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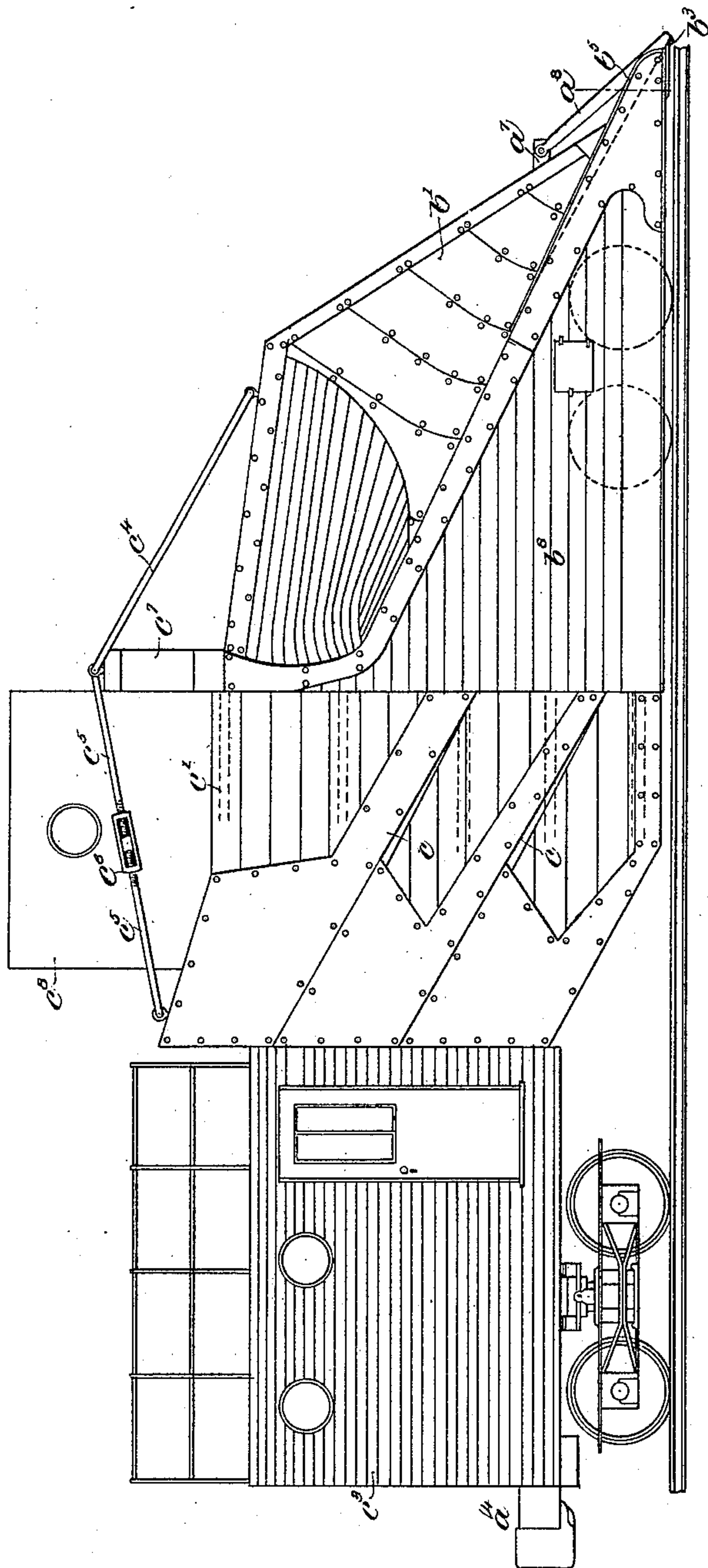
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J. H. RUSSELL.  
SNOW PLOW.

No. 420,467.

Patented Feb. 4, 1890.

Fig. 1.



Witnesses.

