

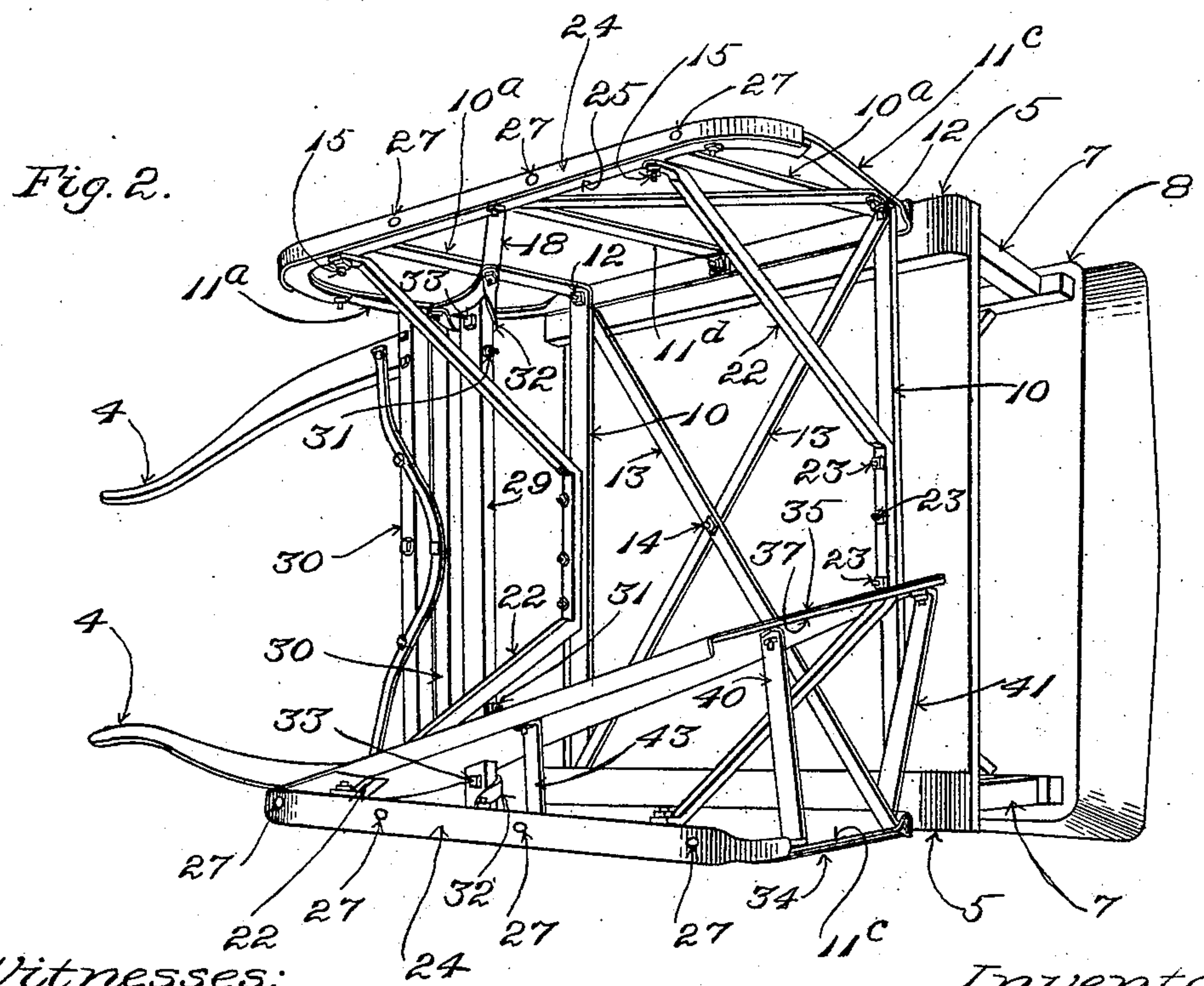
