June 20, 1939. A. R. HENRY ET AL 2,163,279

SNOW PLOW

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Fig 1

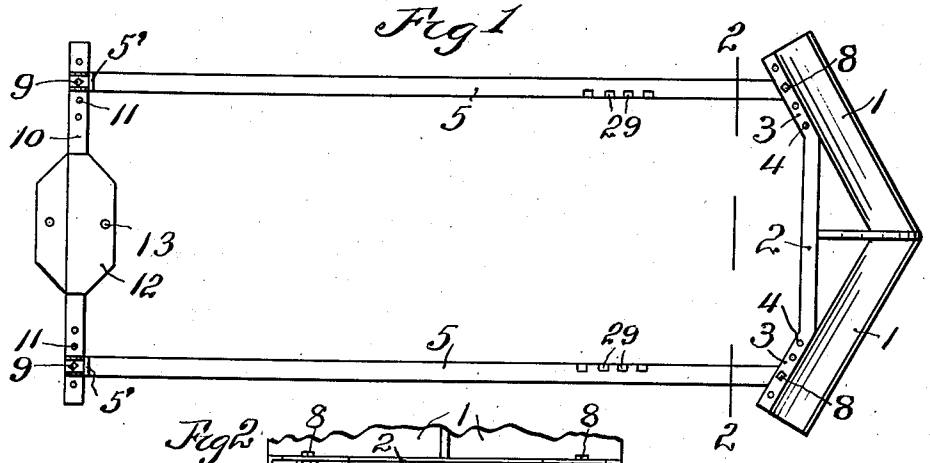


Fig 2

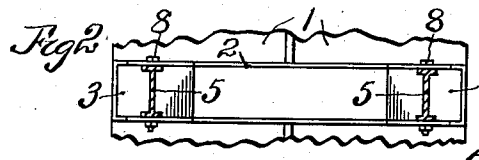


Fig 3

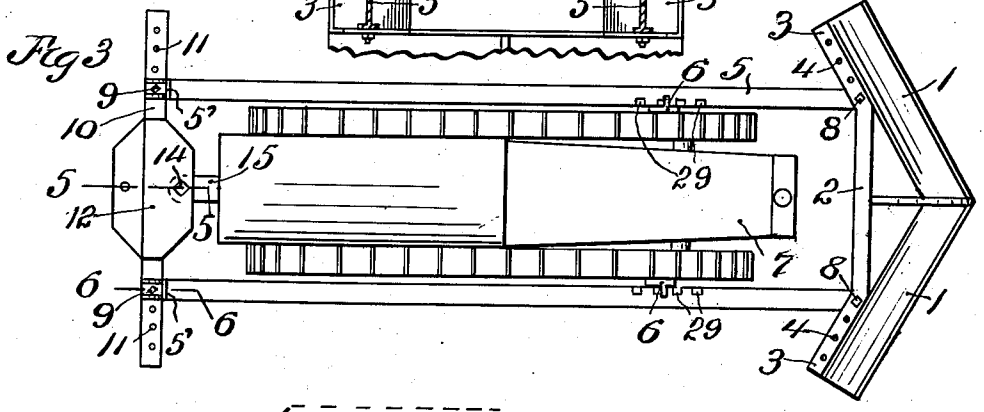


Fig 5

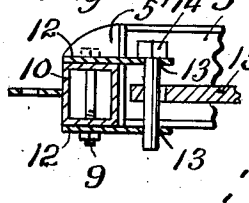
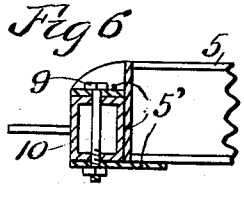


