Jan. 15, 1929. 1,699,480

F. O. SNOW, JR

PORTABLE HOISTING MECHANISM

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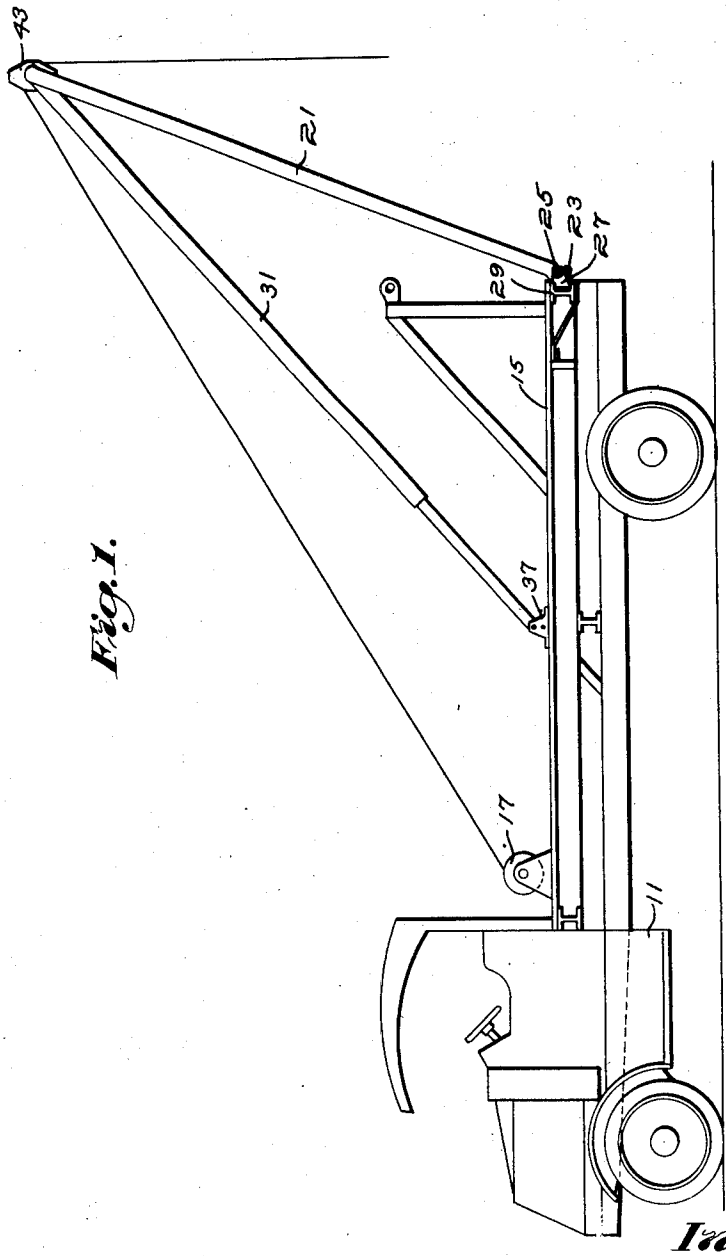

Fig. 1.

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Fig. 2.

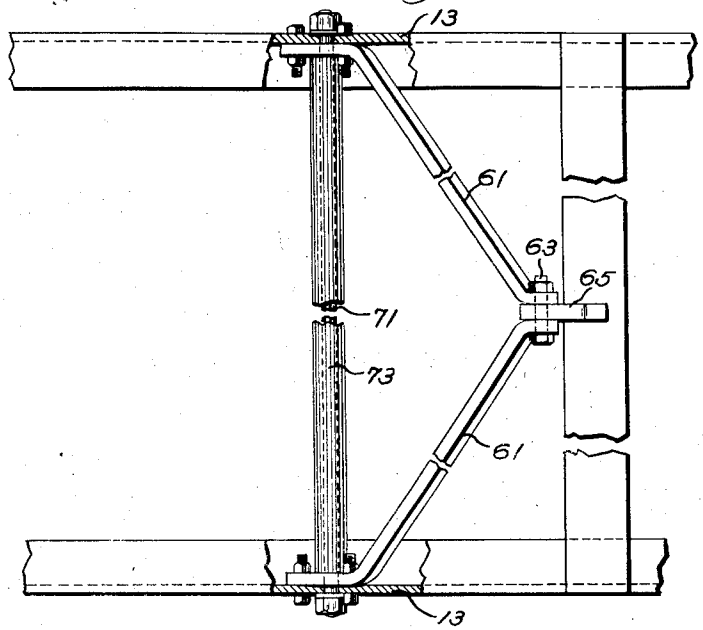

Fig. 3.

