

(No Model.)

J. H. COLVIN.
SNOW OR ICE REMOVER FOR RAILWAYS.

No. 539,670.

Patented May 21, 1895.

Fig. 8.

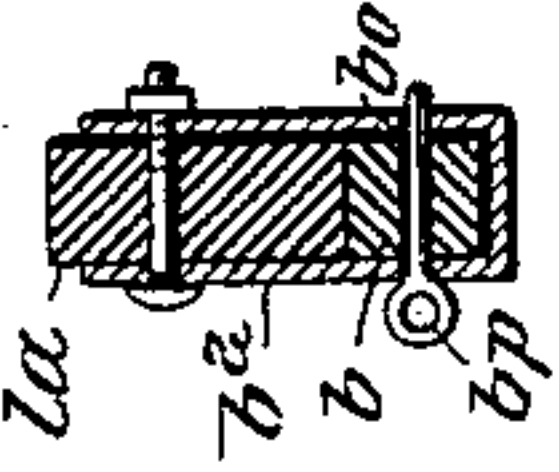


Fig. 7.

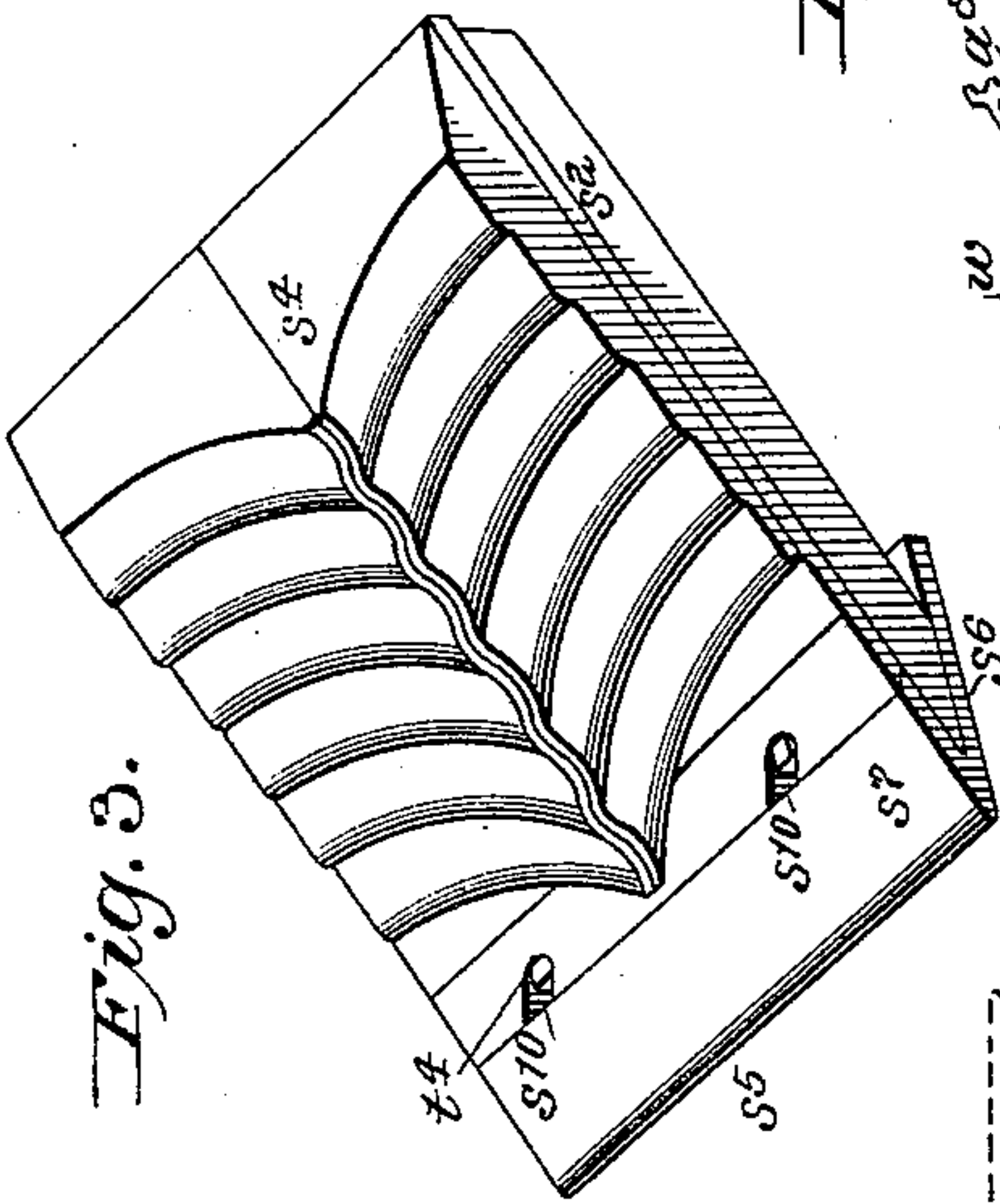


Fig. 1.

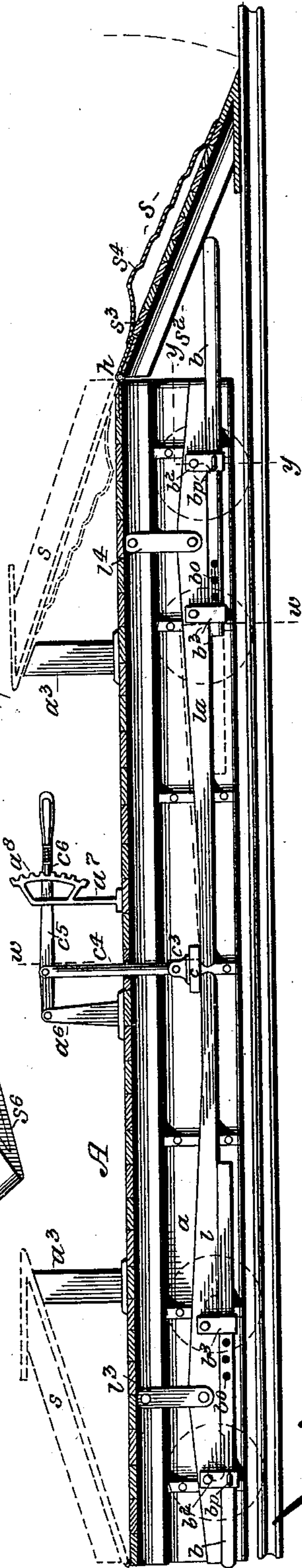


Fig. 5.

