

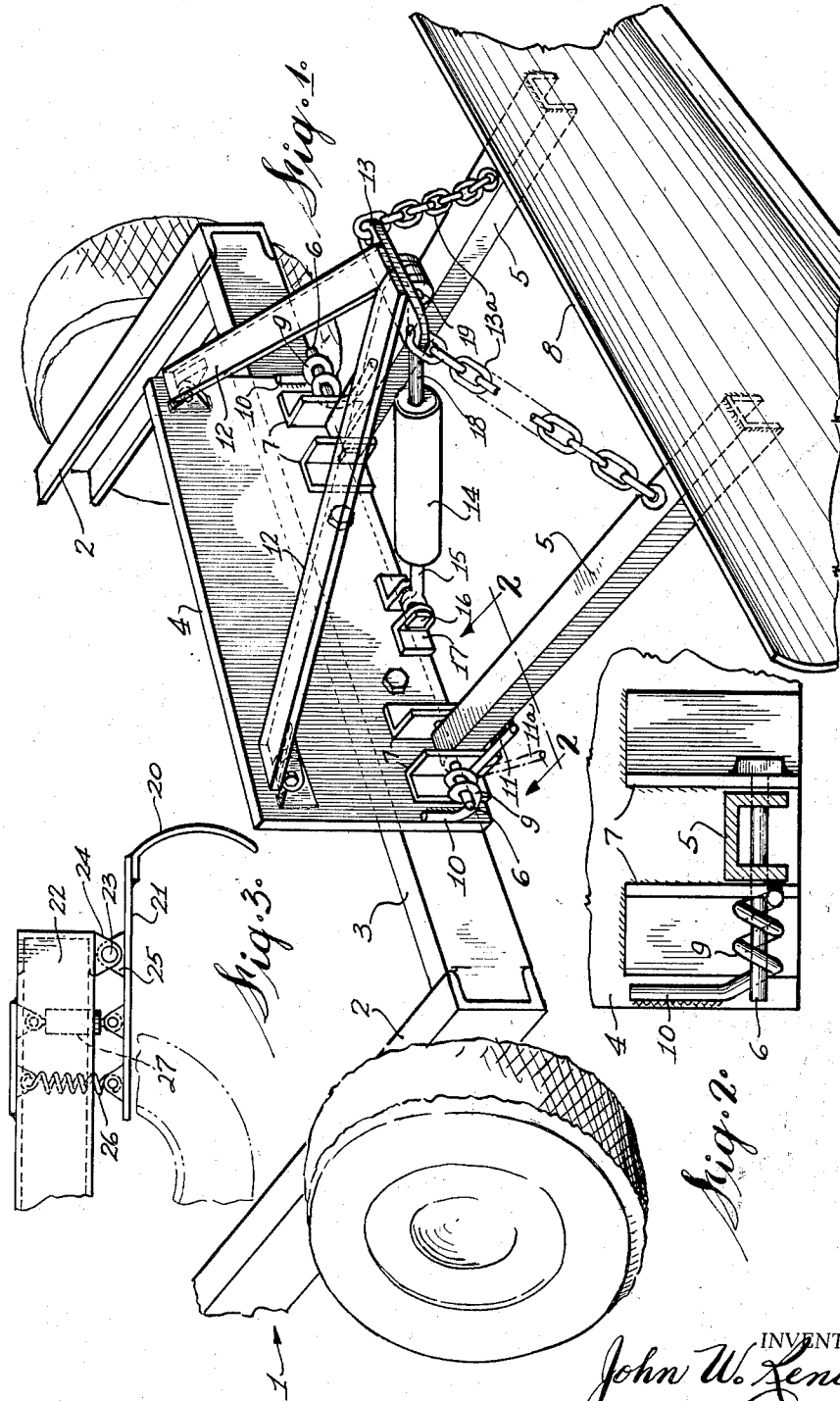
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SNOW PLOW STRUCTURE WITH MEANS TO EXERT DOWN PRESSURE ON SLADE

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**SNOW PLOW STRUCTURE WITH MEANS TO EXERT DOWN PRESSURE ON SLADE**

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2 Claims. (Cl. 37-42)

This invention relates to snow plow structures.

It is usual to load the blade of a snow plow to an extent sufficient that the blade will perform a good scraping or cleaning job. In some cases, a very heavy blade structure is provided whereby there is sufficient inherent weight in the structure itself. Obviously, this is not an economical arrangement. A more usual and conventional form of structure comprises the provision of a light blade structure with hydraulic means exerting downward pressure thereon. Since the hydraulic means is under the control of an operator and since it is quite difficult to determine a satisfactory degree of pressure to be applied, this type of equipment frequently results in excessive pressure on the road surface with a consequent damaging effect on such surface. Moreover, as the blade wears down, the hydraulic pressure must be periodically adjusted by the operator, and again it is quite difficult to achieve the desired fine degree of adjustment.

It is an object of this invention to provide a snow plow structure wherein a predetermined load is applied to the blade from the carrying vehicle.

Another object is to provide a snow plow structure wherein a predetermined load is applied to the blade whereby such load automatically compensates for wear of the blade.

Another object is to provide a snow plow structure wherein any desired degree of preloading may be applied to the blade.

