(No Model.)

3 Sheets—Sheet 1.

W. CLINE.

VENTILATED CAR.

No. 555,928. Patented Mar. 10, 1896.

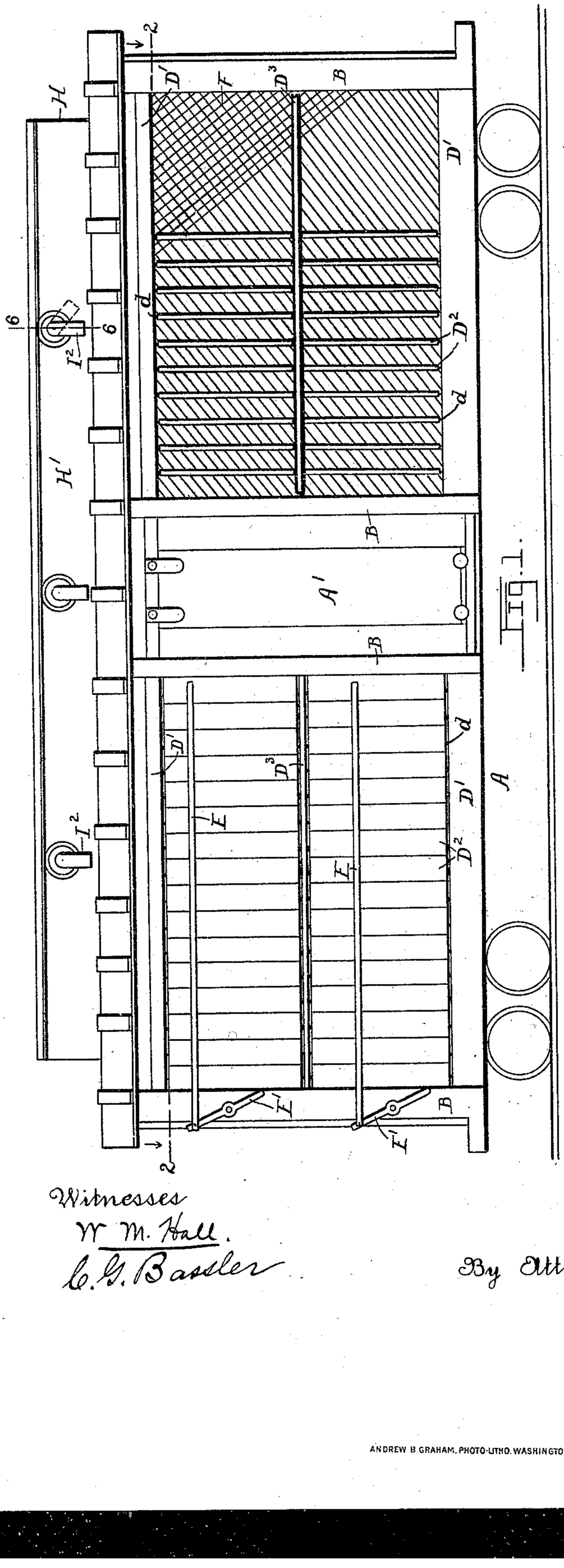

Fig. 1.