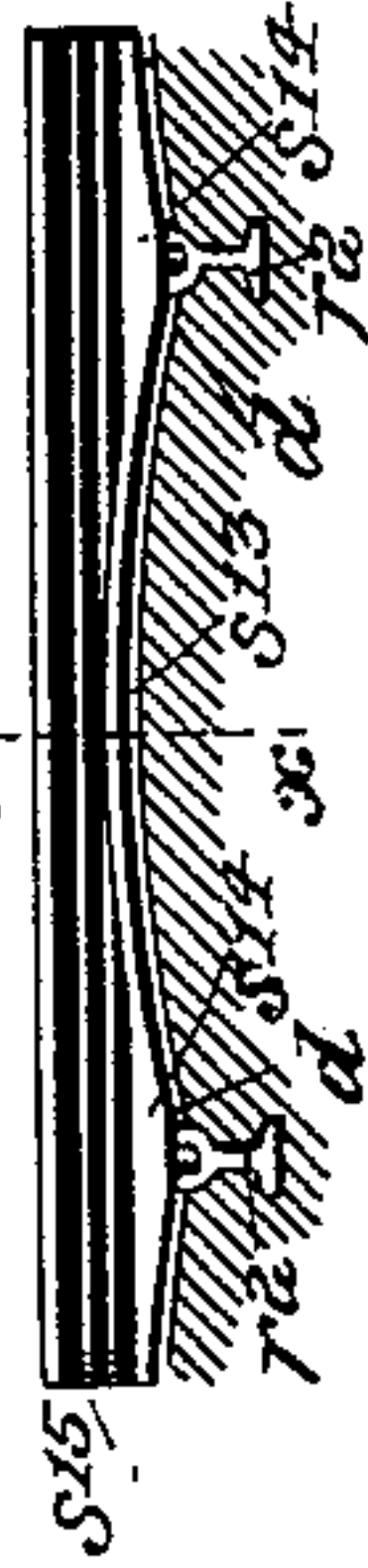


Fig. 6.



Fig. 2.