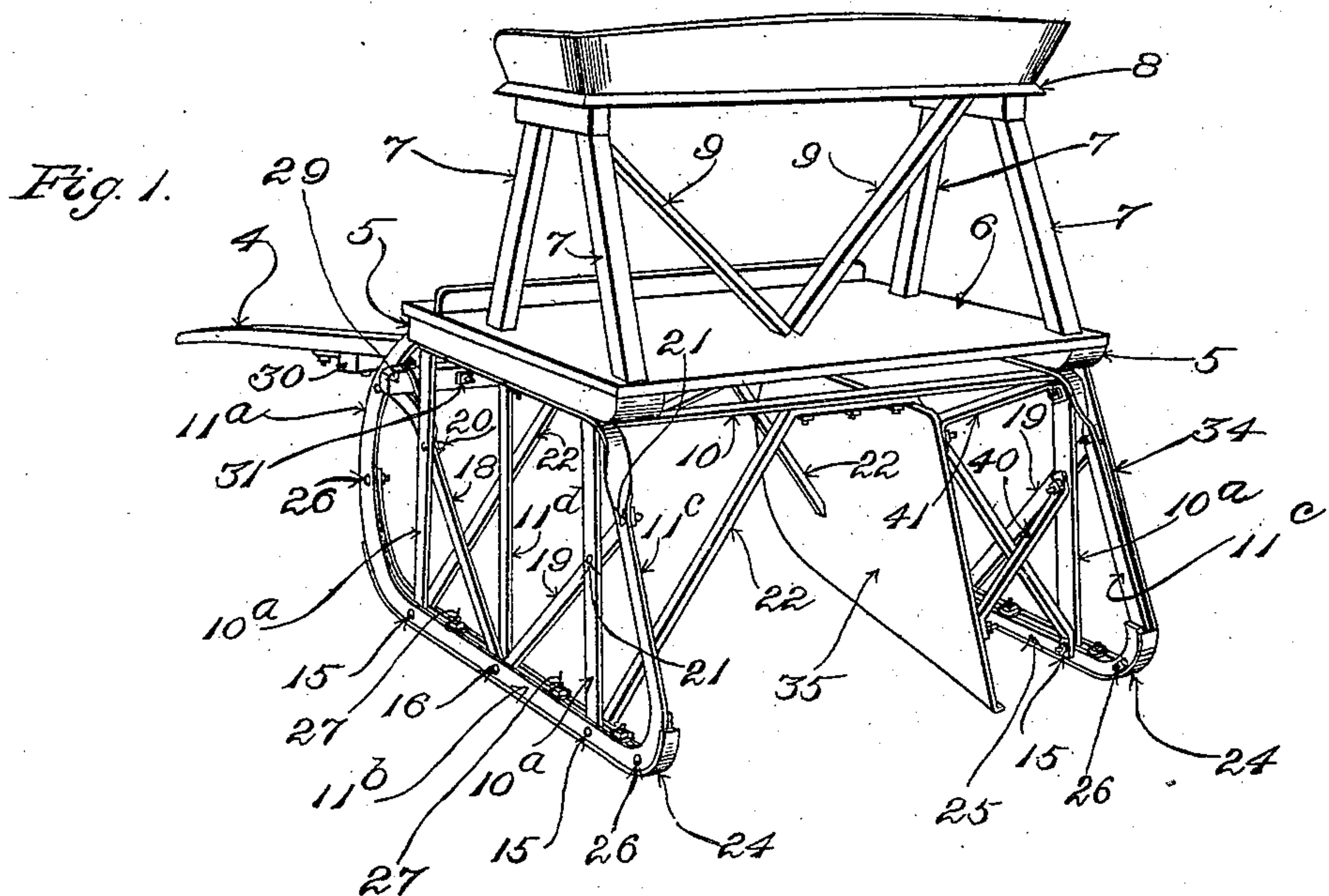
No. 855,886.

