

No. 610,824.

Patented Sept. 13, 1898.

A. C. NYGAARD.
SLEIGH ATTACHMENT FOR VEHICLES.

(Application filed May 16, 1898.)

(No Model.)

2 Sheets—Sheet 1.

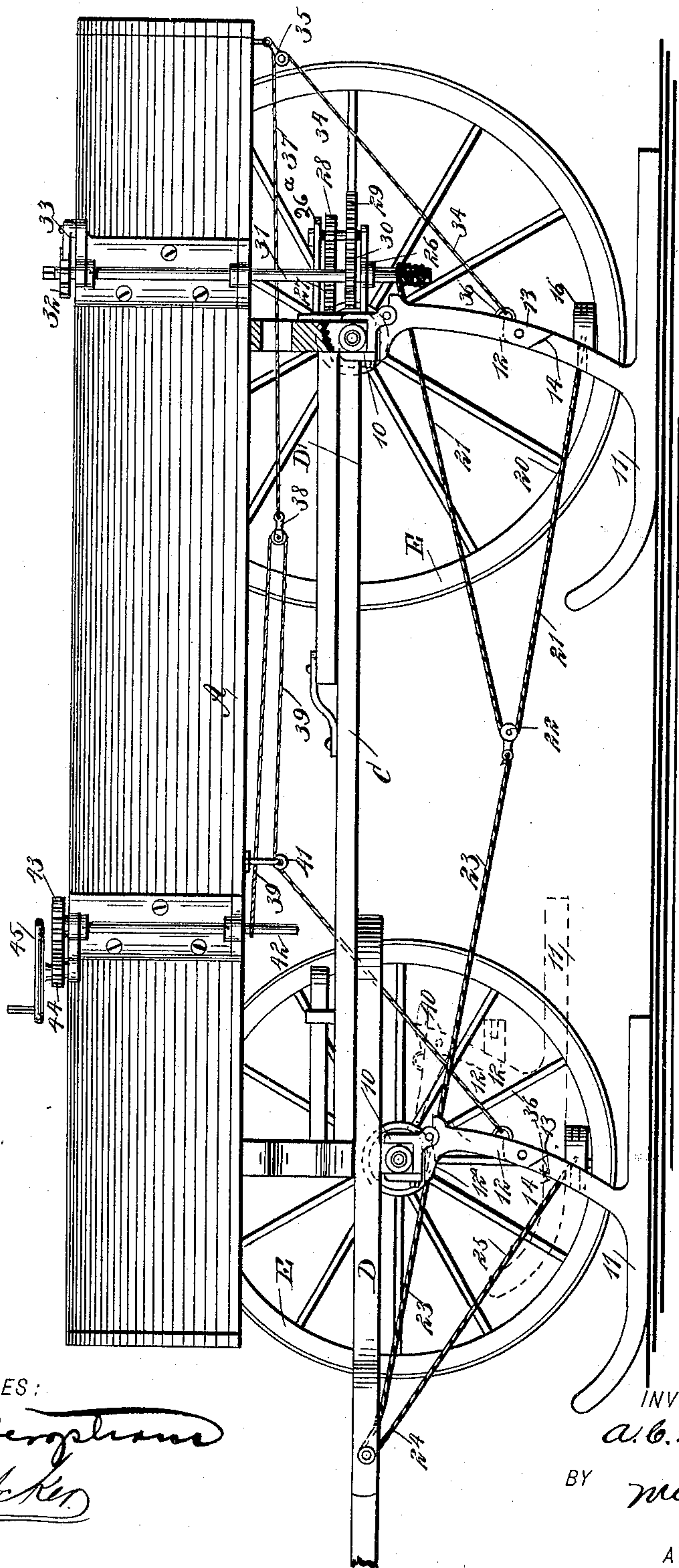


Fig. 1

WITNESSES:

John A. Bergstrom
John A. Bergstrom

INVENTOR

A. C. Nygaard

BY

Munn
ATTORNEYS.

