

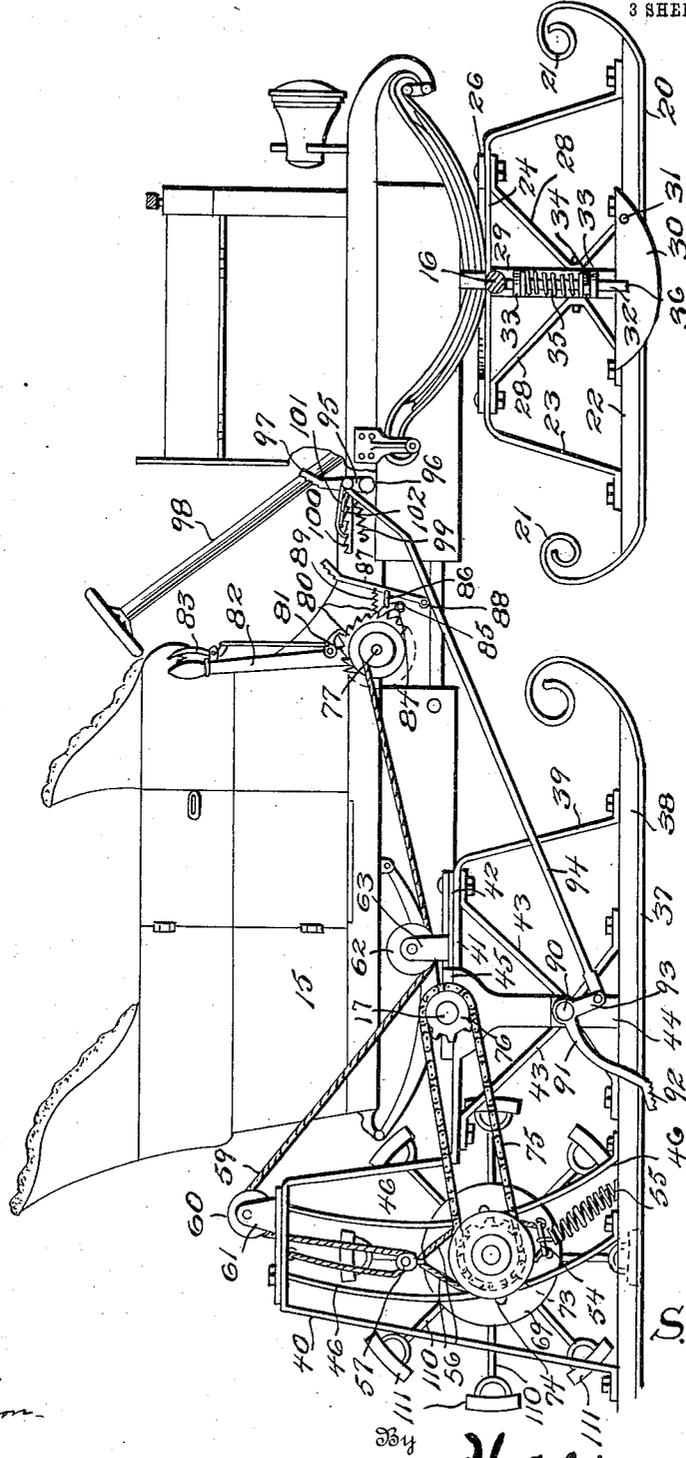
S. L. CHARLES.
 SLEIGH ATTACHMENT FOR AUTOMOBILES.
 APPLICATION FILED MAR. 29, 1911.

1,054,673.

Patented Mar. 4, 1913.

3 SHEETS-SHEET 1.

Fig. 1.



Witnesses
W. M. Woodburn

J. H. M. Fallon

Inventor
S. L. Charles

Chas. H. ... Attorneys

S. L. CHARLES.
 SLEIGH ATTACHMENT FOR AUTOMOBILES.
 APPLICATION FILED MAR. 29, 1911.

1,054,673.

Patented Mar. 4, 1913.