Fig 4

Fig 6



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SNOW PLOW

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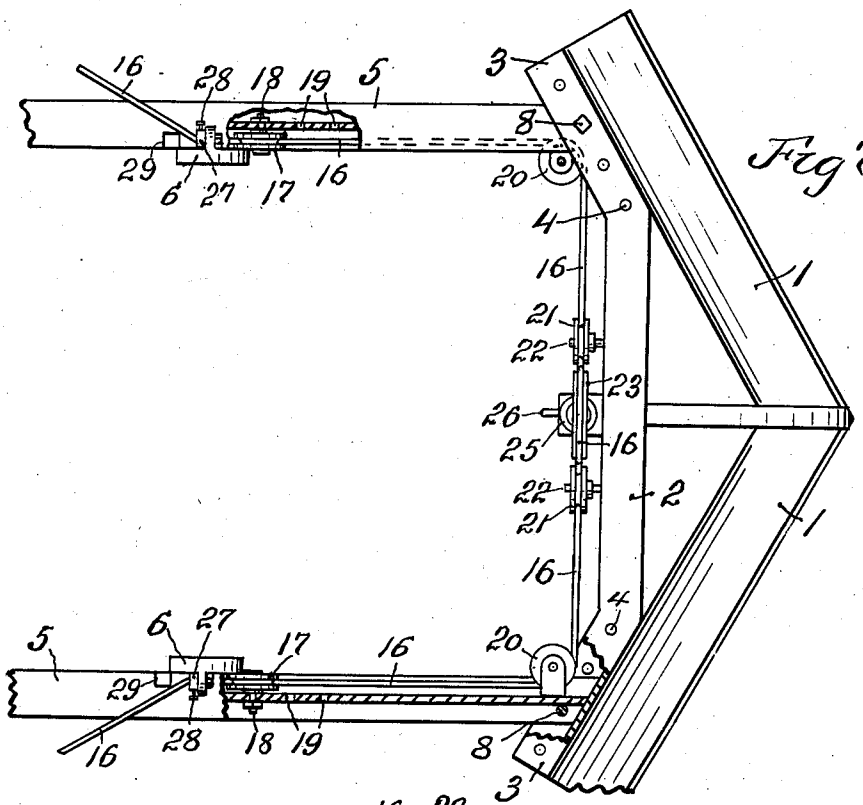


Fig 7

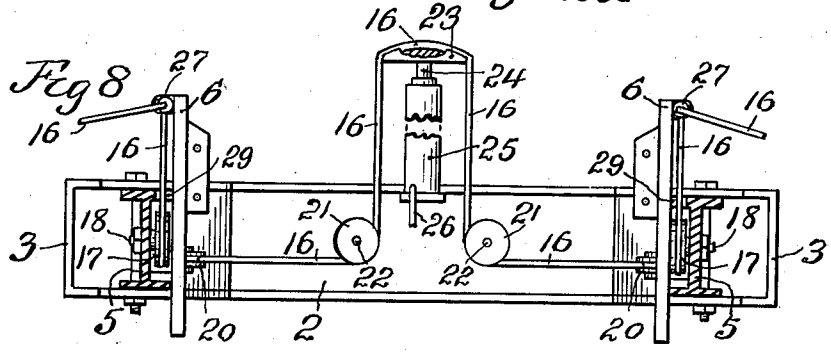


Fig 8

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SNOW PLOW

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Application January 26, 1938, Serial No. 187,012

3 Claims. (Cl. 37—44)

Our invention relates to improvements in snow plows. It relates particularly to tractor propelled snow plows of a type in which the tractor is disposed at the rear of the moldboard of the plow and between longitudinal rearwardly extending side rails attached to the moldboard and having respectively engagement with two rub plates attached to opposite sides of the tractor, for stabilizing the snow plow.

One of the objects of our invention is the provision of novel means by which the side rails can be laterally adjusted to adapt the device to tractors of different widths.

Another object of our invention is the provision of novel means of adjustment laterally and longitudinally of the side rails to adapt the device to tractors of different widths and lengths and having rear draft means for drawing the plow ahead.

A further object of our invention is the provision of novel means for adapting the raising and lowering means of the snow plow to the different adjustments to be made with the side rails and rub plates.

Still another object of our invention is the provision of a novel snow plow, which is simple, cheap, strong, durable, not likely to get out of order, which is easily and quickly fitted to tractors of different sizes, and which is efficient in operation.

The novel features of our invention are hereinafter fully described and claimed.

In the accompanying drawings which illustrate the preferred embodiment of our invention,

Fig. 1 is a plan view of our improved snow plow, with the moldboard raising and lowering means omitted.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 1, showing a tractor operatively disposed between the side rails of the plow with the rails shown adjusted into engagement with the rub plates of the tractor.

Fig. 4 is a side elevation, partly broken away, of our improved snow plow, showing portions of the raising and lowering mechanism, and showing in dotted lines a tractor operatively positioned relatively thereto.

Fig. 5 and Fig. 6 are respectively sections on the lines 5—5 and 6—6 of Fig. 3.

Fig. 7 is an enlarged view of a front portion of our improved snow plow, partly in plan and partly broken away, and showing the raising and lowering mechanism.