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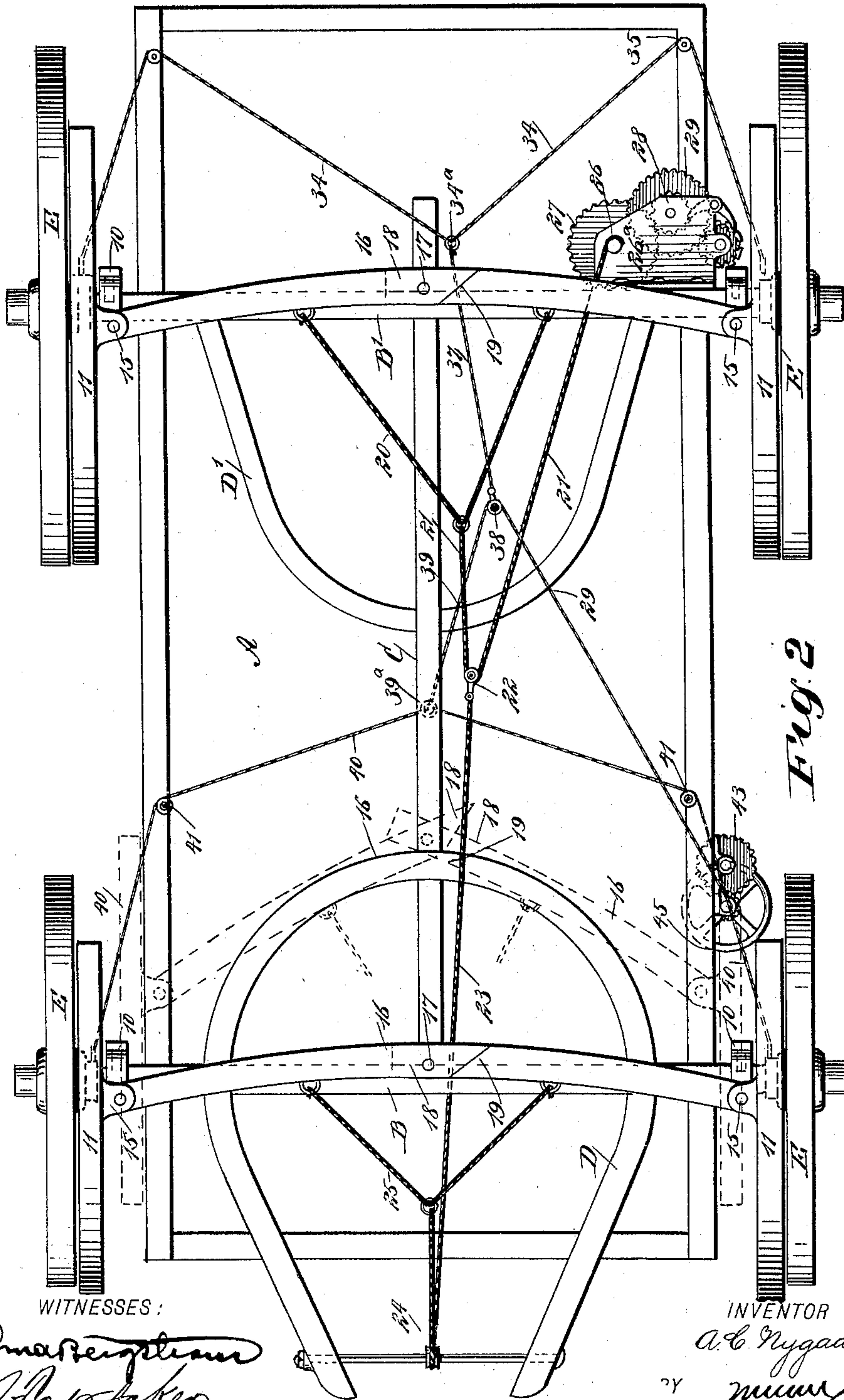


Fig. 2

WITNESSES:
John A. Bergstrom
J. F. Fletcher

INVENTOR
A. C. Nygaard
BY *muw*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ANDREW C. NYGAARD, OF RAWLINS, WYOMING.

SLEIGH ATTACHMENT FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 610,824, dated September 13, 1898.

Application filed May 16, 1898. Serial No. 680,846. (No model.)

To all whom it may concern:

Be it known that I, ANDREW C. NYGAARD, of Rawlins, in the county of Carbon and State of Wyoming, have invented a new and Improved Sleigh Attachment for Vehicles, of which the following is a full, clear, and exact description.

The object of my invention is to provide a sleigh attachment to vehicles so constructed that the sleigh-runners may be folded up beneath the running-gear, permitting the wheels to travel on the ground, or whereby the runners may be made to engage with the surface over which the vehicle is to be passed, at which time the wheels of the vehicle will be elevated from the said surface.

A further object of the invention is to provide a means whereby the sleigh attachment may be operated expeditiously and conveniently either to raise or to lower the runners while the vehicle is in motion.

