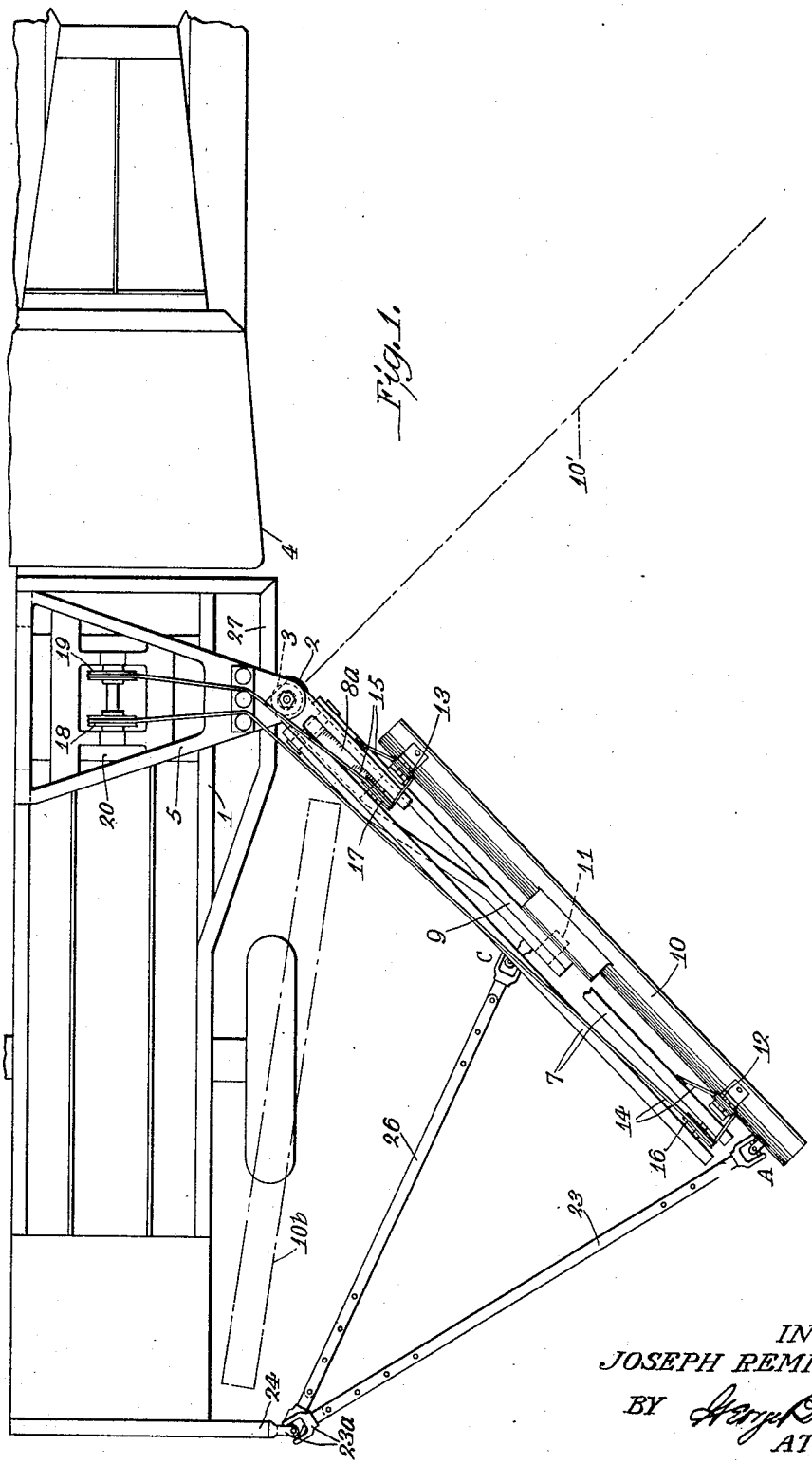
Oct. 4, 1932. J. REMINGTON 1,880,984

SNOW SCRAPING MACHINE

Filed Feb. 13, 1931 3 Sheets-Sheet 1



INVENTOR
JOSEPH REMINGTON
