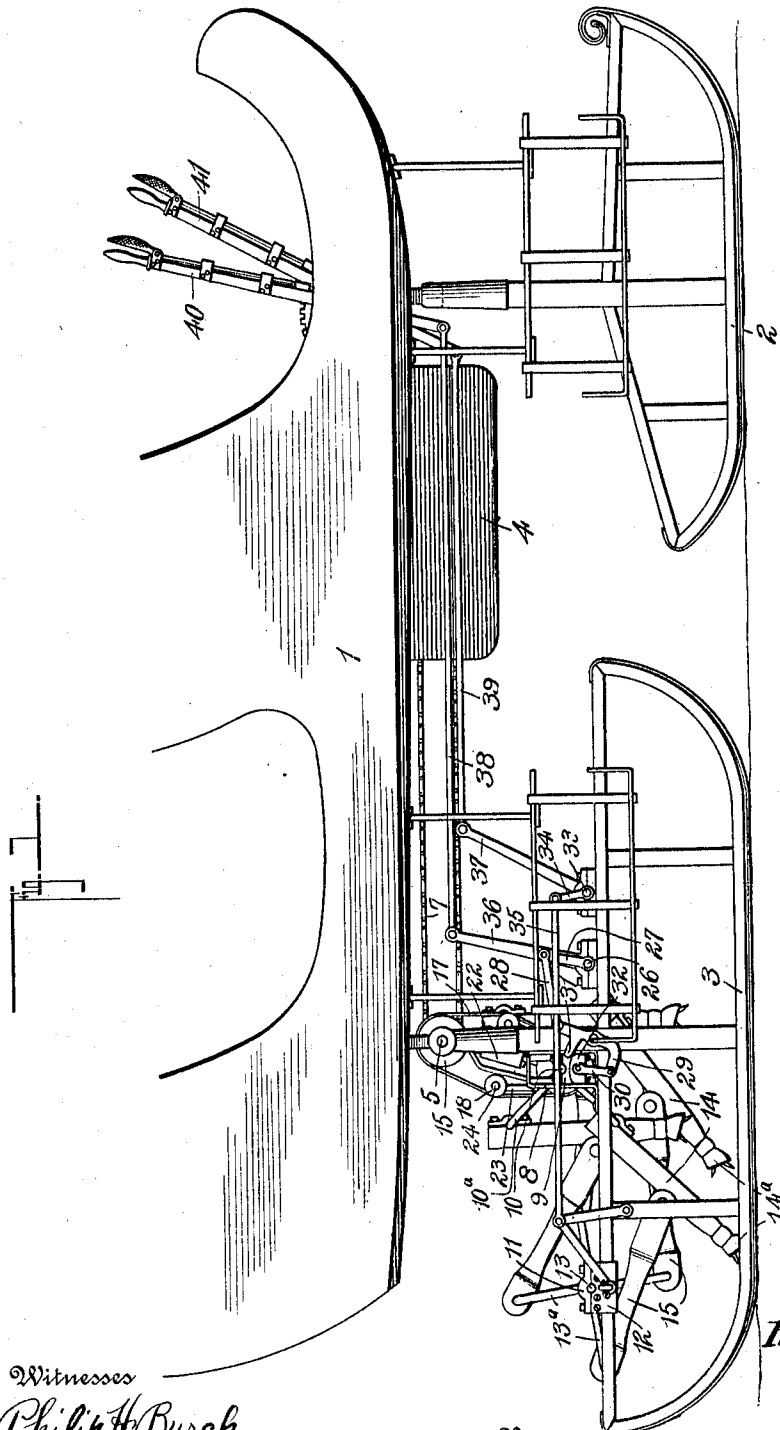


P. F. D. BELLIVEAU.
AUTOSLEIGH.
APPLICATION FILED MAR. 8, 1910.

Patented Jan. 24, 1911.

4 SHEETS-SHEET 1.

982,344.