A further object of the invention is to so construct a vehicle that it may travel over snow-covered surfaces through the medium of runners and travel over surfaces destitute of snow through the medium of its wheels.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both figures.

Figure 1 is a side elevation of a vehicle having the improvements applied, and Fig. 2 is a bottom plan view of the vehicle and the attachment.

A represents the body of the vehicle; B and B', respectively, the forward and rear axles; D, the forward hounds; D', the rear hounds; C, the reach, and E the wheels of the vehicle. A clip 10 is secured upon each axle at a point outside of the side faces of the wagon-body, and a runner 11 is connected with each clip through the medium of knees 12, an independent knee being provided for each runner. These knees 12 are constructed in two sections, a lower section which is attached directly to the runner and an upper section which is pivotally attached or hinged to a clip 10, the upper portion of the upper section of a

knee being provided with a head 12^a, so constructed that when a runner is in engagement with a surface the head will bear against the bottom of the clip and when the knee of the runner is folded up a portion of the head will bear against a side surface of the clip. The two sections of the knee are pivotally connected, one section being provided with a tongue 13, and the shoulder consequent upon the formation of the tongue is inclined, as shown at 14 in Fig. 1, the inclination of these shoulders being downward and rearward, and the lower end portion of the upper section of the knee is correspondingly inclined to the inclination of the aforesaid shoulder 13.

Ears 15 are formed upon the inner faces of the lower sections of the knees 12, as shown in Fig. 2, and transversely-opposing knees are connected by spreaders 16, the spreaders being in the form of rearwardly-arched bars, their ends being pivoted between the ears 15. Each spreader-bar is made in two sections, pivotally connected by pins 17 or their equivalents at the center of the bar, and one section of the bar is provided with a tongue 18, extending from inclined shoulders 19, the other section being curved to receive the tongue, and the inner end of the curved section being correspondingly beveled to the bevel of the shoulders 19, whereby when the spreader-bars are drawn forward the beveled ends of one section will engage with the beveled shoulders 19 of the other section, thus rendering the bar as rigid as though it were constructed in one piece; yet the bar is perfectly free to flex in a rearwardly direction, as shown in dotted lines in Fig. 2.

With reference to the knees 12 of the runners it may be here stated that when the runners are lifted from the ground the upper sections of the knees extend rearwardly and downwardly, as shown in dotted lines in Fig. 1; but when the runners are in engagement with the surface over which the vehicle is to be drawn the opposing inclined portions of the two sections will meet and the knees will be as though constructed in one piece and will serve the same purpose when the vehicle is drawn forwardly.

A loop 20, which may be a chain or cord, is attached at its ends to the forward edge of the rear spreader-bar 16, each member of the

loop being attached to one of the sections of the spreader. A rope or chain 21 is attached to the central portion of the loop 20 and is carried forwardly over a pulley 22 and to an engagement with a winding-post 26, the pulley 22 being attached to one end of a rope or chain 23, which is carried to the front of the vehicle and over a pulley 24, attached to the forward ends of the forward hound D, the rope 23 being also attached to a loop 25, attached to the forward edge of the forward spreader 16 in the same manner as the rear loop 20 is attached to the rear spreader. The winding-post 26 is mounted in a frame 26^a and is provided with a large attached gear 27, which meshes with a pinion 28, mounted on a shaft journaled in the said frame 26^a, and on the same shaft a large gear 29 is mounted, which meshes with a gear 30, secured upon a vertical shaft 31, which shaft extends upward at one side of the wagon-body and is prepared at its upper end to receive a hand-wheel or a crank, being also provided at its upper end with a ratchet-wheel 32, adapted to be engaged by a pawl 33. The gearing between the shaft 31 and the winding-post 26 enables one person to lower the runners, straighten the knees, and raise the wheels and wagon-body, even if the latter be loaded, the change in the position of the parts being effected without inconvenience to the operator.

In making a change which will bring the runners to bear on a surface and elevate the wheels, the runners being in their elevated position (shown in dotted lines) and the spreaders in their broken position, (also shown in dotted lines,) the shaft 31 is turned in a manner to wind the rope or chain 21 on the winding-post, whereupon both of the spreaders will be drawn in a forwardly direction, causing the bent knees of the runners to straighten, and the runners at the same time will be forced laterally and held braced in position by the spreaders, and as the runners engage with the surface over which the vehicle is to be drawn and the knees are straightened the knees serve as levers and the runners as fulcrums for the levers to raise the wheels out of contact with the said surface.

