

No. 717,283.

Patented Dec. 30. 1902.

J. W. RUSSELL.

SNOW PLOW.

(Application filed May 15, 1900.)

(No Model.)

3 Sheets—Sheet 1.

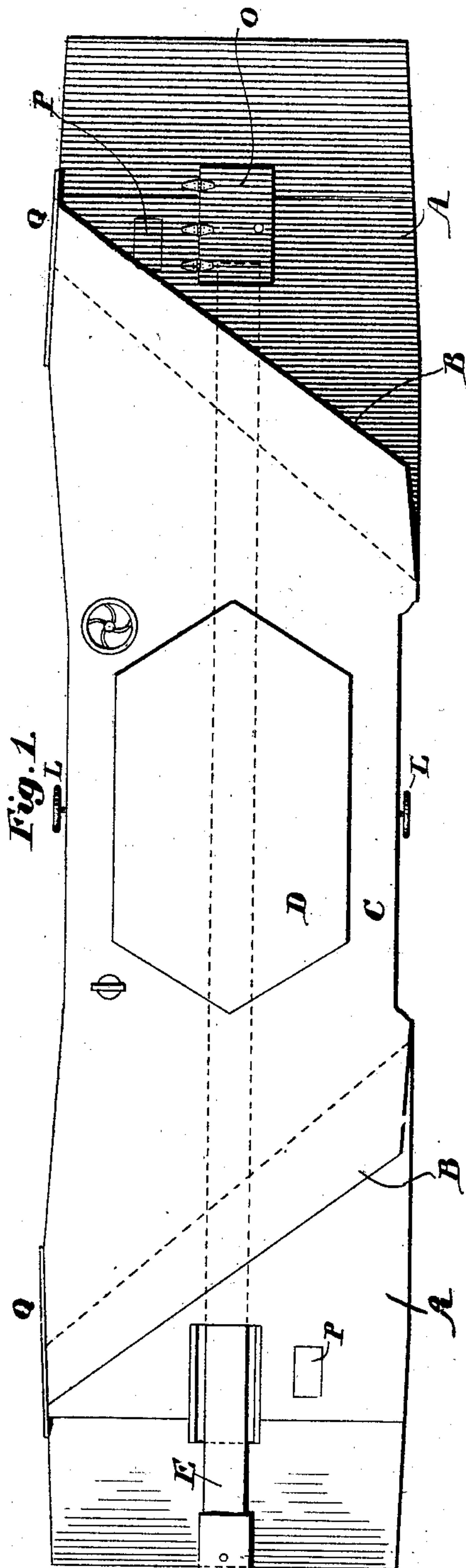
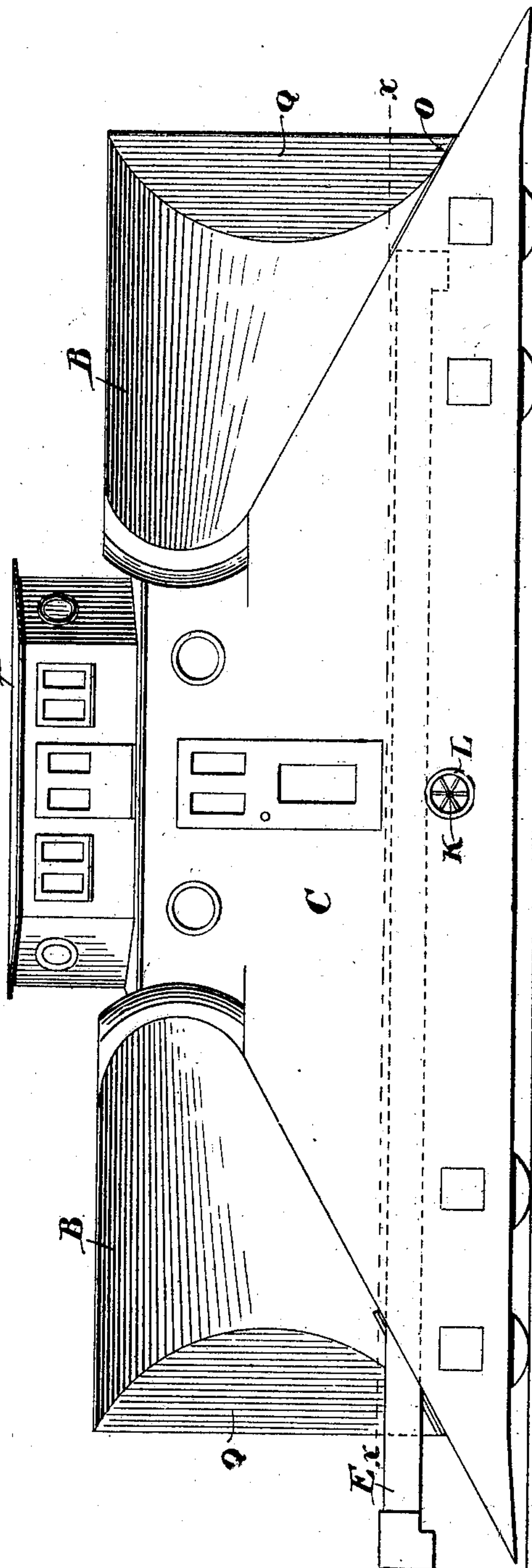