Witnesses

Philip H. Burch
E. B. McBath

Inventor
P. F. D. Belliveau,

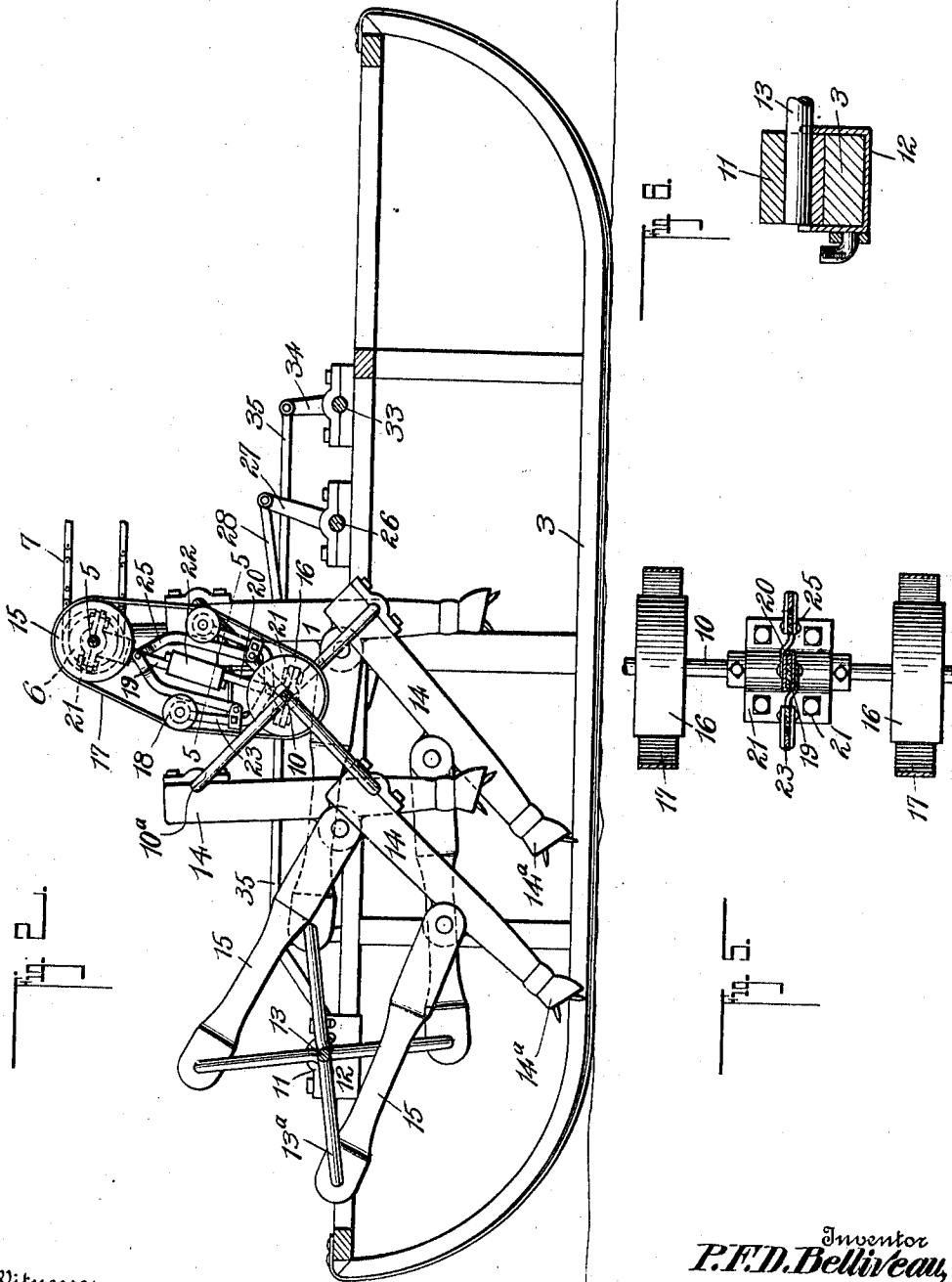
By *William D. Brock*
Attorneys

982,344.

