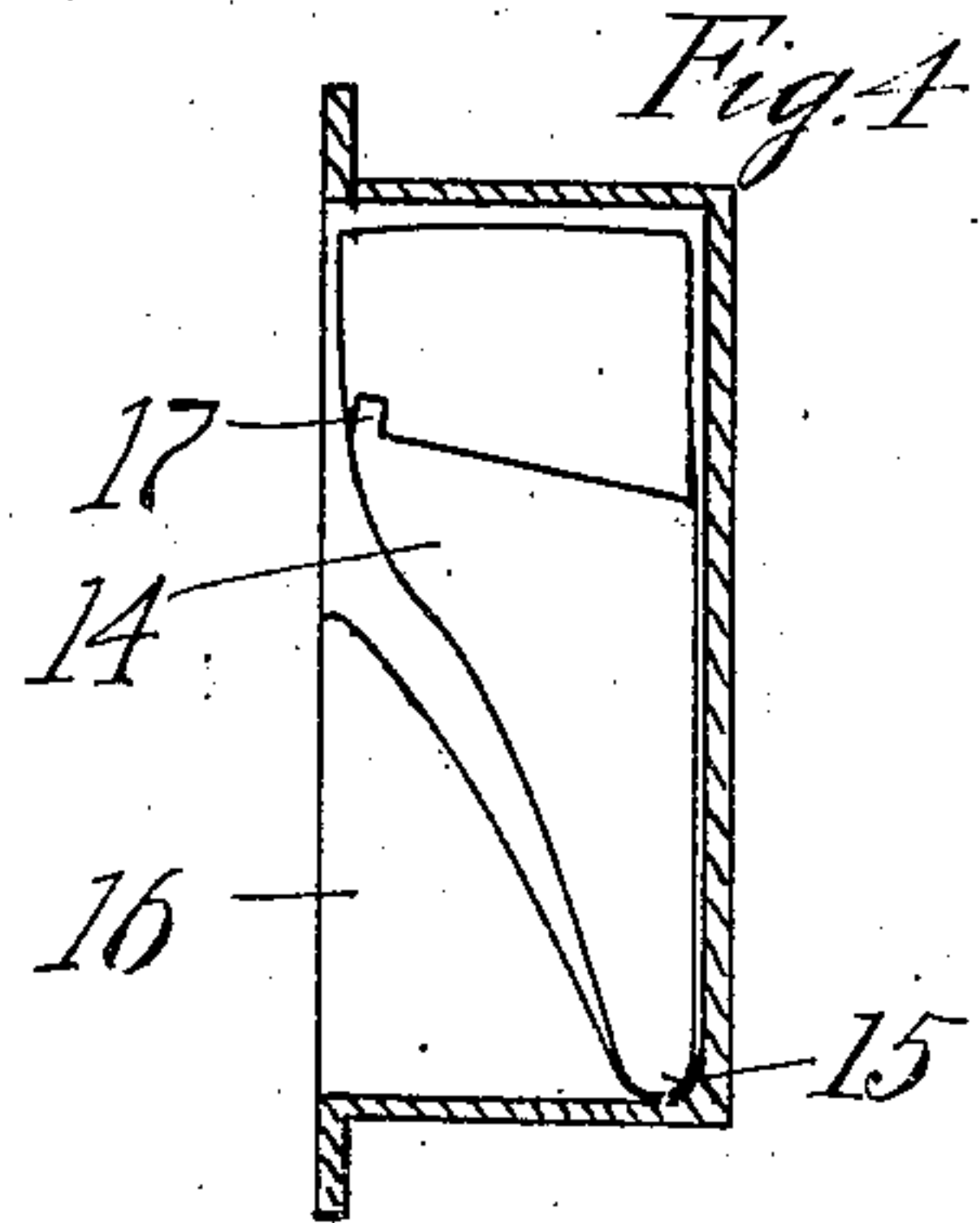
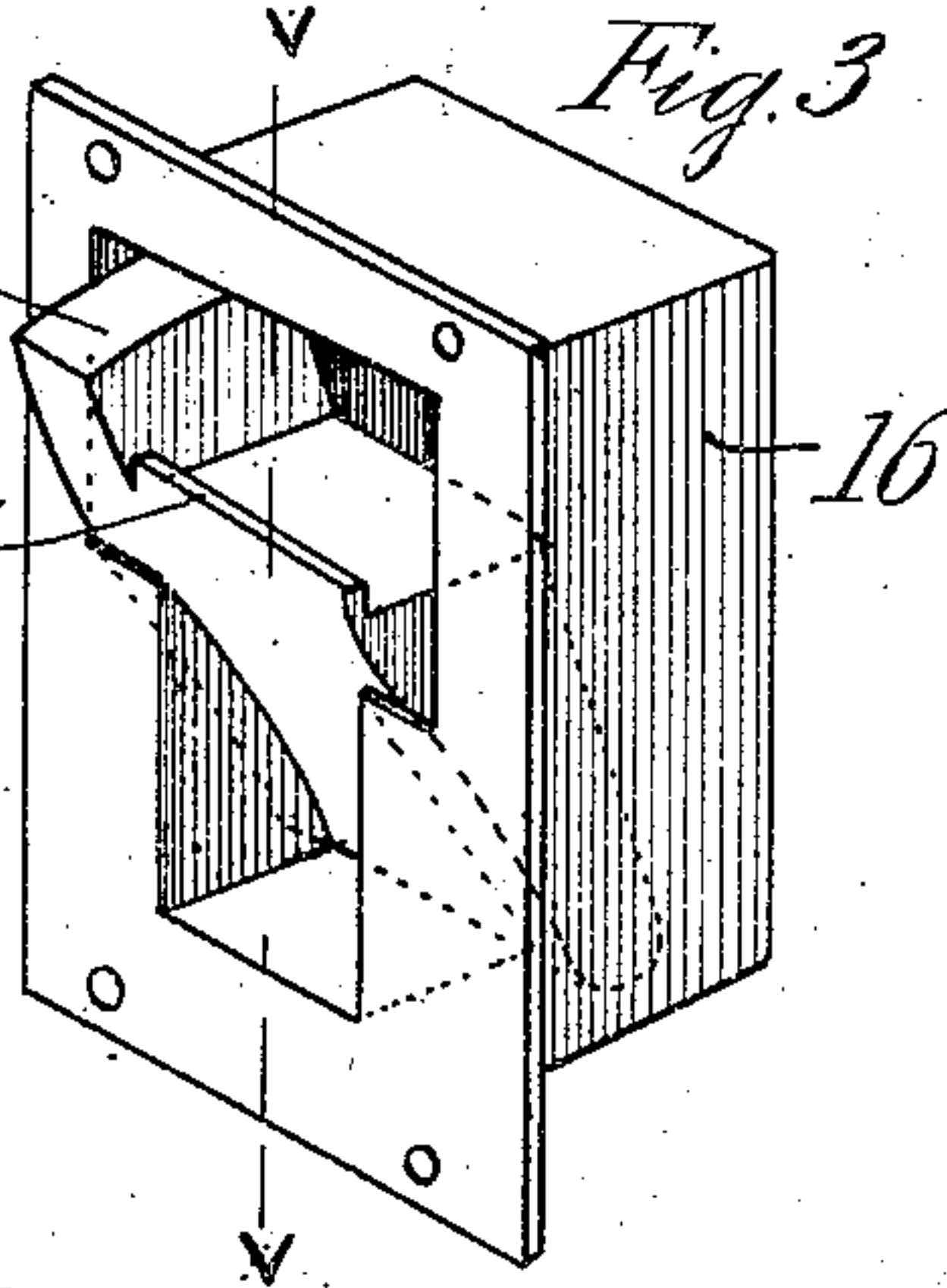