Fig. 1.

Fig. 2.



Witnesses:
Walter E. Lombard
Edward M. Temple.

Inventor:
James W. Russell
by R. S. Spencer Atty.

No. 717,283.

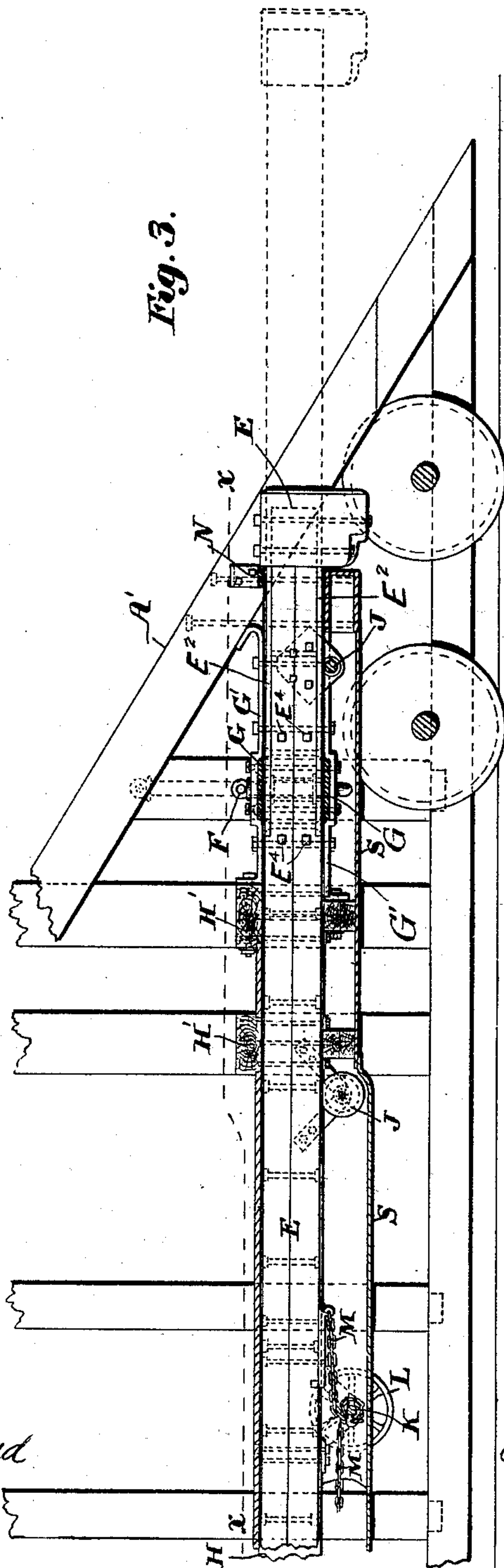
Patented Dec. 30, 1902.