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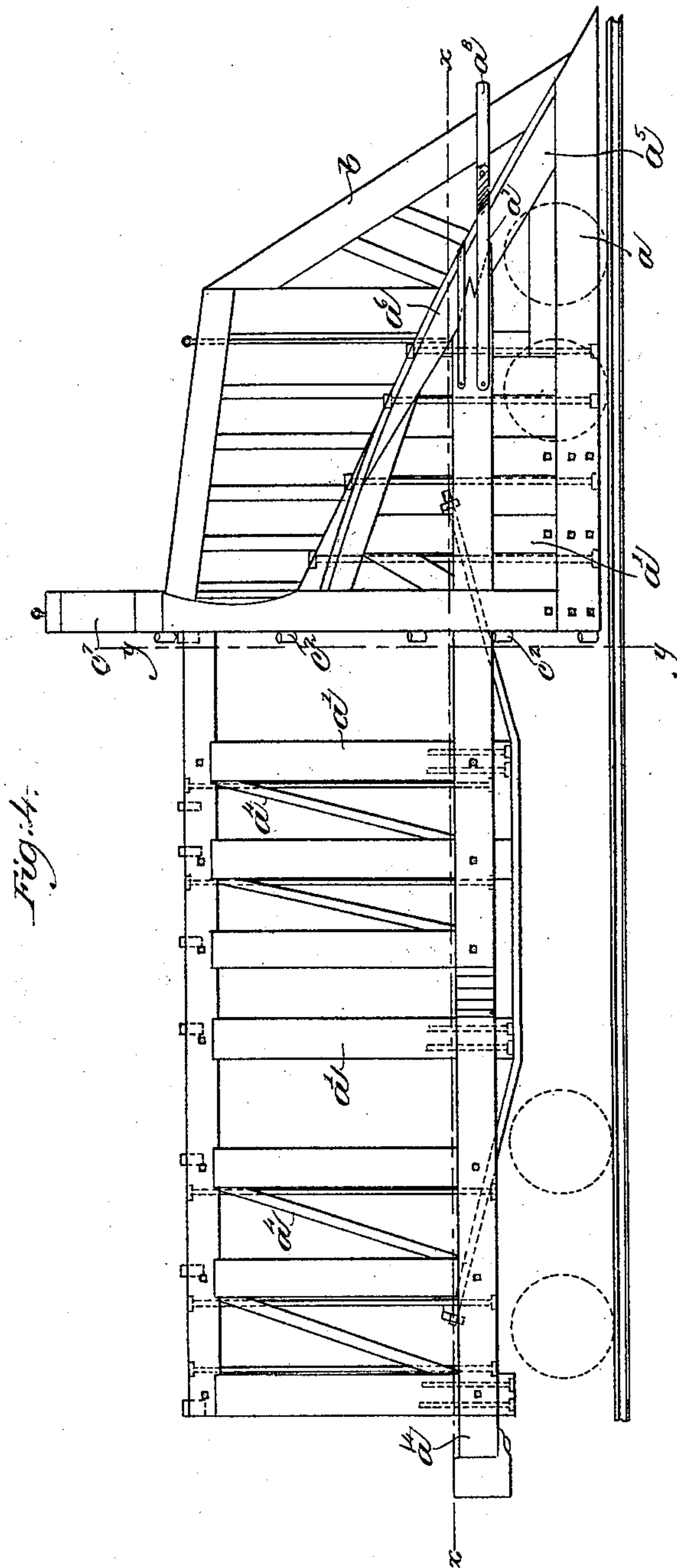
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