

J. W. RUSSELL.

SNOW PLOW.

APPLICATION FILED NOV. 15, 1907.

927,682.

Patented July 13, 1909.

2 SHEETS—SHEET 1.

Fig. 1

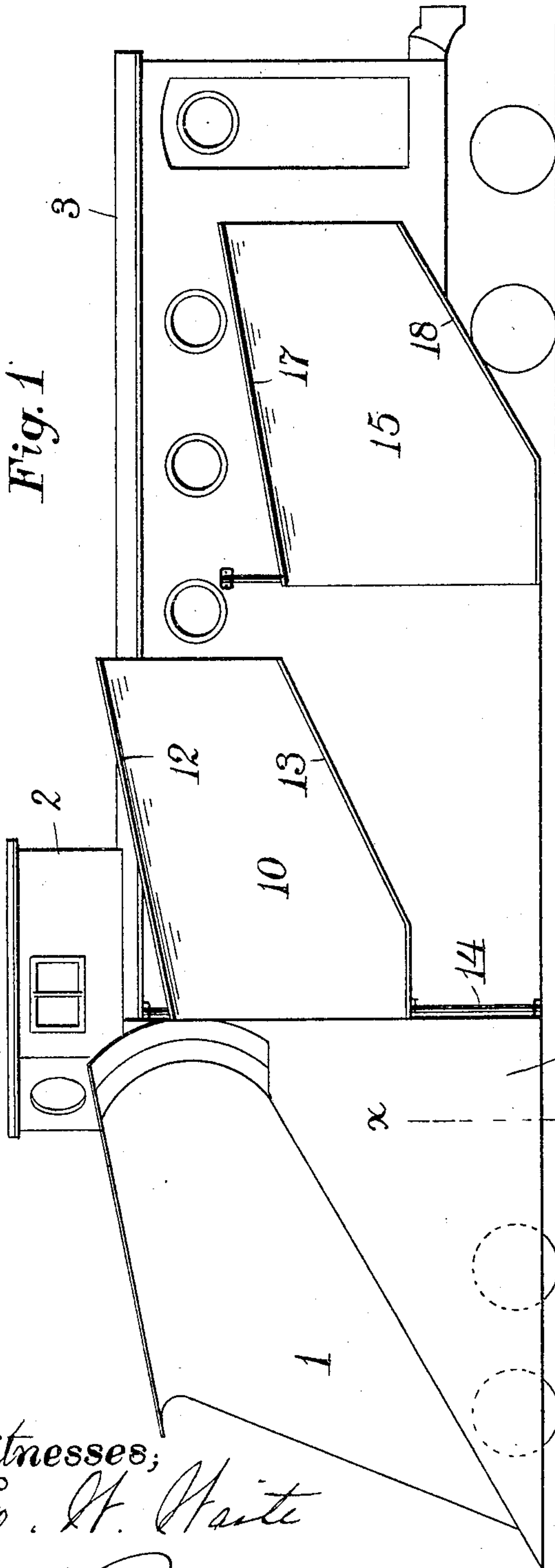
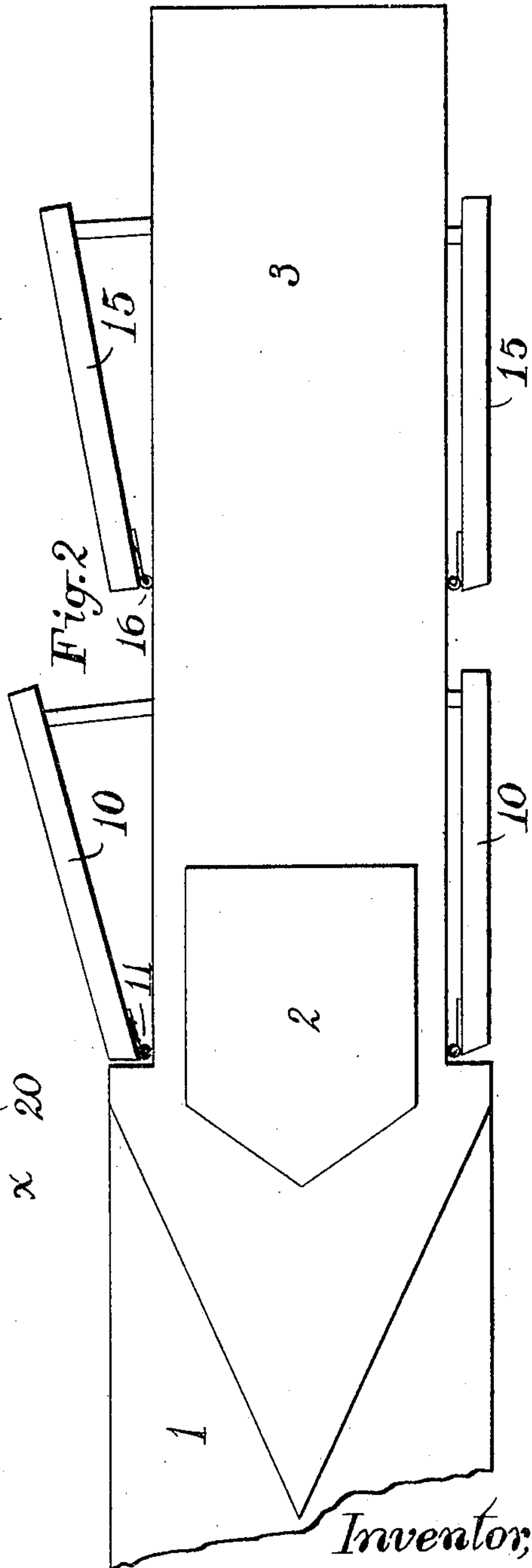