J. W. RUSSELL.
SNOW PLOW.

(Application filed May 15, 1900.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses:
Walter O. Lombard
Edward H. Temple

Inventor:
James W. Russell
by R. H. General
Atty.

No. 717,283.

Patented Dec. 30, 1902.

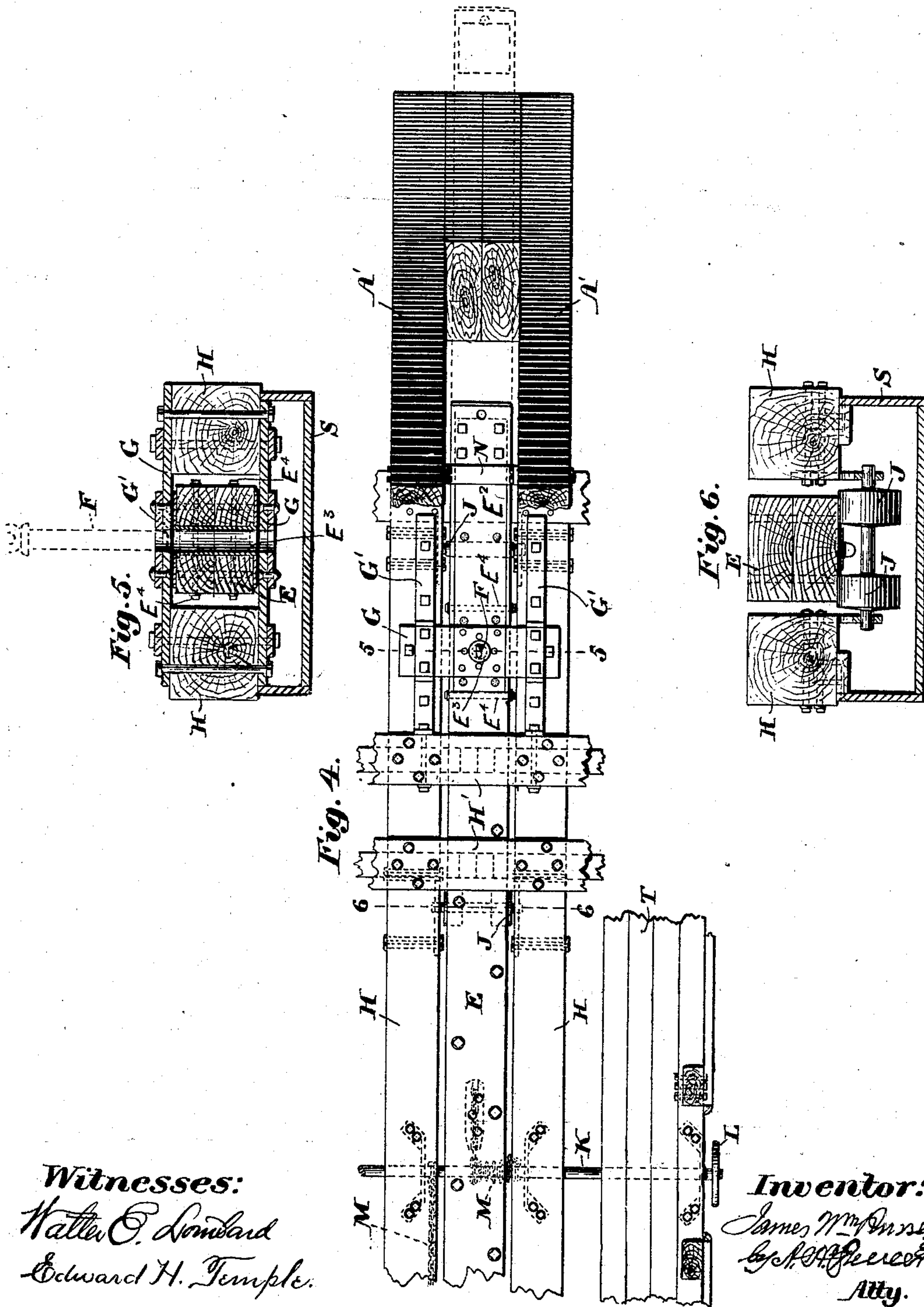
J. W. RUSSELL.