PATENTED JUNE 4, 1907.

P. HANNAGAN.
SNOW PLOW.

APPLICATION FILED NOV. 28, 1906.

2 SHEETS—SHEET 1.



Witnesses:
Oscar F. Hill
Edith J. Anderson.

Inventor.
Paul Hannagan
by Chas. F. Randall
Attorney.

No. 855,886.

PATENTED JUNE 4, 1907.

P. HANNAGAN.

SNOW PLOW.

APPLICATION FILED NOV. 28, 1906.

2 SHEETS—SHEET 2.

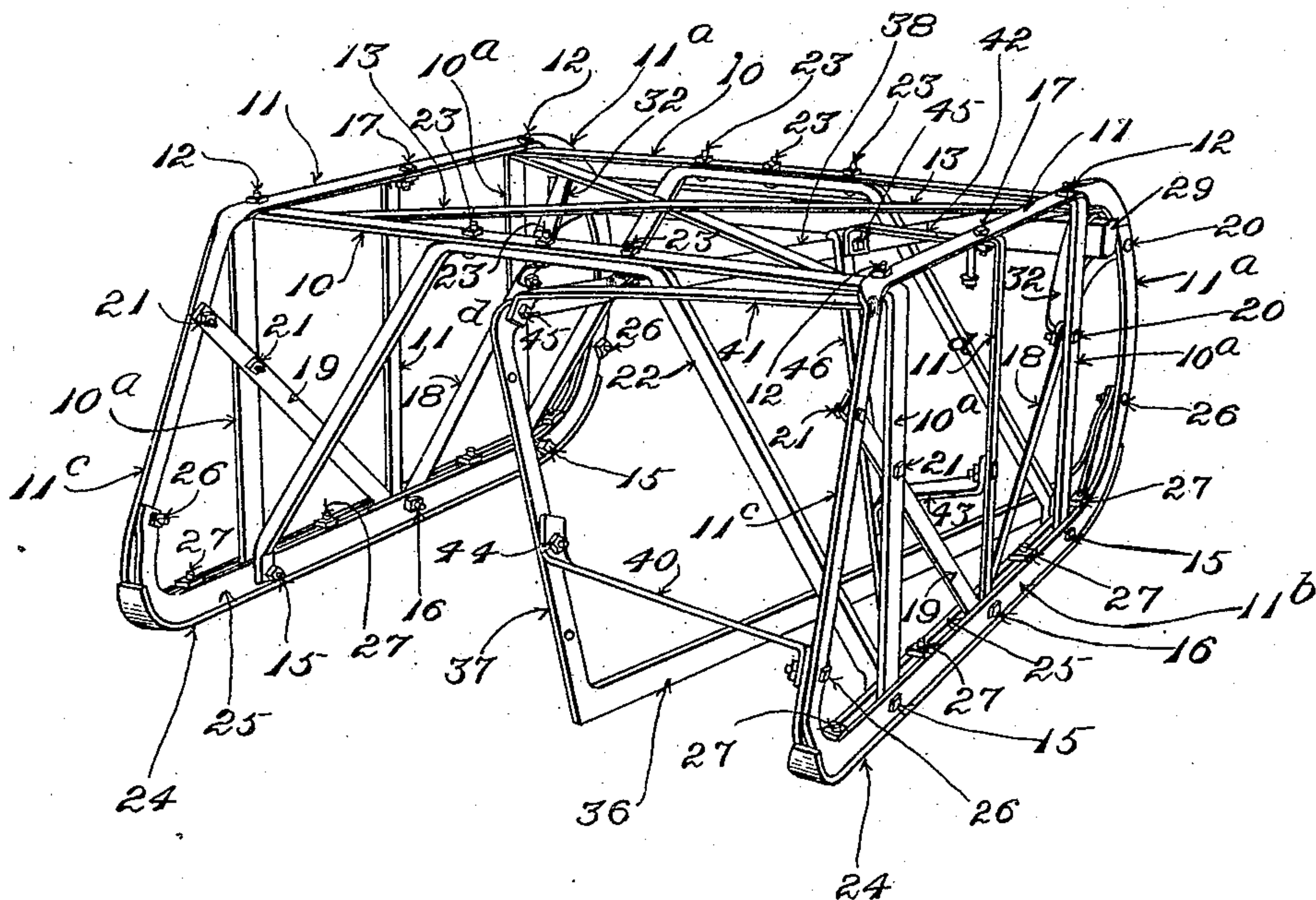


Fig. 3.