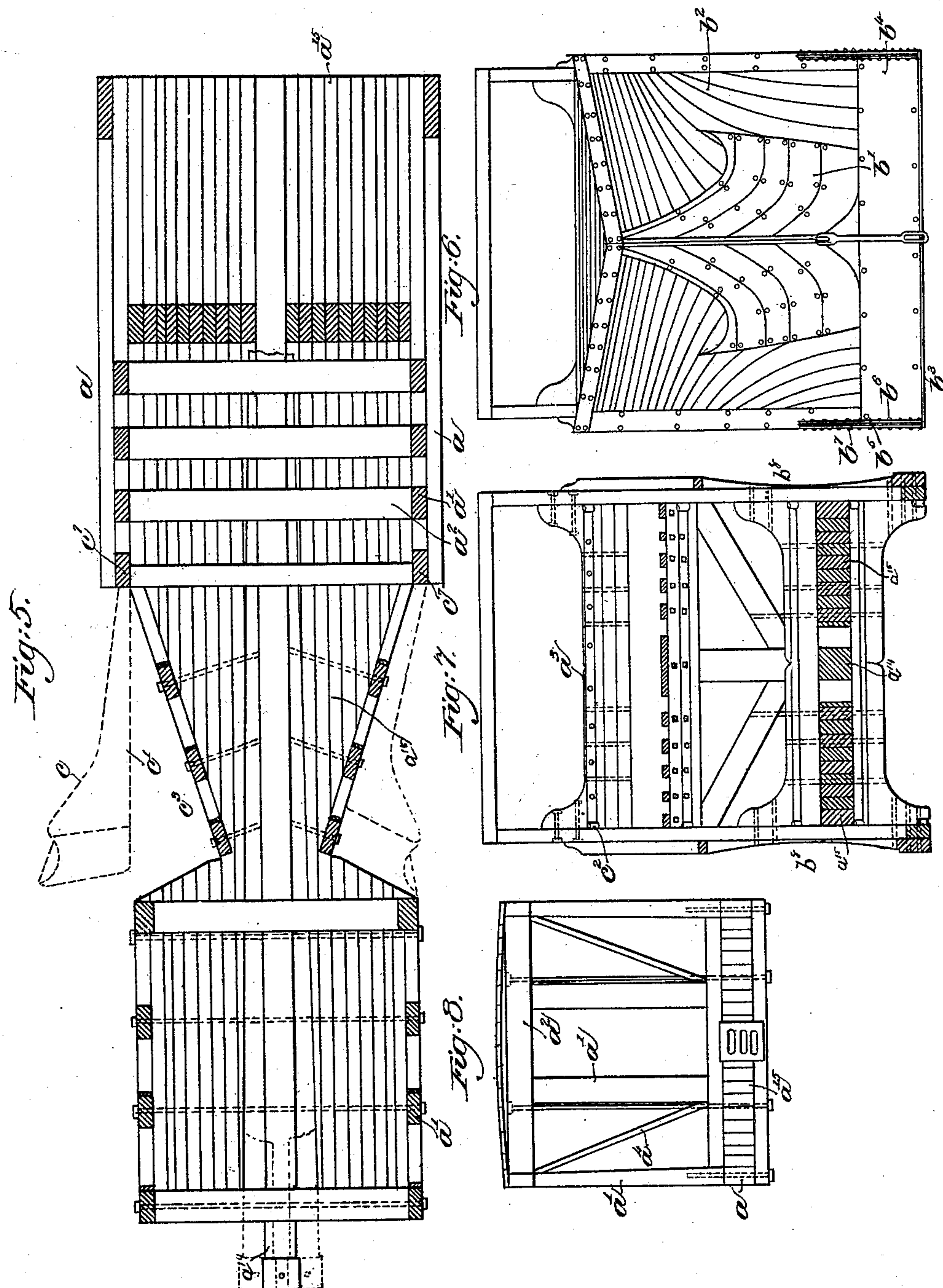
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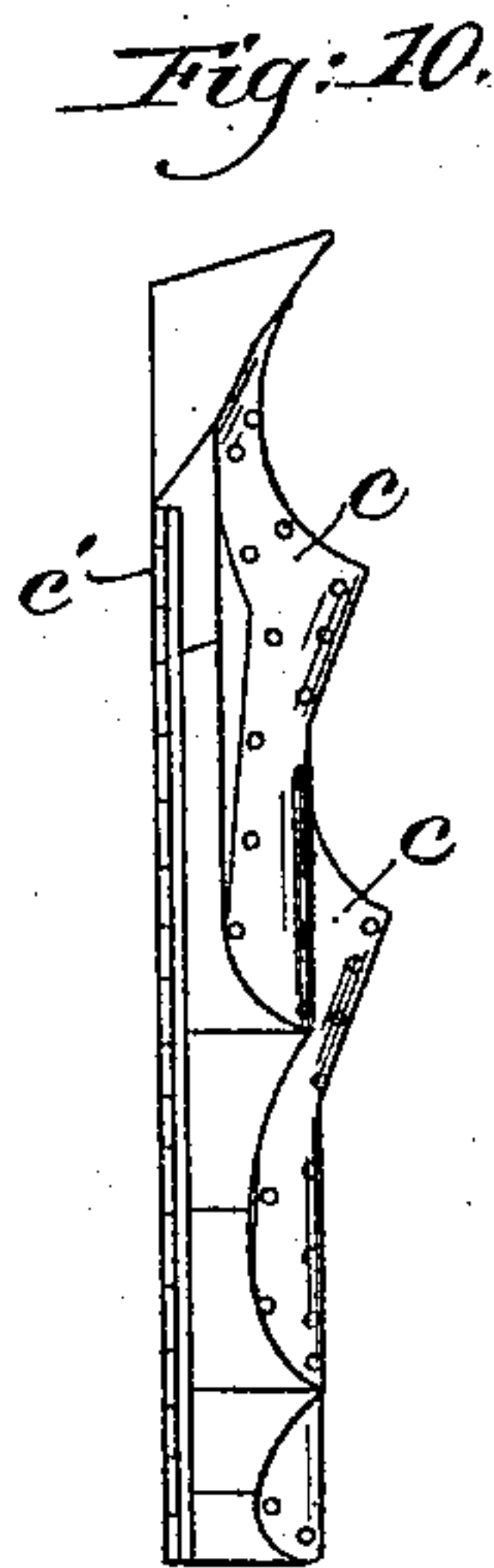