3 SHEETS—SHEET 2.

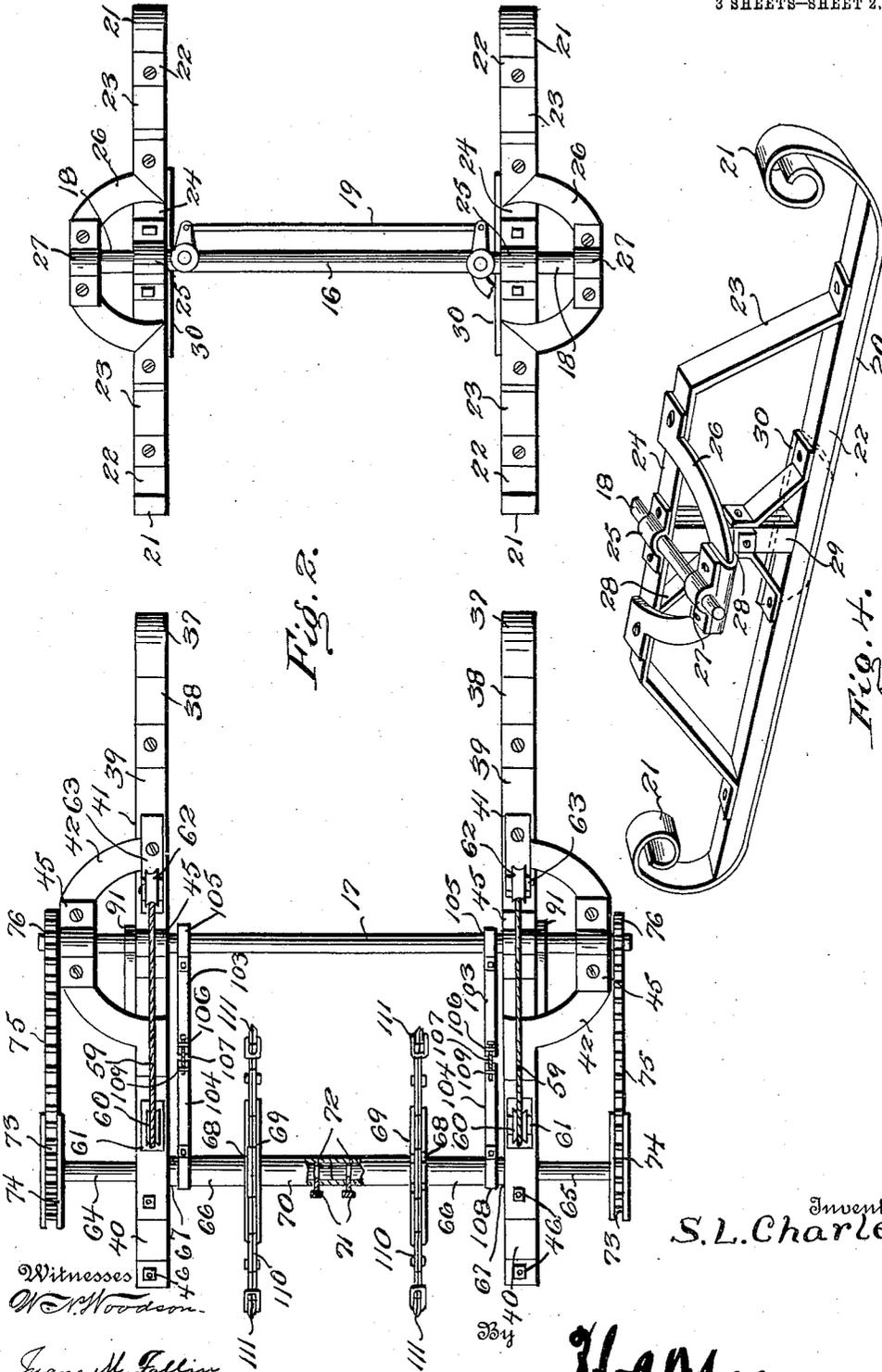


Fig. 2.

Fig. 4.

Witnesses
W. N. Woodson
Juana M. Fallin

Inventor
S. L. Charles.