BY Harry D. Miller
ATTORNEY

Oct. 4, 1932. J. REMINGTON 1,880,984

SNOW SCRAPING MACHINE

Filed Feb. 13, 1931 3 Sheets-Sheet 2

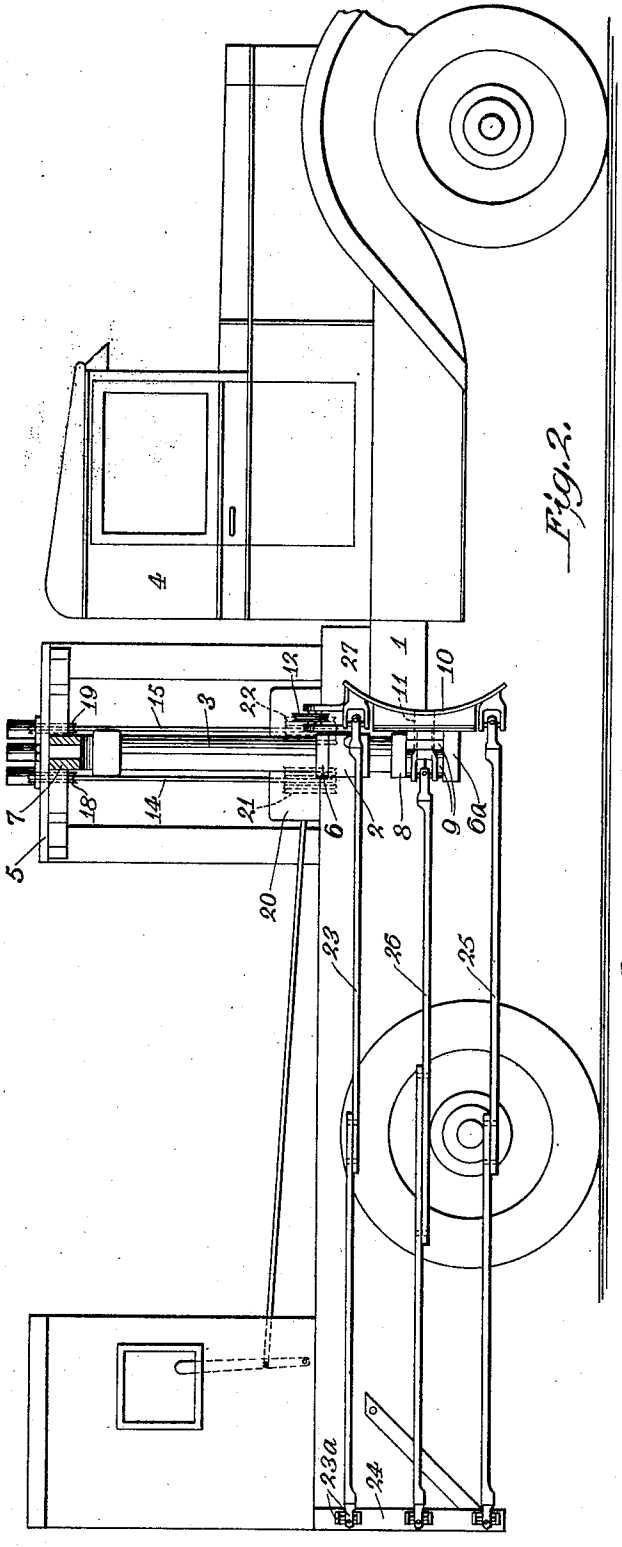


Fig. 2.