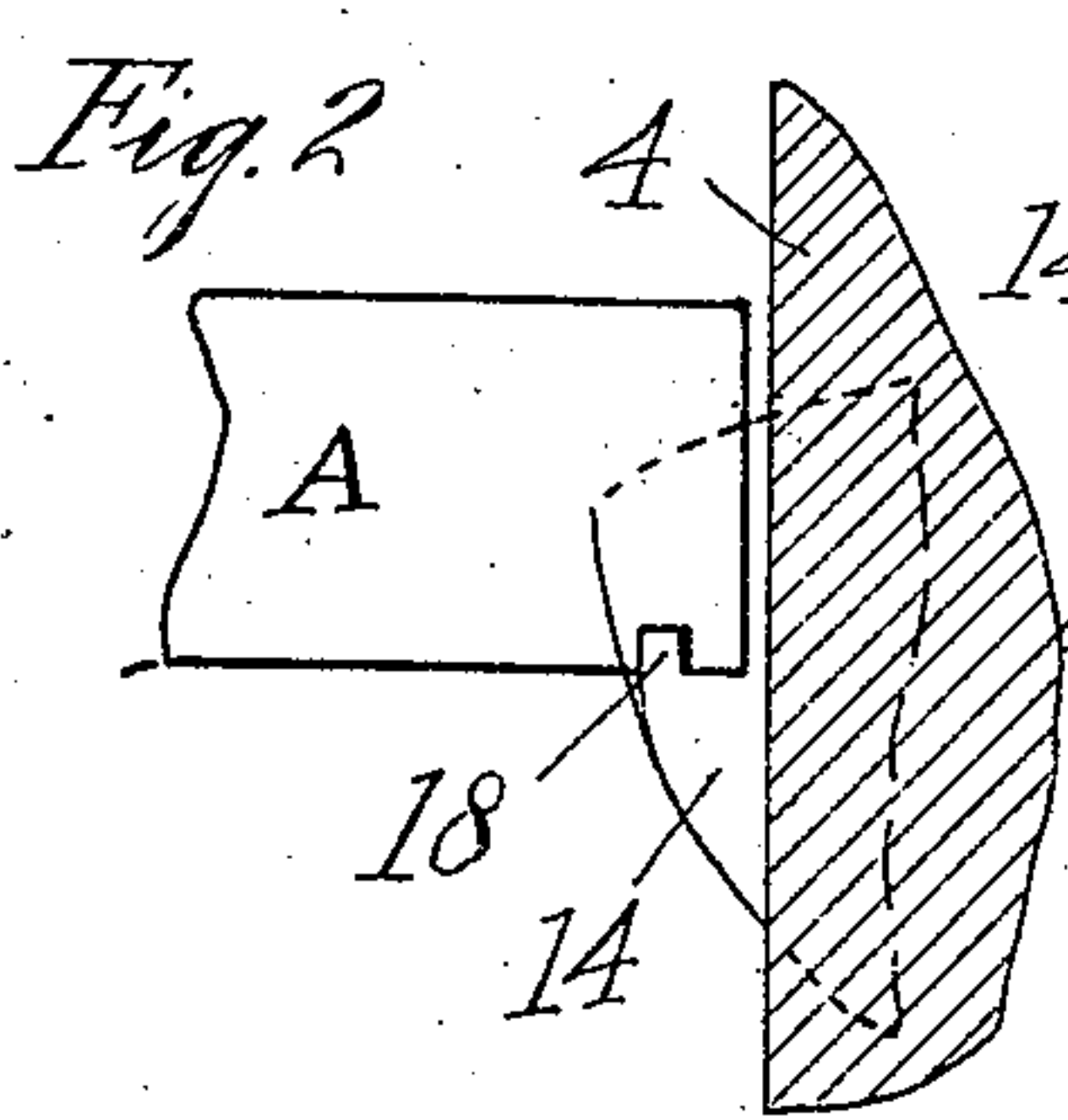
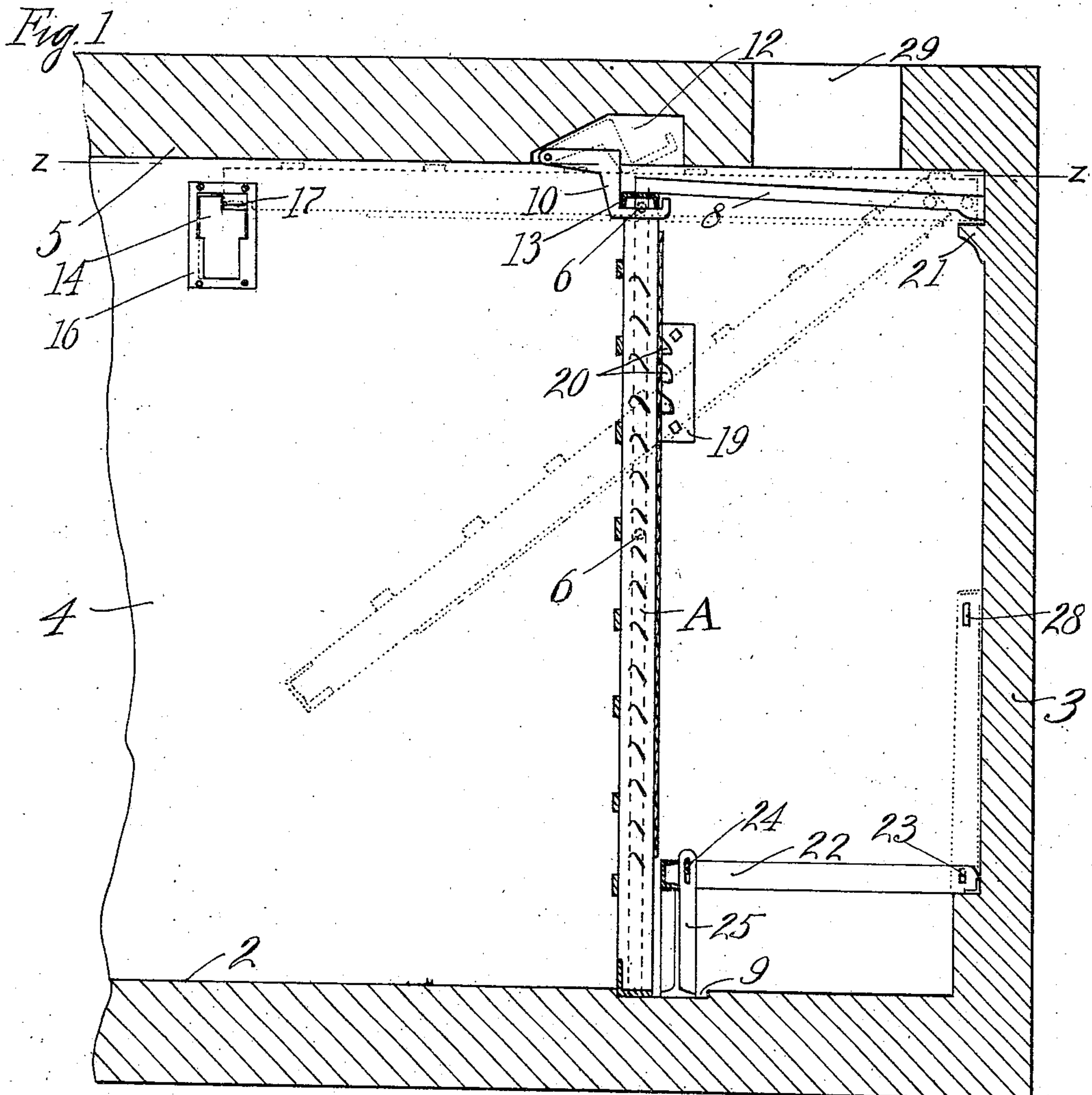