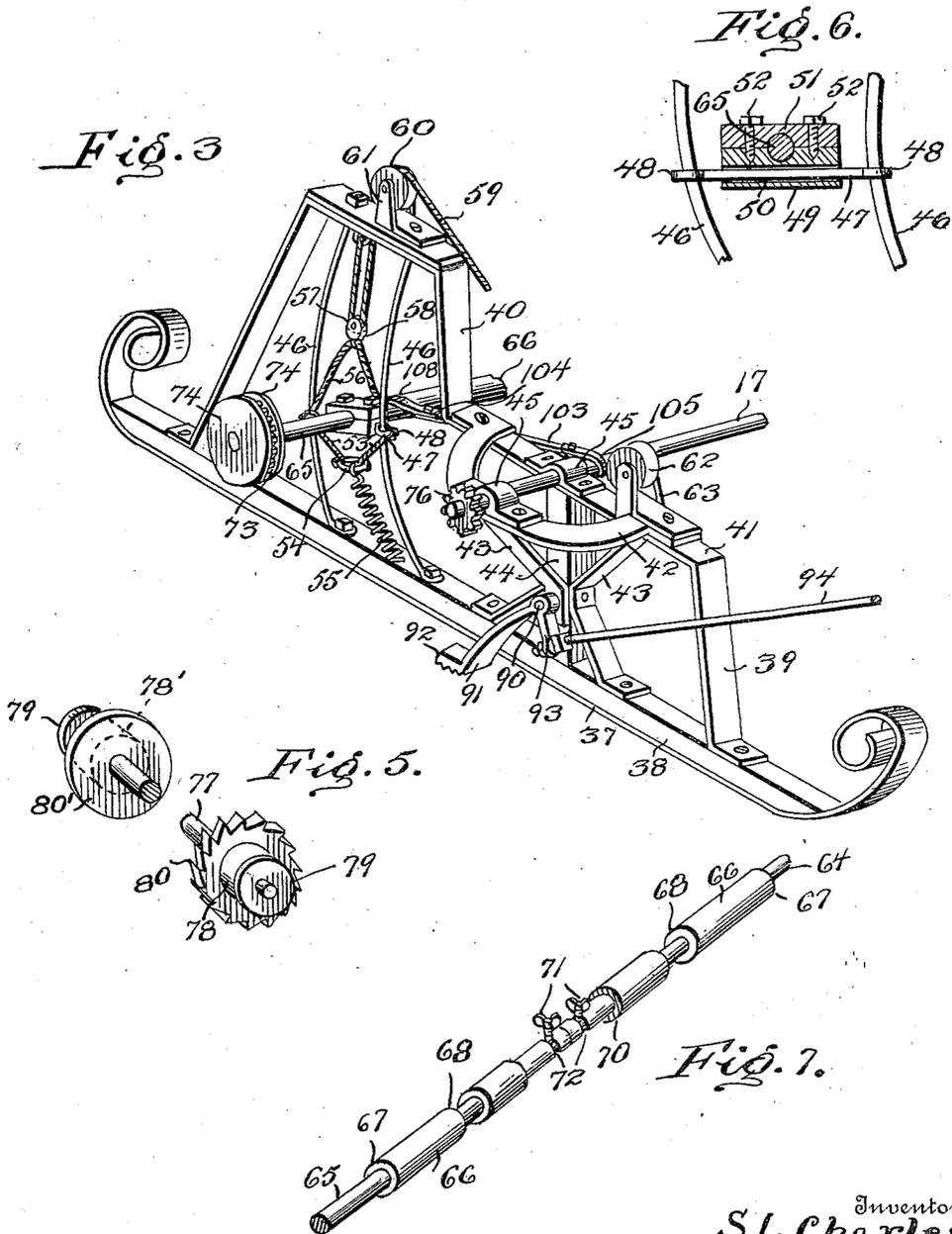
W. H. Macy Attorneys.

S. L. CHARLES.
 SLEIGH ATTACHMENT FOR AUTOMOBILES.
 APPLICATION FILED MAR. 29, 1911.

1,054,673.

Patented Mar. 4, 1913.

3 SHEETS—SHEET 3.



Witnesses
W. A. Woodson
Juana M. Fallon

Inventor
S. L. Charles.

W. A. Macy, Attorneys.

UNITED STATES PATENT OFFICE.

SEWALL L. CHARLES, OF NEILLSVILLE, WISCONSIN.

SLEIGH ATTACHMENT FOR AUTOMOBILES.

1,054,673.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed March 29, 1911. Serial No. 617,774.

To all whom it may concern:

Be it known that I, SEWALL L. CHARLES, a citizen of the United States, residing at Neillsville, in the county of Clark and State of Wisconsin, have invented certain new and useful Improvements in Sleigh Attachments for Automobiles, of which the following is a specification.

This invention relates to a sleigh attachment for automobiles, and refers particularly to certain improvements upon a similar device disclosed in Patent No. 939,666.

This invention has for an object to peculiarly form the rear frames upon which the motor vehicle is mounted whereby the driving elements may be adjusted vertically, and yieldably held in adjusted position without the necessity of separately adjusting the driving chains disposed between the power element of the machine and the driving elements.