Witnesses:

Oscar F. Hill

Edith J. Anderson.

Inventor:

Paul Hannagan

by Chas. F. Randall
Attorney.

UNITED STATES PATENT OFFICE.

PAUL HANNAGAN, OF LAWRENCE, MASSACHUSETTS.

SNOW-PLOW.

No. 855,886.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed November 28, 1906. Serial No. 345,474.

To all whom it may concern:

Be it known that I, PAUL HANNAGAN, a citizen of the United States, residing at Lawrence, in the county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Snow - Plows, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention comprises various improvements in the construction of snow-plows.

The general object of the invention is to produce a snow-plow which shall be stronger and more durable, and at the same time lighter than in the case of plows heretofore designed for the same kinds of work.

Different features of the invention are adapted for general use and are applicable in the case of plows designed for various purposes in dealing with snow, mud, etc., although the invention in its more complete embodiment is an improvement in plows more especially designed for removing snow, mud, etc., from the gutters of streets.

In the drawings,—Figure 1 shows in perspective an embodiment of the invention in connection with a gutter snow-plow. Fig. 2 is a perspective showing the snow-plow of Fig. 1 turned on one side thereof. Fig. 3 is a perspective view showing a framework of slightly modified construction.

Having reference more particularly to Figs. 1 and 2 of the drawings, at 4, 4, are shafts between which a horse may be hitched, at 5, 5, are side-beams extending from front to rear of the plow and mounted upon opposite side-ports of the frame presently to be described, the said side-beams supporting the floor 6 from which rise the stanchions 7, 7, etc., supporting the seat 8 for the driver. 9, 9, are braces extending from outer portions of the bottom of the seat 8 obliquely downward and inward to the floor 6, and shown as abutting against each other at their lower ends. Any other construction and arrangement of floor and seat and means of supporting the seat may be adopted in practice.

The frame comprises, in part, a plurality of cross-bars or cross-irons 10, 10, two in number in the present drawings, as shown best in Figs. 2 and 3, although the number may be increased in practice if desired. Each of these cross-bars or cross-irons has its opposite end-ports provided with side-stanchions 10^a, 10^a, the lower ends of these latter being bolted to the runners as presently

will be explained. Preferably, but not necessarily in all cases, the said side-stanchions are produced by bending down the end-ports of the cross-irons. To the cross-irons are applied the side-bars 11, 11. These side-bars are bolted, as at 12, 12, to the cross-irons. As thus secured together, the cross-irons 10, 10, and side-bars 11, 11, constitute the main elements of a frame which is rectangular in plan. For the purpose of preventing the frame from departing from such shape under the strain and accidents which are incident to its use, it is braced by horizontal ties or braces 13, 13, each thereof extending diagonally from one corner of the frame to an opposite corner, the ends of the said ties or braces being secured to the said corners by the bolts 12, 12, etc. The two ties or braces 13, 13, cross each other, and may be fastened together at the crossing-point by a bolt 14, Fig. 2, although the bolt may be omitted if desired, as indicated in Fig. 3.

