

- [54] CONVERTIBLE SNOW PLOW WITH
SLIDABLE CLOSING WINGS
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37/104
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37/104-105, 53, 47, 32; 172/276, 801, 802,
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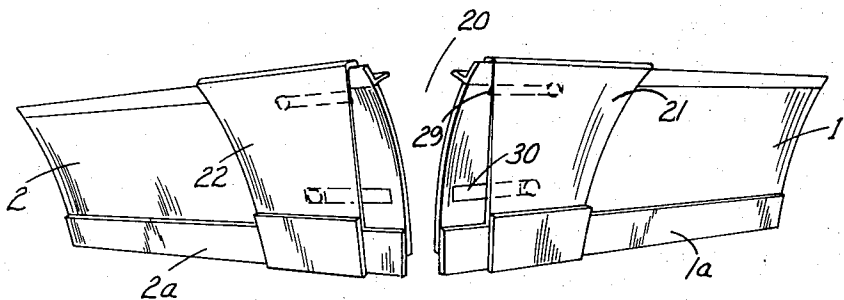
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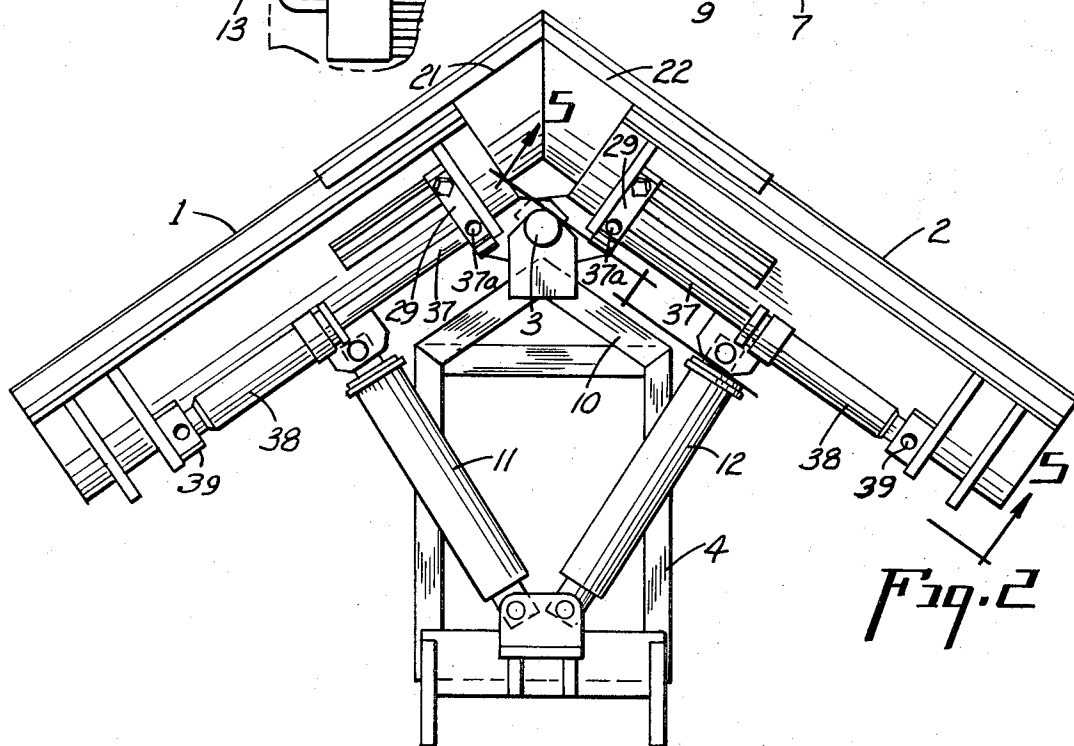
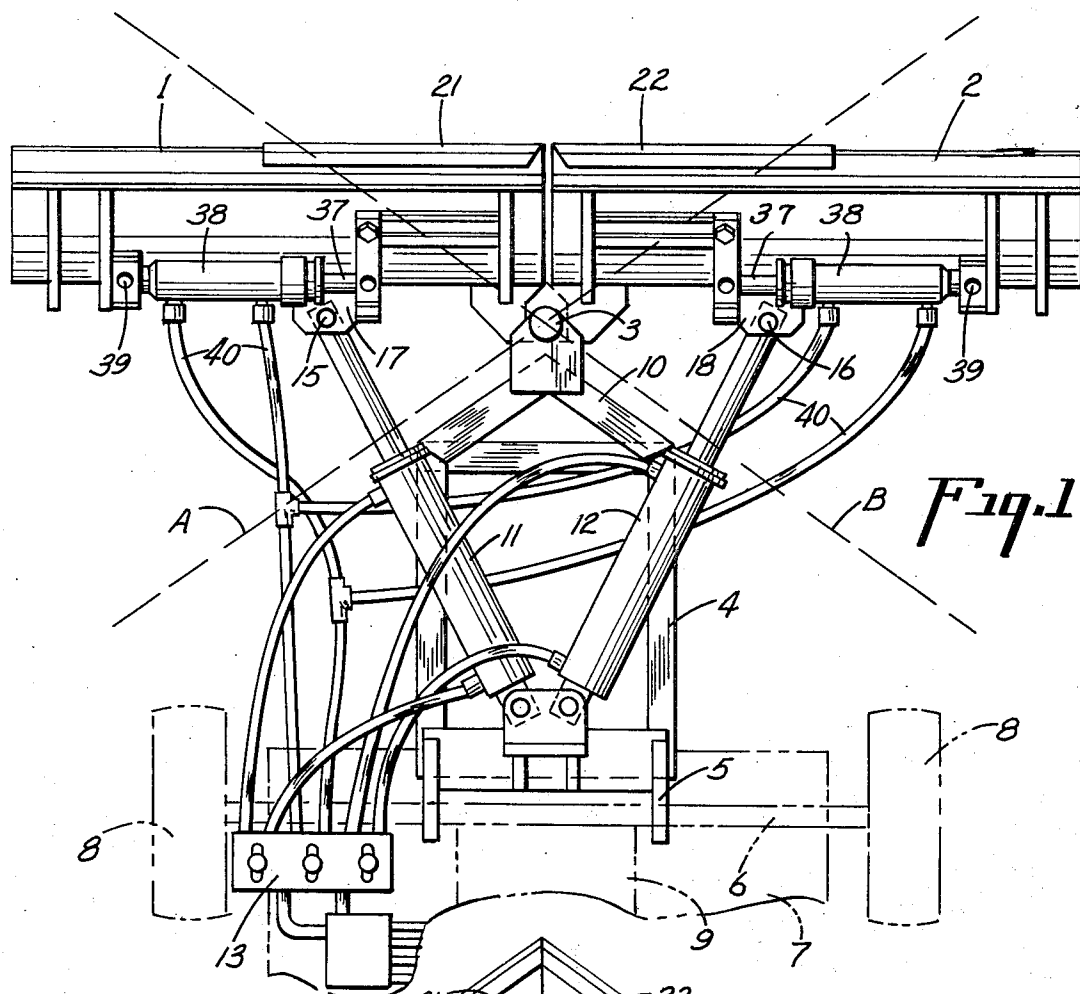
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