956,472.

Patented Apr. 26, 1910.

3 SHEETS—SHEET 1.



Witnesses,
George Yoetker
H. Smith

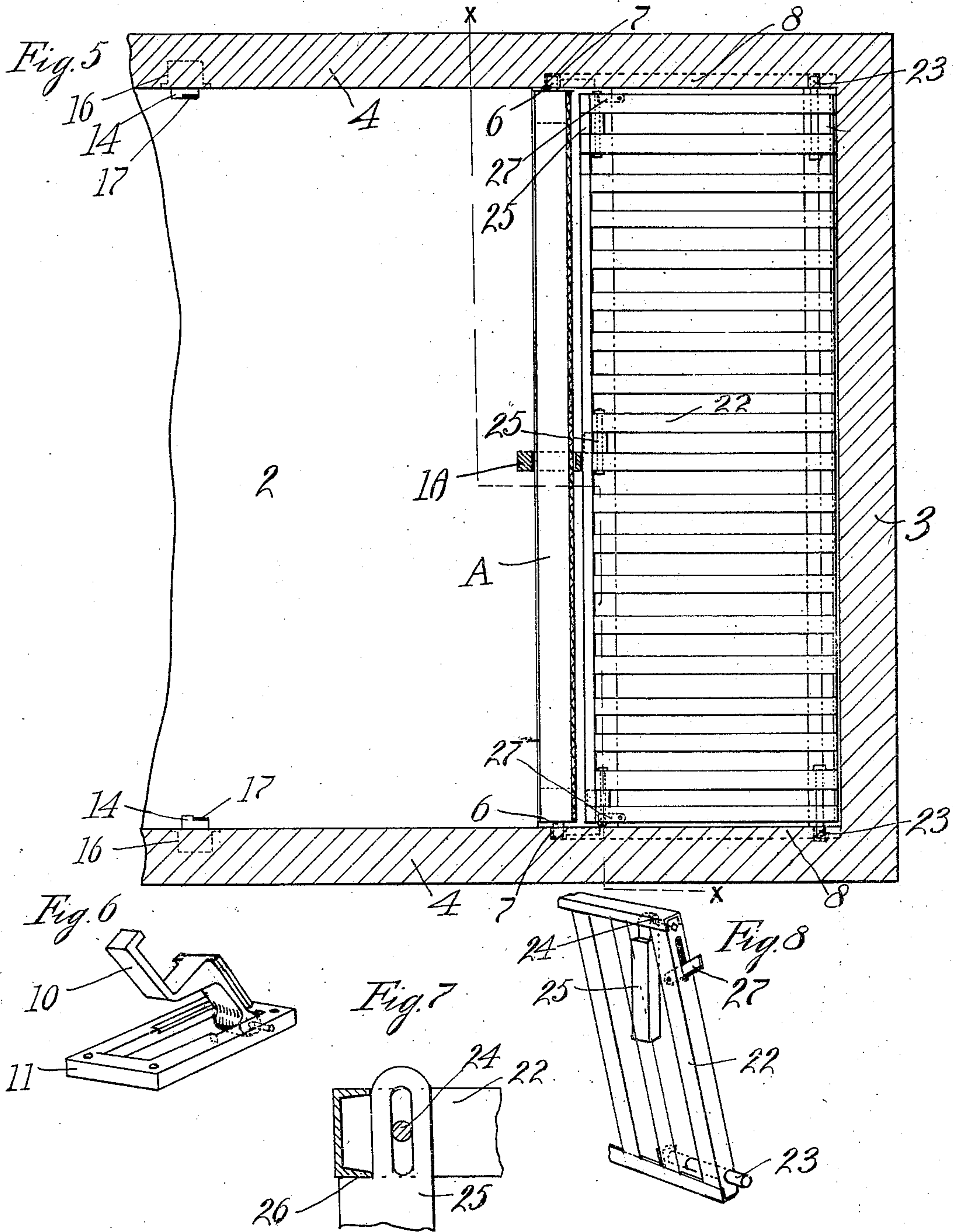
Inventor,
Gebhard C. Bohn
by *Arthur Johnson*
his Attorneys.

G. C. BOHN.
REFRIGERATOR CAR.
APPLICATION FILED MAY 14, 1909.

956,472.