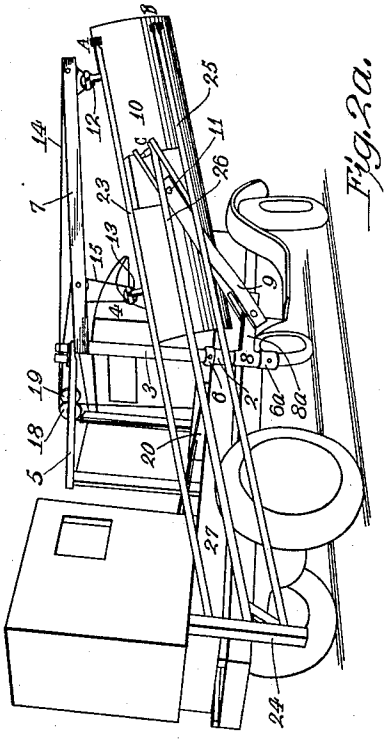


Fig. 2a.

INVENTOR
JOSEPH REMINGTON
BY George B. Wilson
ATTORNEY

Oct. 4, 1932. J. REMINGTON 1,880,984

SNOW SCRAPING MACHINE

Filed Feb. 13, 1931 3 Sheets-Sheet 3

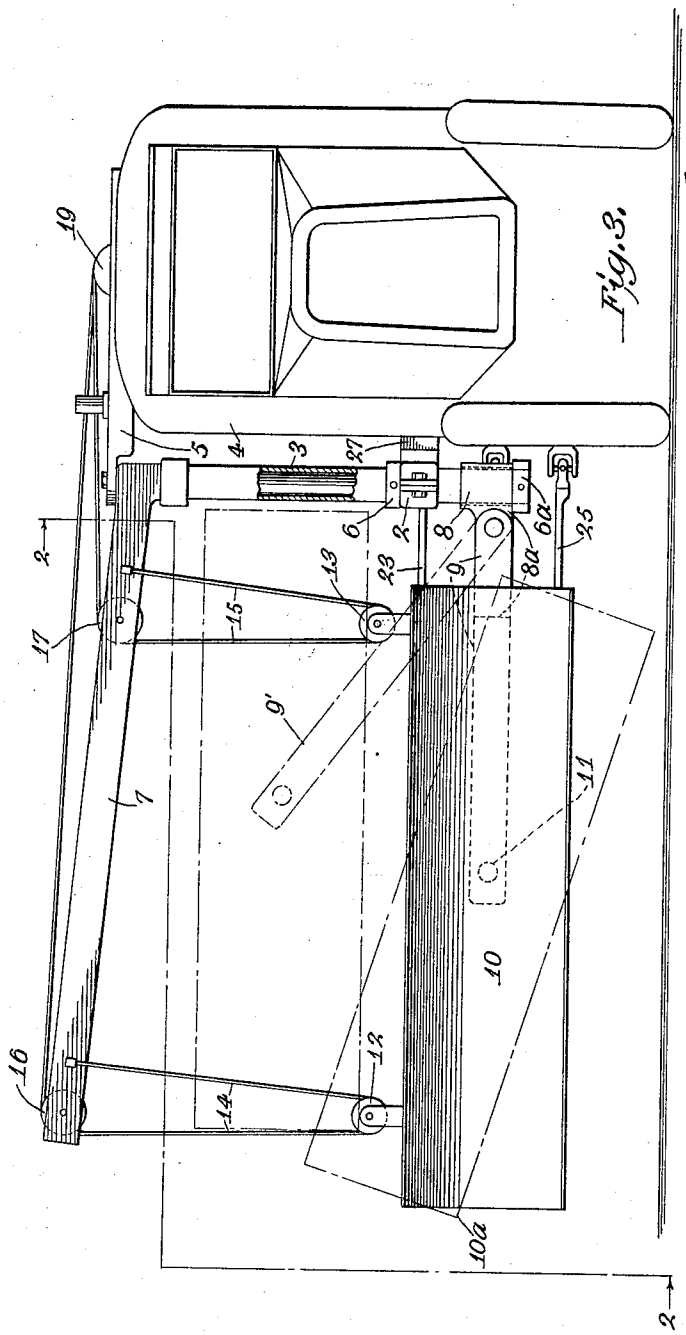


Fig. 3.