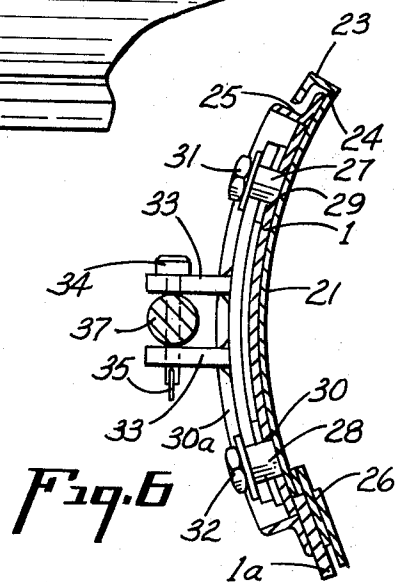
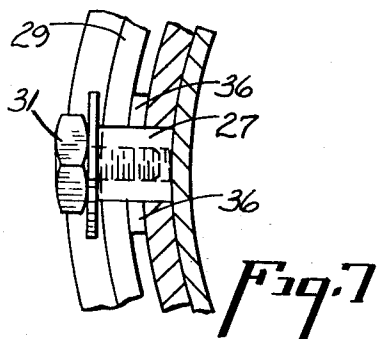
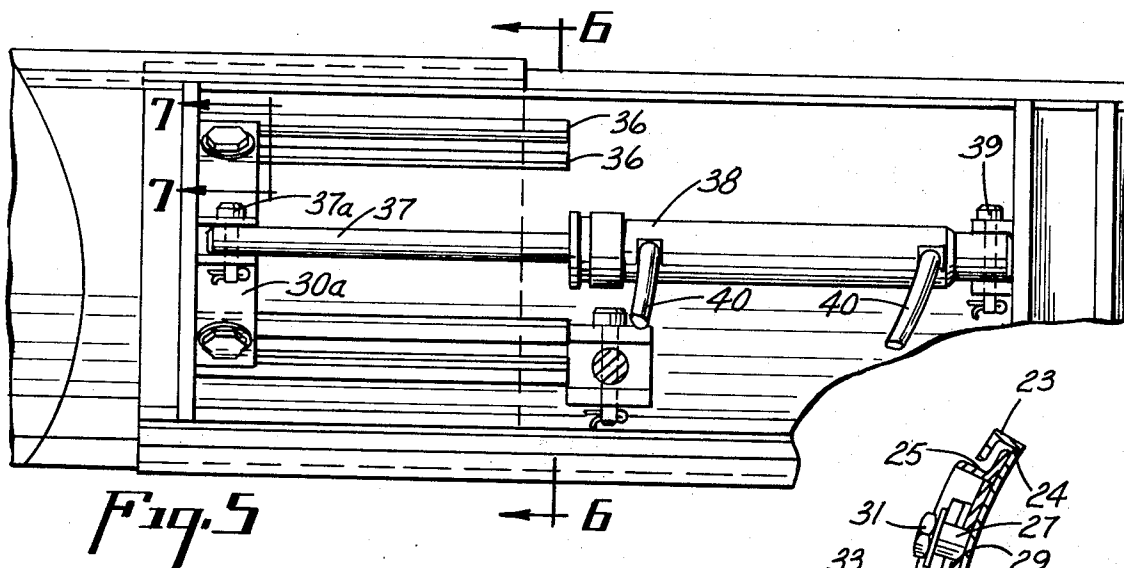
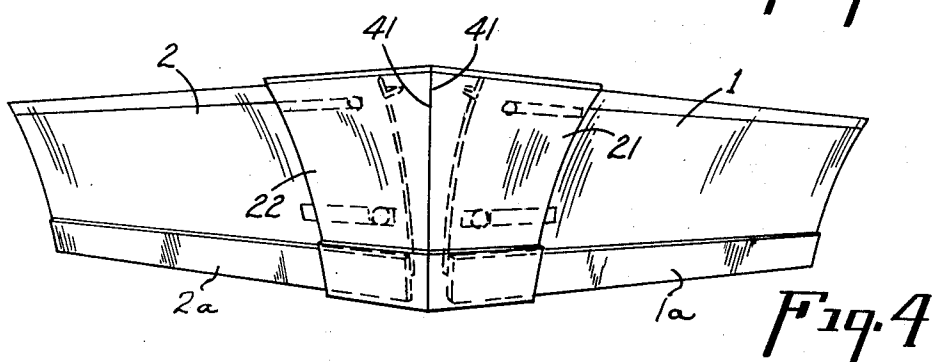
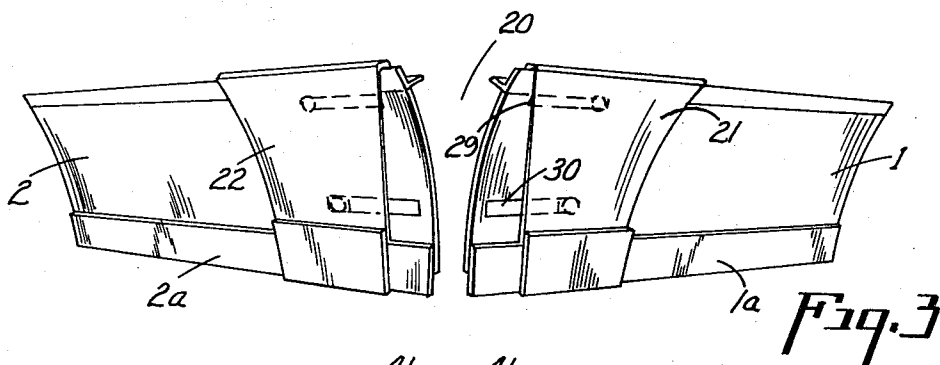
[57] **ABSTRACT**