Patented Apr. 26, 1910.

3 SHEETS—SHEET 2.



Witnesses,
George Voelker
J. Smith

Inventor,
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G. C. BOHN.

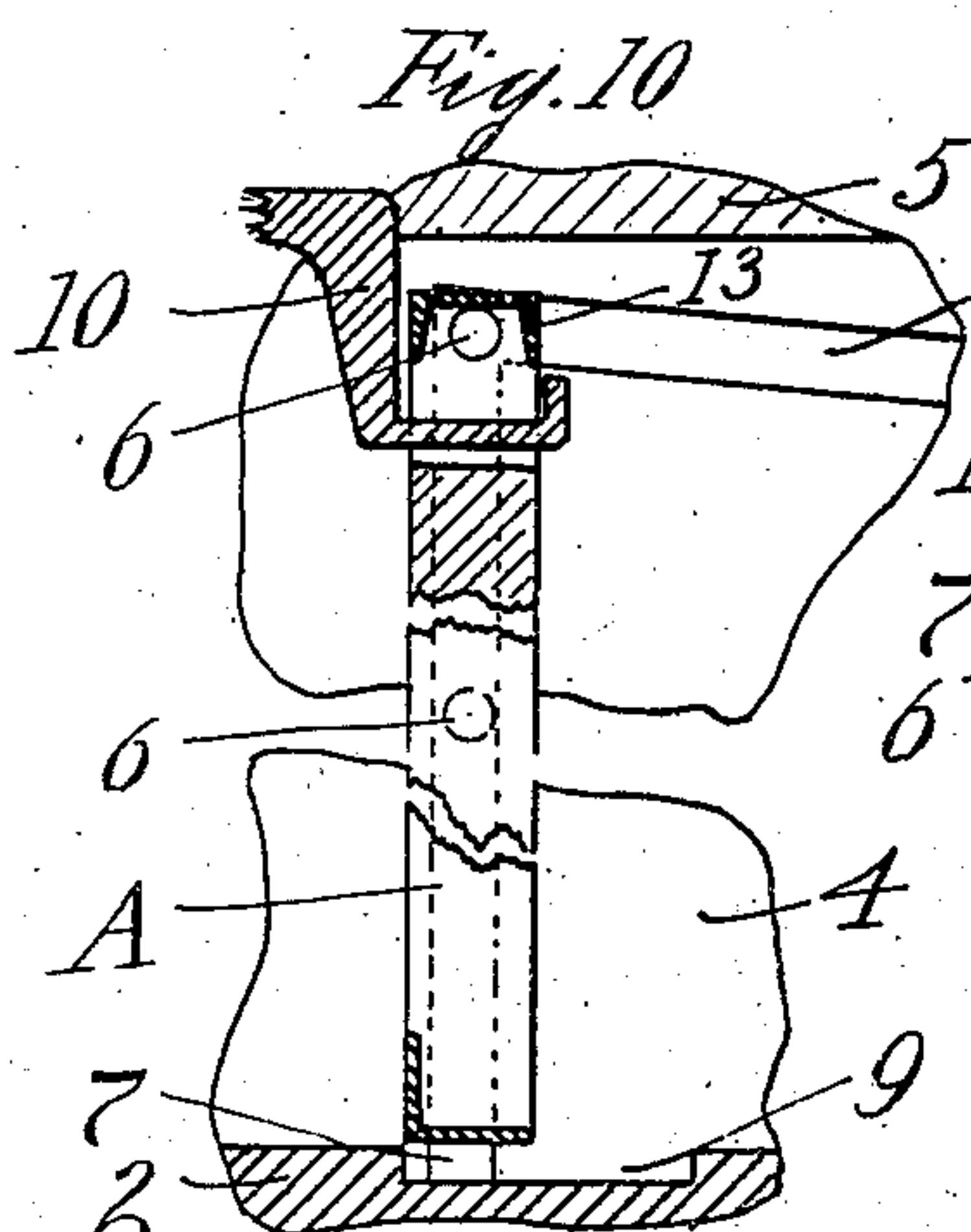
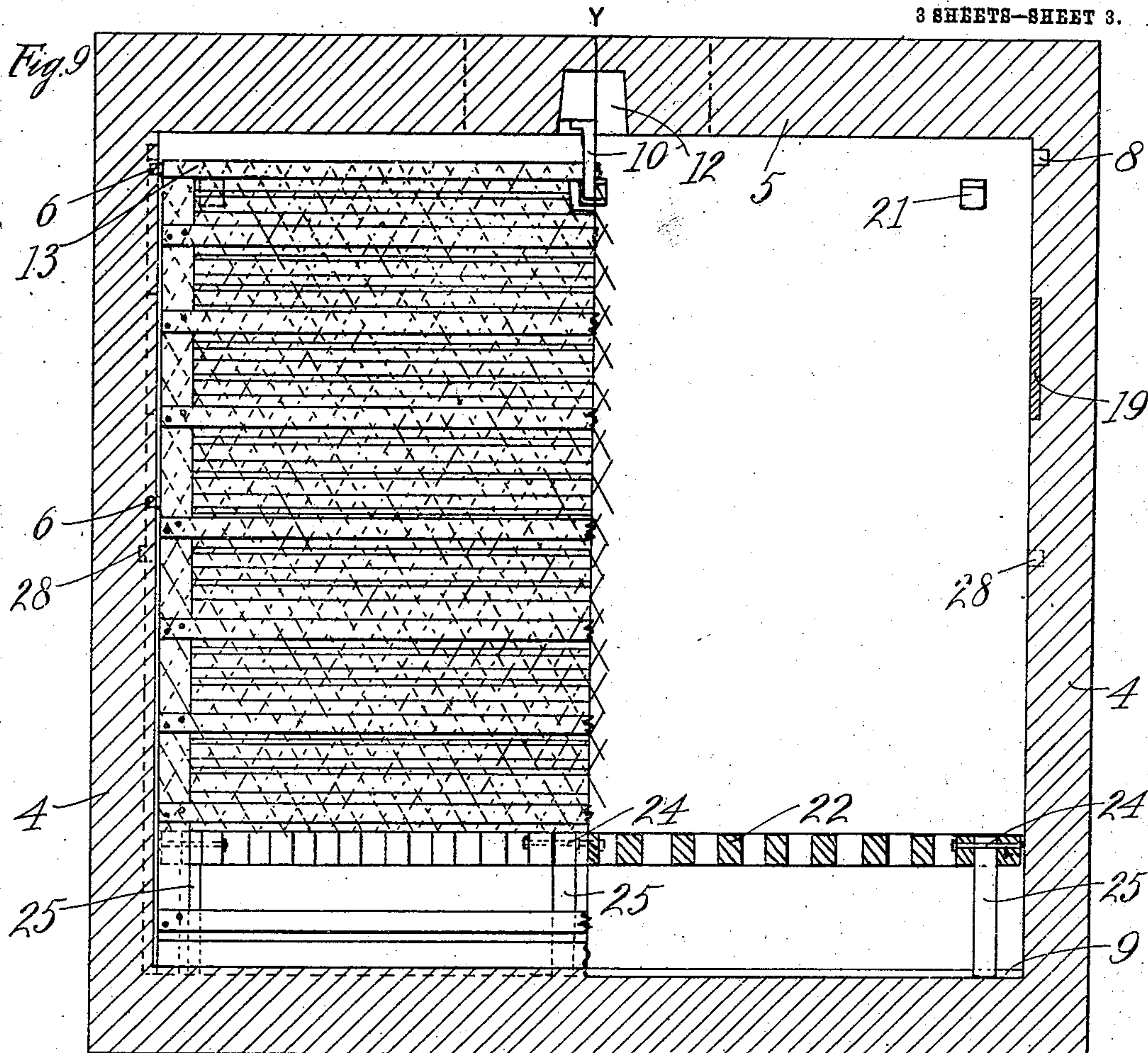
REFRIGERATOR CAR.