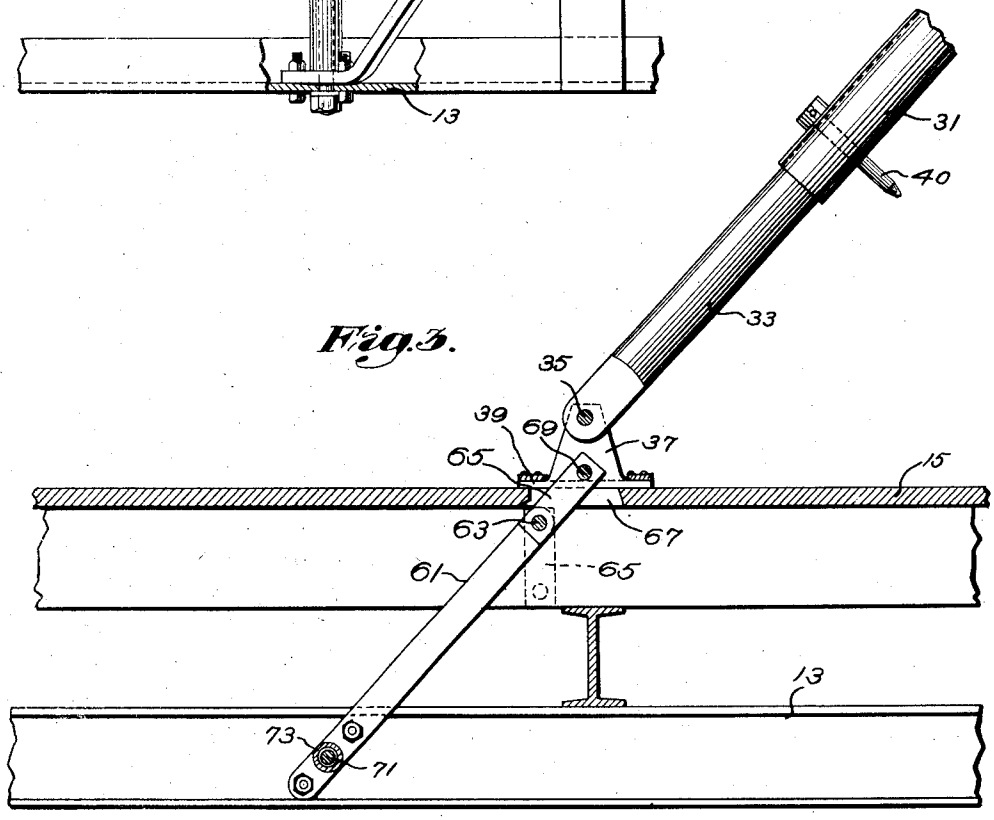

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Fig. 4.