Another object of this invention is to provide the forward or road steering runners with gripping blades which are spaced slightly inward from the runners and engage with the ground to insure the gripping action of the runners and prevent the device from skidding.

The invention further contemplates an improved arrangement of the operating levers controlling the adjustment of the driving elements and the brake employed.

The invention has for a still further object to provide an attachment for motor vehicles of common construction which is adapted for application to the same by simply removing the wheels and substituting the improved runners, and without changing any of the mechanism of the motor vehicle.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of a motor vehicle having the improved attachment applied thereto, and being disclosed partly in section; Fig. 2 is a top plan view of the frames in position and as applied to the axles of a motor vehicle. Fig. 3 is a detail perspective view of one of the rear runners; Fig. 4 is a detail perspective view of one of the forward runners; Fig. 5 is a detail perspective view of the adjusting drum em-

ployed in raising the driving elements; Fig. 6 is a detail sectional view of one of the supporting blocks of the driving shaft and its mounting; Fig. 7 is a detail perspective view of the driving shaft, disclosed partly in section.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawing by the same reference characters.

Referring to the drawings 15 designates the body of a motor vehicle provided in the usual manner with the front axle 16 and the rear axle 17. The front axle 16 carries hinged spindles 18 at its ends which are swung about the ends of the axle 16 by the steering mechanism 19.

In lieu of the wheels mounted upon the axles, the body 15 is provided with runners, each one of the forward runners comprising a contact strip 20 for engagement with the ground and being relatively flat having its opposite ends curved up as at 21. The strip 20 is attached to a bar 22 carrying an up-standing frame 23 provided with a horizontal portion 24 at its upper end. Midway of the ends of the horizontal portion 24 is secured a strap 25 beneath which is supported the spindle 18. An outwardly extending brace 26, of any form, but preferably of arcuate form as disclosed in the drawings, is secured to the ends of the horizontal portion 24 and carries an outer strap 27 at its central portion to receive there-through the outer end of the spindle 18. Braces 28 extend down and in from the ends of the horizontal portion 24 and from the outer end of the member 26 and have their lower ends fixed against the sides of a standard 29 positioned between the bar 22 and the horizontal portion 24 midway of the runner.

A segmental gripping blade 30 is hinged at its forward end upon a pin 31 projecting inwardly from the side of the bar 22 at a point forward of the standard 29. The rear end of the gripping blade 30 terminates at a point rearward of the standard 29. A sliding pin 32 is disposed in vertical relation against the side of the standard 29 and held in such position by spaced ears 33. The pin 32 carries a fixed collar 34 midway of its ends and adapted for engagement against the upper ends of the lower ear 33, the collar being held in such position by a spring 35 interposed between the upper face

of the collar 34 and the upper ear 33. The lower end of the sliding pin 34 is forked, as at 36, to receive therein the upper edge of the gripping blade 30. It will be noted from Fig. 1 that the lower curved edge of the blade 30 extends below the runner strip 20. When an obstacle strikes the gripping blade 30 it is raised to swing about the pin 31 and to force the sliding pin 34 up against the tension of the spring 35. The gripping blade 30 is spaced in a slight distance from the runner strip 20 and is adapted to grip in the ice and snow and hold the runner from sliding laterally whereby the vehicle may be guided in its movement.

Each one of the rear runners comprises a contact strip 37 mounted upon a bar 38 carrying an upstanding frame 39. The rear end of the frame 39 is looped up to provide an extension 40. The horizontal portion 41 of the forward end of the frame is provided with an outwardly extending horizontal brace 42 held rigid in position by the diagonal braces 43 engaging against the sides of a standard 44. Straps 45 are disposed in registration upon the upper faces of the horizontal portion 41 of the frame and the outer end of the brace 42 for the reception of the spindle portions of the axle 17. The extension 40 of the frame carries a pair of vertically disposed arcuate guide rods 46 arranged in longitudinal spaced relation and carrying a vertically movable bar 47. The bar 47 is provided with eyes 48 at its opposite ends for slidably engagement upon the companion rods 46 and is thereby held within the frame. The bar 47 carries a split bearing, the lower block 49 of which is provided with a longitudinal opening 50 receiving the bar 47, while its upper block 51 is secured thereon by machine screws 52, or the like. It will be observed from Fig. 6 that the split bearing is shorter in length than the bar 47, such provision being made for the purpose of admitting of the reciprocation of the bearing between the companion guide rods 46. The blocks 49 and 51 are provided with registering arcuate grooves engaging across the adjacent faces thereof to rotatably receive the ends of an operating shaft hereinafter described. The eyes 48 at the ends of the bar 47 are provided with flexible members 53, preferably in the form of cables, connected at their lower ends to a ring 54, the latter carrying the upper extremity of a spring 55. The spring 55 is attached at its lower end to the bar 38 and exerts a downward pull upon the bar 47. Flexible members 56 are looped up from the eyes 48 and attached to a block 57 in which is disposed a pulley 58. An adjusting cable 59 is attached at one end against the under side of the extension 40 between the guide rods 46, the cable 59 being looped down around the pul-