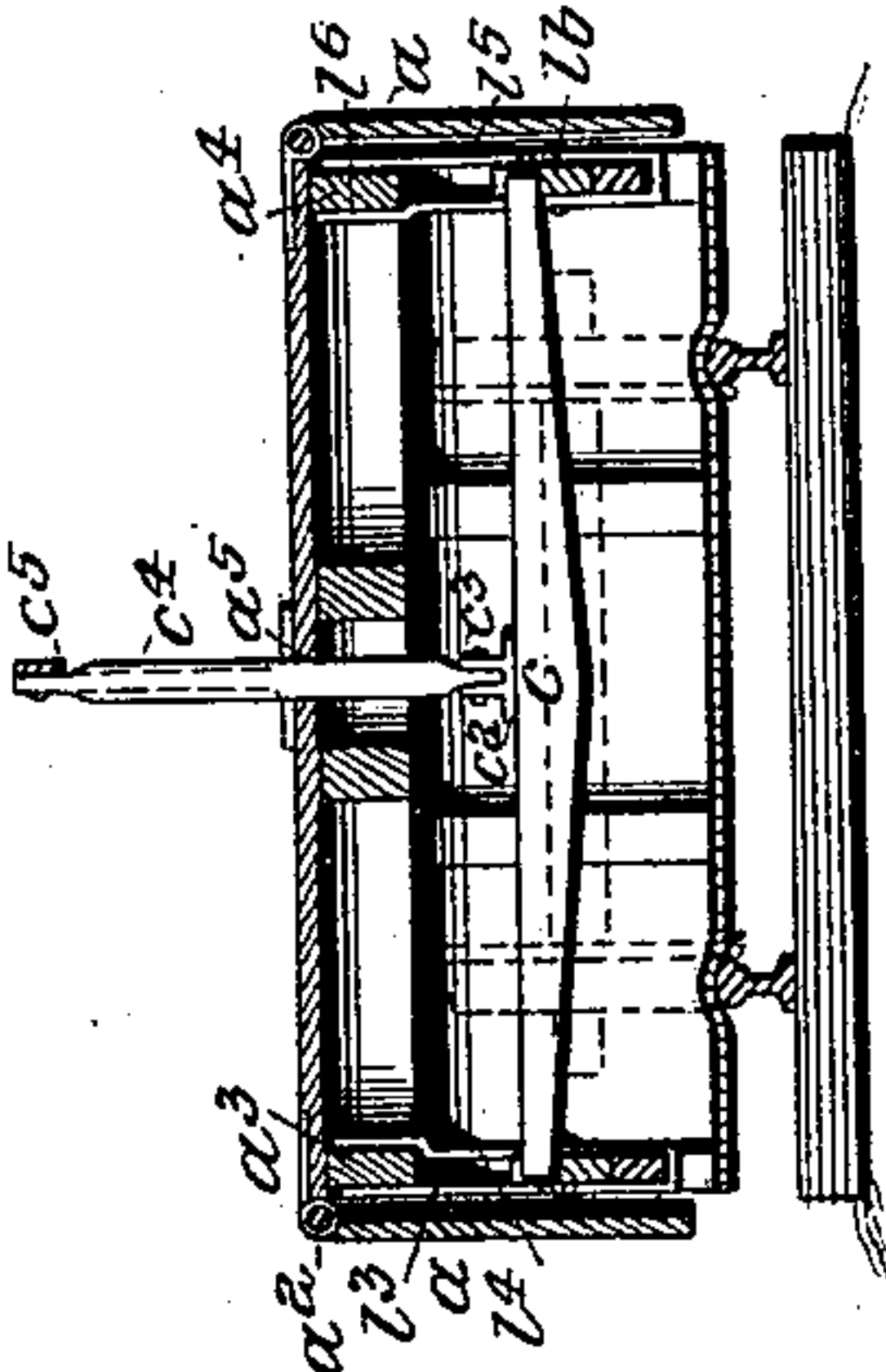
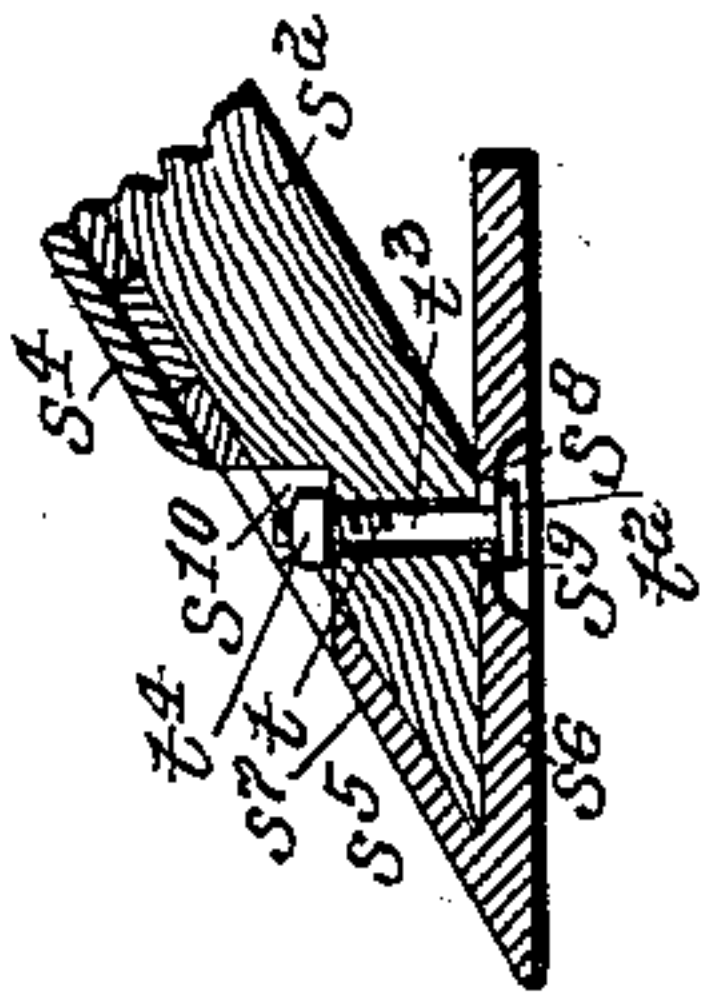


Fig. 4.



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SNOW OR ICE REMOVER FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 539,670, dated May 21, 1895.

Application filed March 18, 1896. Serial No. 542,230. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. COLVIN, a citizen of the United States, and a resident of the city of Richmond, county of Wayne, in the State of Indiana, but temporarily residing in the city of Alexandria, in the county of Alexandria, in the State of Virginia, have invented a new and useful Snow or Ice Remover for Railways, of which the following is a correct description.

The object of the invention is to provide, at inconsiderable expense, a simple mechanism which is applicable to an ordinary flat or platform car, or to a gondola car, whereby when a line of railway has become obstructed by accumulations of snow or ice, it may easily and quickly be freed from such accumulations.