APPLICATION FILED MAY 14, 1909.

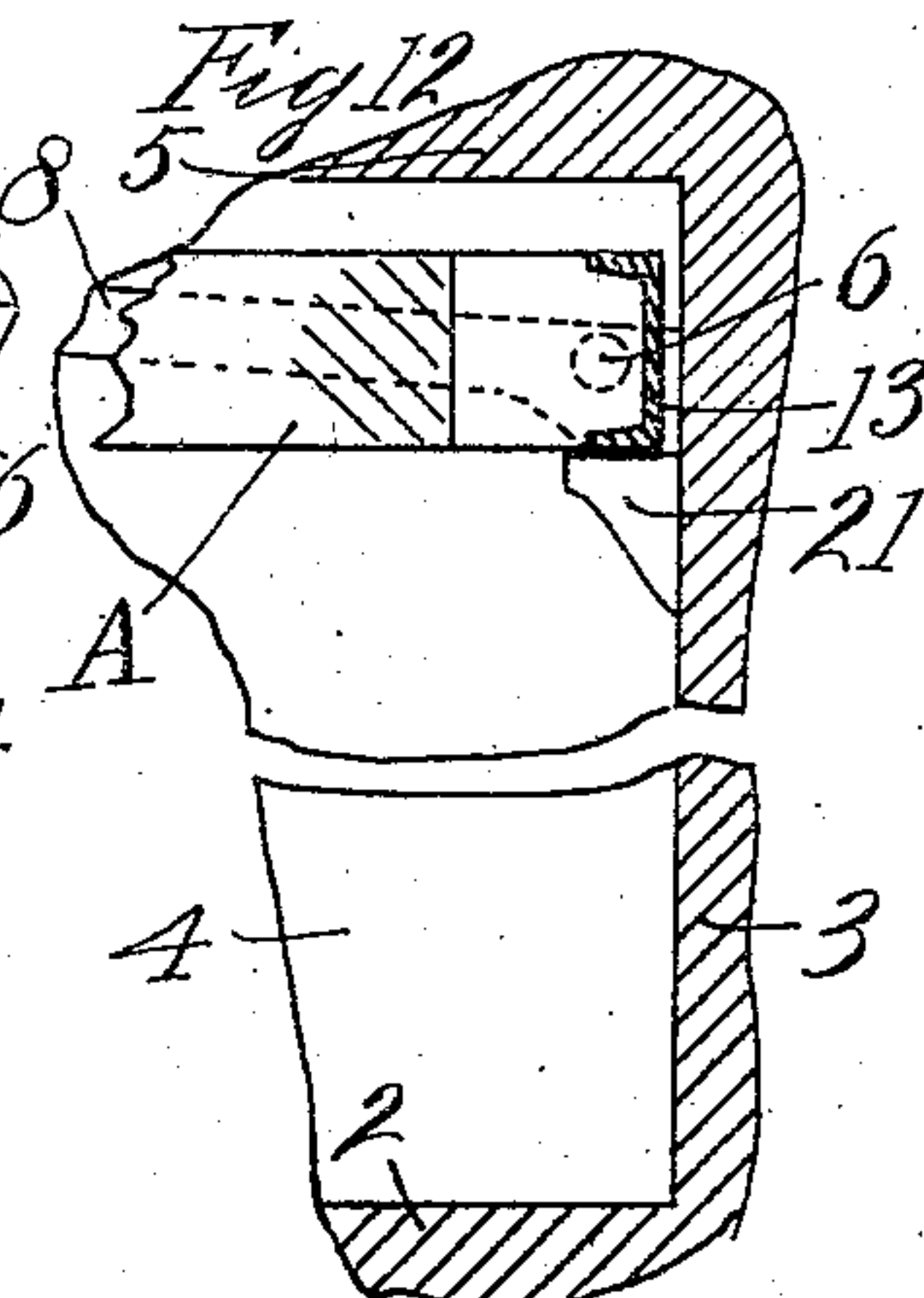
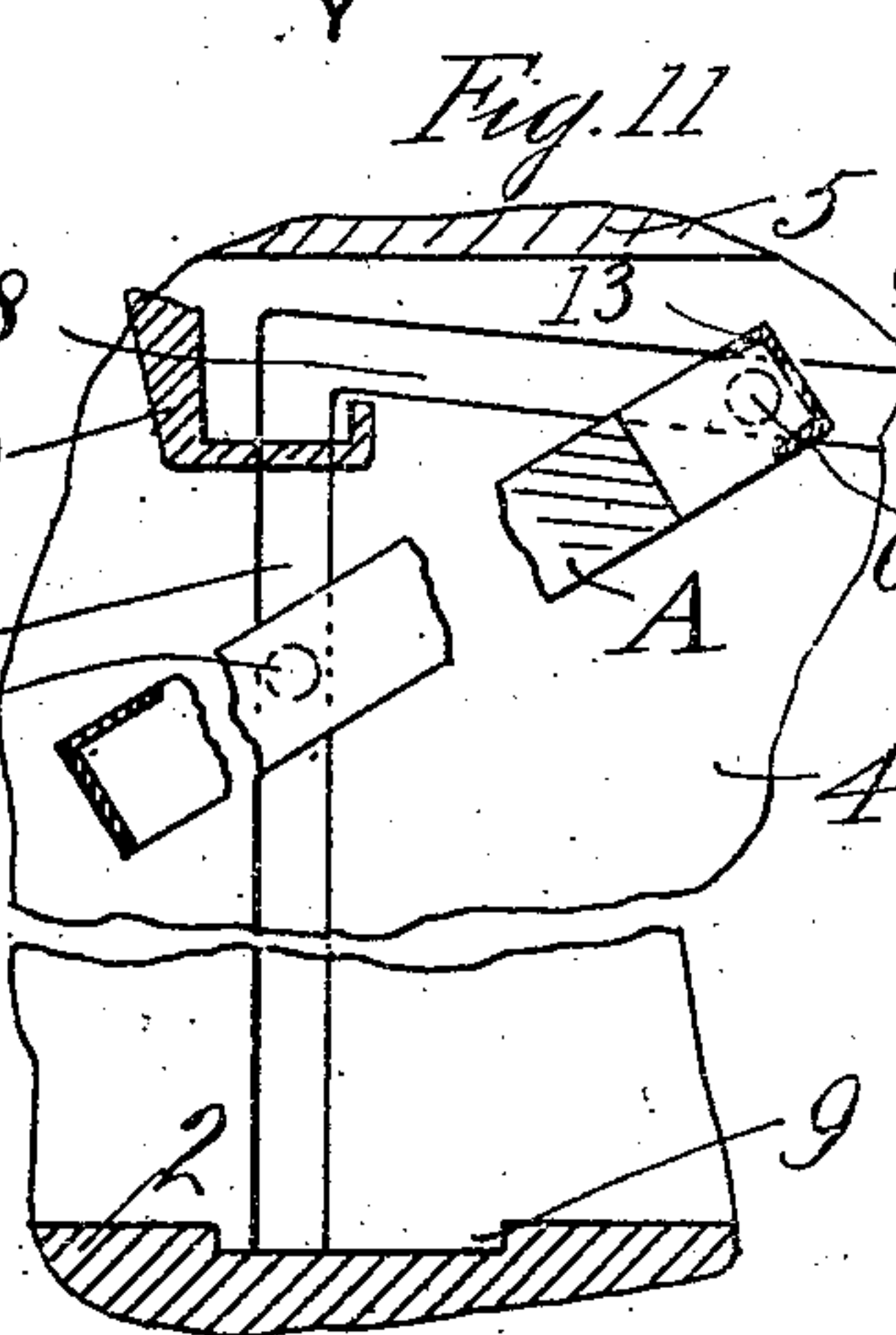
956,472.