P. F. D. BELLIVEAU.
AUTOSLEIGH.
APPLICATION FILED MAR. 8, 1910.

Patented Jan. 24, 1911.

4 SHEETS-SHEET 2



Witnesses

Philip H. Burch
E. B. McRae

Inventor
P. F. D. Belliveau,

By *McRae & Brock*
Attorneys

P. F. D. BELLIVEAU.

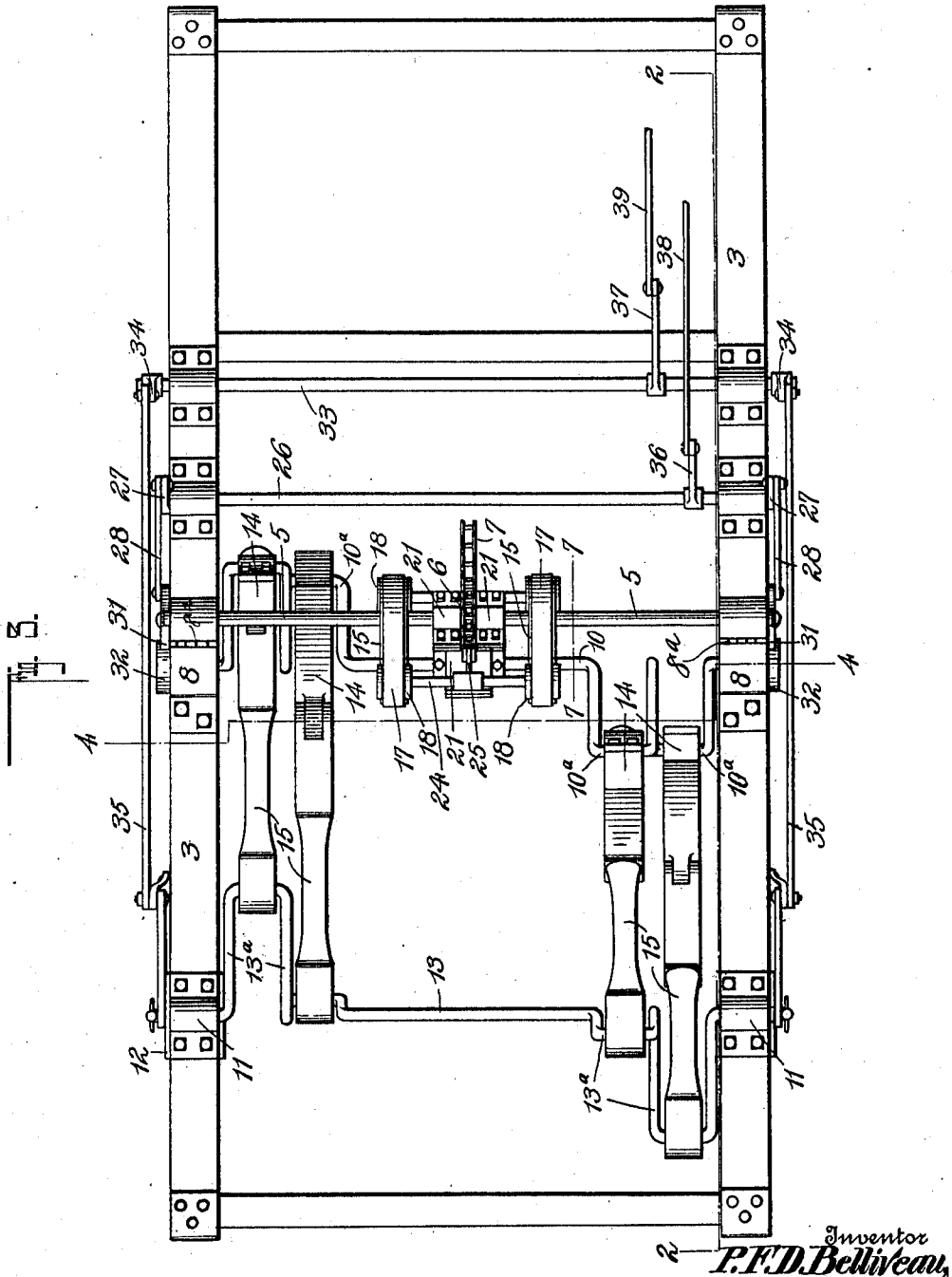
AUTOSLEIGH.