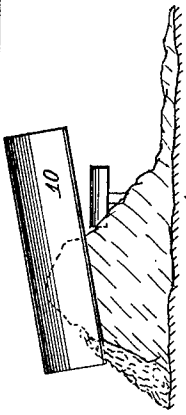


Fig. 6.

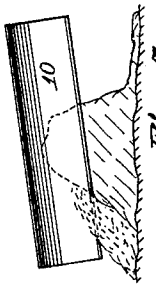


Fig. 5.

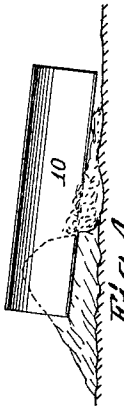


Fig. 4.



Fig. 7.

INVENTOR
JOSEPH REMINGTON
BY George B. Miller
ATTORNEY

Patented Oct. 4, 1932 1,880,984

UNITED STATES PATENT OFFICE

JOSEPH REMINGTON, OF GAYLORD, MICHIGAN

SNOW SCRAPING MACHINE

Application filed February 13, 1931. Serial No. 515,446.

This invention relates to machines for removing snow from highways and pertains more particularly to snow scrapers carried by trucks which may be either self-propelled or actuated by tractors.

The objects of my invention are to provide an improved mounting for the scraper blade, whereby the blade can be advanced along the highway with its lower edge parallel to the surface of the road-bed and close to it, or at any desired height above it, or the blade can be positioned with its outer end elevated and its inner end close to the road-bed so as to scrape off the upper part of the berm or bank of snow that has been thrown to one side of the roadway by a snow-plow, the scraping being done in such manner as to leave the top surface of the berm flat or sloped with any desired degree of inclination either toward the pavement, or away from it.

The blade mounting mechanism also has the capability of hoisting the blade bodily to a considerable height to enable it to pass over obstructions at the side of the roadway, such as mail-box posts and the like.

The blade, when raised higher than the truck wheels, is capable of being swung into a position at one side of and parallel with the length of the truck so that the truck can be driven along the highway without obstructing traffic.

The blade is so mounted that it can be raised and lowered while the truck is in motion and is thereby enabled to scrape the top from an embankment of snow that lines the side of the road for a long distance, say, a mile or more, regardless of the fact that the bank may be of considerable height in some places and relatively small in other places. This ability of the blade mounting to adjust the height of the blade while traveling enables the machine to proceed forward under speed and scrape off drifts without missing part of the work where the snow is of little depth. Thus by adjusting the blade during travel so as to keep it continually at work the snow-removing efficiency of the machine is greatly increased over that of a mere leveling scraper.

My invention also includes certain new and useful mechanical devices and lesser combinations of elements whereby the previously mentioned movements and adjustments of the blade can best be effected. These devices form the subject matter of certain claims. For example, the preferred embodiment of the machine includes a novel system of bracing from the blade to the chassis of the truck whereby the blade is strongly and rigidly backed so as to best overcome the inertia of the snow.

With the foregoing and certain other objects in view, which will appear later in the specification, my invention comprises the devices described and claimed and the equivalents thereof.

In the drawings Fig. 1 is a top plan view, partly diagrammatic, showing a truck embodying my invention in a preferred form, the blade being shown in its ordinary working position.

Fig. 2 is a part sectional side elevation, taken on the line 2—2 of Fig. 3.

Fig. 2*a* is a rear view of the machine, showing the blade in raised position.

Fig. 3 is a front view partly broken away, showing in dotted lines certain of the various positions into which the blade can be moved in a vertical plane.

Figs. 4 to 7 inclusive are diagrammatic representations of various applications of the device to different kinds of work.

The specific details shown herein are merely typical of suitable embodiments of the invention, being those employed in machines that are now in successful operation.