Patented Apr. 26, 1910.

3 SHEETS—SHEET 3.



Witnesses,
George Voelker
Id Smith



Inventor,
Gebhard C. Bohn
by *Arthur J. Bohn*
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UNITED STATES PATENT OFFICE.

GEBHARD C. BOHN, OF ST. PAUL, MINNESOTA.

REFRIGERATOR-CAR.

956,472.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed May 14, 1909. Serial No. 495,972.

To all whom it may concern:

Be it known that I, GEBHARD C. BOHN, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Refrigerator-Cars, of which the following is a specification.

My invention relates to improvements in refrigerator cars of the type in which the ice containers are in the ends of the cars, its object being to provide improved construction of removable ice chamber walls which can be displaced to make the entire length of the car available for carrying freight.

In the accompanying drawings forming part of this application, Figure 1 is a vertical longitudinal section of the end of a car embodying my invention taken on line $y-y$ of Fig. 9; Figs. 2, 3 and 4 are detail views of a device for supporting the movable ice chamber wall in raised position; Fig. 5 is a horizontal section on line $z-z$ of Fig. 1; Fig. 6 is a detail of a hook for holding the upper end of the movable ice chamber wall in normal position; Fig. 7 is a detail of a portion of the bottom grating of the ice chamber; Fig. 8 is a detail view of the bottom grating of the ice chamber illustrating the means for supporting the same in raised position; Fig. 9 is a vertical section on line $x-x$ of Fig. 5; Figs. 10, 11, and 12 are detail views illustrating the mechanism allowing the movable refrigerator wall to be raised to a position underneath the roof of the car.

In the drawings 2 represents the floor, 3 the end wall, 4 the side walls, and 5 the roof of an ordinary refrigerator car. Extending across the end of the car and having slidable support by means of pivot pins 6 normally projecting into the vertical guideways or grooves 7 in the side walls of the car, is the bulkhead or partition A of any desired open work or perforated construction. Extending from the upper ends of the guideways 7 horizontally and downwardly toward the adjacent end wall 3 are guideways or grooves 8. The lower end of the bulkhead A normally rests in a groove 9 in the car floor.

In order to cooperate with the pivots and save the upper end of the bulkhead from being forced outwardly by the ice in the ice chamber I provide the downwardly ex-

tending abutment hook 10 hinged in a plate 11 supported in an opening 12 in the car roof. As shown in Fig. 1 this hook normally extends through the upper open work end of the bulkhead immediately below the top of the cross bar 13, so that the cross bar will abut against the inner wall of the hook in being forced outwardly by the ice in the ice chamber.

For the purpose of supporting the bulkhead in raised horizontal position underneath the roof of the car, I provide the latches 14 having swivel support 15 in metal casings 16 in the side walls of the car underneath the roof. The latches 14 are so weighted as to each normally extend outward through the opening in the casing 16, but will swing inward into the casing under the influence of upward or inward pressure. Consequently as the bulkhead is lifted into dotted line position shown in Fig. 1 it will, in passing the latches, turn the latches inwardly out of the way, the latches thereafter dropping outwardly into position to form rests for the end of the bulkhead. The latches are each preferably formed with a rib 17 to fit into a corresponding groove 18 in the bulkhead to more securely lock the bulkhead in supported position.

In carrying the bulkhead to supported position it will first be lifted out of the groove 9 and as soon as the upper pivots 6 reach the horizontal guideways 8 the bulkhead may be swung outwardly, the upper pivots 6 traveling rearwardly in the guideways 8 and the lower pivots traveling upwardly in the vertical guideways until the bulkhead is carried to extreme raised position past the latches 14. It will be evident that as the bulkhead is raised and swung upwardly it will be freed from the hook 10, and as the bulkhead is carried to extreme raised position it will force the hook on its pivotal support into the opening 12 and out of the way. By means of this arrangement the upper edge of the bulkhead is guided horizontally, and a point on each vertical edge thereof intermediate the top and bottom edge is guided vertically, thus causing the bulkhead to recede into its horizontal position. It will be noted that when the bulkhead has receded into its horizontal position its lies directly below the ice aperture or opening 29, and since the bulkhead is of open work construction it serves as a ventilating closure through which said opening 29 communi-

cates with the interior of the car for ventilating purposes.