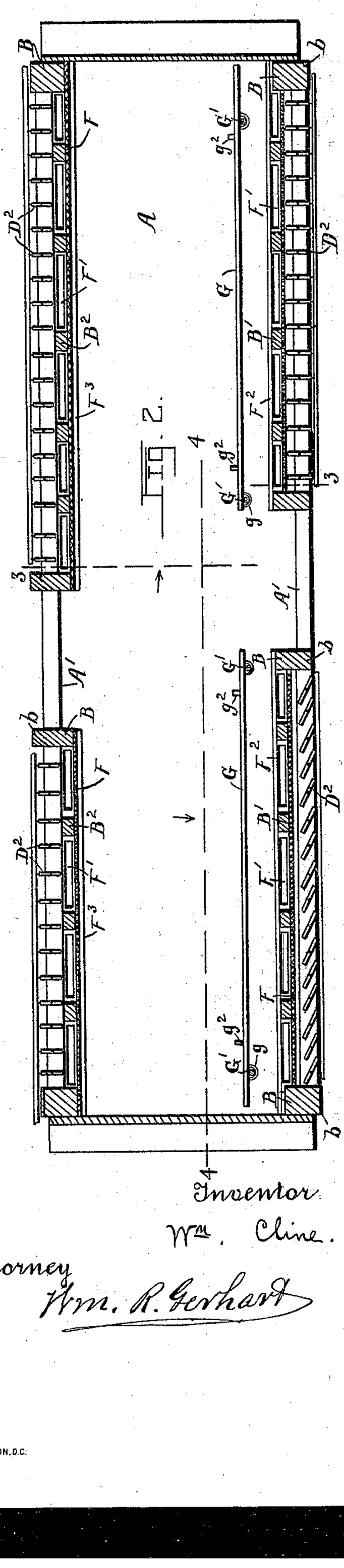

Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

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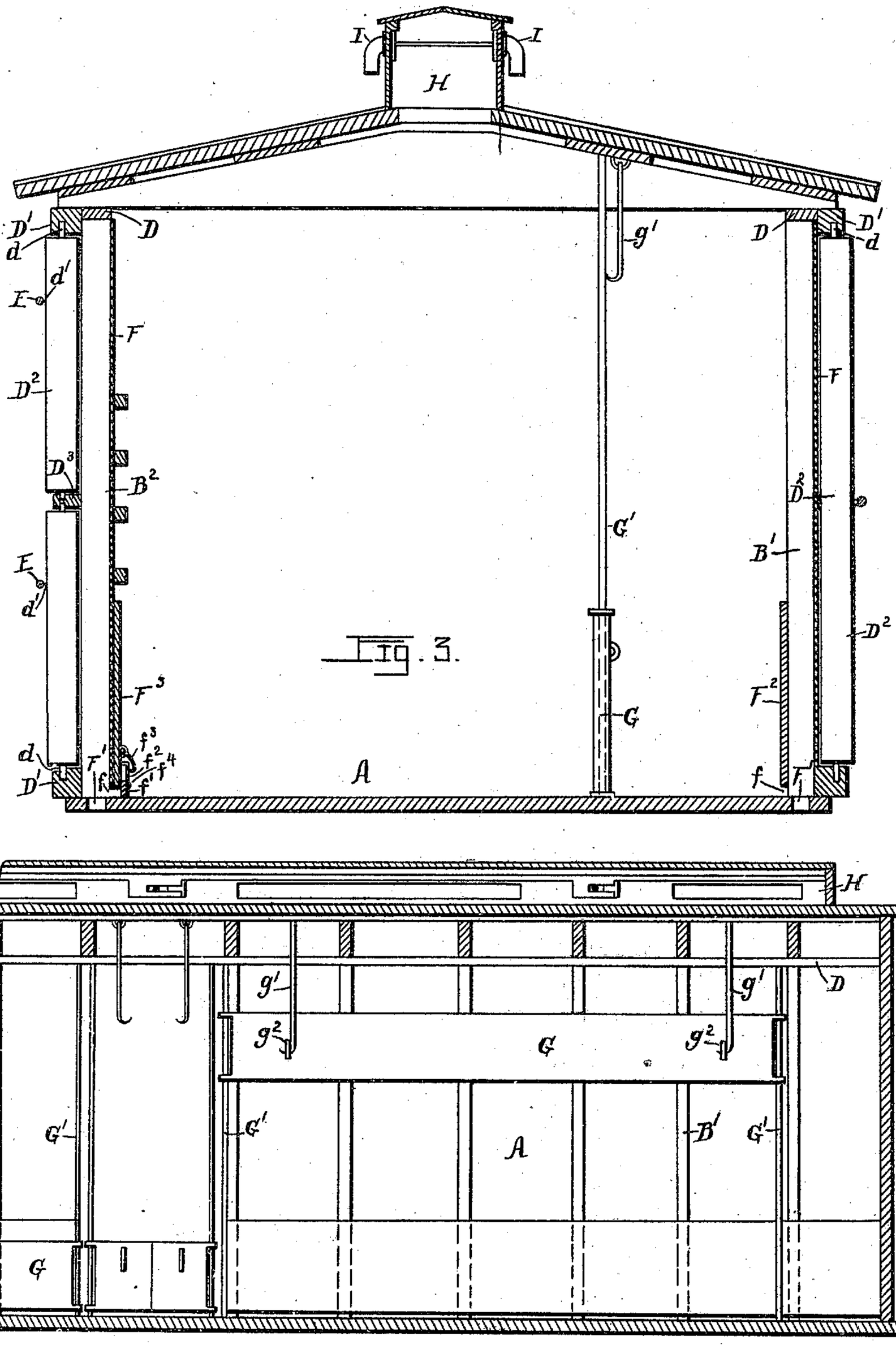

Fig. 3.