APPLICATION FILED MAR. 8, 1910.

982,344.

Patented Jan. 24, 1911.

4 SHEETS-SHEET 3.



Witnesses

Philip H. Burch
E. B. McBeth

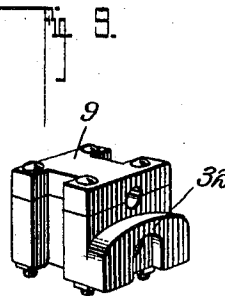
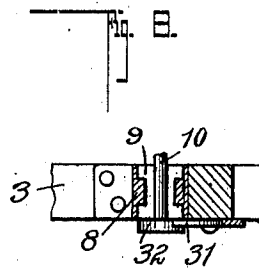
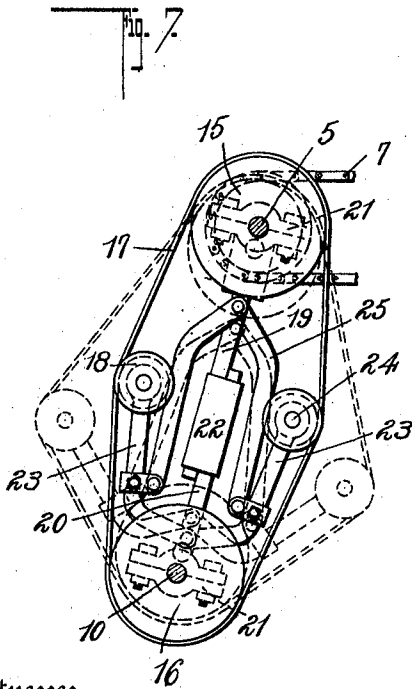
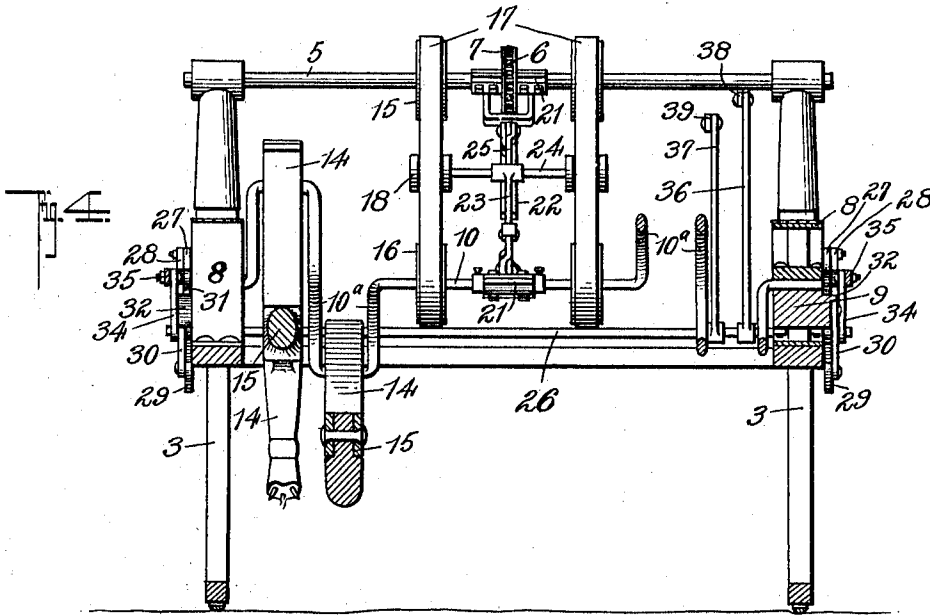
By *J. Mearns Brock*
Attorneys

P. F. D. BELLIVEAU.
AUTOSLEIGH.
APPLICATION FILED MAR. 8, 1910.

982,344.

