 45 required height, or at a height somewhat—say a foot or more—below the level of the snow-bank. The detent prevents retrograde rotation of the drum, as before stated, and the instant the scraper is hoisted to the re-  
 50 quired point an attendant operates the lever P and throws the drum out of engagement with the wheel F. The locomotive is then stopped and is again driven forward, which  
 55 causes the scraper to slide over the snow-bank until the latter is in contact or nearly in contact with the front end of the car. The car and locomotive are then stopped and immediately thereafter backed, which causes the  
 60 scraper to descend in the upper side of the snow-drift and to scrape or scoop off the top of the drift, as will be readily understood, the snow accumulating and becoming packed between the arms B' and the sheathing of the  
 65 frame C', and being prevented from sliding over the top of said frame by the hinged gate thereon. When the car has been backed a sufficient distance to be clear of the drift, the

snow collected by the scraper drops upon the track and when the car is again urged forward, the plow at the front end thereof throws  
 70 the snow dropped by the scraper *f* from the track. By continuing the before-described operation of the apparatus the same will, by dint of tentative effort, effectually remove  
 75 the drift. I calculate that drifts which now obstruct and delay the passage of railroad-trains, sometimes for several weeks, may be removed by a train equipped with my improved apparatus in the course of a few hours.

I propose to provide the car with laterally-  
 80 projecting platforms *a*, to enable workmen to move about from end to end of the car without having to crawl under the drum, and I also propose to house or inclose the front end of the car by nailing boards onto and across the  
 85 brace-beam C and D. The said housing will, of course, be provided in front with windows through which the operation of the apparatus may be inspected, and in the sides with doors to admit of the entrance of the work-  
 90 men from the platforms *a*.

The roller at the lower side of the scraper-frame supports the latter when in transit above the track.

When lowering the scraper, the detent must  
 95 be disengaged from the ratchet on the drum in the manner before described, and the friction brake-lever N must be applied to the drum to regulate the speed and check too rapid descent of the scraper.  
 100

I propose to provide the car with a suitable brake, whereby it may be stopped when  
 necessary. I also provide the car with sand-boxes for sprinkling sand on the tracks, to  
 105 prevent the wheels from slipping.

If necessary, the car may be ballasted by piling rocks or other heavy material on the platform or on side boards extended outward  
 therefrom. The derrick may be pivotally  
 110 jointed, so that it may be folded back to enable the car to pass under bridges and tunnels.

In short, I do not desire to limit myself to the precise construction and arrangement of  
 115 devices hereinbefore described, as it is obvious that modifications may be made therein without departing from the spirit of my invention.

Having thus described my invention, I claim—  
 120

1. In a snow-scraper, a truck, in combination with a bolster arranged thereon, a vertical pivot connecting the bolster with the truck, a scraping-frame hinged to the bolster, and means for raising and lowering the frame  
 125 and swinging the frame and bolster.

2. The combination, with the car, of the bolster pivoted on the front end thereof, the scraper having side arms pivoted to said bolster, and means for raising and lowering the  
 130 scraper and for laterally swinging the same substantially as described.

3. The combination, with the car, of the vertical and laterally-movable scraper se-

cured to a bolster on the front end thereof, the roller at the lower side of the scraper, for the purpose set forth, and devices to raise and lower the scraper, substantially as described.

5 4. The combination of the car, pivoted scraper at the front end thereof, the derrick-frame rising from the car, the wheel F, geared to and rotated by one of the car-axles, the drum, the clutch devices and lever to engage  
10 the drum with the wheel F and to disengage it therefrom, and the elevating-rope attached to the scraper, guided by the derrick-frame and attached to the drum, whereby the scraper may be automatically raised when the car is in  
15 motion, substantially as described.

5. The combination of the car, the scraper pivoted thereto and adapted to be swung laterally, the windlass mounted on the car, and a cable passed in opposite directions around  
20 the windlass and having its terminals connected at opposite sides of the scraper-frame, whereby the latter may be swung in either direction by said windlass, for the purpose set forth, substantially as described.

25 6. The car having the scraper projecting from its front end and the gate at the upper side of the scraper, substantially as described.

7. The combination of the car, the hinged arms on the sides thereof, the scraper on the  
30 front end of the car, adapted to be swung laterally, the guiding-ropes attached to the said scraper, guided by the arms, and means, substantially as set forth, to operate the said ropes, substantially as described.

35 8. The car having the derrick-frame, the

shaft E, gears connecting said shaft to one of the car-axles, the drum loose on the shaft, the clutch to engage it therewith, the detent engaging the ratchet-wheel on the drum, the pivoted scraper on the front end of the car, 40 and the elevating-ropes attached to said scraper, guided by the derrick and connected to the drum, substantially as described.

9. In a snow-scraper, the frame C', in combination with the roller I', journaled trans- 45 versely in the lower end thereof and having a series of sleeves K', substantially as specified.

10. In a snow-scraper, the combination, with the front frame C', of the transverse 50 roller I', having the series of sleeves K', and the superimposed scraper L', terminating in rear of the roller, substantially as specified.

11. The combination, with the truck, of the laterally-swinging scraper A', pivoted thereto, 55 of the windlass M', mounted on the truck, the opposite arms N', pivoted to the sides of the truck and provided at their upper ends with sheaves, and the guiding-rope P', passed around the windlass and over the sheaves 60 and having its terminals connected at opposite sides of the scraper, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 65 presence of two witnesses.

CHARLES J. MALONE.

Witnesses:

R. G. WILLIAMS,  
J. H. JENKINS.