Fig. 2



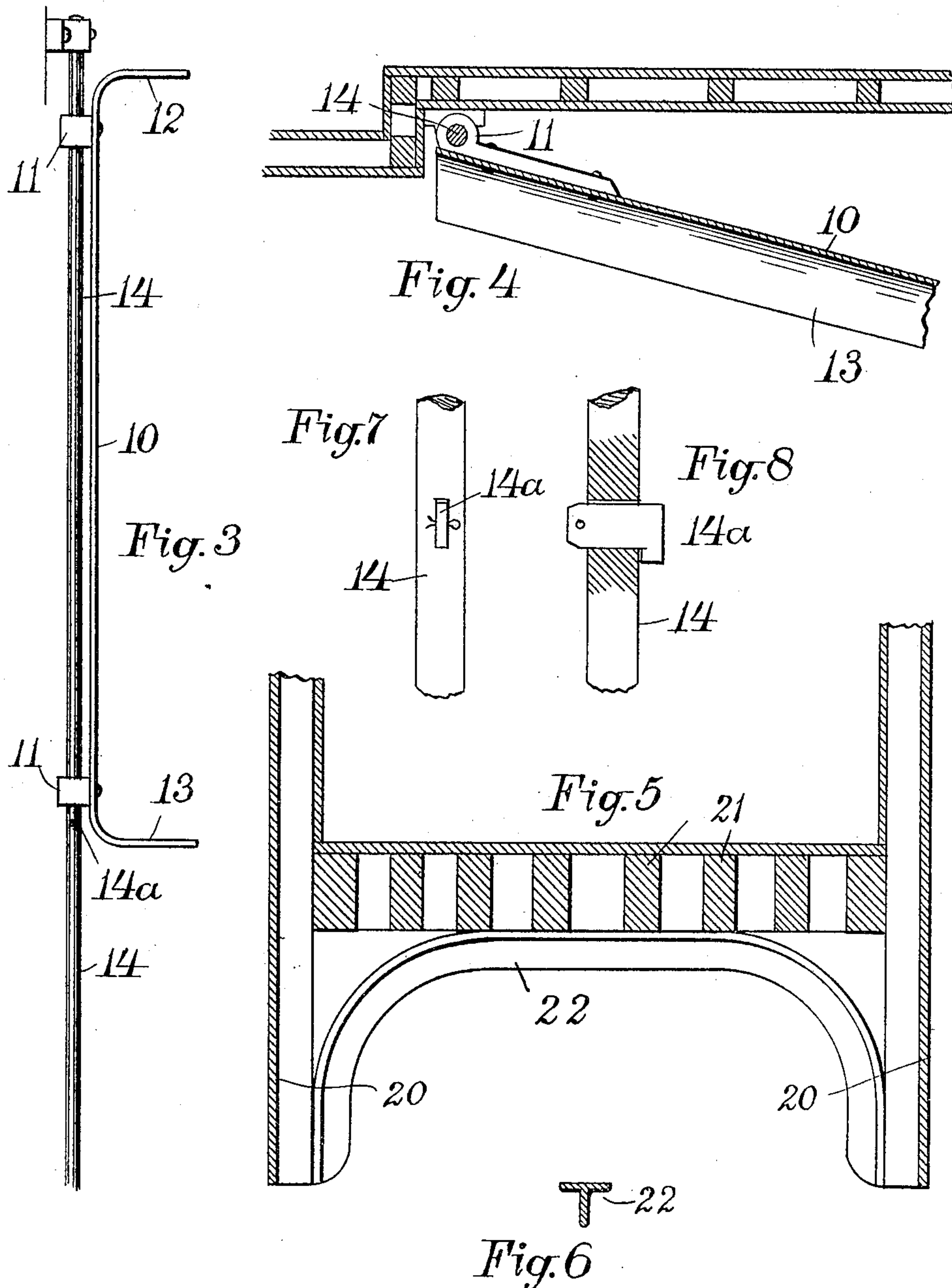
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UNITED STATES PATENT OFFICE.