In order to form an intermediate support for the bulkhead I provide the plates 19 secured to the side walls of the car inside the ice chamber and having notches 20 opening into the vertical guideways. Thus as the bulkhead is raised to a point where the lower pivots are opposite the plates 19 it may be moved slightly rearwardly to bring the pivots into the corresponding notches 20 and thus support the bulkhead in an intermediate position of rest as indicated in dotted lines in Fig. 1. This feature, while allowing the bulkhead to be supported in intermediate position to gain access to the interior of the ice chamber or to relieve the labor of raising, also constitutes a feature of safety in case of accidental dropping of the raised bulkhead since in case of accidental dropping the bulkhead will be stopped in intermediate position and prevented from dropping to the floor. Suitable brackets 21 are shown carried by the end wall of the car to form rests for the upper end of the bulkhead when in raised position, and thus relieve the strain on the pivots. The grating 22 forming the bottom of the ice chamber has hinge connection 23 with the end wall, and has slotted pivotal connection 24 with the extension 25 adapted to turn downwardly to rest upon the car floor and form a supporting leg for the grating. The leg extension 25 is formed with a shoulder 26 upon which is adapted to rest the outer end of the grating 22 as shown in Fig. 7. Pivotaly secured in the ends of the grating are fingers 27 adapted to extend into openings 28 in the side walls of the car to hold the grating in suspended position.

Among the advantages of my construction is the covering of the ice opening 29 by the bulkhead when the same is supported in raised position and the consequent securing of an open work protection for the ice opening preventing unauthorized entering therethrough and at the same time permitting of ventilation.

I claim as my invention:

1. A refrigerator car having an icing, ventilating opening in its roof, in combination with a perforated or open work bulkhead suitably attached to the inner parts of the car and both vertically and horizontally movable therein, said bulkhead when vertically positioned extending substantially from floor to roof to form one wall of an ice chamber communicating with said opening and when in its raised position constituting a perforated closure for said opening, substantially as described.

2. A refrigerator car having an icing, ventilating opening in its roof near one end, in combination with a perforated bulkhead movably attached to and supported by the

side walls of the car and both vertically and horizontally movable in the car, said bulkhead when vertically positioned extending substantially from the floor to the roof of the car and forming the inner wall of an ice chamber beneath said opening and when in its raised position, serving as the closure for said opening in the roof of the car, substantially as described.

3. A refrigerator car having an icing, ventilating opening in its roof, in combination with a perforated bulkhead, which is bodily movable in both vertical and horizontal directions within the car and which serves in one of its positions to complete an ice chamber beneath said opening and in the other of its positions to close said opening, substantially as described.

4. A refrigerator car having an icing, ventilating opening in its roof, in combination with a perforated bulkhead movably attached to and supported within the car adjacent to said opening, said bulkhead being bodily movable in both horizontal and vertical directions within the car and being adapted to assume vertical and horizontal positions alternately and to serve as one wall of an ice chamber when in one position and as the closure of said opening when in its other position, substantially as described.

5. A refrigerator car having an icing, ventilating opening in its roof, in combination with a perforated bulkhead of dimensions substantially corresponding to the vertical cross-section of the car, suitable attachments for supporting said bulkhead in vertical and horizontal positions, said bulkhead and attachments being so formed as to permit said bulkhead to swing bodily vertically and horizontally from a vertical position, in which it serves as an ice chamber wall, to a horizontal position, in which it serves as the closure of said opening, and vice versa, substantially as described.

6. A refrigerator car having an icing, ventilating opening in its roof near the end of the car, in combination with an open work bulkhead which, when vertically positioned, extends substantially from floor to roof of the car, bulkhead attachments for supporting said bulkhead in both vertical and horizontal positions within the car and for adapting the bulkhead to both horizontal and vertical movement beneath and adjacent to said roof opening, said bulkhead when in vertical position forming one wall of an ice chamber in the end of the car, and when in its horizontal position forming an open work closure for and beneath said roof opening, substantially as described.

7. A refrigerator car having an icing, ventilating opening in its roof, in combination with an ice floor in the car beneath said opening, a perforated bulkhead extending

substantially from said ice floor to the roof of the car, said bulkhead being arranged to swing toward the center of the car and to be horizontally movable toward the end of the car, whereby said bulkhead is adapted to serve as the closure of said opening when raised and positioned against the car roof, substantially as described.

8. In a refrigerator car the combination with a perforated bulkhead normally arranged in a vertical transverse position therein and adapted to complete an ice space or chamber therein, attachments through the medium of which said bulkhead is normally supported in said vertical position, other attachments for supporting said bulkhead in horizontal position beneath the roof of the car, said bulkhead being adapted to swing from one position to the other and said attachments being constructed to cause the lower end of the bulkhead to move away from the ice space and the upper end thereof to move into the ice space, when said bulkhead is raised, substantially as described.

9. A refrigerator car having an icing, ventilating opening at its end, in combination with a perforated bulkhead normally arranged in a vertical transverse position in the car and adapted to form the inner wall of an ice chamber at the end of the car, substantially right-angled guides comprising horizontal and vertical portions adapted to guide said bulkhead vertically and horizontally to a position beneath the car roof and below said opening, such movement of the bulkhead being upward and toward the end of the car, substantially as described.

10. A refrigerator car having an icing, ventilating opening at its end, in combination with a perforated bulkhead normally arranged in a vertical transverse position in the car and adapted to form the inner wall of an ice chamber at the end of the car, substantially right-angled guides comprising horizontal and vertical portions for guiding the bulkhead, said bulkhead being vertically and horizontally movable along said guides to a position beneath the car roof, such movement of the bulkhead being upward and toward the end of the car, and holding and securing devices for securing the lower end of the bulkhead in two positions, substantially as described.

11. A refrigerator car having an icing, ventilating opening at its end, in combination with a perforated bulkhead normally disposed in a vertical transverse position in the car and adapted to form the inner wall of an ice chamber at the end of the car, substantially right angled guides comprising horizontal and vertical portions respectively engaged with the top of the bulkhead and intermediate points on the side edges thereof, said bulkhead being vertically and horizontally movable to a position beneath the

car roof, and in front of said opening, such movement of the bulkhead being upward and toward the end of the car, and means for securing the bulkhead in vertical and horizontal positions, substantially as described.