ley 58 and passing up through the extension 40 and passing over a pulley 60. The pulley 60 is disposed in a bracket 61 carried upon the extension 40 and disposed in longitudinal registration with the frame. The operating cable 59 is carried forwardly beneath the pulley 62 journaled in a frame 63 carried upon the horizontal portion 41.

The adjustable blocks 49—51 of the rear runners carry the sections 64 and 65 of the operating shaft. Each of the sections of the operating shaft is provided with an enlarged portion 66 spaced in from the outer ends thereof to provide shoulders 67 bearing against the inner sides of the split bearings or blocks. The inner ends of the sections are reduced to correspond in diameter with the outer ends thereof and to provide inner shoulders 68 for supporting thereagainst the propeller wheels 69. A sleeve 70 engages over the inner ends of the operating shaft sections and carries at its central portion a pair of longitudinally spaced set screws 71 engaging through the sleeve 70 and having their inner ends resting in annular grooves 72 provided in the inner ends of the axle sections. The axle sections can thus move independently of one another within the sleeve 70. The outer extremities of the sections 64 and 65 extend beyond the split bearings and carry thereon sprocket wheels 73. Plates 74 engage against the opposite sides of the sprocket wheels 73 and extend out beyond the teeth of the sprocket wheels to house the same and hold the chains 75 from displacement during the operation of the device. Small sprocket wheels 76 are mounted upon the ends of the rear axle 17 outwardly of the braces 42 and in longitudinal registration with the sprocket wheels 73. The chains 75 pass over the sprocket wheels 76 to impart the movement of the rear axle to the operating shaft.

A shaft 77 is journaled through the body 15 and has its ends projecting therebeyond to rigidly receive drums 78 and 78' which carry the forward ends of the operating cables 59 of the rear runners. Flanges 79 are formed upon the outer ends of the drums 78 and 78' to retain the cables 59 in position. Each one of the cables 59 passes beneath the pulley 62 and thence to the drum 78. The inner end of the drum 78, positioned at one side of the body 15 adjacent to the seat of the operator, terminates in an enlarged ratchet wheel 80 cooperating with a pawl 81 hinged upon the lower end of the hand lever 82 and being operated by a thumb latch 83 disposed upon the upper end of the lever. The drum 78' is provided with an enlarged flange 80' upon its inner end to hold the cable 59 in position. The lower extremity of the lever 82 is hinged upon the stub shaft 77, the lever 82 swinging

concentric with the drum 78. The ratchet wheel 80 is provided with a locking pawl 84 hinged upon a pin 85 against the side of the body and adjacent to the ratchet wheel 80. The pawl 84 is disposed at the forward side of the ratchet wheel 80 and is connected by a link 86 to a foot lever 87 which is hinged in the body 15 and extends up in a position substantially vertical forwardly of the ratchet wheel 80. The foot lever 87 is hinged at its lower end upon a pin 88 and is provided with a spring 89 to normally retract the foot lever and hold the pawl 84 in engagement with the ratchet wheel 80.