Fig. 4.

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(No Model.) 3 Sheets—Sheet 3.

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VENTILATED CAR.

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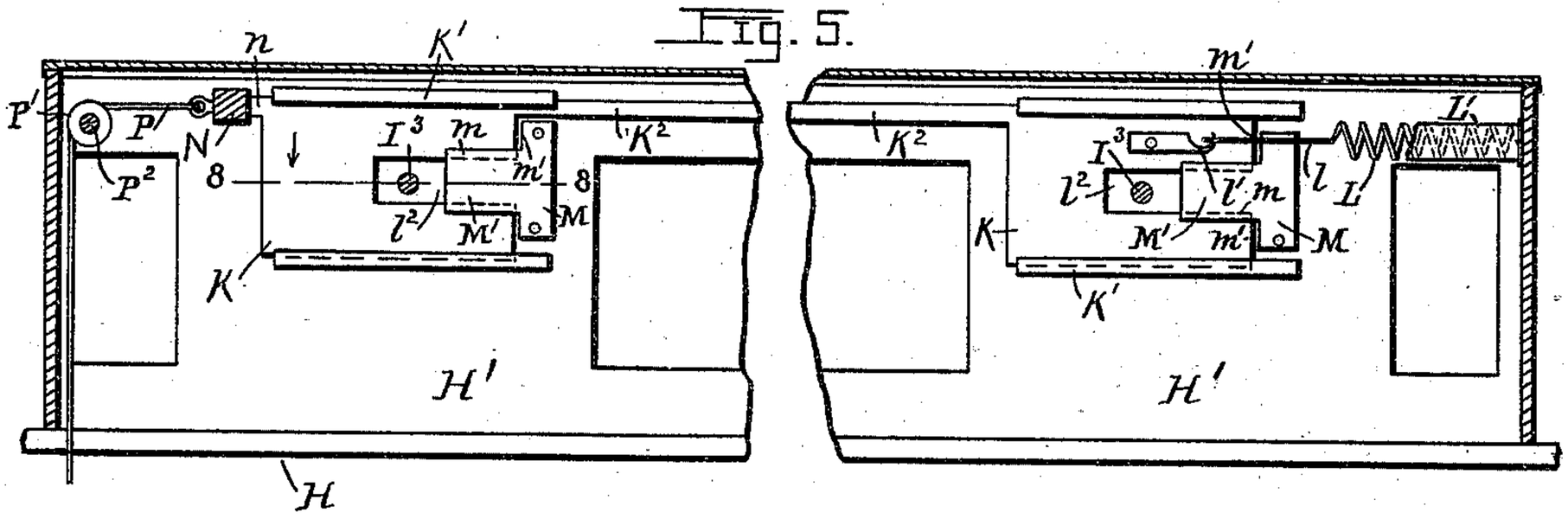
Fig. 5.