Fig. 8 is an enlarged transverse section of the plow looking forwardly, parts being broken away.

Similar characters of reference designate similar parts in the different views.

1 designates the usual concavo-convex forwardly converging wings of the moldboard of the snow plow. Our invention provides a transverse channel beam 2 with rearwardly extending flanges, and having outwardly and rearwardly diverging end portions 3 respectively fastened to the rear sides of the wings 1, and having each a transverse row of holes 4 extending outwardly and rearwardly. The beam 2 serves as a brace for the wings 1.

5 designates two longitudinal parallel rails, shown as I beams, and which are adapted for adjustment toward and from each other and to be attached at their forward ends respectively to the portions 3 by bolts 8, each adapted for positioning in any one of the adjacent holes 4. The inner sides of the side rails 5 are adapted to have rubbing engagement with two rub plates 6 respectively provided on opposite sides of the frame of a tractor 7, for stabilizing the snow plow and preventing lateral swinging thereof. Such engagement of the rails 5 with the rub plates 6, is shown in Figs. 3, 4, 7 and 8. The forward ends of the side rails 5 are disposed in the channels of the brace beam 2.

The rear ends of the side rails 5 are respectively provided with brackets 5' attached to the rear ends of the I beams, and having extending respectively through them vertical bolts 9, each adapted for insertion through any one of a transverse row of holes 11 in the adjacent end portion of a transverse draw bar 10. Two horizontal plates 12 are fastened respectively to the upper and lower sides of the draw bar 10 in the middle portion thereof, and are respectively provided with two vertically alined holes 13 through which is inserted a bolt 14 attached to a coupling 15 at the rear end of the tractor 7, disposed between the side rails 5 and the brace beam 2 and draw bar 10.

To adapt the snow plow to a tractor which is wider and longer than the one shown, the bolts 8, 9 and 14 are withdrawn, and the larger tractor substituted for the smaller one, after which the side rails 5 are adjusted to engage with the rub plates 6, following which the bolts 8 and 9 are inserted in the proper holes 4 and 11, and the bolt 14 engaged with the coupling 5 and the plates 12.

It will be noted that, when the side rails 5 are adjusted outwardly, to widen the space between them, the side rails will also be adjusted rearwardly, due to the divergence rearwardly of the rows of holes 4, thereby lengthening as well as

widening the space between the rails 5, thereby adapting the plow to a wider and longer tractor. With the means of bolting the side rails 5 to the moldboard by inserting the bolts 8 in the holes 4 disposed in rearwardly and outwardly diverging rows in the moldboard, and the bolts 9 in the holes 11 arranged in two alined rows of holes in the draw bar 10, when the side rails 5 have been adjusted toward or from each other and bolted in their adjusted positions, the draw bar 10 will have been simultaneously correspondingly changed in its distance from the moldboard. Thus the adjustment of the snow plow frame, comprising the moldboard, draw bar and side rails, as to width simultaneously correspondingly adjusts it as to length.

For raising and lowering the forward portion of the plow, a cable 16 has its ends respectively attached to the upper ends of the rub plates 6, passing thence downwardly and forwardly under and engaged with two peripherally grooved wheels 17, disposed respectively at the inner sides of the side rails 5, and rotatable on two transverse bolts 18, each adapted for insertion in any one of a longitudinal row of holes 19 provided transversely through the web of the adjacent I beam 5, Figs. 4, 7 and 8.

The cable 16 passes from the grooved wheels 17 forwardly into engagement with the outer edges of the wheels of two pulleys 20 attached respectively to the inner sides of the webs of the I beams 5. The cable then passes inwardly from the pulley wheels 20 into engagement with the under edges of two grooved wheels 21 respectively mounted on two pins 22 fastened to and extending rearwardly from the brace beam 2. From the wheels 21 the cable 16 passes upwardly into an arcuate groove in the upper side of a member 23 fastened to the upper end of a vertical piston rod 24, the lower end of which is attached to a piston, not shown, in a vertical cylinder 25 supported in the brace beam 2, and having in its lower end an oil supply and drain pipe 26.

Suitable means, of usual structure, not shown, are provided for injecting oil into the cylinder 25 through the pipe 26, to force the piston rod 24 upwardly, and for withdrawing the oil through the pipe 26, to enable the piston rod to lower.