Continuations 11^a, 11^a, of the side-bars extend forwardly, downwardly, and then rearwardly, each of such continuations having an edge thereof presented in advance. The said continuations thereby are adapted to constitute noses or cutters by means of which the snow will be cut or parted in the forward movement of the plow. They are rounded vertically, and thereby are adapted to ride up over stones and unevennesses encountered in their path. The runner 11^b at each side extends rearward in continuation of the noses or cutter 11^a at such side, the lower ends of the respective side-stanchions 10^a, 10^a, being fastened to the respective runners by means of bolts 15, 15, etc. From the rear ends of the runners the side-irons extend upward to the side-bars 11, 11, forming rear stanchions 11^c, these latter inclining upwardly and forwardly. Preferably the side-irons are formed each in one integral piece, although in some instances the respective portions 11, 11^a, 11^b, 11^c, thereof may be constituted of separate pieces suitably bolted or otherwise fastened together.

At 11^d, 11^d, are side-stanchions located intermediate the side-stanchions 10^a, 10^a, at the respective sides of the plow, and each extending vertically from the corresponding side-bar 11 to the runner 11^b below the same, each stanchion 11^d having its lower end secured to the corresponding runner by a bolt 16, and its upper end bent transversely, see Figs. 2 and 3, and extended beneath the

middle portion of the length of the corresponding side-bar 11 and secured to the said side-bar by a bolt 17, Fig. 3, passing vertically through the side-bar and the said lug.

Increased stability is secured by means of the diagonal braces or ties 18, 19, at each side of the frame, the pair of such braces or ties at a given side having the lower ends thereof secured by the bolt 16, while the upper portion of each forwardly-extending brace 18 is secured to the forward side-stanchion 10^a and to the nose or cutter 11^a by means of bolts 20, 20, Figs. 1 and 3, and the upper portion of the rearwardly-extending brace or tie 19 is secured to the rear side-stanchion 10^a and rear stanchion 11^c by bolts 21, 21.

The frame is stiffened transversely by bent braces 22, 22, of substantially U-shape, each of these latter having its middle portion secured by bolts 23, 23, etc., Figs. 2 and 3, to one of the cross-irons 10, 10, while its downwardly-extending diverging legs are engaged with the side-irons by opposite bolts 15, 15.

The described construction produces an openwork sled-frame which is very strong and possesses ample rigidity, and which admits of readily being repaired in case necessity therefor should arise. I do not limit myself to employment of the same in the particular connection herein described, inasmuch as it is suitable for use in general.

Each runner is shown furnished with a shoe 24, 24, having the ends thereof upturned to fit the rounded front and rear portions of the runner. I contemplate omitting or dispensing with the shoes in some instances. The manner of securing the same to the runners may be varied, although preferably I secure them in place as shown in the drawings, which latter represent each runner as having combined therewith an auxiliary runner-section 25 which is held in place by the bolts 15, 15, 16, and by means of other bolts 26, 26, the latter securing the upturned ends of the auxiliary runner to the nose or cutter 11^a and to the lower portion of the rear stanchion 11^c, respectively. The shoe is secured in place by means of bolts 27, 27, etc., which latter are shown as having their heads engaged with the bottom of a shoe 24, and their stems passed up through the space between a runner and the corresponding auxiliary runner, with nuts applied to the threaded upper portions of the stems of the said bolts and resting on the upper edge of the runner and auxiliary runner. By tightening up the said nuts and bolts each shoe is securely clamped to the bottom edges of the corresponding runner and auxiliary runner.

I do not limit myself in all cases to providing the runner with an auxiliary runner and securing the shoe in place in the manner just described. I contemplate in many cases dispensing altogether with the shoes and allowing the lower surfaces of the runners

themselves to rest upon the surface over which the plow is caused to pass.

At 29 is a draft-bar extending transversely across the front of the frame, with its opposite end-portions resting upon the forward portions of the diagonal braces or ties 18, 18, in the openings between the forward side-stanchions 10^a, 10^a, and the noses or cutters 11^a, 11^a. To the said draft-bar 29 the cross-bar or cross-bars 30 of the shafts 4, 4, is or are connected loosely by shackles having attaching bolts 31, 31, which pass through the draft-bar 29. The end-portions of the said draft-bar are held down upon the said portions of the braces or ties 18, 18, by means of metal straps 32, 32, passing over the said end-portions and having the extremities thereof secured by the bolts 20, 20, such straps also being secured to the draft-bar by the bolts 33, 33, shown in Fig. 2. Preferably, the outer sides of the side-iron which is intended to travel next to the curbing or edge-stones of the gutter that is to be cleared, is closed or covered by a web 34, Figs. 1 and 2, of sheet iron or other suitable material, although I contemplate omitting this web or cover in many instances.