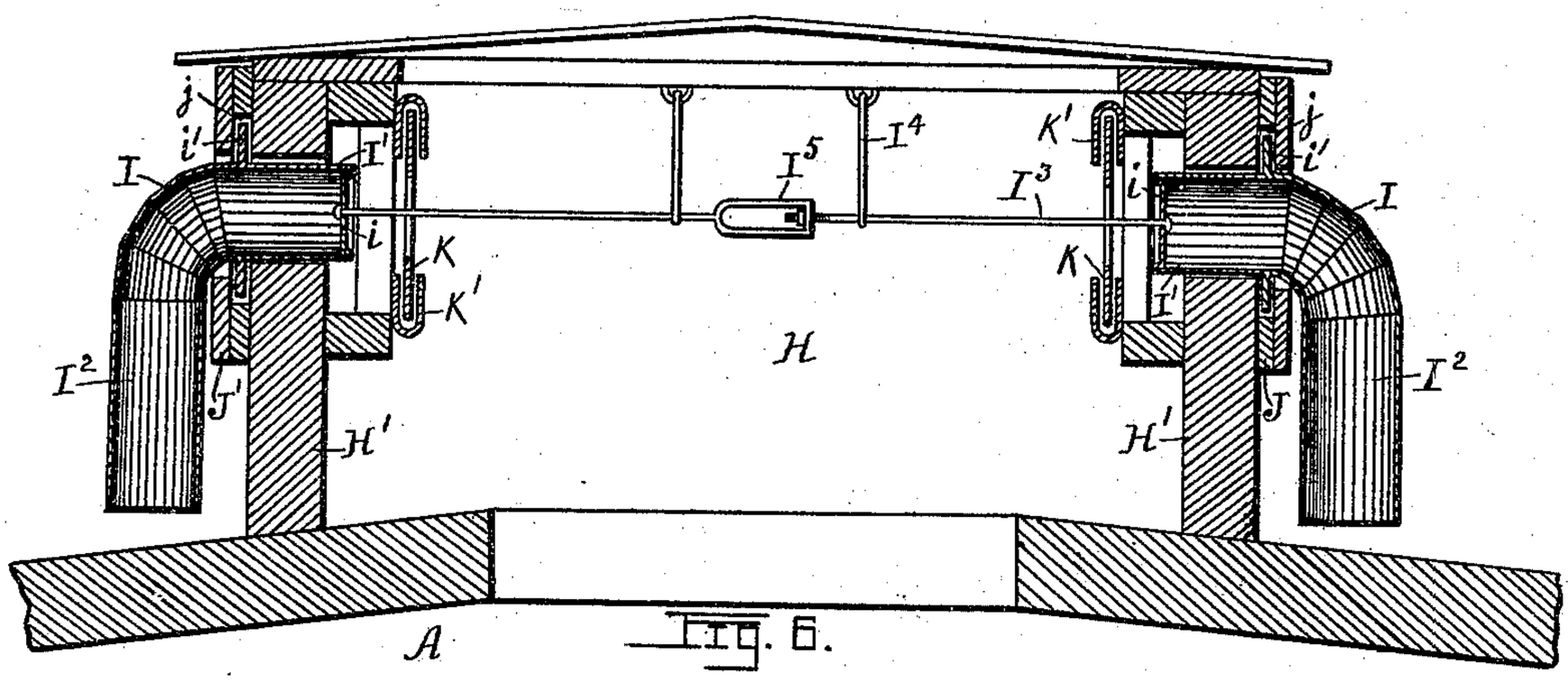


Fig. 6.

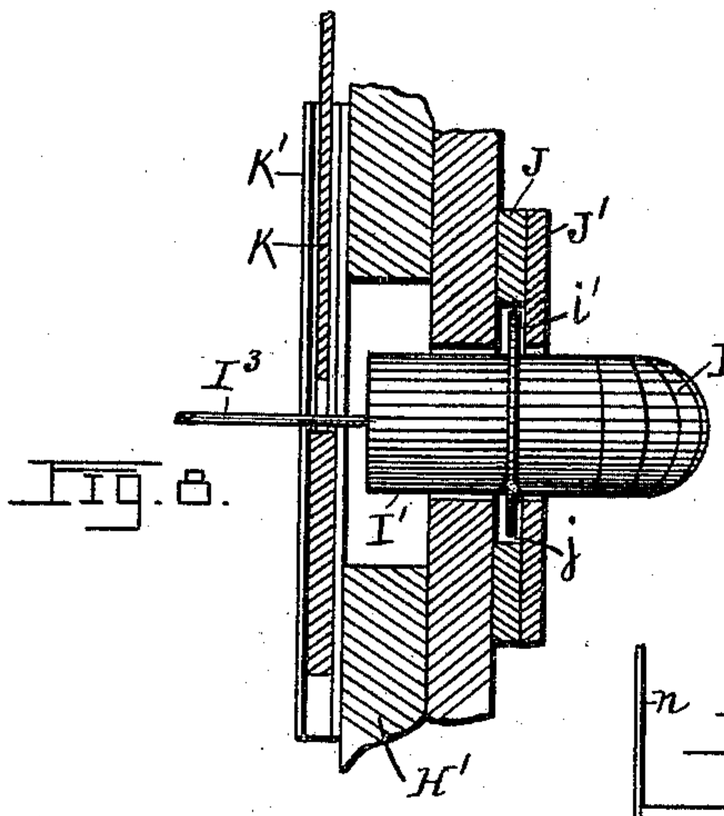


Fig. 8.

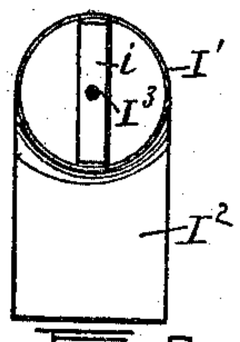


Fig. 9.