To raise the moldboard, oil is admitted into the cylinder 25 through the pipe 26 under the piston, thereby lifting the latter and with it the piston rod 24, thus lifting the cable 16 through the member 23 on which the cable rests. This lifting of the cable 16 will cause it to lift the wheels 17 and with them the side rails 5, thereby raising the moldboard 1. By withdrawing oil from the cylinder 25 through the pipe 26, the piston will lower, thus lowering the middle portion of the cable 16, and enabling the front portion of the plow to lower to the desired position. The hydraulic jack comprising the cylinder 25 and the parts cooperating therewith, is of the usual type, and has the usual means, not shown, but well known in the art, for controlling the flow of oil into and out of the cylinder 25, or for holding it therein at any desired height within its range.

The cable 16 provides one form of resilient means having running and supporting engagement with the wheels 17, and the latter form means for supporting, lifting and lowering the forward portions of the side rails 5 and with them the moldboard 1.

To adapt the cable 16 to operatively engage the wheels 17 and the stabilizing members 6 in the different positions to which they may be adjusted, when the snow plow is used with tractors of different sizes or having different locations for the stabilizing members 6, the end portions of the cable 16 have respectively slidably adjustable on them clamps 27, each having a set screw 28 for tightly clamping the clamp on the cable, the clamps 27 respectively bearing against the stabilizing members 6 for holding the cable from sliding in the holes through which the cable extends in the stabilizing members. Other suitable means, however, may be employed for adjustably attaching the cable to the stabilizing members 6.

The cable 16 is attached to the stabilizing members 6 at points higher than the wheels 17, thereby enabling the stabilizing members to support the load.

As shown in Figs. 1, 3, 7 and 8, the inner upper flange of each side rail 5 is provided with a longitudinal row of notches 29 for receiving therethrough the cable 16 to suit the different positions to which the adjacent wheel 17 may be adjusted.

To adapt the snow plow to any particular tractor, the side rails 5 are adjusted, as has been described, to bring them into operative engagement with the rub plates 6, after which the cable 16 has its end portions attached to the rub plates 6, and the clamps 27 then affixed to bear against the rub plates, and the coupling 5 is attached by the bolt 14 to the plates 12 of the draw bar 10. The apparatus will then be in condition for use. By operating the hydraulic jack, the cable 16 may be operated to raise and lower the front end portion of the plow, as desired.

Many modifications of our invention, within the scope of the appended claims, may be made without departing from the spirit of our invention.

What we claim is:—

1. In a tractor propelled snow plow of a type having a moldboard forward of and draft means at the rear of the tractor, the combination with a mold board having two rearwardly and outwardly diverging rows of holes, of draft means, two longitudinal side rails adjustable toward and from each other to positions in which they will be adapted for stabilizing engagement with opposite sides respectively of the tractor, two bolts respectively extended through said rails and respectively insertible through the holes of said two rows for holding said rails in said positions, and means for attaching said rails to said draft means when said rails are in said positions, whereby said plow is adapted for use with tractors of different lengths and widths.

2. In a tractor propelled snow plow having a frame adapted to encircle a tractor, said frame having at its front a moldboard, at its rear a draw bar having means for releasable attachment to the rear of the tractor, two side rails adjustable toward and from each other and respectively adapted for stabilizing engagement with the sides of the tractor, means for releasably fastening said side rails in their adjusted positions to said draw bar, and bolting means for releasably fastening said side rails to said moldboard by which the adjustment of said side rails on said moldboard and on said draw bar to change the width of said frame will correspondingly simultaneously change the distance between said draw bar and said moldboard.

3. In a tractor propelled snow plow having a frame adapted to encircle a tractor having at its sides respectively two stabilizing members, in

combination with said stabilizing members, a frame having at its front a moldboard having two outwardly and rearwardly diverging rows of holes, a rear draw bar having releasable means for attachment to the rear of the tractor, two side rails adjustable toward and from each other and having respectively two longitudinal rows of holes, two bolts respectively inserted through said side rails and respectively one through the holes of one of said diverging rows, and the other through the holes of the other of said diverging rows for releasably fastening said side rails to said moldboard, two supporting wheels, two bolts respectively rotatably supporting said two wheels and insertible one in the holes of one of said longitudinal rows, and the other in the holes of the other longitudinal rows and respectively supported by said side rails, and means for raising and lowering said frame including flexible means attached to said stabilizing members and having running and lifting engagement with said wheels.

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