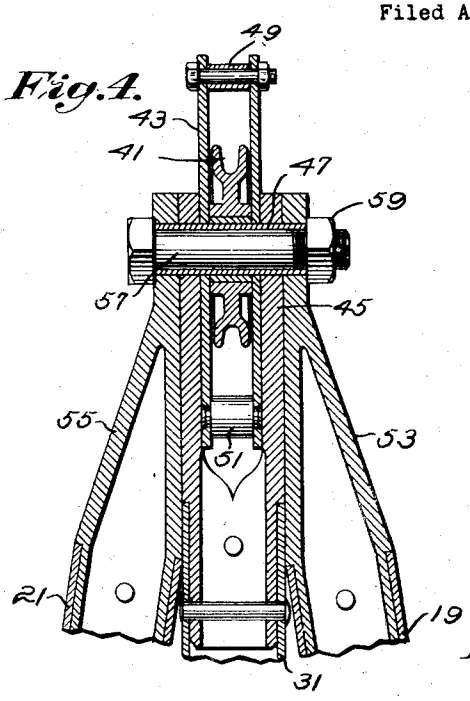
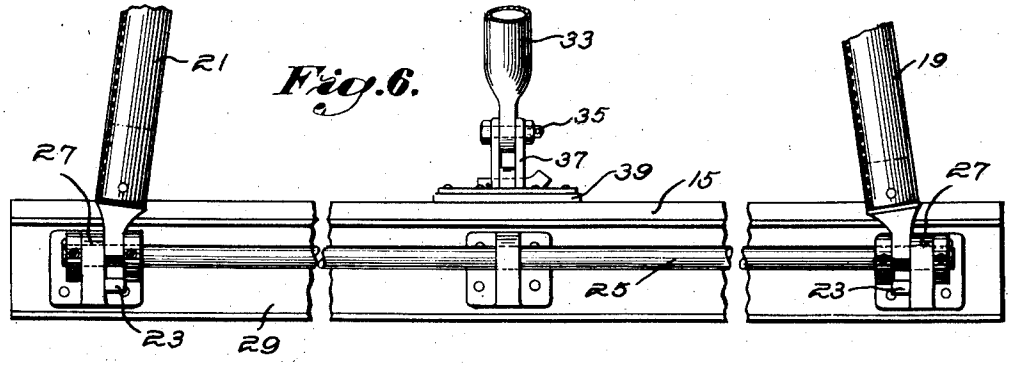


Fig. 5.

Fig. 6.



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PORTABLE HOISTING MECHANISM

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Fig. 7.

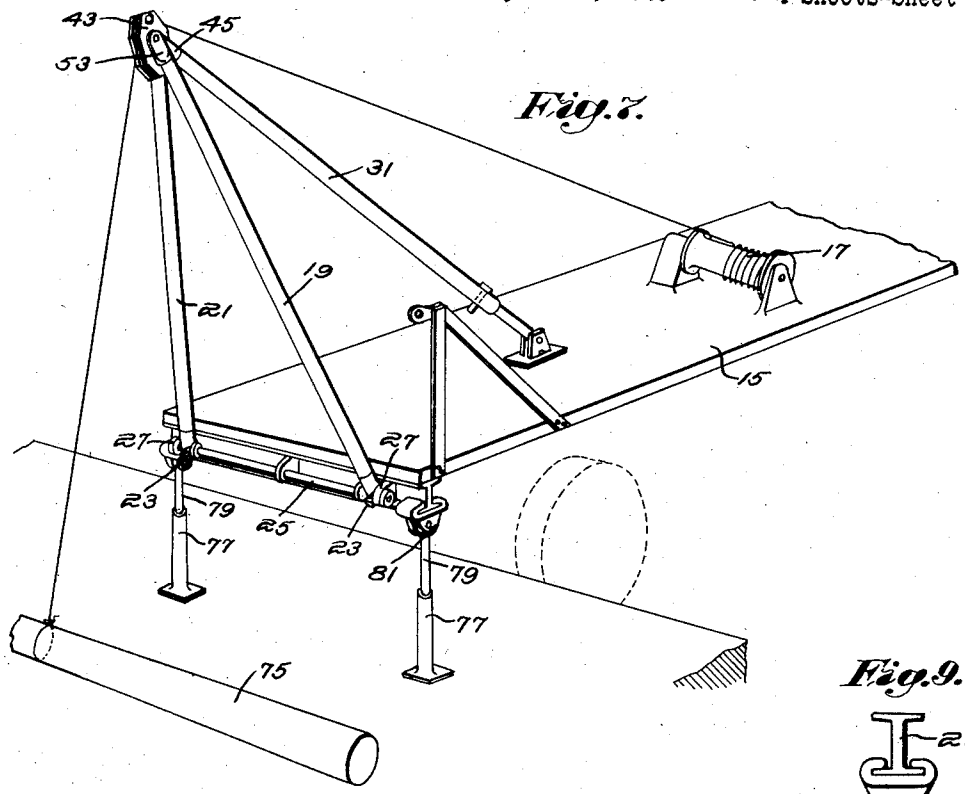


Fig. 9.