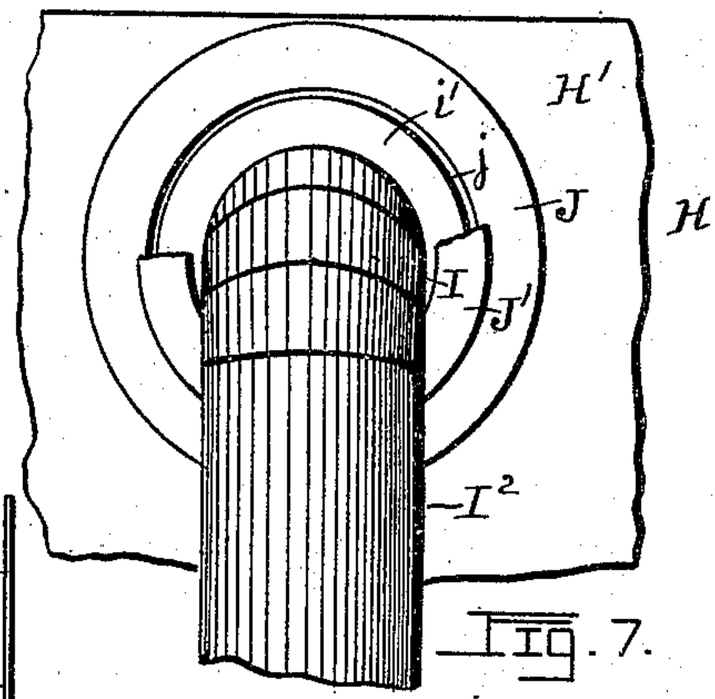


Fig. 7.

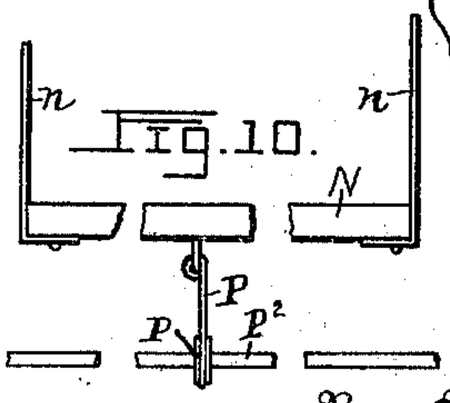


Fig. 10.

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UNITED STATES PATENT OFFICE.

WILLIAM CLINE, OF LANCASTER, PENNSYLVANIA, ASSIGNOR TO DANIEL D. GOOD AND SAMUEL B. BITZER, OF SAME PLACE.

VENTILATED CAR.

SPECIFICATION forming part of Letters Patent No. 555,928, dated March 10, 1896.

Application filed March 7, 1895. Serial No. 540,820. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CLINE, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain Improvements in Car Ventilation, of which the following is a specification.

This invention relates to improvements in the ventilation of railway-cars, and is particularly applicable to cars adapted to the transportation of horses and other classes of more valuable stock; and the object of my improvements is to afford proper ventilation to a car at all times, and, at the same time, to protect the stock against undue draft and inclemency of the weather.

The invention consists in the construction and combination of the various parts, as hereinafter fully described, and then pointed out in the claims.

In the accompanying drawings, forming a part of this invention, Figure 1 is a side elevation of a car embodying my invention, the slats on one side of the car being shown in an open and those on the other side in a closed position. Fig. 2 is a horizontal section on the broken line 2 2 of Fig. 1. Fig. 3 is a vertical section on broken line 3 3 of Fig. 2, and Fig. 4 a longitudinal vertical section on broken line 4 4 of Fig. 2. Fig. 5 is an enlarged longitudinal vertical section of the ventilator on the top of the car, and Fig. 6 a similar transverse section on broken line 6 6 of Fig. 1. Fig. 7 is an enlarged outside elevation of one of the ventilating-flues, parts being cut away to show its connection with the car. Fig. 8 is a similar horizontal section on broken line 8 8 of Fig. 5; Fig. 9, an inner end view of one of the ventilating-flues, and Fig. 10 a top view of the transverse bar through which the valves are opened.

Similar letters indicate like parts throughout the several views.

The sides of the car are open between the end posts and the door-posts, as shown.

Referring to the details of the drawings, A indicates the body of the car; A′, the side doors; B, the end posts of the frame and those adjacent to the side doors, which posts extend outward beyond the intermediate posts B′ B^2, as seen at *b*, Fig. 2, and D the cap pieces or plates resting on posts B B′.