Each of the rear frames is provided with an outstanding pin 90 upon which are hinged the upper ends of brake arms 91 carrying upon their lower extremities brake shoes 92. The brake shoes 92 are in the form of backwardly turned webs having serrated under faces for engagement with the ice and snow to retard the movement of the machine. The upper ends of the brake arms 91 are provided with depending lugs 93 to the lower ends of which are pivotally attached brake rods 94. The forward ends of the brake rods 94 are hinged upon upstanding arms 95 carried at the extremities of a transverse shaft 96 disposed in the body 15 and projecting from the sides thereof. The shaft 96 is provided midway of its ends with a foot lever 97 disposed adjacent to the steering post 98 and is provided with a spring 99 for retracting the foot lever and holding the brake shoes 92 from the ground. The arms 95 are rigid upon the shaft 96 at its opposite ends so as to actuate the brake shoes 92 simultaneously at the opposite sides of the machine. The body 15 carries a rack 100 arranged in registration with the foot lever 97 upon the floor of the body and adapted to receive a pawl 101 hinged upon the foot lever 95. A leaf spring 102 is carried by the foot lever and bears yieldingly against the lower edge of the pawl 101 to hold the same out of engagement with the rack 100.

The device is provided with a means for adjusting the tension upon the chains 75, such means comprising a spacing bar having a forward section 103 and a rear section 104. The forward section 103 is provided with an open or sleeve portion 105 for loose engagement about the shaft 17. The section 103 extends backwardly and is provided with an upturned lip 106 to receive and carry a set screw 107. The rear section 104 of the spacing bar is provided with a sleeve portion 108 receiving therethrough the extremity of one of the operating shaft sections and having an upturned lip 109 at its forward end registering with the lip 106 and receiving in threaded relation there- through the outer end of the set screw 107.

A spacing bar of this construction is disposed at each side of the machine between the opposite ends of the rear axle 17 and the operating shaft sections 64 and 65.

Each of the propeller wheels 69 is formed of a pair of disks carrying therebetween radial arms 110 upon the outer ends of which are disposed cutters 111 adapted to engage with, and to bite into the ice and snow over which the vehicle passes and to impart movement to the runners when the propellers are rotated.

In applying the improved runners to a motor vehicle, the wheels of the vehicle are first removed when the forward runners are positioned upon the spindles 18 by inserting the latter through the straps 25 and 27. It is thus seen that the swinging movement of the spindles 18 is communicated to the forward runners whereby the machine is guided in its movements. The rear runners are positioned upon the extremities of the rear axle 17, engaging the extremities of the axle through the straps 45. The sprocket wheels 76 are positioned upon the ends of the axle, and the sleeve portions 105 of the spacing bars are arranged upon the axle against the inner sides of the rear runners. After the chains 75 have been applied to the sprocket wheels 74 and 76, and it is desired to change the tension of the chains 75, the set screws 107 are moved through the lips 106 and 109 to space apart or contract the sections 103 and 104. The lengthening and shortening of the spacing bars moves the operating shaft toward and from the rear axle 17, sliding the split bearings over the bars 47. The companion guide rods 46, which are curved, are substantially concentric to the axle 17 so as to space the split bearings equidistant from the axle 17 in its various vertical adjustments. The operating cables 59 are attached to the drums 78-78' at the sides of the body 15 and are wound thereon when the drums are rotated so as to draw up the bars 47 upon the guide rods 46 and raise or lower the operating shaft. This operation extends the spring 55 which draws the bars 47 down when the operating cable 59 is released. To release the operating cable 59 the operator moves the thumb latch 83 to lift the pawl 81 from the ratchet 80 and then pushes the foot lever 87 forward to withdraw the pawl 84 from the ratchet wheel 80 and free the drum 78. When the forward runners pass over obstacles, such as railway tracks, stones, and the like, the gripping blades 30 strike the obstacles and are swung up against the tension of the springs 35 so as not to injure the lower curved biting edges of the same. The springs 35 immediately return the gripping blades 30 against the ground and yieldingly hold the same in such position.

Having thus described the invention, what is claimed is:

1. In a device of the class described sleigh runners having guide members spaced apart, 5 bars slidable respectively on said guide members, blocks having shaft bearings and slidable respectively on said bars, a driven shaft mounted on said blocks, means under the control of the operator for adjusting 10 said bars on said guide members, and means for adjusting said blocks longitudinally of said bars.

2. In a device of the class described sleigh runners and guide members spaced apart, 15 an axle mounted for rotation on said run-

ners, bars slidable respectively on said guide members, blocks having shaft bearings and slidable respectively on said bars, a driven shaft mounted in said blocks, means under the control of the operator for adjusting 20 said bars on said guide members, radius bars coupling said axle and shaft, and means for adjusting said radius bars to change their lengths.

In testimony whereof, I affix my signature in presence of two witnesses. 25

SEWALL L. CHARLES. [L. s.]

Witnesses:

HOMER C. CLARK,

J. F. SCHUSTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."