This disclosure is of a moldboard type of plow, more particularly for snow removal, wherein the moldboard is comprised of a pair of wings mounted on a frame to be connected to a vehicle, whereby the wings may swing as a unit around a central point so as to direct the material being plowed to one side or the other of a vehicle, or push such material straight ahead, and alternatively position the wings to cause the movement of the material to opposite sides of the vehicle, simultaneously or separately and in this latter position certain means to close the gap created in the V-position are provided, which means are movable into and out of position for that purpose, suitable operating means being provided therefor.

6 Claims, 7 Drawing Figures







CONVERTIBLE SNOW PLOW WITH SLIDABLE CLOSING WINGS

OBJECTS OF THE INVENTION

It is a principal object of this invention to provide a very versatile moldboard type of plow which can be used in all conventional ways, since the same incorporates therein the various attributes of a single, straight plow, movable to either side, around a central pivot point so as to direct snow or other material being plowed to such side, likewise to be arranged so as to assume the form of a V-type plow wherein the material being plowed is divided and plowed to opposite sides simultaneously, the gap between the ends of the plow when in a V-position being closed by certain closure means arranged and operated in a manner to accommodate for the various positions to be assumed by the respective sections or wings of the moldboard.

A more specific object of the invention is to provide a moldboard type of plow, which when it assumes the V-type position is equipped with certain closure means which are movable along the face of the respective wings comprising the plow into a position adjoining one another, whereby to complete the V-configuration desired to effect snow removal or the like.

Another object of the invention is to arrange the various elements hereinbefore described so that they are operable by hydraulic means or other suitable operating instrumentalities to facilitate the movement thereof and to accommodate for various positions of the respective parts as they are placed in operating condition.

Another object of the invention is to mount the closure means in such a manner that they do not interfere in the normal use of the plow, and at the same time are available without attachment or detachment for assuming their operative position when the plow is in V-condition with the wings in divergent arrangement so that same may be moved into and out of location with simple manipulating means and rapidly for accommodating for various conditions which are met by the plow in operation.

Other and further objects of the invention will be understood from a consideration of the specification appended hereto and disclosed in the drawings, wherein:

FIG. 1 is a top plan view, partly fragmentary in nature, illustrating the plow in its usual straight-ahead plowing condition as mounted on the forward end of a vehicle shown in dotted lines and fragmentary.

FIG. 2 is a position which the plow may assume so as to operate as a V-type plow, certain of the operating means being omitted for clarity.

FIG. 3 is a front view, somewhat fragmentary and primarily illustrative to indicate the manner of positioning the respective parts when initial V-position of the wings of the plow is desired.

FIG. 4 indicates the closure means in closed position so as to complete the V-type plow as an operating unit.

FIG. 5 is a rear view, somewhat fragmentary, to further illustrate the mounting means for the closure means.

FIG. 6 is a view taken about on the line 6—6 of FIG. 5, looking in the direction of the arrows, to illustrate further the construction.

FIG. 7 is a fragmentary view, taken about on the line 7—7 of FIG. 5, looking in the direction of the arrows to illustrate detail further.

DESCRIPTION OF THE INVENTION

Referring now to FIG. 1, the plow of this invention is shown as comprising a pair of wings 1 and 2, pivotally connected at 3 to a push frame designated 4, which latter push frame is suitably mounted by connecting means 5 to the front axle 6 of a vehicle generally suggested in dotted lines at 7 and to indicate the relationship of the vehicle to the plow hereof with suitable wheels such as 8 supporting the front end of the vehicle, the vehicle being driven in the conventional manner by a motor which is suggested at 9.

The push frame 4 being rectilinear in nature and of substantial strength with a forwardly extending mounting section 10 thereon to support the pivot 3, additionally supports suitable operating means comprising a pair of hydraulic piston and cylinder units 11 and 12 with the usual hoses therefor connected to an operating manifold unit 13.

These piston and cylinder units 11 and 12 are connected to the respective wings at 15 and 16 in pivotal manner, the pivots being supported and connected on the respective wings by suitable rearwardly extending lugs 17 and 18 respectively.

As shown, the pair of wings 1 and 2 when in alignment, comprise the moldboard curved in the usual manner and having suitable wear elements 1a and 2a at their lower edges.

Since it is contemplated that the respective wings 1 and 2 may be moved simultaneously in alignment so as to direct the snow or other material being moved to the dotted line positions suggested at A and B, or intermediate such points, manipulation of the hydraulic piston and cylinder units 11 and 12 effects such movement.

The wings 1 and 2 as in FIG. 2, may be moved into a V-position with the wing 1, assuming approximately the position indicated by the line A and the wing 2 along the line B around the pivot 3 on the push frame 4 and supporting section 10 thereof.

Since such movement by the hydraulic piston and cylinder units 11 and 12 will create a gap as shown in FIG. 3 at 20, it is obviously desirable to close this gap if the plow is to be effective and direct all the material being engaged to the respective opposite sides of the vehicle.