JAMES WILLIAM RUSSELL, OF BOSTON, MASSACHUSETTS.

SNOW-PLOW.

No. 927,682.

Specification of Letters Patent.

Patented July 13, 1909.

Application filed November 15, 1907. Serial No. 402,270.

To all whom it may concern:

Be it known that I, JAMES WILLIAM RUSSELL, a citizen of the United States, residing at Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Snow-Plows, of which the following is a specification.

My invention relates to snow plows for railways, and it has especially to do with constructing the same with a plurality of wing elevators upon each side of the snow plow body, and with certain details of construction hereinafter set forth.

Referring to the drawings forming part of this specification, Figure 1 is a side elevation of a snow plow made in accordance with my invention. Fig. 2 is a plan view of the same, with a part thereof broken away. Fig. 3 is an edge view of one of the wing elevators showing its elevator flanges, and its pivotal means. Fig. 4 is a horizontal section of the same. Fig. 5 is a cross section of the plow one the line X—X in Fig. 1. Fig. 6 is a cross section of the brace-beam shown in Fig. 5. Fig. 7 is a detail view of a section of one of the pivot rods for the elevator wings, showing the device for supporting the wing in its elevated position. Fig. 8 is another view of said device.

A complete railway snow plow, to which my improvements are especially fitted, comprises a share 1, main body 3, and a lookout or pilot 2. The share is substantially wider than the body, and immediately behind the shoulder thus formed are pivoted or hinged two elevator wings 10, one at each side of the body. Close behind these wings are hinged or pivoted other elevator wings 15. These wings are substantially alike, being each formed with flanges projecting outwardly from their top and bottom edges, and means for forcing them to swing to a suitable angle away from the body 3. Such means may be the compressed-air devices set forth in my Patent 722,187. The under flanges 13 of the wings 10 and 18 of the wings 15 being upwardly inclined, and the wings held outward at suitable angles, as shown at the right hand side of the plow body in Fig. 2, the impact of said wings and their flanges with the snow beside the track will both elevate such snow and throw it farther away from the track.

In previous wings of the kind, the elevator function was performed by means of beams or plates bolted or riveted to the wings.

This rendered such wings very heavy, and so harder to manipulate. To do away with this objectionable feature, I form the wings and their flanges integral, with a smooth rounded juncture or bend, as illustrated in Fig. 3. Thus made, the wings are light, and comparatively inexpensive.

In my former constructions of snow plows, I provided the same with but a single wing elevator at each side. I have discovered, however, that by providing a plurality of wings at each side, they can be made far lighter, more convenient to operate and capable of several other important advantages as hereinafter set forth. In the first place, by having the front wing at each side located at a higher level than the other, such front wing will elevate and throw to one side the upper layer of snow beside the track. Then the rear wing reaches and elevates the remaining snow beneath that first removed, and so each wing receives far less strain than if one alone acted upon the entire mass of such snow at a time. Hence the wings are less liable to injury, the pressure upon them is less and so makes them easier of operation; they can be made lighter, and considerably smaller. This latter feature is rendered clearer when we note that with the same rise of under flange, a single wing must be made twice as long and twice as high to do the work of the two. But thus doubling both dimensions means four times the area of a single small wing, while the two wings only double the area, leaving a net gain in area of one half. Further, a single large wing, by its increased leverage, must be made much thicker and stronger, and so heavier and more expensive. Consequently, my double wing arrangement will save at least one third in weight and cost as compared with the single-wing, for the same work. I find, however, that the same will accomplish much more and better work, for the following reason: The snow nearest the ground always becomes the most heavily packed and most difficult to move. A single large wing is thus limited in its outward spread, and the snow is elevated and thrown to so slight a distance from the track as to leave but a narrow cutting therein; much of the elevated snow coming tumbling back as the plow passes on. With my double wing, the lower wing will be set as far out as the hard packed bottom snow will permit, while the upper wing can be spread far enough to