The invention, broadly stated, consists of an inclined plow or shovel which is secured to the frame or body of a car, in connection with a novel mechanism which is operative from the car, whereby the plow is made adjustable, up or down, in relation to the track of the railway.

The invention consists also of an inclined plow or shovel which is loosely secured to the body or frame of a car, and which is provided with a double-inclined outwardly-flaring corrugated deflecting and discharging surface, and with a novel cutting and clearing shoe.

The invention consists also of a plow or shovel which is loosely secured to an end of a car, and which is inclined downwardly from its point of attachment thereto, in combination with an extensible adjustable arm or lifting-bar which engages the bottom surface of the plow or shovel, and is movable by mechanism which is operated from the car, into, or out of engagement with the plow or shovel.

The invention consists further of various novel elements, or of various novel and useful combinations of parts, in a snow and ice remover for railways, as will clearly appear from the following detailed description of the same, and from the specific and distinct claims of novelty which follow such detailed description.

In the accompanying drawings, which constitute a part of this specification, Figure 1 represents a longitudinal section of a modified gondola car which is provided with my improved snow and ice removing mechanism, the

section being near the central line of the car. Fig. 2 is a transverse section, as in the irregular broken line *ww* of Fig. 1. Fig. 3 is a perspective plan view of the plow or shovel detached. Fig. 4 is an enlarged detail section showing a portion of the frame, floor, and deflecting-shield of the plow or shovel and also its attached cutting and scraping shoe. Fig. 5 is a rear elevation of the shoe of the plow or shovel, as when slightly modified, to adapt it to street-railways. Fig. 6 is a front elevation of the shoe of the plow or shovel detached. Fig. 7 is a section of the shoe, as in the line *xx* of Fig. 5. Fig. 8 is a detail section in the vertical line *y* of Fig. 1, representing one of the bar-operating levers, the stirrup depending from the lever, the adjustable lifting-bar within the stirrup, and the key by which the bar is maintained in position when adjusted.

In the longitudinal section represented in Fig. 1, and in the transverse section seen in Fig. 2, the invention is shown as applied to a gondola car *A*, the side-walls *a* of which are here shown as let down or dropped, upon their hinges *a*², this being their position when the car is in readiness for service in removing snow.

The snow plow or shovel *s* is secured by hinges *h* to the frame or floor-timbers of the car. The plow consists of longitudinal sills or stringers *s*²; flooring *s*³, which extends in a uniform inclined plane, from side to side of the plow; a superposed two-way, outwardly-flaring, corrugated deflecting-shield or guard *s*⁴, suitably secured to the body of the plow; and an angular detachable cutting and clearing shoe *s*⁵, which embraces a horizontal sole *s*⁶, and an inclined upper *s*⁷. The sole *s*⁶ of the shoe *s*⁵, has a shallow bottom recess *s*⁸, and,—in continuation of the recess,—an opening *s*⁹, to receive, respectively, the head *t*², and the body *t*³, of a bolt *t*, which extends upwardly into a recess or gain *s*¹⁰, in the body of each of the sills *s*², where it is secured in position by means of a holding-nut *t*⁴. At points coincident with the rails *r, r*, of the trackway, the toe *s*¹¹ of the shoe *s*⁵, is provided with a recess *s*¹², whereby the front edge of the shoe is permitted to extend downward, a short distance, into the spaces exterior to and between the two rails.

The modified form of shoe *s*¹⁵, represented

in Fig. 5, is designed for application to the plow when it is desired to employ it in clearing street railways or tramways, the central, upwardly-extending recess s^{13} , being adapted to the corresponding upwardly-rounded elevation or "crown" of the railway; and the downwardly-extending projections or "scoops" s^{14} , s^{14} , being adapted to the corresponding track-depressions d , d , of each of which one of the sunken rails r^2 , r^2 , constitutes the center. It will be seen that under this construction, the two shoes, s^5 and s^{15} , are made interchangeable, and that thus the plow is adapted to be employed, with equal advantage, for clearing any ordinary steam or electric railway,—provided with "T" or "H" rails,—or any ordinary form of street-railway, having rounded "crown," and sunken rails.