For this purpose, the closure means comprising a pair of sliding members 21 and 22 is provided, the members being substantially identical but of the opposite hand as will be appreciated from consideration of the various Figures, and rather peculiarly shaped, and best possibly described as trapezoidal in plan, viewed from the front of the plow as a whole.

Referring more specifically to the other figures in the drawings, and particularly to FIGS. 5 and 6, it will be seen that each of the closure members or sliding members such as 21 is of arcuate configuration so as to conform with the face of the wing with which the same may be associated, and in this case the wing 1, having at its upper end an inwardly or rearwardly extending angle member 23, which is suitably fixed to the upper edge 24 of the member 21, and adapted to slide along a mating member 25 welded or otherwise fixed at the upper edge of the wing member 1.

The lower edge of the sliding member 21 is suitably near the upper edge of the wear member 1a so as to be partly guided thereby and is further equipped with wear surface 26 which is offset sufficiently so as to be suitably spaced but close enough to the wear surface 1a as to move therealong.

Fixed on the rear surface of the member 21 are suitable guide parts 27 and 28 which extend through longitudinally extending slots 29 and 30 respectively, and are engaged by arcuate bar 30a extending from one of the guide members 27 to the other guide member 28 and fixed thereto by the bolts 31 and 32.

This arcuate bar 30a is equipped with a pair of ears 33 suitably fixed to the member 30a so that they may in turn be engaged by the piston rod 37 of a piston and cylinder unit 38, which piston and cylinder unit 38 is pivotally mounted at 39 in rear of the wing 1 for example, the usual plumbing including hoses 40 being furnished for supplying fluid from the manifold control 13 in generally conventional manner.

Suitable guide bars are provided on the rear face of the wing 1 and denoted 36 so that sufficient strength will be imparted to the unit to prevent its cocking undesirably and at the same time to extend it where over a greater area.

In view of the foregoing, and the fact that the closure member 21 is movable along the outer surface of the wing 1, it may be moved into the position shown in FIG. 4, and in this position its leading edge 41 will be substantially vertical as viewed in that Figure although arcuate in end elevation as will be apparent since it must follow the configuration of the wing 1.

It is pointed out that the closure member 22 will be identically arranged with respect to the wing 2 and including the various elements thereof so that such closure means or member may be slidable to and fro along the face of the wing 2 into the positions shown in FIGS. 3 and 4, the latter being with the edge 41 thereof adjoining the corresponding edge 41 of the closure member 21, whereby to close the gap 20 created when the respective wings 1 and 2 are moved into the so-called V-position.

Correspondingly when the wings 1 and 2 are desired to be placed in transverse alignment for example, as in FIG. 1, the closure members or sliding members 21 and 22 must be retracted to the position shown in FIG. 3 for such manipulation.

It will be understood that the members 21 and 22 are

moved simultaneously toward and from each other as the plumbing is disclosed, while the wings may be moved individually or simultaneously by the piston and cylinder units 11 and 12.

I Claim:

1. In plow construction of the class described, in combination, a push frame for mounting on a vehicle at the forward end thereof, a pair of wings having pivotal mounting means at their adjacent ends on the frame so as to swing into alignment with one another, said mounting means facilitating swinging movement of the wings whilst in alignment into various angular positions with respect to said frame, and likewise into divergent positions with respect thereto, separate, slidable closure means carried by the wings for the gap between the adjacent ends of the wings when the same are in the divergent position and operating means for said wings and closure means connected to said wings and means.

2. the combination as claimed in claim 1, wherein the closure means comprise a pair of members, one being mounted on each of the wings for movement into a position to close the gap between the adjacent ends of the wings when the latter are in divergent position, and hydraulic piston and cylinder units connected to the wings and to the members, to move said members.

3. The combination as claimed in claim 2 wherein the pair of members are provided with upper and lower guide means on the wings, are slidable along the outer faces of the wings and guided into positions with their adjacent vertical edges substantially in abutting position.

4. The combination as claimed in claim 2, wherein the members conform to the contour of the wings, one being slidably supported for movement along the outer surface of each of said wings, guides are provided on the wings and members to position the members during such movement, and hydraulic piston and cylinder units behind the wings are connected to said members to move the same.

5. The combination as claimed in claim 4, wherein the operating means are arranged to move the members into closing position irrespective of the angular disposition of the wings.

6. The combination as claimed in claim 4, wherein the operating means are arranged to move the members simultaneously into closing position.

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