Mounted on the truck frame 1 in any convenient place, preferably at one side thereof, is a bearing 2 in which is an upright pillar 3. The top of the pillar, which is preferably at about the height of the top of the truck cab 4, is stiffened by an A-frame 5 and associated braces that extend down to the chassis at the other side of the truck. To sustain the pillar in the bearing at the desired height a collar 6 is clamped to the pillar and seated on the bearing.

Projecting laterally from the upper part of the pillar is a jib or arm 7 that can be

swung through an angle in a horizontal plane. The pillar 3 preferably turns with the jib 7, but may be stationary, in which case the jib is pivoted to the top of the pillar. Loose on the pillar above a collar 6*a* and fixed thereto is a stand-off fender comprising a sleeve 8 formed with a lug 8*a* pivoted to a laterally projecting arm 9 that can be raised and lowered at its outer end, as indicated by the broken lines at 9′ in Fig. 3.

To the outer end of arm 9 is pivoted a scraper blade 10 of any suitable cross sectional shape. The pivot 11 is preferably located at about the geometric center of the blade so that the outer end of the blade can be raised or lowered, as indicated by the dotted lines at 10*a* and its inner end will be correspondingly moved.

Sheaves 12, 13 may be mounted upon the blade near its upper edge and close to its ends. On each sheave is rove one of a pair of chains or flexible cables 14, 15. Preferably, each cable is fastened at one end to the jib 7 and extends downward, around the appropriate sheave, and thence up to the jib again and around a second sheave 16, 17 that is mounted on the jib, and thence by way of a third sheave 18, 19 which is supported on the framework 5 carried by the chassis, to a power-driven drum mounted in a gear case 20. There are two drums 21, 22, one for each cable.

The drums may be operated together at the same speed so as to raise and lower the scraper blade in horizontal position, raising with the outer end of the lower radial arm 9, or one drum may be run faster than the other to raise one end, as 10*a* of the blade higher than the other, or only one drum may be employed to tilt the blade. Since the power drums and the mechanism by which they are operated are known in the art of road scraping and crane handling machinery, and since they do not form any part of my claimed invention, those elements are not illustrated in detail herein, their locations being indicated diagrammatically. It will be sufficient to understand that either of the cables may be hauled in or let out by suitable means to raise and lower either end or both ends of the scraper blade. The blade-operator's station, containing the usual hoist-control levers, is preferably located on the truck chassis rearward of the blade 10.

In ordinary use the scraper blade is set at an angle of about forty five degrees rearward of a horizontal line assumed to extend transversely to the direction of travel along the roadway, as shown in Fig. 1. An extensible brace 23 is connected by a universal joint 23*a* to a downwardly extending bracket 24 on the chassis frame 1 and extends forward and outward, its outer end being similarly connected to the blade at a point near its outer upper corner. A second brace 25 is similarly connected from a lower point on the bracket 24 to the outer lower corner of the blade. In general the two extensibly adjustable braces 23, 25 are approximately parallel, so that a parallel motion device is thus defined whereby the blade will maintain approximately a vertical position while being raised and lowered by cables 14, 15.

A third brace 26 is swiveled to the blade approximately at its center near pivot 11 and is pivoted to bracket 24 at about midway between the pivotal points of the other two braces 23, 25. The points of attachment A, B, C of the three braces to the back of the blade define, as will be understood from Figs. 1, 2, 2*a* and 3, a triangular figure, and their rear points of attachment to the chassis may be roughly considered as representing two of the three triangles that form the sides of a hypothetical pyramid. The approximately triangular-shaped structures so produced afford the greatest strength and stiffness as a backing for the blade. Each of the three braces 23, 25, 26 is extensible so that the blade 10 can be moved to any position, ranging from the one shown in full lines in Fig. 1 to approximately ninety degrees ahead of that position, as indicated by the dotted line 10′ in Fig. 1. This latter position is sometimes adopted for scraping snow from the side of the highway onto the road-bed.