Patented Jan. 24, 1911.

4 SHEETS—SHEET 4.



Witnesses

Philip H. Burch
E. B. McBath

Inventor
P. F. D. Belliveau,

By J. Mearns Brock
Attorneys

UNITED STATES PATENT OFFICE.

PETER F. D. BELLIVEAU, OF EAST LONG MEADOW, MASSACHUSETTS,

AUTOSLEIGH.

982,344.

Specification of Letters Patent.

Patented Jan. 24, 1911.

Application filed March 8, 1910. Serial No. 548,014.

To all whom it may concern:

Be it known that I, PETER F. D. BELLIVEAU, a citizen of the United States, residing at East Long Meadow, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Autosleighs, of which the following is a specification.

This invention relates to a sleigh or sled intended to be propelled mechanically, and the invention relates especially to the construction and arrangement of the propelling apparatus.

The invention consists in the novel features of construction and arrangement of parts hereinafter fully described and pointed out in the claims.

In the drawings forming a part of this specification: Figure 1 is a side elevation. Fig. 2 is a section on the line 2—2 of Fig. 3. Fig. 3 is a plan view of the rear runners and parts connected thereto. Fig. 4 is a section on the line 4—4 of Fig. 3. Fig. 5 is a section on the line 5—5 of Fig. 2. Fig. 6 is a detail sectional view illustrating a slidable bearing. Fig. 7 is an enlarged section on the line 7—7 of Fig. 3, illustrating in side elevation certain drive mechanism and a belt tightening device. Fig. 8 is a horizontal section taken through a vertically movable bearing. Fig. 9 is an enlarged perspective view of the bearing block shown in section in Fig. 8.

In these drawings 1 represents a sleigh body provided with front runners 2 and rear runners 3, and it will be understood that the body of the sleigh or sled may be of any design or style and also that any suitable means may be employed for steering the device, and the front runners 2 may be pivotally mounted in any well-known manner. As the steering mechanism does not form a part of this invention, it is not thought necessary to show or describe any of the forms already in use. Any suitable form of engine may be employed and this may be located in any convenient place, and for purposes of illustration I have shown a casing 4 in which an engine of any desired type may be arranged. Journalled upon the rear runners in suitable bearings is a shaft 5. Centrally mounted upon said shaft and keyed thereto is a sprocket wheel 6 and a sprocket chain 7 driven from the engine runs over the said sprocket wheel. Mounted upon the rear runners, and in a lower plane than the shaft

5 are suitable vertically arranged brackets 8 which inclose and also form guides for vertically movable bearing blocks 9, in which blocks is journaled a shaft 10 which shaft is provided with crank portions 10^a, said crank portions being arranged in pairs, a pair of crank portions being formed adjacent each end of the shaft, the crank portions of one pair being oppositely arranged with respect to the corresponding crank portions of the other pair, and the crank portions of each pair being approximately at right angles to each other. Also upon the runners, and it will be understood that the word "runners" hereafter will mean the rear runners, are placed slidable bearings 11, said bearings being held to the runner frame by means of an angled bracket 12 as shown in Fig. 6. These bearings are movable longitudinally along the runners, and in said bearings I journal a shaft 13 parallel to the shaft 10 and having crank portions 13^a formed and arranged similar to the crank portions 10^a, and adapted to cooperate therewith.