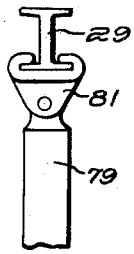
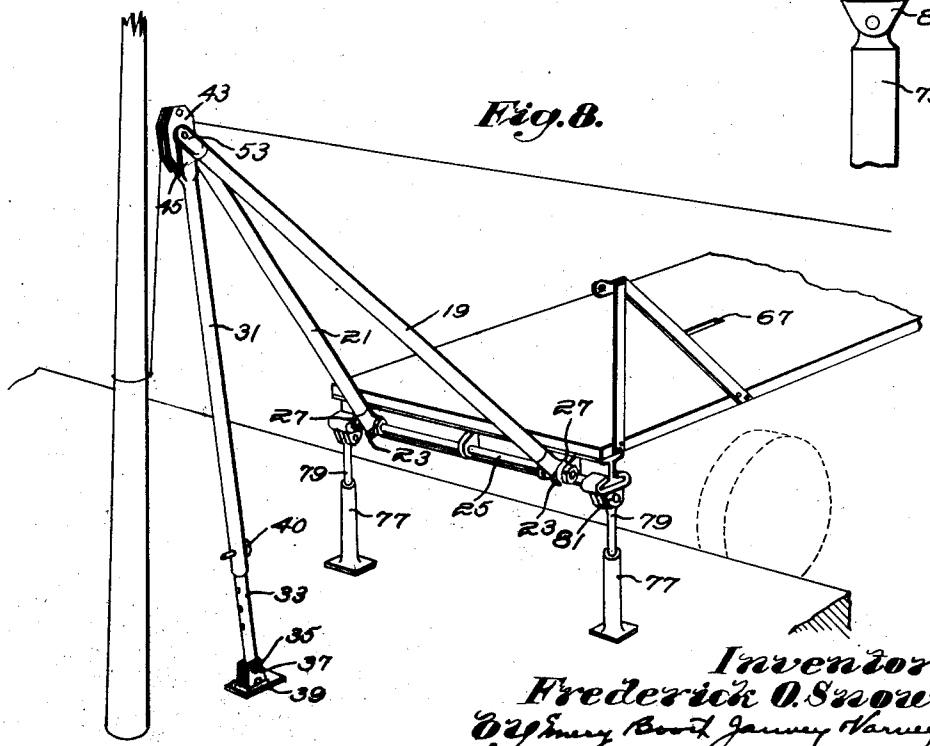


Fig. 8.



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UNITED STATES PATENT OFFICE.

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PORTABLE HOISTING MECHANISM.

Application filed April 22, 1925. Serial No. 25,116.

This invention relates to hoisting mechanism and more particularly to portable hoisting mechanism such as may be carried on a self-propelled or other vehicle.

The invention is shown for illustrative purposes as embodied in a portable automobile hoist adapted more particularly for the handling of poles to be erected or removed, but it may, either in the illustrated or some modified form, have various applications to other uses.

The invention will be best understood by reference to the folowing description when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings,—

Fig. 1 shows a typical motor vehicle of the truck type equipped with a hoisting derrick embodying one form of the invention;

Fig. 2 is a plan view of a portion of the chassis showing the means adopted for bracing the intermediate leg of the derrick when supported on the vehicle;

Fig. 3 is a side elevation in partial section of the bracing means shown in Fig. 2;

Fig. 4 is a sectional elevation taken through the sheave support at the junction of the intermediate and side brace legs of the derrick;

Fig. 5 is a side elevation showing the sheave support and the attachment of the side legs to the truck;

Fig. 6 is a rear elevation showing the attachment of the several legs of the derrick to the truck;

Fig. 7 illustrates the adaptation of the derrick to the lifting of a load close to the rear end of the truck;

Fig. 8 illustrates its adaptation to the lifting of a load further removed from the rear of the truck; and

Fig. 9 shows the jack attachment for the truck's rear end.

Referring to the drawings and to the illustrative embodiment of the invention, I have there shown as representative of a typical self-propelled vehicle the automobile truck 11 which is equipped with the usual driving motor and steering and controlling mechanism, and has the chassis frame 13 and body floor 15. Mounted on any suitable part of the truck, and herein for purposes of illustration at the forward part of the body to the rear of the driver's seat, is the winch or winding drum 17 operated from the driving motor through any suitable power take-off (not shown), the winch being of any usual construction and having the usual controlling devices (not shown).