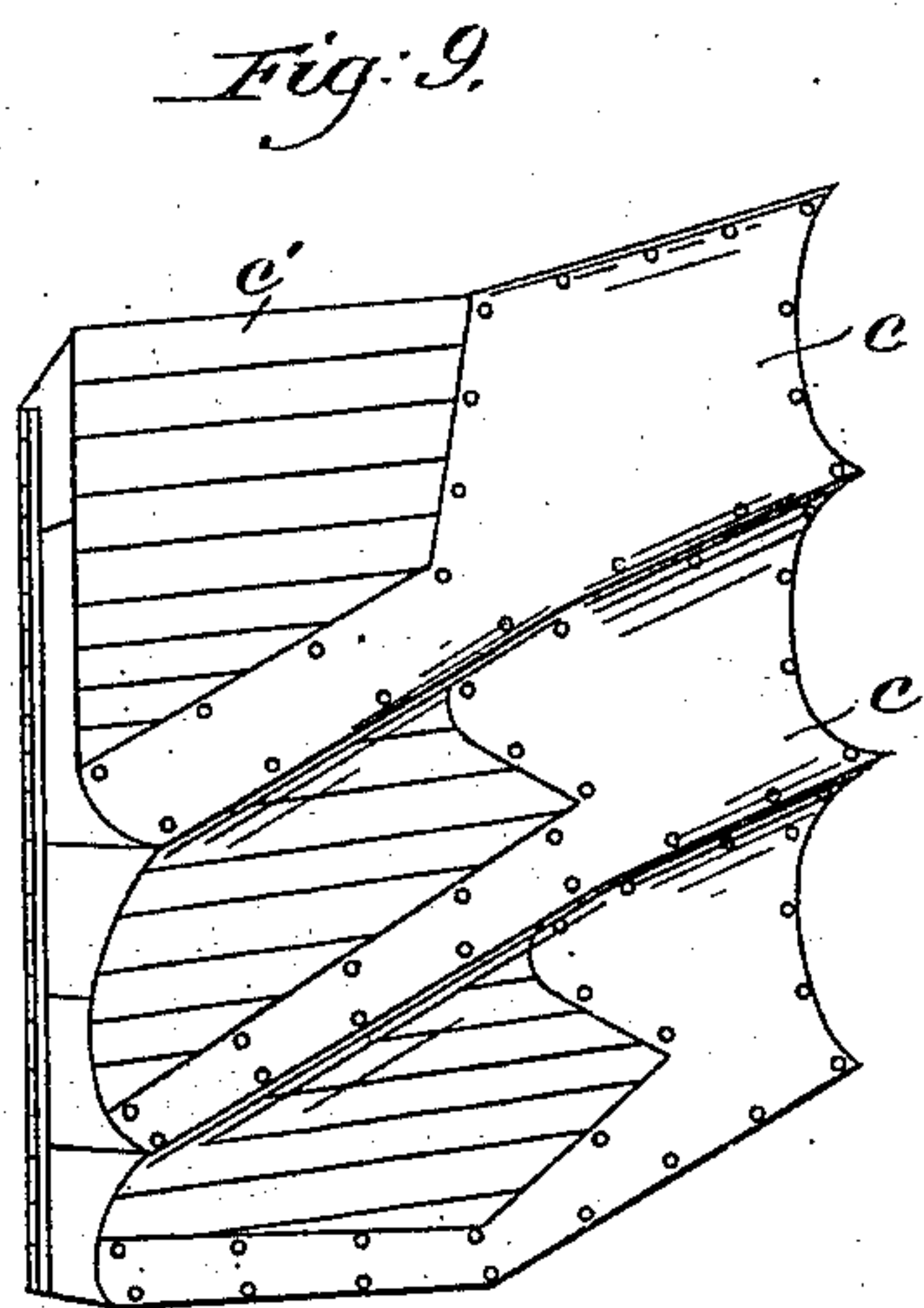
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4 Sheets—Sheet 4.