SNOW PLOW.

(Application filed May 15, 1900.)

(No Model.)

3 Sheets—Sheet 3.



UNITED STATES PATENT OFFICE.

JAMES WILLIAM RUSSELL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO RUSSELL CAR AND SNOW-PLOW COMPANY, A CORPORATION OF MAINE.

SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 717,283, dated December 30, 1902.

Application filed May 15, 1900. Serial No. 16,724. (No model.)

To all whom it may concern:

Be it known that I, JAMES WILLIAM RUSSELL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain
5 new and useful Improvements in Snow-Plows, of which the following is a specification.

The object of this invention is to provide a practically operative snow-plow that will not require to be turned around at the end of the
10 trip in order to use it when moving in substantially the opposite direction, such apparatus being properly termed a "double-end" snow-plow.

With few exceptions all trains on double-
15 tracked roads run to the right—that is, trains moving in either direction pass to the right of those moving in the opposite direction. Hence snow-plows to avoid throwing snow toward the second track or the other trains must
20 throw all the snow in one direction, generally to the right, as does the double-track snow-plow shown in patent granted to me March 15, 1892, No. 470,951.

In the best form of my double-end snow-
25 plows I have made one end of the car or plow to throw the snow to the right and the other end to throw it to the left. In the use of a plow of this type in yards less switching over is required, as the plow is operative when mov-
30 ing in each direction and no dead-head trips need be made. This style of plow is also required on such portions of railways as run along the side of a mountain or river, where it is desirable and sometimes necessary that
35 the snow be thrown from both tracks into the river or away from or down the hill.

In the drawings, Figure 1 is a plan view of this double-end double-track snow-plow, showing the long coupling, push or power bar,
40 movable longitudinally, and other features. Fig. 2 is a side elevation of the same. Fig. 3 is a side elevation of part of the power-bar and adjoining parts, showing a little more than one-half of the length of the same, drawn
45 on a larger scale than Figs. 1 and 2, illustrating some details. Fig. 4 is a plan view of the frame-timbers, showing top of the push-bar and adjacent parts at line $x x$, Figs. 2 and 3. Figs. 5 and 6 are transverse sections on a
50 larger scale at lines 5 5 and 6 6 of Fig. 4.

My invention is embodied in a strongly-built car mounted upon trucks adapted to run upon ordinary railroads and furnished with a longitudinally-adjustable push or draw
bar having a coupling-head at each end and
55 a detachable fastening for securing such bar alternately at two different intermediate points to the frame-timbers. Such car is shown furnished at each end with snow-re-
moving apparatus integral with the car, the
60 whole constituting a double-end snow-plow.

Various features peculiar to my invention are hereinafter described, and especially referred to in the appended claims.

Each end of said car or snow-plow consists
65 of an inclined surface A, Fig. 1, to lift the snow and a moldboard or share B, Fig. 2, to throw the snow off to one or both sides of the track. This car or double-end snow-plow is
70 formed with the central cab-section C, Figs. 1 and 2, to provide room for men in charge of the snow-plow and also with the cupola or lookout D on top to enable the men in charge to better perform their work. The long push-
75 bar, draw-bar, or power-bar E is of continuous metal or timber detachably secured to the timbers of the car-frame and made of a length somewhat less than the full length of the car
or snow-plow, so that either end may protrude
80 beyond the plow while the other is retracted. Efficient means are provided by which said
bar may be moved longitudinally in order that the end of the plow that is being used
85 may have its front free from the obstruction that any exposed coupling or buffer would
offer to the movement of the snow over the
inclined front of the plow. The ends of this
movable bar are provided with suitable coup-
90 ling-heads, whereby the locomotive or another car is connected with my improved plow at
either end.