The mold-board 3 is provided with a facing 35, Figs. 1 and 2, that preferably is composed of sheet iron, boiler-iron having been used by me in practice, although other suitable material may be employed if preferred. The framework of the mold-board comprises the lower bar 36, Fig. 3, the upwardly-extending post 37 at the rear end of the said bar 36, and the forwardly extending upper portion or bar 38. Preferably, though not necessarily in all cases, the parts 36, 37, and 38, are formed in one piece or integral. They may be formed of separate pieces secured together in convenient manner. The forward extremity of the lower part 36 is bent upwardly to correspond with the lower portion of the nose or cutter 11^a at the side of the plow at which the mold-board is located, and is secured to the said nose or cutter and to the corresponding portion of the corresponding auxiliary runner 25 by means of the bolt 26. The forward extremity of the upper portion 38 is secured by a bolt (not shown) to the draft-bar 29. If deemed advisable, the framework 36, 37, and 38 may be made continuous, with the front extremities of the upper and lower portions 38, 36, united by an intermediate or connecting portion. The upper portion 38 is secured to the rear cross-iron 10 by one of the bolts 23, which passes vertically through a transversely-twisted portion of the parts 38 shown in Fig. 3.

The framework of the mold-board is braced transversely to enable the same to withstand the lateral pressure between the same and the snow or mud which is being displaced, by means of braces 40, 41, 42, and

43. The brace 40 has one end thereof engaged by the bolt 26 of the adjacent rear stanchion 11^c, while the other end thereof is attached to the portion 37 by means of the bolt 44. One extremity of brace 41 is engaged by the adjacent bolt 12, while the other extremity thereof is secured to the framework of the mold-board by the bolt 45. Brace 42, Fig. 3, has one extremity thereof engaged by the adjacent bolt 17, while the other extremity thereof is secured to the portion 38 of the framework of the mold-board by the bolt 45.

At 46 is a vertical stanchion having the upper extremity thereof made fast to the upper portion 38 of the mold-board frame by means of the bolt 45, while the lower extremity thereof is made fast to the lower portion 36 by means of another bolt, not shown. Brace 43 has one extremity thereof bolted to the intermediate stanchion 11^d, and the other extremity thereof bolted to the stanchion 46.

Preferably, the rear extremity of the framework of the mold-board is raised a little relatively to the front portion to conform to the rise in the outer portion of a gutter, although in some instances I contemplate forming the mold-board with a horizontal under edge.

The lower bar 36 of the mold-board frame usually will be raised somewhat higher than the runners of the main frame, but in most cases the said lower bar will be sufficiently low to serve during the ordinary use of the snow plow as an intermediate runner.

Figs. 1 and 2 show the lower marginal portion of the facing 35 of the mold-board bent transversely and extending under the mold-board frame to serve as a shoe, although this is not necessary in all cases. Brace 40 is arranged at a different inclination in Fig. 3 from that of Figs. 1 and 2.

The plow may be made small and light enough to be manually operated.

One leg of the forward brace 22 passes through a hole in facing 35, as indicated in Figs. 1 and 2.

I do not limit myself to braces applied and arranged in the manner shown and described in connection with the framework of the mold-board, and contemplate in some instances constructing the plow to travel on wheels instead of the runners which are herein shown and described.