Another object is to provide a simple, relatively inexpensive snow plow structure of reduced weight wherein the downward force thereof comprises a combination of the weight of the blade structure and a preloaded spring means.

The invention resides in a snow plow structure comprising, in combination with a generally horizontal vehicle frame, a rigid blade supporting frame pivotally carried by said vehicle frame, a blade fixed to said supporting frame, and resilient pressure applying means acting on said blade supporting frame to apply downwardly directed resilient pressure on said blade.

The invention will be described with reference to the accompanying drawing, in which:

FIGURE 1 is a perspective view of a snow plow structure in accordance with the invention,

FIGURE 2 is a sectional view on line 2-2 of FIGURE 1, and

FIGURE 3 is a side elevation of a modified form of snow plow structure.

Referring to FIGURES 1 and 2, 1 is a portion of a carrying vehicle having longitudinal beams 2 and a transverse beam 3.

The plow structure comprises an upright plate 4 fixed to the transverse beam 3. A pair of blade-carrying arms 5 each have one end thereof pivotally mounted as by a pin 6 in brackets 7 fixed to the plate 4. A blade 8 is fixed as by welding to the other ends of the arms 5.

A torsion spring 9 is coiled about each pin 6 and has one end portion 10 fixed, as by welding, to plate 4 and another end portion 11 fixed, as by welding to an arm 5. Each end portion 11 is torsionally loaded in a downward direction. Thus, such end portion 11 may have a normal unloaded position indicated at 11a in dotted lines.

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Means for raising and lowering the blade may comprise a pair of arms 12 pivotally mounted on plate 4 above arms 5 and carrying a bracket 13 having chains 13a connecting the bracket to arms 5. A hydraulic cylinder 14 has a connecting bar 15 pivotally mounted at 16 to a bracket 17 fixed to plate 4 and a connecting rod 18 pivoted at 19 to bracket 13.

It will be apparent that the springs 9 and the torsional loading on end portions 11 may be chosen to provide any desired degree of loading on the blade 8.

It will also be understood that in the "down" or operating position of the blade, the hydraulic cylinder 14 is at the end of its downward stroke and applies no lifting force on the blade.

Referring to FIGURE 3, the blade 20 is fixed to a mounting plate 21 and is pivotally carried by the vehicle frame 22 by means of pivot pin 23 and brackets 24 and 25. Resilient pressure is applied to the blade in a downward direction by means of one or more tension springs 26 one end of which is connected to plate 21 and the other end of which is connected to the vehicle frame. A hydraulic cylinder 27 may be provided for raising and lowering the blade.

I claim:

1. A snow plow comprising a mobile frame, a substantially vertically disposed plate rigidly affixed to said frame and extending transversely of the path of movement thereof, a transversely extending blade disposed forwardly of the frame and generally in parallel relation thereto, said blade having an arcuate curvature from top to bottom to facilitate plowing of snow, a pair of substantially parallel and horizontally extending arms rigidly affixed to the rear convex surface of the blade, means pivotally connecting the ends of the arms remote from the blade to said plate for pivotal movement of the blade about substantially a horizontal axis, said means pivoting the arms to the plate including a pair of flanges rigidly secured to said plate adjacent each outer bottom corner thereof receiving the ends of the arms respectively therebetween, a pivot pin extending through said flanges and through the inner end of each arm, each pivot pin extending beyond the flanges toward the outer edge of the plate, a torsion coil spring mounted on said projecting pivot pin and having a laterally extending end engaging with the plate and a laterally extending end connected with the arm in spaced relation to the pivot pin to bias said arms and blade in a downward direction, a pair of bars disposed in overlying relation to said arms and disposed in a horizontal plane generally parallel to the plane of the arms, said bars converging forwardly, a transverse member rigidly interconnecting the outer adjacent ends of said bars, means pivotally mounting the inner ends of the bars to the upper outer corners of said plate for pivotal movement about a horizontal axis parallel to the horizontal axis of movement of said pair of arms, a flexible member connected to each end of said transverse member at the forward ends of said bars and extending downwardly therefrom, said flexible members being in the form of chains having their lower ends attached to said arms at a point adjacent to but spaced from the blade, the length of said transverse member being less than the distance between said arms whereby the chains extend downwardly in a diverging manner, a hydraulic piston and cylinder assembly having one end pivotally connected to the lower central edge of said plate, the other end of the assembly being pivotally connected to the adjacent ends of said bars and said transverse member at the center thereof whereby extension of said hydraulic piston and cylinder assembly will elevate the blade to an inoperative lifted position and contraction of the piston and cylinder assembly will en-

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able the blade to be positioned in an operative position for plowing snow.

2. A snow plow comprising a mobile frame, a mounting plate underlying said frame and projecting longitudinally therefrom, means pivotally mounting an intermediate portion of said plate on said frame for pivotal movement about a transverse horizontal axis, an arcuate plow blade rigidly attached to said plate at the end thereof projecting from the frame, a spring interconnecting the plate and said frame in longitudinally spaced relation to the transverse pivotal axis of the point of connection of the plate to the frame for biasing the end of the plate having the blade thereon in a downward direction, and a hydraulic piston and cylinder assembly interconnecting the plate and the frame intermediate the spring and the pivotal connection between the plate and frame for lifting the blade when the piston and cylinder assembly is extended thus overcoming the resilient effect of the spring.

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