In order to relieve the frame of the plow from unnecessary strain, I apply the propelling power thereto as near as possible to the
95 point of resistance in removing snow—that is, near the forward truck and beneath the inclined surface of the plow, as best shown in
Figs. 3 and 4. I connect the power-bar E, near either end thereof, to the plow-frame by
100 a heavy transverse metal plate at the respec-

tive ends of the plow, thus applying the strains of use to one set of said plates in using one of the two plows and to the other set when using the other plow. This push or power bar is shown in Figs. 3, 4, and 5 as secured to the forward portion of the car or snow-plow by a removable locking-pin F, passing through this bar near its end and through substantial metal plates G above and below said bar and bolted to the heavy sills H at each side of the bar. The metal plates G are shown reinforced by longitudinal steel strips or plates G', bolted to the sills H and to the plates G and turned up at the ends to bear against cross-sills H' and oblique end timbers A'. Any suitable means for securing said bar to the frame of the car or plow and releasing the same, so that it may be moved longitudinally to engage with the plates at the opposite end, may be substituted therefor.

The wooden power-bar E at each end near the locking-pin is protected and strengthened by a metal plate on both its upper and lower sides firmly bolted or otherwise secured to the bar. I have shown in Figs. 3, 4, and 5 at E² a half-inch steel plate extending from the coupling-head back beyond the locking-pin F for this purpose. The hole in the power-bar E for the locking-pin F is also furnished with or protected by the metal lining or bushing E³, Figs. 3 and 5.

To secure the power or push bar to the car or plow by means of a pin or other locking device into wood only, the wood would not stand the severe use that such bar would be subjected to when one or more locomotives are coupled to the other end of the long bar and pushing and pulling, as is done in the use of cars and snow-plows upon railroads. By protecting and strengthening the wooden bar with metal, as stated and shown, the hole in the bar E will not become so enlarged by use or wear as to become inoperative or render the use of the bar dangerous.

To put holes in the wooden power-bar E large enough for a pin of sufficient size to give the required strength will greatly weaken the bar. I have, therefore, also strengthened the bar E at the vertical hole for the pin F by bolts E⁴, Figs. 3, 4, and 5, passing horizontally through the said bar at each side of the hole for said pins.

My improved snow-plows are some forty to forty-five feet long. Difficulty is experienced in getting timber sufficiently long, large, and sound to stand the pressure of snow resistance to two, three, and sometimes more powerful locomotives. I therefore form the push or power bar E in two or more laterally-joined pieces of selected wood, securely bolted together at frequent intervals with the grain reversed to constitute one stiff composite bar. (See Figs. 3, 5, and 6.) The vertical bolts uniting the two timbers are countersunk, as indicated by dotted lines in Fig. 3. Such thinner timbers of full length can be obtained

free from defects and from heart-pieces, and when securely united the composite bar is less likely to warp than a single stick. This continuous push-bar should have at least one-fourth inch clearance between it and the crossing timbers in the frame of the snow-plow and an equal clearance between it and the floor above it to prevent any binding effect between such timbers or flooring and to facilitate moving it endwise. Rollers J are placed under this push-bar. (See Figs. 3, 4, and 6.) Upon these the push-bar E rests and is supported in order that it may be moved longitudinally without difficulty. These rollers supporting said bar constitute one feature of my invention.