What is claimed as the invention is,—

1. In a snow-plow, the combination with the main frame comprising the cross-irons having connected therewith the upright stanchions at opposite sides, the side-irons comprising the side-bars, the cutters or noses, and the runners, the runners being connected with the lower ends of the said stanchions, and the braces secured to the said cross-irons with the downwardly and

outwardly diverging legs thereof connected at their extremities with the lateral elements of the main frame, the mold-board frame located intermediate the said runners, and inclined with respect thereto, the braces intermediate the mold-board frame and the adjacent lateral elements of the frame, and the mold-board carried by the said mold-board frame.

2. In a snow-plow, the combination with the main frame comprising the cross-irons having connected therewith the upright stanchions at opposite sides, and the side-irons each comprising the connected side-bar, cutter or nose, runner, and section intermediate the rear ends of the side-bar and runner, having the runners connected with the lower ends of the said stanchions, of the mold-board frame located intermediate the said runners, the braces intermediate the mold-board frame and the adjacent lateral elements of the main frame, and the mold-board carried by the said mold-board frame.

3. In a snow-plow, the combination with the main frame comprising the cross-irons having connected therewith the upright stanchions at opposite sides, the side-irons each comprising the connected side-bar, cutter or nose, runner, and section intermediate the rear ends of the side-bar and runner, having the runners connected with the lower ends of the said stanchions, and the braces secured to the said cross-irons with the downwardly and outwardly diverging legs thereof connected at their extremities with the lateral elements of the main frame, of the mold-board frame located intermediate the said runners, the braces intermediate the mold-board frame and the adjacent lateral elements of the main frame, and the mold-board carried by the said mold-board frame.

4. In a snow-plow, the combination with the main frame comprising the cross-irons having connected therewith the upright stanchions at opposite sides, the side-irons each comprising the side-bar, the cutter or nose, and the runner, having the runners connected with the lower ends of the said stanchions, and the diagonal cross-ties crossing each other transversely of the frame, of the mold-board, the mold-board frame located intermediate the said runners, and the braces intermediate the mold-board frame and the adjacent lateral elements of the main frame.

5. The combination with the sled-frame comprising the cross-irons having connected therewith the upright stanchions at the opposite sides of the frame, and the side-irons each comprising the side-bar, the cutter or nose, and the runner, having the runners connected with the lower ends of the said stanchions, of the mold-board, the mold-board frame located intermediate the said runners, and the braces intermediate the mold-board

frame and the adjacent lateral elements of the sled-frame.

6. The combination with the sled-frame comprising the cross-irons having connected therewith the upright stanchions at the opposite sides of the frame, and the side-irons each comprising the side-bar, the cutter or nose, and the runner, having the runners connected with the lower ends of the said stanchions, of the mold-board, the mold-board frame comprising the runner like member connected at its front with one of the side-irons, and the braces intermediate the said mold-board frame and the adjacent lateral elements of the side-frame.

7. In a snow-plow, the combination with the main frame comprising the cross-irons having connected therewith the upright stanchions at opposite sides, the side-irons each comprising the side-bar, the cutter or nose, and the runner, having the runners connected with the lower ends of the said stanchions, and the shoes secured to the said runners, of the mold-board, the mold-board frame located intermediate the said runners, and the braces intermediate the mold-board frame and the adjacent lateral elements of the main frame.

8. In a snow-plow, the combination with the main frame comprising the cross-irons having connected therewith the upright stanchions at opposite sides, and the side-irons each comprising the side-bar, the cutter or nose, and the runner, having the runners connected with the lower ends of the said stanchions, the auxiliary runners secured to said runners, a shoe applied to each pair comprising a runner and auxiliary runner, and shoe-securing bolts passing between the said runner and auxiliary runner, of the mold-board, the mold-board frame located intermediate the said runners, and the braces intermediate the mold-board frame and the adjacent lateral elements of the main frame.

9. The combination with the frame provided with the opposite parallel runners, of the intermediate runner, and the mold-board secured thereto.

10. In a snow-plow, the combination with the side-iron comprising the cutter or nose and the runner, of the skeleton mold-board frame secured at its forward end to the said cutter or nose and diverging from the said side-iron rearwardly, and the mold-board facing secured to the said skeleton frame.