J. H. RUSSELL.  
SNOW PLOW.

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# UNITED STATES PATENT OFFICE.

JAMES HENRY RUSSELL, OF ST. JOHN, NEW BRUNSWICK, CANADA.

## SNOW-PLOW.

SPECIFICATION forming part of Letters Patent No. 420,467, dated February 4, 1890.

Application filed July 25, 1888. Serial No. 280,981. (No model.) Patented in Canada February 24, 1888, No. 28,556.

*To all whom it may concern:*

Be it known that I, JAMES HENRY RUSSELL, of St. John, county of St. John, New Brunswick, Canada, have invented an Improvement in Snow-Plows, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to snow-plows, and has for its object to provide a strong, durable, and efficient plow which is capable of performing the twofold office of opening the road and widening it at the same time.

My improved snow-plow is so constructed, as will be described, that it is enabled to withstand excessive strain, the center of gravity of the said plow being brought substantially near the track, so that when the plow is driven into a large bank or mass of snow and ice the plow will not be lifted from the track. In order that the way may be widened as well as opened for the car, the plow may, and preferably will, be provided with wings capable of being moved out from the said plow, the said wings having, preferably, a series of elevators or upwardly-inclined chutes or shelves, by which the snow at the sides of the track is carried away therefrom.

My invention therefore consists, essentially, in a snow-plow, a frame or body having its floor or bottom built or made solid, substantially as will be described, whereby the center of gravity of the plow is brought nearer the track and derailment of the plow obviated.

Other features of my invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of a wing snow-plow embodying my invention; Figs. 2 and 3, details to be referred to, made on an enlarged scale; Fig. 4, a side elevation of the frame or body of the plow, the outside sheathing being removed; Fig. 5, a horizontal section of the frame or body on line  $x x$ , Fig. 4; Fig. 6, a front end elevation of the plow; Fig. 7, a vertical section of the frame or body on line  $y y$ , Fig. 4; Fig. 8, a rear end elevation of the plow; Fig. 9, a detail to more clearly show the construction of the wings, and Fig. 10 an end elevation of the wings shown in Fig. 9.

The body or frame of the plow is preferably composed, as herein shown, of side beams  $a$ , posts  $a'$ , cross-beams  $a^2$ , preferably of timber firmly bolted or otherwise secured together, and truss rods or beams  $a^3$ , (see Fig. 7,) and braces  $a^4$ .

The forward part of the plow is made compact and substantial, as shown in Fig. 4, by increasing the number of the beams and posts and bringing them close together, and the said part is strengthened by a beam  $a^5$ , which I shall hereinafter designate as the "backbone" of the plow. The backbone  $a^5$  has secured to it the power-bar  $a^{14}$ , the latter being framed, as shown in Fig. 4, to fit into saw-cuts in the backbone, the said power-bar being secured to the backbone, as herein shown, by straps  $a^6 a^7$ , the strap  $a^7$  having secured to or forming part of it the shunting-bar  $a^8$ , the said power-bar being free to oscillate when the plow is rounding a curve in the track.

The frame or body, substantially on a line with the power-bar  $a^{14}$ , and constituting the floor or bottom of the plow, is built or made solid, as shown in Figs. 5, 7, and 8, by means of timber  $a^{15}$ , fitted and secured together on opposite sides of the said power-bar without spaces between the said timbers, whereby the center of gravity of the plow is brought nearer the rail and the danger of derailment diminished or obviated. The body or frame is provided at its forward end with an inclined beam  $b$ , herein shown as located in the center of the plow, the said beam forming a support for the center cutter  $b'$ , (see Fig. 6,) preferably made of steel plate, which is firmly bolted or riveted to the body or frame through the sheathing  $b^2$ , firmly secured thereto. Each strip of sheathing  $b^2$ , applied to the front of the plow, is made wider at its end near the extreme front end of the plow and gradually grows smaller toward the rear, as clearly shown in Figs. 1 and 6, so that when the sheathing is applied to the front portion or nose of the plow the said sheathing will be geometrical—that is, it will conform to the lines of a ship, whereby the snow lifted upon the nose of the plow will follow the lines of sheathing and be more effectually carried away from the plow.