The described vehicle is arranged to carry a collapsible derrick of the middle or tripod type comprising the two inclined side legs 19 and 21 which are detachably secured by their hook-shaped ends 23 to a rod or bar 25, the latter supported at the rear of the truck by brackets 27 bolted to the transverse I-beam 29 fastened to the rear of the truck. The derrick further comprises the intermediate or shiftable leg which is composed of a tubular member 31 having a telescopically contained lower end 33 pivoted to the bolt 35 between ears 37 carried by a foot or rest 39 having a preferably flat bottom. The telescopic end 33 is provided with a series of perforations adapted to be brought singly into registration with a perforation on the tubular member 31, whereupon, with the aid of the pin 40, the leg may be lengthened or shortened to adapt its length to different positions with the foot resting on or off the truck, this being accomplished without the needed provision of additional or extra parts.

The upper ends of the three legs are capable of temporary connection and afford journal support for a sheave 41 and guide block 43, as shown in Fig. 4. For this purpose the upper end of the intermediate leg has secured thereto the forked carrier 45 carrying the tubular member or sleeve 47 which is fixedly secured thereto as by a driving fit therein. The fixed sleeve 47 serves as a journal bearing for the sheave 41 and also carries the guide block 43 which is formed of two plates separated at opposite ends by the spacing members 49 and 51, the lower one of which may serve as a becket or attachment for the end of the hoist rope or cable when a double purchase is required. The block is capable of a turning movement on the sleeve 47 so as to adapt itself to different angular positions of the hoisting cable.

The side legs 19 and 21 have secured to their upper ends respectively the terminal

members 53 and 55 so shaped that while the side legs may preserve their angular inclination, the terminal members present flat, interior faces opposed to the sides of the forked carrier and perforated to receive the ends of the sleeve 47 so as to have a swiveling movement thereof. When the terminal members of the side legs are slipped over the projecting ends of the fixed sleeve 47 they may be united into a single structure with the intermediate leg by means of the bolt 57 which passes through the sleeve and is secured therein by the nut 59.

Through the connecting bolt the side legs may be attached to or detached from the intermediate leg at will, the sleeve 47 which serves exclusively as the sheave journal remaining in the forked carrier at all times, and the sheave carrier, guide block and sheave being preserved as an integral unit at such times as the side legs are detached therefrom.

When the intermediate leg is positioned to be supported by the truck the foot may rest on the floor thereof, but provision is preferably made whereby the strain received by the leg is transmitted directly to the chassis frame. This object may be secured in any suitable manner, but herein there is provided a brace rod 61 (Figs. 2 and 3) at each side of the chassis, bolted or otherwise secured at its lower end to the chassis frame 13 and having a slope or angle approximating that had by the intermediate leg in the position of the latter when supported by the truck.

The two brace rods converge toward each other and are united at their upper ends by the bolt 63 so as to form a V-shaped brace, carrying at their point of union the link 65. When the leg 31 is positioned for support on the truck it is placed over the slot 67 in the floor, the link 65 is swung up and secured between the ears 37 by the pin 69 (as indicated in full lines in Fig. 3), the floor being thereby relieved of the strain transmitted through the leg 31, which strain is taken directly by the chassis frame.

When the leg 31 is to be shifted to a position off the truck, the pin 69 is removed, and the link thereby detached is allowed to swing down to the dotted line position (Fig. 3), leaving the truck floor without obstruction. The two brace rods 61 may be connected by the tie-rod 71 provided with the spacing sleeve 73.