D′ D′ are stringers connecting the outwardly-extending portion of posts B, and D^2 slats having in their ends centrally-located pins *d*, which are pivoted in the opposite faces of stringers D′. The length of these slats may be of the full height of the car, as seen on the right of Fig. 1, or they may be divided centrally into two rows and have their inner ends pivoted in an intermediate stringer D^3, as shown on the left of Fig. 1.

E E are horizontal adjusting-bars, to one of which all the slats of each row thereof are hinged, as at *d*′, Fig. 3, in any well-known manner. These slats lap and fold upon each other when closed, so as to form a closed side for the car.

E′ E′ are levers pivotally connected with adjusting-bars E and adapted to actuate the same.

If preferable, cap pieces or plates D may be of sufficient width to lap the outwardly-extended portions of posts B and take the places of stringers D′. The posts B are extended out beyond the intermediate posts B′ B^2, as before explained, to better support stringers D′ and prevent the contact of slats D^2 with the screens F, to be described.

F F are wire screens, secured to the outside of posts B′ on one side of the car and to the inside of posts B^2 on the other side thereof. The screens secured to posts B′ extend from the upper to the lower stringers, while those secured to posts B^2 extend only from the top stringers to a sheeting secured to the lower ends of said posts. The placing of the screws on the inside of the posts is simply shown as a modification in the construction; but I prefer attaching the screens on the outside of the posts, as is the case with posts B′ in the drawings.

F′ indicates vertical floor-openings between the posts, and F^2 F^3 sheeting or partitions secured to the inner faces of said posts. This sheeting does not extend quite to the floor of the car, but is so located as to leave openings or slots *f* between their lower edges and the floor to permit the sweepings of the car to be pushed under them into the floor-openings F′, and

are high enough to protect the slats or screens outside of them. The floor-openings are also of much importance in ventilating the car, for in very cold weather and during severe and driving rain or snow storms the side openings are intended to be entirely closed and ventilation is then obtained through said floor-openings, through which, by reason of their position, a plentiful supply of fresh air is obtained and rain and snow prevented from entering the car, which would not be prevented were said openings placed in the sides or ends of the car.

G G are partitions, set away from one side of the car and forming with the sheeting mangers for hay or other "long feed."

G′ G′ are rods located between the sheeting and the manger-partitions and adjacent to said partitions, and having their ends secured in the floor and to the top of the car. On one side of the manger-partitions are eyes or staples *g g*, through which rods G′ G′ pass.

When horses are carried in the car the partitions G G rest upon the floor of the car; but when the car is loaded with smaller animals or merchandise said partitions are raised toward the roof of the car and there supported by pendent hooks *g′*, which engage eyes g^2 on the sides of the partitions. The openings or slots between the bottom of sheeting F^3 and the floor of the car are closed by vertically-movable gates *f′*, sliding in ways formed by rods f^2, (seen in Fig. 3,) which gates are secured in an elevated position by hooks f^3, engaging eyes f^4 in the sides of said gates.

The sheeting F^2 F^3 and the partitions G G are of such height as to form the backs and fronts of the mangers, and have tight unbroken surfaces, so that they may prevent any air-draft from passing through them. The screens are placed inside of the vertical slats to prevent hay or other matter, which might work over or under the sheeting, from getting between the slats, whereby the same might be prevented from closing tightly, for, in order that the draft through the car may be under complete control, it is necessary that the slats can at any time be entirely closed upon each other, as well as opened out to their full extent.

Side ventilation of the car is obtained by means of the pivoted slats, which, as will readily be seen, can be set in any direction necessary to conform with the movement of the car and the direction of the wind, the screens preventing the entrance into the car of coal-dust, dirt, &c., when the slats are open without obstructing the passage of air. In cold weather, or during severe storms, when it is necessary to keep the slats tightly closed, ventilation is maintained by means of the floor-openings and a ventilator in the top of the car, the air being prevented from striking directly against the animals by sheeting F^2 F^3. When horses are carried the manger-partitions and the gates *f′* prevent any draft from beneath the sheeting from circulating under them or striking against their breasts, which is an important consideration, as horses, because of the greater care and shelter given them ordinarily, require more protection during transportation than that necessary for other animals carried by rail. These partitions and gates also prevent the air from striking directly under the horses where the slats are open, and thus, while the car is thoroughly ventilated, the draft is prevented from drawing directly under and up around them. For this reason also the floor-openings between the posts are vertical openings, that the currents of air through them may pass the openings beneath the sheeting and be carried up between said sheeting and the outer wall of the car formed by the closed slats.