Upon the car A are provided standards or supports a^3 , which are adapted to sustain the plow or shovel s , when in its reversed position. Under the body of the car, and extending longitudinally of the same, are levers l , la , lb , lc , which are pivotally supported by means of links, l^3 , l^4 , l^5 and l^6 , respectively, which are pivotally connected to the exterior longitudinal sills a^3 and a^4 of the car. Stirrups b^2 and b^3 , which are connected to, and depend, in a similar manner, from the levers l , la , lb , lc , receive a longitudinal bar b , which is provided with lateral perforations bo , each of which is adapted, when the bar b has been suitably adjusted in its relation to the plow or shovel s , to receive, in connection with an opening b^4 in the stirrup, a securing-pin bp .

The inner extremities of the levers l , la , &c., at the mid-length of the car, are in coincidence, and nearly in contact. A broad cross-bar or bearing-arm c , rests, by its outer extremities, upon the opposite or meeting ends of the four levers l , la , lb , and lc , and at its center or mid-length receives a base or pedestal c^2 , which has bifurcations c^3 , c^3 , in which is pivotally received the lower extremity of a bearing support c^4 , which extends vertically upward through an opening a^5 , in the body of the car A, and at its upper extremity is pivotally connected to a lever-arm c^5 , which is pivoted also to a fixed standard a^6 , and which is operated also in connection with an adjusting and holding rack a^8 , which is provided upon a vertical standard a^7 , the free end of the lever being maintained in position when adjusted, by means of a spring-actuated catch c^6 .

It will be seen that the lifting-bars may be drawn inwardly from their extended position, when it is desired to attach or "couple on" another car.

To persons skilled in the art to which the invention relates, the operation of the described apparatus will, in the main, be plain from the foregoing description of its construction. It will be understood that under ordinary circumstances when in the act of clearing, the sole s^6 of the shoe s^5 , will, at its recesses s^{12} , rest in contact with the tread of the

rails, while in its remaining edge-portions, it will, as already explained, project into the spaces below the plane of such tread, and in the forward movement of the car, will excavate and carry away all accumulations with which it may come in contact. Should a rough track be encountered, as when two contiguous ends of rails are laid at, or which in use have assumed dissimilar elevations, or should the road-bed be impeded by other heavy obstructions, lying either upon the rails, or within the spaces below the plane of the tread of the rails, it will be practicable, by means of the lever c^5 , and its connections, to instantly elevate the front or engaging extremity of the plow, while a further outward adjustment of the bearing and lifting bar b , will enable the operator, by a lever-movement of no greater extent, to elevate the plow to a still higher plane.

Through the provision of the double-inclined ridged or corrugated deflecting and directing guard or shield s^4 , which may in any convenient manner, be made detachable, the tendency of the body of snow, especially if it be a dry and light snow, to be pushed back by itself as it were, and to thus slide over the rear of the plow, and be deposited, in part, upon the car, will be counteracted, the corrugations or ridges serving to arrest the backward movement of the snow, and to cause it to be heaped, instead of sliding up the incline, and the mass of snow, as it accumulates, through the forward movement of the car, will be forced diagonally outward, and away from the track, while by reason of the provision of the depending side-walls or wings a , of the car, any portions of the accumulation which, when thrown forcibly outward by the plow, may fall against such wings, will be prevented thereby from falling upon and obstructing the track.

Through the provision of the recesses s^{10} , in the sills s^2 of the plow s , by which, in connection with the securing-bolts, the two distinct but closely analogous shoes, s^5 and s^{15} , are made readily detachable and interchangeable, the plow becomes equally useful whether employed upon a line of steam or electric railway, in the open country, or upon a line of sunken rails, in a city street.