The wheels are lowered and the runners raised by a system of ropes or chains, which are shown in finer lines than the ropes or chains employed to lower the runners. The ropes or chains which are adapted to raise the runners and rearwardly flex the spreaders consist of a rope 34, which is passed over pulleys 35, attached to the rear under portion of the wagon-body and to eyes 36 or their equivalents, located upon the upper sections of the runner-knees at the rear. A ring 34^a is engaged with the central portion of the rope 34, and the said ring is attached to a second rope or chain 37, which carries at its forward end a pulley 38. A third rope or chain 39 is passed around the pulley 38, one end of the rope or chain 39 being attached to a winding post or shaft 42, while the other end of

the rope or chain 39 is attached, through the medium of a ring 39^a or its equivalent, to the central portion of the forward rope or chain 40, which is passed over pulleys 41, suspended from the wagon-body at the rear of the forward axle, and to eyes 36 or their equivalents, attached to the upper sections of the forward knees 12 at their rear edges, and as the knees are rearwardly flexed and lifted to the horizontal position shown in Fig. 1 the spreaders attached to the knees will be flexed in a rearwardly direction, as illustrated in dotted lines in Fig. 2, and as the sleigh-runners are raised the wheels of the wagon will be lowered to a contact with the ground. The winding-shaft 42, employed for raising the runners, is usually provided with a gear 43 at its upper end, which meshes with a pinion 44, upon the shaft of which a hand-wheel 45 or its equivalent is located.

It is evident from the foregoing description that a sleigh attachment may be made to any vehicle in a simple, durable, and expeditious manner and that either the wheels or the runners may be brought into action, as required, and the mechanism controlling the movement of the runners be operated by a single individual.

The knees of the runners are curved in a forwardly and downwardly direction, their forward edges being concaved when the knees are in operative position and the rear edges convexed, while the forward edges of the spreaders are concaved when the spreaders are in operative position and their rear edges convexed.

The runners when in use should as near as possible take the track of the wheels, so as not to decrease the stability of the wagon and to facilitate the movement of the vehicle.

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

1. A running-gear for vehicles, runners, knees for the runners pivotally attached to the running-gear, the knees being constructed in pivoted sections, flexing in a rearwardly and locking in a forwardly direction, spreaders for the knees, operating in like manner as the knees, and means, substantially as described, for exerting tension on the spreaders in a forwardly direction and tension on the knees in a rearwardly direction, as set forth.

2. A vehicle running-gear, knees pivotally attached to the axles of the running-gear, the said knees being constructed in pivotally-connected sections, one section being provided with a socket and the other with a tongue to enter the socket, the shoulders formed on the tongue and opposing surfaces of the sockets being inclined in a forwardly and downwardly direction, runners attached to the lower sections of the knees, spreaders pivotally attached to the lower sections of transversely-opposing knees, the said spreaders being constructed in pivotally-connected sections, one section being provided with a socket and the

other with a tongue to enter the said socket, the shoulders formed by the tongue and the opposing surfaces of the sockets being inclined in a manner to cause the spreaders to flex in a rearwardly direction, winding-shafts, a flexible connection between one of the winding-shafts and the forward portions of the spreaders, and a flexible connection between the second winding-shaft and the rear portions of the upper sections of the said knees, as and for the purpose specified.

3. The combination, with the running-gear of a vehicle and the body thereof, a casing containing a train of gearing carried by the running-gear, a winding-shaft connected with the said train of gearing and a winding-post also connected with the said train of gearing, and a second winding-shaft, both winding-shafts being carried by the body of the vehicle, of runners, forwardly-curved knees pivotally attached to the axles of the running-gear, the said knees being constructed in piv-

otally-connected sections arranged to flex in a rearwardly direction and lock when carried in a forwardly direction and straightened, spreaders pivotally connected with the lower sections of transversely-opposing knees, the spreaders being rearwardly arched and constructed in pivotally-connected sections, flexing when carried in a rearwardly direction and locking when carried in a forwardly direction, tension devices connected with the forward edges of the spreaders at each side of their centers and with the winding-post of the said train of gearing, tension devices acting independently of the tension devices in the spreaders, connected with the upper sections of the knees at their rear and with the second winding-shaft carried by the wagon-body, for the purpose set forth.

ANDREW C. NYGAARD.

Witnesses:

MORGAN M. MAGHEE,
LETTIE H. CANNON.