H indicates a clearstory raised above the top of the car, as is usual.

I I are bent ventilator-flues, having the horizontal sections I′ thereof passing through and revoluble in openings in side walls H′ of the clearstory, the sections I^2 of the flues hanging down outside of walls H′ and being connected with parts I′ by curved sections. Flues I I are disposed in pairs in opposite sides of the clearstory, those of each pair being connected by rods I^3, having their outer ends rigidly secured at the intersection of radial bars *i*, fixed in the ends of sections I′ of the flues, and their inner ends supported by hangers I^4 and connected by swivel-joints I^5 adapted to regulate the tension of the rods, as illustrated in Fig. 6.

i′ i′ are annular flanges formed on flues I outside of the walls of the clearstory and engaging similarly-shaped openings *j* in plates J, secured to the side of the clearstory, and J′ J′ are plates embracing flues I and covering the joints between flanges *i′* and plates J.

K K are valves adapted to slide horizontally in ways K′ over the inner ends of flues I to regulate the draft through the same. K^2 K^2 are bars connecting the valves on each side of the clearstory. The valves K are normally held in position to close flues I by coiled springs L, housed in tubes L′ and connected with the adjacent valves by rods *l*, which engage hooks *l′* on the valves. In each valve there is an open-ended horizontal slot l^2. The jaws formed by each slot embrace one of the rods I^3 and engage grooves *m* in the edges of a tongue M′ on a stop-plate M, the shoulders *m′* of which limit the movement of the valve under the tension of spring L. The valve at the end of each series opposite the spring L is connected with a transverse bar N by a rod *n*, and to the center of bar N is attached a cord P, which passes around a sheave P′, mounted on a rod P^2 near the end of the clearstory, whence it passes down into the car and is properly secured to hold the valves in an open position.

Being hung as they are, the depending ends of flues I are readily turned from the weather by the pressure of the wind, so that dust and

dirt are prevented from being drawn into them. As will be understood, the draft through the flues is regulated by valves K, by means of which the flues can be practically closed. By the construction herein described the ventilation of the car can be completely regulated, and no matter how inclement the weather the animals in the car can at all times be well supplied with fresh air without exposing them to hurtful drafts or to rain or snow.

The ventilator-flues and the parts connected therewith may be placed along the side of the car beneath the roof instead of in a clear-story, but I prefer locating those parts as hereinbefore described.

I do not confine myself to the details of construction herein shown and described, as it is obvious that many changes may be made therein without departing from the principle of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a car having openings in the sides thereof, of side posts having vertically-disposed floor-openings between them, and vertical slats pivoted at their ends in front of the floor-openings and adapted to close the openings in the sides of the car, for the purpose specified.

2. The combination, with a car having openings in the sides thereof, of side posts having floor-openings between them, slats pivoted in front of the floor-openings and adapted to close the openings in the sides of the car, and tight partitions located between said floor-openings and the lower portion of the body of the car, for the purpose specified.

3. The combination, with a car having openings in the sides thereof, of side posts having floor-openings between them, slats pivoted in front of the floor-openings and adapted to close the openings in the sides of the car, and removable tight partitions located between said floor-openings and the lower portion of the body of the car, for the purpose specified.

4. The combination, with a car having openings in the sides thereof, of side posts having floor-openings between them, screens covering the openings in the sides of the car and located outside of the floor-openings, pivoted slats adapted to close the openings in the side of the car and located outside of the screens, and tight partitions between said floor-openings and the lower portions of the body of the car, for the purpose specified.

5. The combination, with a car having openings in the sides thereof, of posts located along said sides and having floor-openings between them, slats pivoted in front of the floor-openings and adapted to close the openings in the sides of the car, tight partitions secured to the lower portions of said posts on the inside thereof, the lower edges of said partitions being raised above the floor of the car, and means for closing the openings between said partitions and the floor of the car, for the purpose specified.

6. The combination, with a car having openings in the sides thereof, of posts located along said sides and having floor-openings between them, slats pivoted in front of the floor-openings and adapted to close the openings in the sides of the car, partitions secured to the lower portions of said posts on the inside thereof, the lower edges of said partitions being raised above the floor of the car, and tight partitions located on the floor of the car inside of said partitions secured to the posts, substantially as and for the purpose specified.

7. The combination, with a car having openings in the sides thereof, of posts located along said sides and having floor-openings between them, slats pivoted in front of the floor-openings and adapted to close the openings in the sides of the car, tight partitions secured to the lower portions of said posts on the inside thereof, the lower edges of said partitions being raised above the floor of the car, and removable tight partitions located on the floor of the car inside of said partitions secured to the posts, substantially as and for the purpose specified.