11. In a snow-plow, the combination with the side-iron comprising the cutter or nose and the runner, of the skeleton mold-board secured at its forward end to the said cutter or nose and diverging from the said side-iron rearwardly, the lower bar of the said skeleton frame serving as a runner, and the mold-board facing secured to the said skeleton frame.

12. In a snow-plow, the combination with

the opposite side-irons, each comprising a cutter or nose and a runner, and cross-irons secured at opposite sides of the framework to the said side-irons and provided with vertical stanchions which are connected to the runners, of the mold-board frame secured at its forward end to the cutter or nose of one of the side-irons and diverging from such side-iron rearwardly, and the facing secured to the said mold-board frame.

13. In a snow-plow, the combination with the opposite side-irons, each comprising a side-bar, a cutter or nose, and a runner, and the cross-irons connected with the opposite side-bars and provided with vertical stanchions attached at the lower ends thereof to the runners, of the mold-board frame secured at its forward end to the cutter or nose of one of the said side-irons and diverging from such side-iron rearwardly, and the facing secured to the said frame.

14. In a snow-plow, the combination with the opposite side-irons, each comprising a side-bar, a cutter or nose, and a runner, the cross-irons connected with the opposite side-bars and provided with vertical stanchions attached at the lower ends thereof to the runners, and the diagonal braces connecting with opposite corners of the frame and crossing each other, of the mold-board frame secured at its forward end to the cutter or nose of one of the said side-irons and diverging from such side-iron rearwardly, and the facing secured to the said mold-board frame.

15. In a snow-plow, the combination with the opposite side-irons, each comprising a side-bar, a cutter or nose, and a runner, and provided with draft-bar supports, of the mold-board frame secured at its forward end to the cutter or nose of one of the said side-irons and diverging from such side-iron rearwardly, the facing secured to the said frame, and the draft-bar mounted on the said supports.

16. In a snow-plow, the combination with the opposite side-irons, each comprising a side-bar, a cutter or nose, and a runner, and provided with draft-bar supports, and the cross-irons connected with the opposite side-bars and provided with vertical stanchions attached at the lower ends thereof to the runners, of the mold-board frame secured at its forward end to the cutter or nose of one of the said side-irons and diverging from such side-iron rearwardly, the facing secured to the said mold-board frame, and the draft-bar mounted on the said supports.

17. In a snow-plow, the combination with the opposite side-irons, each comprising a side-bar, a cutter or nose, and a runner, the cross-irons connected with the opposite side-bars and provided with vertical stanchions attached at the lower ends thereof to the runners, and the braces attached by their middle portions to the said cross-irons and

having the side-portions thereof bent downwardly and attached to the runners, of the mold-board frame secured at its forward end to the cutter or nose of one of the side-irons and diverging from such side-iron rearwardly, and the facing secured to the said frame.

18. A snow plow constructed with an obliquely-disposed mold-board frame, braces by which said frame is sustained in place, and a facing applied to the mold-board frame.

19. A snow-plow constructed with an obliquely-disposed skeleton mold-board frame, braces retaining said frame in place, and a sheet-metal facing applied to the mold-board frame.

20. In a snow-plow, in combination, opposite runners extending parallel with each other, and a laterally inclined mold-board located between the said runners.

21. In a snow-plow, in combination, oppo-

site runners extending parallel with each other, and a mold-board located between the said runners, meeting or joining in advance with one of the said runners and diverging rearwardly toward the other thereof.

22. In a snow-plow, in combination, opposite runners extending parallel with each other, and a mold-board located between the said runners, meeting or joining in advance with one of the said runners, such runner constituting a cutter which precedes the said mold-board, the mold-board diverging rearwardly toward the other runner.

In testimony whereof I affix my signature in presence of two witnesses.

PAUL HANNAGAN.

Witnesses:

CHAS. F. RANDALL,
EDITH J. ANDERSON.