The method of utilizing the derrick is illustrated in Fig. 7, where the truck, for the purpose of illustration, is shown back against the curb of a street or in proximity to the load to be raised, which is represented by the pole 75. In this position the rear of the truck is preferably supported by a pair of screw or other jacks 77 which rest on the ground or other adjacent support. To secure a direct and convenient support for the leg braces 19 and 21, the extensible member 79 of each jack has swiveled to the end thereof the supporting bracket 81 (see Fig. 9) having overturned edges by means of which the support may be slid over the ends of the I-beam 29 and secured to the sides thereof, thus providing a direct rest or reinforcement for the I-beam and the legs, the jacks being suitably adjusted by raising the extensible member to such appropriate height that the load is received directly on the jack. The detachable bracket 81 permits the jacks to be fastened to the I-beam and to be suspended therefrom so that, if desired, the truck may have its position shifted more or less while the jacks hang suspended therefrom. When the derrick is ready for use each jack, if needs be, may be adjusted so that its foot approximately touches the ground. When the load is taken by the derrick it is transmitted through the side legs to the I-beam, depressing the rear of the vehicle and causing each jack to seat itself firmly on the ground. The swiveling connection to the bracket 81 assists each jack to adapt itself to slope or unevenness in the ground. If desired, the jacks may be inclined slightly in a direction toward the load to be lifted so as to act as sprags and brace the vehicle against longitudinal displacement when the load is taken by the derrick.

The derrick being set up with the foot 39 secured to the link 65, the hoisting cable is run over the sheave 41 and attached to the pole or other load, and the winch operated to raise the same. If it is desired to secure a double purchase a block may be placed in the bight of the hoisting cable and the end of the latter secured through a hook to the becket 51, the block being connected to a rope or cable secured to the pole.

If the line of lift is at a substantial distance to the rear of the load (as represented in Fig. 8), the foot 39 may be disconnected from the link 65 and the leg 31 shifted to a position with the foot resting on the ground or other support extraneous of the truck, and the hoisting or lowering operation performed with the parts in that position, the length of the leg 31 being first adjusted by the required amount through its adjustable telescopic connection to the end piece 33.

During the travel of the truck or at such times as the hoisting device is not required, the derrick may be taken down, the legs disconnected and the parts stowed on the truck in any convenient place. In erecting the derrick on the truck it may be conveniently assembled with the ends of the legs to be joined resting on the ground at the rear of the truck, the side legs being hooked about the rod 25 and the bottom of the intermediate leg lying loosely on the truck floor. The hoisting cable is then run through the pulley

and its end attached to a suitable elevated anchor member, such as the I-piece 83, by means of which arrangement the winch can be operated to raise the derrick to the link 65. This arrangement of anchoring member and hoisting cable may be similarly utilized in lowering the derrick or in shifting the derrick from the position shown in Fig. 7 to that shown in Fig. 8.

While I have herein shown and described for purposes of illustration one specific embodiment of the invention, it is to be understood that extensive deviations and changes from the described embodiment, from the form and mechanical arrangement of parts and from the illustrated application of the apparatus may be made, all within the spirit of the invention.

Claims:

1. A portable hoisting mechanism comprising a power driven vehicle having a chassis frame and a floor, a power driven winch on the vehicle, a derrick comprising side legs adjustably secured by pivotal connection to the opposite sides of the rear end of the vehicle, an intermediate leg having a foot adapted to rest on the floor of the vehicle, and means for bracing the third leg from the chassis frame comprising a brace member and a link connected thereto, with means for detachably securing the link to the foot, said link, when attached to the foot, projecting through an opening in the vehicle floor.

2. A portable hoisting mechanism comprising a power-driven vehicle having a chassis frame and a floor, a derrick of the tripod type having three legs, the third leg being adapted to be shifted to rest either on the vehicle or on an extraneous support, a brace member secured to the chassis frame and presenting a support for the third leg forward of the support for said two legs, and means for attaching the brace member to or detaching the same from said third leg to cause the load received by the third leg to be transmitted directly to the chassis frame when the third leg is positioned forwardly to rest on the vehicle.

3. In a portable hoisting mechanism comprising a vehicle having a chassis frame and a floor, a derrick of the tripod type comprising side legs adjustably secured by pivotal connections to the opposite sides of the rear end of the vehicle, a third intermediate leg having a foot adapted to rest upon the floor of the vehicle but detachable with relation thereto, whereby the third leg may be shifted from the floor to an extraneous support, and means for bracing the third leg from the chassis frame while resting on the floor, the same comprising a bracing connection extending forwardly and downwardly from the floor to the chassis frame.

In testimony whereof, I have signed my name to this specification.

FREDERICK O. SNOW, JR.