Various devices may be employed to move the push-bar E longitudinally. As shown in Figs. 3 and 4, I mount a transverse shaft K in suitable bearings fixed to the sills of the plow. This shaft is provided with one or more cranks or hand-wheels L, preferably made detachable, by which the shaft may be rotated. A stout chain M, Figs. 3 and 4, connects the middle portion of shaft K to the movable push-bar. The middle of the chain is attached to the shaft, and each end of the chain is secured to the push-bar some feet distant from the shaft. When the push-bar is in its normal position—that is, with one end extended beyond one of the inclines A of the snow-plow and its other end retracted or drawn inside of the other end of the plow, as illustrated in Figs. 1, 2, 3, and 4—the major part of the chain M will be wound around the shaft and the other half unwound or stretched out.

In order to change the position of the push-bar, the coupling-pin F must first be withdrawn from the hole through said bar and the lower coupling-plate G, so as to release the bar. This may be done by hand or by any convenient mechanical device. Then by turning the hand-wheel L or the shaft K the portion of chain M which had been extended will be wound upon the shaft, and at the same time the coiled portion of said chain will be unwound or let out as the chain draws the push-bar to its new position.

A brace or chock or filling-piece N is placed above the push-bar E, just below the top of the incline A of the snow-plow, to prevent the end of the power or push bar from lifting when the engine behind is pushing against it. I have shown this device in Figs. 3 and 4 as a bar-iron brace, support, or stop. Such brace or support N when placed as shown will also act as a stop or catch to limit the rearward longitudinal movement of the power or push bar and stop the reverse travel of the bar when the hole in it for the locking-pin F is in line with the hole in the coupling-plate G, Figs. 3, 4, and 5. This brace, support, stop, or filling-piece is a feature of my invention.

To shield the chains, rollers, or other means used to move the push-bar longitudinally, the

same should be inclosed or boxed in, as in Figs. 3, 5, and 6, or be otherwise covered to protect such parts from snow and from becoming frozen up and difficult to operate, if not altogether inoperative. Such shield S is a part of my invention.

The sides of the car or double-end snow-plow from end to end are extended down nearly to the level of the railroad-track, as in Fig. 2, so as to prevent the lateral entrance of snow between the two plows, which, if permitted to accumulate, would clog under the rearmost plow and be liable to cause derailment. This construction is peculiar to my invention.

My double-end snow-plow is made narrower at its center or cab section C than at its ends or snow-plow sections, as shown in Fig. 1, to avoid binding or rubbing against the walls of snow at the side of the road when the snow-plow is traveling around curves in the track or road. This constitutes a feature of my invention.

I provide a door O, Fig. 1, with secure fastenings or other suitable means of closing or covering the openings in the ends of the snow-plow through which the ends of the power or push bar E protrude. Such means for covering the opening when the bar is retracted form a feature of my invention. I also provide a covered opening or recess P in each of the inclined snow-plow faces, Fig. 2, to permit the air-brake appliance to be connected at the rear end and to close the opening in the end being used to remove the snow, thereby avoiding the obstruction to the movement of the snow and the damage that would be done to the hose of the air-brake if it was exposed.

My double-track snow-plow is provided at the extreme outside of the car at the front end of each share or moldboard B, Fig. 2, with an upright metallic cutter Q, Fig. 2, preferably of steel or iron plate at least three-eighths of an inch in thickness. These two vertical plates will weigh about a ton, more or less. In the double-end snow-plow shown in the illustrations, Figs. 1 and 2, two of these plates are required on one side of the car and none on the other. To counterbalance this extra weight on one side of the car or snow-plow, the floor timbers or sills are increased in number or size or the bottom made solid upon the side of the plow opposite to that carrying the metal plates or the upright cutters. These extra timbers T give added strength as well as weight, and are thus better than mere ballast. This arrangement to offset substantially the weight of the cutters at the front of the share or moldboard constitutes part of my invention.

The plows at opposite ends of the car may have their moldboards extending in oblique planes, substantially parallel, instead of in opposite oblique directions, as Figs. 1 and 2 represent them. When arranged in parallel planes, the snow will be thrown to the right,

for instance, when the plow moves in either direction instead of being arranged for right-hand and left-hand running, as in the construction shown in Figs. 1 and 2.