12. A refrigerator car having a bulkhead arranged vertically and normally dividing said car into an ice chamber and a freight compartment, an icing, ventilating opening communicating with said ice chamber through the roof thereof, guideways adapted to guide said bulkhead into a horizontal position to close said opening and to combine said chamber and compartment into a single compartment and means for retaining said bulkhead in its horizontal position, substantially as described.

13. In a refrigerator car the combination with a movable bulkhead normally supported transversely in said car adjacent one end thereof to divide said car into two compartments, horizontal and vertical guides for said bulkhead adapted to cause said door to recede into a horizontal position, an icing and ventilating aperture communicating with one of said compartments and locking means adapted to maintain said bulkhead in its horizontal position whereby when said bulkhead is in its horizontal position said aperture will be closed and the two compartments will be combined into a single compartment, substantially as described.

14. A refrigerator car provided with a movable bulkhead adjacent one end normally dividing said car into two compartments, said bulkhead being substantially as wide as the internal width of said car and as high as the internal height of said car, means for guiding the upper edge of said bulkhead horizontally, means for guiding a point intermediate the horizontal edges of said bulkhead vertically, whereby when said bulkhead is moved it will recede to a horizontal position, an icing, ventilating opening communicating with one of said compartments adapted to be closed by said bulkhead when said bulkhead is in its horizontal position, locking means for supporting the lower edge of said bulkhead in said horizontal position, said locking means being normally in the path of movement of said bulkhead but adapted to be moved to an effective position by said bulkhead until said bulkhead reaches its horizontal position and then to return to its locking position to lock said bulkhead in said position.

15. A refrigerator car provided with a horizontal bulkhead normally arranged transversely of said car in a vertical position to separate said car into an ice chamber and a freight compartment, but adapted to be moved into substantially parallel relation to the roof of said car, of a movable abutment for the upper edge of said bulk-

head, adapted when said bulkhead is in its normal position to prevent the ice in said ice chamber, from forcing said bulkhead outwardly, but adapted when said bulkhead is moved into parallel relation to the roof of said car to be moved thereby into an inoperative position, substantially as described.

16. A refrigerator car having an icing ventilating opening in its roof, in combination with an openwork bulkhead adapted to normally divide said car into two compartments but adapted to recede into a position to combine said compartments into a single compartment and close said icing opening, locking means for retaining said bulkhead in its last mentioned position, said locking means comprising a latch adapted to be automatically operated by said bulkhead and to become effective after said bulkhead has reached its said position, substantially as described.

17. In a refrigerator car the combination of a car body having an icing ventilating opening in its roof, with a bulkhead normally arranged in a vertically transverse position to divide the car body into an ice chamber and a freight compartment but adapted to be swung into a horizontal position substantially parallel to the roof of said car and thus close said opening, horizontal and vertical guideways for guiding said bulkhead into said horizontal position, shoulders substantially at the end of said horizontal guides adapted to support the upper edge of said bulkhead against the end of the car and automatic latches adapted to support the lower edge of said bulkhead to retain said bulkhead in its horizontal position.

18. A refrigerator car having an icing, ventilating opening in its roof, in combination with a bulkhead normally dividing said car into an ice chamber and a freight compartment, horizontal guideways in the side walls of said car for guiding the upper edge of said bulkhead into a position in proximity to the end wall of said car, vertical guides in the side walls of said car for guiding a point intermediate the ends of said bulkhead to a position adjacent the roof of the car, whereby said bulkhead may be moved to a position beneath said opening at substantially right angles to its normal position, and means adjacent said vertical guides for retaining said bulkhead in a position intermediate said right angled positions, substantially as described.

19. A refrigerator car having an icing, ventilating opening in its roof, in combination with a movable openwork bulkhead normally arranged in a vertical position to divide said car into an ice chamber communicating with said opening and a freight compartment, but arranged to recede into a

substantially horizontal position adjacent the roof of said car beneath said opening and whereby said chamber and compartment are combined into a single compartment horizontal guide grooves in the side walls of said cars and pins carried by said bulkhead adjacent the upper edge thereof adapted to move in said guides, vertical guide grooves in the side walls of said car and pins cooperating therewith arranged on the vertical sides of said bulkhead and adapted to vertically guide a point intermediate the horizontal edges of said bulkhead, whereby said bulkhead may be guided into its horizontal position, and means adjacent said vertical guides for retaining said bulkhead in an intermediate position, substantially as described.

20. A refrigerator car having an icing, ventilating opening in its roof, in combination with a movable openwork bulkhead normally arranged in a vertical position to divide said car into an ice chamber and a freight compartment but arranged to be moved to a substantially horizontal position adjacent the roof of said car to close said opening and combine said chamber and compartment into a single compartment, horizontal guide grooves in the side walls of said cars and pins carried by said bulkhead adjacent the upper edge thereof adapted to move in said guides, vertical guide grooves in the side walls of said car and pins cooperating therewith carried on the vertical edges of said bulkhead and adapted to vertically guide a point intermediate the horizontal edges of said bulkhead, whereby said bulkhead may be guided into its horizontal position, and notches arranged along said vertical guides and adapted to be engaged by the pins on the vertical edges of said bulkhead to retain said bulkhead in a position intermediate its vertical and horizontal positions, substantially as described.

21. A refrigerator car having an ice chamber and a freight compartment, a vertical bulkhead normally separating said chamber and compartment but arranged to be swung into a horizontal position, means for locking said bulkhead in its horizontal position, a movable floor for said ice chamber independent of said bulkhead and adapted to be swung into a vertical position adjacent the end wall of said car, said floor being hinged at one edge to the end of the car and provided with supports carried by its other edge, substantially as described.

22. A refrigerator car provided with an ice chamber and a freight compartment, a hinged floor for said ice chamber normally lying in a horizontal position, supports carried by said floor for maintaining it in a horizontal position, and a latch carried by the end wall of the car adapted to lock said floor in a position parallel to said end wall.

23. In a refrigerator car the combination
with a car body, of a bulkhead arranged nor-
mally in a vertical transverse position to
divide said car into an ice chamber and a
5 freight compartment, but adapted to be
moved into a horizontal position adjacent
the roof of the car, a hinged abutment hook
depending from the roof of the car and
adapted to prevent the upper end of said bulk-
10 head against being forced outwardly by the

ice in said chamber, and a receptacle for said
abutment hook into which said hook is
moved by the bulkhead when said bulkhead
is moved to its horizontal position.

In testimony whereof I affix my signature 15
in presence of two witnesses.

GEBHARD C. BOHN.

Witnesses:

H. S. JOHNSON,
H. SMITH.