To propel the sleigh over the ground I provide pitmen 14 said pitmen being four in number, one being pivotally hung upon each crank portion 10^a. Arms 15 are pivotally connected to the crank portions 13^a and are also pivotally connected to the pitmen 14 midway their ends, as shown in the drawings. To transmit rotation of the shaft 5 to the shaft 10 I employ pulleys 16 fixed upon said shafts and I preferably place two pulleys upon each shaft and connect them by belts 17. These belts run over idlers 18 which idlers form part of a belt tightening device. This device consists of two bars overlapping and sliding upon each other, said bars being carried respectively by plates 21 which plates are clamped loosely upon the shafts 5 and 10 respectively, the bars being held in loose sliding contact with each other by a sleeve 22. The lower bar supported from the shaft 10 has pivoted arms which extend upwardly upon opposite sides of the sleeve 22 and which form bearings for shafts 24, upon which shafts are loosely mounted the idlers 18. The arms 23 are also pivotally connected to the upper bar 19 by means of links 25 which are pivotally connected to both the arms 23 and the upper bar 19.

Arranged in advance of the shafts 5 and 10 is a shaft 26 which at its ends carries

crank portions 27, of suitable crank arms to which are pivotally connected rods 28 which extend rearwardly and pivotally connect with one end of pivoted cam levers 29, said levers being arranged upon the outer sides of the runners and the other ends of the cam levers are pivotally connected by means of links 30 with the bearing blocks 9. These cam levers also have rearwardly projecting locking lugs 31 which engage shoulders 32 formed on the outer faces of the bearing blocks 9, said shoulders being most clearly shown in Fig. 9. In advance of the shaft 26 is a shaft 33 which has crank arms 34 pivotally connected by links 35 to the brackets 12. To the shafts 26 and 33 are fixed respectively rocker arms 36 and 37 and in the forward portion of the sleigh I provide operating levers 40 and 41 connected respectively to said rocker arms by links 38 and 39.

Each pitman 14 is provided with a foot portion 14^a provided with spurs or prongs. It will be obvious that rotation of the shaft 5 will rotate the shaft 10, and by reason of the mounting of the pitmen upon the crank portions of said shaft they will be given an up and down movement, and the motion and direction of this movement will be properly controlled and regulated by the arms 15 which connect the pitmen to the crank portions of the shaft 13, said shaft being of course rotated through the movement imparted to it by the pitmen and arms. The extent of the downward throw of the pitmen, and consequently the extent to which they would engage the ground can be regulated by shifting the bearings of the shafts 10 and 13, the lever 40 controlling vertical movement of the shaft 10 and the lever 41 controlling the sliding movement of the shaft 13. It will furthermore, be noted that when the shaft 10 is in normal position, it will be held down by the locking lugs 31. When the lever 40 is drawn toward the operator, the cam levers 29 will be rocked upon their bearings so as to withdraw the lugs 31 from in position over the curved surface of the shoulders 32 of the bearing blocks 9 and the links 30 will elevate said bearings in the guideways formed by the brackets 11. This will not only lift the pitmen but also would slacken the belts 17 were it not for the belt tightening device previously described. As soon as the shaft 10 rises the bar 19 carried by it will also move upwardly upon the other bar 19, and the arms 23 being connected pivotally by the arms 25 to the stationary bar 19 will spread outwardly, to an extent proportionate to the rise of the shaft 10, and will thus hold the idlers 18 in engagement with the belts, keeping the belts perfectly taut, such change in position being illustrated by the dotted lines in Fig. 7. The bearings on the shaft 13 can also be shifted by the lever 41, and by

means of the movement of both shafts the stroke of the pitmen are under control of the operator. Thus in a light snow the downward movement can be shortened, and upon down grades the shafts can be moved to their full limit, thus causing the pitmen to entirely clear the ground, so that the sleigh will simply coast, or if it is desired to stop forward motion of the sleigh without stopping the engine this can be done by operating the levers 40 and 41 and bring the pitmen into a position where they will work idle between the side members of the rear runner and without engaging the surface of the ground.