I claim as my invention—

1. A railway-car provided at each end with a snow-plow integral with the car-body, having a share or moldboard extending obliquely from the outside of one rail to the outside of the other rail, to throw substantially all the snow in one direction, substantially as set forth.

2. A railway-car provided at each end with a snow-plow, the share or moldboard in the snow-plow integral with the car-body at one end of the car extending in the opposite oblique direction to that at the other end of the car, thereby making a double-end snow-plow for right-hand and for left-hand running, substantially as set forth.

3. A railway-car provided at each end with a snow-plow integral with the car-body, and with an intermediate or centrally-located cab section furnished with a door, for the accommodation of the men in charge of the snow-plow, substantially as set forth.

4. A snow-plow for railways having a continuous coupling or push bar extending nearly from end to end of the car-body, such bar being formed of two or more timbers bolted together laterally, and having holes furnished with metallic bushings to receive the pins connecting said bar to the car-body, substantially as set forth.

5. A railway-car provided at each end with a snow-plow, having a long coupling or push bar movable lengthwise of the car or snow-plow, and its ends adapted to project alternately beyond the inclines or ends of the snow-plow, a hole near each end of the push-bar and a hole in a coupling-plate on the frame of the car to receive a coupling or locking pin, adapted to fix the bar with either end projecting beyond the corresponding incline or end of the snow-plow, and the other end of the bar retracted or drawn within the corresponding end of the car or snow-plow, substantially as set forth.

6. A railway-car provided at each end with a snow-plow, and having a long coupling or push bar movable lengthwise of the car or snow-plow, in combination with a chain attached to the push-bar, a shaft for said chain and means for rotating said shaft to move the said chain and push-bar lengthwise, substantially as set forth.

7. A railway-car provided at each end with a snow-plow, and having a long coupling or push bar movable lengthwise of the car, and means for longitudinal adjustment of the push-bar, in combination with a covering or shield for inclosing the push-bar and its adjusting devices, to exclude snow and to prevent the bar from becoming clogged or inoperative, substantially as set forth.

8. In a double-end snow-plow, the long coupling or push bar E, adjustable to two different

positions lengthwise of the frame, and provided, near each of its ends, with fastenings for securing it, beneath the inclined face of the plow proper, to the corresponding end of the frame, substantially as set forth.

9. In a double-end snow-plow, the long coupling or push bar, adjustable lengthwise of the car or snow-plow, and a connecting-pin near each end of said bar, in combination with two coupling-plates G secured near each end of the car or snow-plow frame sills, and adapted to engage said pins alternately, substantially as set forth.

10. In a double-end snow-plow, the longitudinally-adjustable coupling or push bar and a connecting-pin near each end of said bar, in combination with two coupling-plates G secured to the sills H of the car or snow-plow, and with longitudinal metal reinforcing-strips G', above and below the plates G and bolted to the sills H, substantially as set forth.

11. A car or snow-plow provided with a continuous power-bar adjustable to two different positions lengthwise of the car, the coupling parts of said bar having vertical holes to receive the pins which connect the bar to the

frame or body of the car or plow, and being reinforced laterally by transverse horizontal bolts in front and rear of said holes, to prevent splitting, substantially as set forth.

12. A car or snow-plow provided with a continuous power-bar, adjustable to two different positions of the frame or body, in combination with a transverse brace N, secured across the frame at each end thereof, and extending over the power-bar to support its end portions against the strains of use, substantially as set forth.

13. A car or snow-plow provided with a continuous power-bar, adjustable to two different positions of the car, in combination with means external to the car and connected within the car to said power-bar, whereby such bar may be adjusted longitudinally to its two positions alternately, substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

JAMES WILLIAM RUSSELL.

Witnesses:

A. H. SPENCER,
I. C. ROGERS.