The plow at its extreme forward end is provided with a chisel-shaped bit  $b^3$ , made, pref-



erably, of a single piece of steel and provided with a groove or notch, (see Fig. 3,) into which is fitted the plate  $b^4$ , preferably of boiler-iron, the plate  $b^4$  extending upward on the nose of the plow, preferably a considerable distance, it being cut or notched at its center to embrace or fit over the center cutter  $b'$ , as shown in Fig. 6.

The plow is also provided at its sides with cutters  $b^5$ , (see Fig. 2,) preferably of steel, which are strengthened, as herein shown, by sharp steel flanges  $b^6 b^7$ , the said cutter and flanges being riveted or bolted together and to the frame or body of the plow, a portion of the flange  $b^6$  being preferably covered by the plate  $b^4$ , as shown in Figs. 2 and 6.

The sides  $b^8$  of the forward portion of the plow are preferably made concaved, so that when the plow is driven into a bank or mass of snow a portion of the snow sheared by the side cutters may fall in a substantially-loose state against the concaved sides, thereby obviating wedging or binding of the plow and enabling it to be driven at a high rate of speed, the side resistance being overcome. The snow and ice sheared by the side cutters, and which falls against the concaved sides in a substantially loose state, is carried away from the track by one or more elevators or chutes  $c$ , (see Figs. 1, 5, 9, and 10,) preferably of boiler-iron, having secured to or forming part of it a sharp steel cutter, the said boiler-iron being bolted or otherwise secured to wings  $c'$ , hinged as at  $c^2$ , the said wings normally lying within recesses  $c^3$  in the sides of that portion of the plow in the rear of or next to the nose of the plow, as shown in Fig. 5, the said wings when not in use lying within the said recesses and having their outer faces or sides substantially on a line with the sides of the plow. Each wing is supported, as shown, by stay-rod  $c^4$  and swinging gaff  $c^5$ , provided with a turn-buckle  $c^6$  and secured to the side post  $c^7$ , constituting a derrick, and by which the strain is removed from the hinges of the wings. The wings  $c'$  may, and in practice will, be operated by suitable machinery from within the house  $c^3$ , herein shown as forming part of the plow. The top or deck of the plow is provided, as shown, with a pilot-house  $c^8$ , in which the pilot controlling the operation of the plow is located.

I claim—

1. In a snow-plow, a frame or body having its floor or bottom  $a^{15}$  built or made solid, substantially as described, whereby the center of gravity of the plow is brought nearer the track and derailment of the plow obviated, substantially as described.

2. In a snow-plow, a frame or body having a backbone  $a^5$ , and a power-bar extended from

the rear toward the front of the plow through the body of the same, and having one end connected directly to said backbone and its other end free to oscillate, substantially as described.

3. In a snow-plow, a frame or body constructed, substantially as described, to form the nose of the plow, and provided with recesses  $c^3$ , combined with wings extended substantially the height of the plow and having elevator-chutes attached thereto, the said wings normally lying within said recesses, substantially as described.

4. In a snow-plow, a frame or body constructed, substantially as described, to form the nose of a plow, and provided with side cutters  $b^5$  at its front end, and having its sides  $b^8$  at the rear of the said side cutters made concaved, whereby the side resistance or binding effect of the snow is overcome, substantially as described.

5. In a snow-plow, the combination, with the frame or body constructed, substantially as described, to form the nose of the plow, of the metal plate  $b^4$ , secured to the top of the nose, and the one-piece chisel-shaped steel bit  $b^3$ , secured to the under side of the nose, substantially as described.

6. In a snow-plow, the combination, with the frame or body, of a one-piece steel chisel-shaped bit  $b^3$  and metal plate  $b^4$ , and cutters  $b^5$ , secured to the sides of the plow, substantially as described.

7. In a snow-plow, the combination, with the frame or body, of a one-piece steel chisel-shaped bit  $b^3$  and metal plate  $b^4$ , and cutters  $b^5$ , secured to the sides of the plow, and flanges  $b^6 b^7$ , to strengthen said side cutters, substantially as described.

8. In a snow-plow, the frame or body provided with recesses in its sides, combined with wings forming sides of the plow and adapted to normally lie in said recesses, posts  $c^7$  on opposite sides of the plow, and with rods  $c^4 c^5$ , secured to the said posts and to the wings and nose of the plow, to operate substantially as described.

9. In a snow-plow, the combination, with the body of the plow, of side wings pivoted to the sides of the plow and independent of the front or nose of the plow and upwardly-inclined elevator-chutes attached to said side wings, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES HENRY RUSSELL.

Witnesses:

JAS. H. CHURCHILL,  
MABEL RAY.