The braces 23, 25, 26 and the jib supporting pillar 3 may all be fastened directly to the chassis 1 of the truck, but I prefer, for structural reasons and to prevent springing the chassis members out of alinement, to provide a sub-frame 27 upon which the necessary blade manipulating devices are mounted. The sub-frame 27 can be placed upon the chassis frame or removed at will.

In the drawings I have illustrated diagrammatically a number of ways in which a snow scraping blade mounted according to my invention can be used. In Fig. 4 the blade 10 is shown as scraping snow from a bank, produced by a snow-plow, into the roadway. Fig. 5 shows the blade scraping off the top of a berm of snow and depositing the surplus on the side of the bank remote from the roadway. Fig. 6 shows the blade raised to its greatest height and arranged for scraping the top from a very deep berm and for passing over a mail-box or other obstruction. Fig. 7 shows diagrammatically the kind of cut that can be taken from a long bank of snow at the side of the road, indicating the mode of operating the blade when appropriately raised and lowered while the truck is moved forward, in order that it may be kept in efficient operation by following the contour of the top of the bank instead of missing the low spots, as above described. I have also shown by dotted lines 10*b* in Fig. 1 the manner of folding the blade 10

back while elevated so as to stow the blade and the jib 7 alongside the chassis and above the rear wheel out of the way of traffic while the machine is in transit from place to place.

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

1. A snow scraper comprising a vehicle, a jib carried by the vehicle and positioned above the chassis thereof to project laterally therefrom, a scraper blade suspended from the jib, means adapted to raise either end of the blade toward the jib and lower it therefrom, brace members movable with the blade and connecting said blade and chassis, an arm pivotally connected at its outer end to the blade at approximately the geometric center thereof, said arm pivoted at its inner end to the chassis for movement in a vertical plane and in a horizontal plane and lying closely adjacent the back of the blade, said arm constituting a stand-off fender operative between the blade and chassis, for the purposes set forth.

2. A structure as claimed in claim 1, wherein the stand-off fender is secured to the back face of the blade by a pivot located in substantially the mid-length of the blade.

3. A structure as claimed in claim 1, wherein the fender is pivoted at its outer end to a pivot located on the back face of the blade, a bracket is carried on the chassis, and a pivotal connection is provided between the bracket and the inner end of the fender.

4. A structure as claimed in claim 1 wherein the fender is pivoted at one end to the blade for angular movement relative thereto in a vertical plane, and is pivoted at its other end to a sleeve rotatably mounted on the chassis, for the purposes set forth.

5. A snow scraper comprising a vehicle, a jib carried by the vehicle and positioned above the chassis thereof to project laterally therefrom, a scraper blade suspended from the jib, means adapted to raise the blade toward the jib and lower it therefrom, diagonally disposed brace members swivel-connected at one end to the blade and at the other end to the chassis rearward of the blade, and a stand-off fender hinge-connecting the central portion of the blade and the chassis in a manner to permit free movement of adjustment of the blade vertically and horizontally, and also to permit relative angular movement of rotation of the blade with respect to the stand off fender for the purposes set forth.

6. In combination, a vehicle chassis, an upright post secured to the chassis at one side thereof, a jib mounted for swinging movement in a horizontal plane at the upper end of said post, a scraper blade freely suspended from said jib by cables attached to the inner and outer end portions of the blade respectively, cable actuating means, a pair of approximately parallel braces pivoted at their outer ends respectively to the outer, upper and lower corners of the blade, the inner ends of said braces being pivoted to the chassis in vertically spaced relation, a third brace swiveled at one end to the blade at approximately the geometric center thereof and pivoted at its other end to the chassis substantially between the pivotal points of said pair of braces, an arm pivoted at its outer end to the blade adjacent said central swivel and pivotally connected at its inner end to the chassis adjacent the bottom of said post, said arm adapted for movement in a vertical plane and in a horizontal plane and lying closely adjacent the back of the blade.

In testimony whereof, I affix my signature.

JOSEPH REMINGTON.