It will be noted that the snow-plow or shovel is supported wholly by the car itself, except as, by its shoe, it may, in the operation of clearing, incidentally, and for comparatively brief periods, be partially supported by the rails.

It will be obvious that a car might be provided with a single pair of coincident levers, each carrying a single adjustable, supporting and elevating bar, but I prefer to employ two pairs of levers, and corresponding bars, as shown and described.

The invention having been thus described, what is claimed is—

1. A railway-car which is provided with a plow or shovel which is adapted to be hinged to either end of the car, and which is adjust-

able up or down, in relation to the track-rails, by mechanism which is operated from the floor of the car, and which acts upon the bottom of the plow, at whichever extremity of the car such plow may be placed.

2. A railway-car which is provided with a snow plow or shovel which is pivotally secured to the body or frame of the car, and is reversible upon its pivot, in a vertical plane and which at its snow-engaging extremity is provided with a rigidly-attached, integral, bifurcated or two-limbed shoe which in one of its parts extends along the track-rails, and is formed with recesses and projections which are adapted to the configuration of the road.

3. A railway-car which is provided with a snow-plow or shovel which is adjustably and reversibly attached to the frame or body of the car, and which at its snow-engaging extremity is provided with a detachable angular shoe which in one part extends along and in contact with the surface of the track-rails, and which in its other part extends along and constitutes a portion of the inclined snow-and-ice-engaging surface of the body of the shovel proper.

4. A railway-car in which are combined an end-plow or shovel which is pivotally secured to the body of the car; a series of levers which extend longitudinally, beneath the frame of the car, and which are pivotally supported in bearings which depend from such frame; a standard which is mounted upon the longitudinally-extended pivoted levers; a standard which is mounted upon the body of the car; an adjustable lever which is pivoted to the standard upon the body of the car, and which is pivoted also to the standard which is supported by the longitudinally-extending levers; and a series of horizontal lifting-bars, each of which is longitudinally adjustable in bearings of one of the longitudinal levers; whereby the end-plow or shovel is either elevated from, or depressed toward the track-rails.

5. A railway-car which is provided with elements as follows:—an end-plow or shovel which is loosely attached to the body of the car; longitudinally-extending levers which are suspended beneath the body of the car;—lifting-bars each of which is adjustable, longitudinally, along one of the longitudinally-extending levers; a vertical standard which is fixed

upon the body of the car; an adjustable lever which by one extremity is pivoted to the standard which is fixed upon the body of the car; and a vertically-arranged standard or connecting-bar which is pivotally mounted, as a depressible fulcrum, upon the free ends of the longitudinal levers which are suspended beneath the body of the car, and which at its upper extremity is pivoted to the adjustable lever which in turn is pivotally-connected to the standard which is fixed upon the body of the car.

6. The combination with a railway-car, of a snow-plow or shovel which in its upper portion is, by a horizontally and transversely extending pivotal bearing, attached to the body of the car, and is thus made reversible in a vertical plane; and which in its remaining portion rests upon longitudinally-extending bars which project outwardly from the ends of the car.

7. The combination with a railway-car of a continuous or non-sectional snow-plow or shovel which by its upper extremity is pivotally attached to the body of the car, and which is thus made invertible when not in use; and which in its lower portion rests upon the extremity of longitudinally-adjustable bars which project from the ends of the car, and which are operated from the floor of the same.

8. In a snow and ice remover for railway-cars, a snow-plow the body or frame of which is provided with top recesses, and with corresponding downwardly-extending securing-openings; in combination with a detachable clearing-shoe which has a bottom recess which is provided at its top with a corresponding securing-opening.

9. In a snow and ice remover for railway-cars, a snow-plow which is invertibly attachable to either end of the car, and which is provided with a detachable shoe the clearing edge of which is formed with a central upwardly-extending recess, and with corresponding downwardly-extending projections, whereby the shoe is adapted to the transverse profile of a railway; substantially as shown and described.

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Witnesses:

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