8. The combination, with a car having openings in the sides thereof, of side posts having vertically-disposed floor-openings between them, screens covering the openings in the sides of the car and placed outside of the floor-openings, pivoted slats adapted to close the openings in the sides of the car and located outside of the screens, and tight partitions located between said floor-openings and the lower portion of the body of the car, the lower edges of said partitions being raised above the floor of the car, for the purpose specified.

9. The combination, with a car having openings in the sides thereof, of screens covering said openings, vertical slats pivoted at their ends in front of said openings, means for opening and closing said slats, and a ventilator in the top of the car, whereby an upward draft may be produced through either one or both sides of the car.

10. The combination, with a car having openings in the sides thereof, of side posts having vertically-disposed floor-openings between them, vertical slats pivoted at their ends in front of the floor-openings and adapted to close the openings in the sides of the car, and a ventilator-opening in the top of the car, whereby an upward draft may be produced either through the side or bottom of the car.

11. The combination, with a car having openings in the sides thereof, of side posts having floor-openings between them, slats pivoted in front of the floor-openings and adapted to close the openings in the sides of the car, tight partitions secured to the lower portions of said posts on the inside thereof,

and a ventilator in the top of the car, substantially as and for the purpose specified.

12. The combination, with a car, of revoluble elbow-flues located opposite each other in the walls of the car, and a rod connecting the inner ends of each pair of oppositely-located flues, for the purpose specified.

13. The combination, with a car, of revoluble elbow-flues located opposite each other in the walls of the car, a bar extending across the mouth of each flue, and a rod connecting the inner ends of each pair of oppositely-located flues and having its ends secured in said bars, substantially as and for the purpose specified.

14. The combination, with a car, of revoluble elbow-flues located opposite each other in the walls of the car, each flue having a section extending through a wall of the car and a depending section on the outside of the car, and a rod divided into sections and connecting the inner ends of each pair of oppositely-located flues, the adjacent ends of said rod-sections being connected by swivel-joints adapted to regulate the tension of the rods, substantially as specified.

15. The combination, with a car, of a flue extending through a wall of the car, a valve adapted to slide over the mouth of the flue, a spring connected with one end of the valve, and means for overcoming the tension of the spring, for the purpose specified.

16. The combination, with a car, of flues located opposite each other in the walls of the car, a rod connecting the inner ends of each pair of flues, a valve adapted to slide over the mouth of each flue and having a slot therein engaged by the rod, an end of each valve being connected with a spring, and means for overcoming the tension of the spring, for the purpose specified.

17. The combination, with a car, of flues located opposite each other in the walls of the car, a rod connecting the inner ends of each pair of flues, a valve adapted to slide over the mouth of each flue and having an open-ended slot therein engaged by the rod, a stationary tongue engaging the open end of each slot, an end of each valve being connected with a spring, and means for overcoming the tension of the spring, for the purpose specified.

18. The combination, with a car, of flues located opposite each other in the wall of the car, a rod connecting the inner ends of each pair of flues, a valve adapted to slide over the mouth of each flue and having an open-ended slot therein engaged by the rod, a stationary tongue engaging the open end of each slot and having shoulders thereon adapted to engage the jaws forming said slot, an end of each valve being connected with a spring, and means for overcoming the tension of the spring, for the purpose specified.

19. The combination, with a car, of a series of flues located in a side thereof, each flue having a section extending through the wall of the car and a depending section on the outside of the car, a series of connected valves adapted to close said flues, a spring connected with said series of valves, and means for overcoming the tension of the spring, for the purpose specified.

20. The combination, with a car, of series of revoluble flues located opposite each other in the sides of the car, rods connecting opposite flues, a series of connected valves located on each side of the car and adapted to close the flues, a spring connected with an end of each series of valves, a transverse bar connected with the other ends of said series of valves, and means for actuating said bar to overcome the tension of the springs, for the purpose specified.

21. The combination, with a car, of series of revoluble flues located on opposite sides of a car, rods connecting opposite flues, a series of connected sliding valves located on opposite sides of the car and adapted to close the flues, each valve having an open-ended slot engaged by one of said rods, a tongue engaging the open end of each of said slots, a spring connected with one end of each of the series of valves, and means for overcoming the tension of the springs, for the purpose specified.

WILLIAM CLINE.

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