The above description sets forth the essential features of the invention and in manufacturing the device the bearings 9 may be formed in two parts either as shown in Fig. 9, or in any other suitable manner, and I also prefer to form the bracket 8 in which this bearing works in two sections, said sections being hinged together, as shown at 8^a in Fig. 3, as this permits one side of the bracket to be swung open when placing the bearing block 9 within it. The relation of the arms 23 and 25 of the chain tightening device with respect to each other can also be adjusted in order to keep the proper slack upon the belts, such adjustment of the belts being allowed for by set screws of the ordinary kind as shown in Fig. 7. It will also be noted that while I have illustrated the belt tightener as operating upon two belts it can be readily modified to operate in connection with only one belt in case a single belt is employed. It will also be understood that any desired transmission means, either sprocket chains, shafts or belts can be employed for transmitting power from the engine to the mechanical construction which forms the subject matter of this application. It will also be understood that while I have shown this mechanical motive device applied to a sled having runners it can be applied to a vehicle provided with wheels in place of runners and it also can be employed for the purpose of drawing other vehicles or wheeled devices. The mechanical movement for example mounted upon a suitable frame can be employed for the purpose of drawing mowing machines, or it can be embodied in a hay rack, or used in any other manner which may be found advisable.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The combination with a sleigh having rear runners, of parallel shafts journaled on said runners and having crank portions, one of said shafts being in a higher plane than the other, pitmen pivotally connected to the crank portions of the higher shaft, and arms pivotally connected to the middle

portions of said pitmen and to the crank portions of the lower shaft.

2. The combination with a sleigh runner, of parallel shafts having crank portions journaled thereon, one of said shafts being movable vertically and the other being movable horizontally, pitmen pivotally connected to the crank portions of the vertically movable shaft, and arms pivotally connected to the crank portions of the horizontally movable shaft and also pivotally connected to the pitmen.

3. The combination with the rear runners of a sleigh, of vertically movable bearings, a crank shaft journaled therein, horizontally movable bearings, a crank shaft journaled therein, pitmen connected to the crank portions of one shaft, arms pivotally connected to said pitmen and to the crank portions of the other shaft and separate means controllable at the will of the operator for moving said bearings.

4. A device of the kind described comprising runners, a vertically movable shaft carried by said runners, said shaft having two pairs of crank portions, the crank portions of one pair being oppositely arranged from those of the other and the crank portions of each pair being substantially at right angles to each other, pitmen pivotally connected to said crank portions, arms pivotally connected midway the ends of the pitmen, a second shaft having crank portions corresponding to those of the first, the arms

being pivotally connected to said crank portions, and bearings for the second shaft adapted to move in a horizontal plane.

5. A device of the kind described comprising a driven shaft, fixed bearings for said driven shaft, a shaft having crank portions, vertically movable bearings for the second mentioned shaft, pitmen pivotally connected thereto, a pulley fixed upon each of said shafts, a belt running over said pulleys, idlers engaging said belt, means supporting said idlers and adapted to spread them apart when the second mentioned shaft is lifted, and means under control of an operator for lifting said shaft.

6. A device of the kind described comprising parallel crank shafts, vertically movable bearings for one of said shafts, horizontally movable bearings for the other shaft, pitmen connected to the vertically movable shaft, arms connected to the horizontally movable shaft, and pivoted to the pitmen, a driven shaft in a higher plane than the vertically movable shaft, pulleys fixed upon the two last mentioned shafts, a belt running over said pulleys, and means supported by said last mentioned shafts for holding the belt tight when the vertical shaft is lifted above its normal position.

PETER F. D. BELLIVEAU.

Witnesses:

FRED. G. BELLIVEAU,
DAVID G. BELLIVEAU.