throw the snow to a considerable distance away; thus giving a cutting with substantially sloping sides widely separated at their tops. Where the track traverses a narrow rock cutting, the lower wings can be spread but little, while the upper wings may reach above the edges of such rock cutting, and so throw the snow thereat farther away.

Another improvement which I have made upon the wings is to have them vertically adjustable. This is done by having their hinges 11 and 16 slidable upon the fixed rods 14 shown in Figs. 1 and 4. A pin or block 14^a inserted in a suitable slot in the rod, and made sure therein by a cotter pin, supports a wing at the proper height. This adjustment is particularly desirable for the front wings, inasmuch as their normal position is elevated, for when the plow is traversing a long section of prairie country with scarcely any cuttings, and where the snow is not very deep, then the front wings can be dropped to the level of the others, and both sets work upon the same layer of snow. In this case, the best results are secured by swinging the front wings farther out than the others, and so giving the plowed channel much more sloping sides than would otherwise be practicable.

The purpose of the upper flanges 12 and 17 of the wings is to keep the snow being elevated, from crowding up and over the top edges of the wings, instead of being thrown wholly outward at the free ends thereof.

Behind the share 1 and beside the supporting wheels thereof the sides of the plow descend nearly to the track, as shown in Fig. 1, to form aprons to keep the snow from falling in upon the track. There is considerable strain against these aprons 20, and it is customary to provide them with braces rising obliquely to the sills 21 of the car. Moreover, there is a heavy strain upon the central sills given by the usual braces from elevated points of the plow sides to such sills, for resisting the inward thrust of the upper wing-hinges. To simultaneously strengthen the said sills at such point, and to brace the said aprons, I provide the T-iron 22 bent into an inverted shallow U, as shown in Fig. 5, and which acts to strengthen both such weak places. Fig. 6 shows the shape of this iron beam in transverse section.

What I claim as my invention and for which I desire Letters Patent is as follows, to wit;—

1. A piece of railway rolling stock having a plurality of simultaneously operative wings on one side thereof, each wing being laterally

adjustable on a vertical axis, and independently of the other.

2. A piece of railway rolling stock having a plurality of laterally adjustable wings on one side thereof, said wings being located at different levels.

3. A piece of railway rolling stock having a plurality of laterally adjustable wings on one side thereof, the wings nearest the front end of the plow being located at a higher level than the ones back of it.

4. A railway snow plow having two laterally adjustable wings at each side, each wing covering less than the full height of the plow-body, the forward wings being located near the roof of the plow, and the rear wings being located near the track.

5. A snow plow having wings hinged thereto to swing on a vertical axis, each wing being formed of sheet metal in a vertical plane having its top and bottom edges curved sharply outward at right angles to such body and suitably strengthened at the back.

6. A wing for snow plows constructed from sheet metal having an edge curved outward to form an elevator, and having a stiffening bar secured to the back thereof; said bar being located transverse to such curved edge and similarly curved to conform thereto, substantially as described.

7. A wing for snow plows constructed from a single sheet of metal, having its top and bottom edges curved outward, in combination with vertical stiffening bars secured to the back of said plate and terminally curved to fit said curved edges, substantially as described.

8. The combination with a piece of railway rolling stock, of a vertical rod terminally fixed to a side thereof, a wing elevator having hinge-members slidable and rotatable on said rod, means for supporting the hinge-members at various heights on said rod, and means for angularly adjusting the wing elevator.

9. The combination with a snow plow body having sills and sides, of a brace for said sides and a support for the sills consisting of a single length of metal bent into a shallow inverted U.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 11th day of November, 1907.

JAMES WILLIAM RUSSELL.

Witnesses:

A. B. UPHAM,
F. L. NORTON.