

No. 770,759.

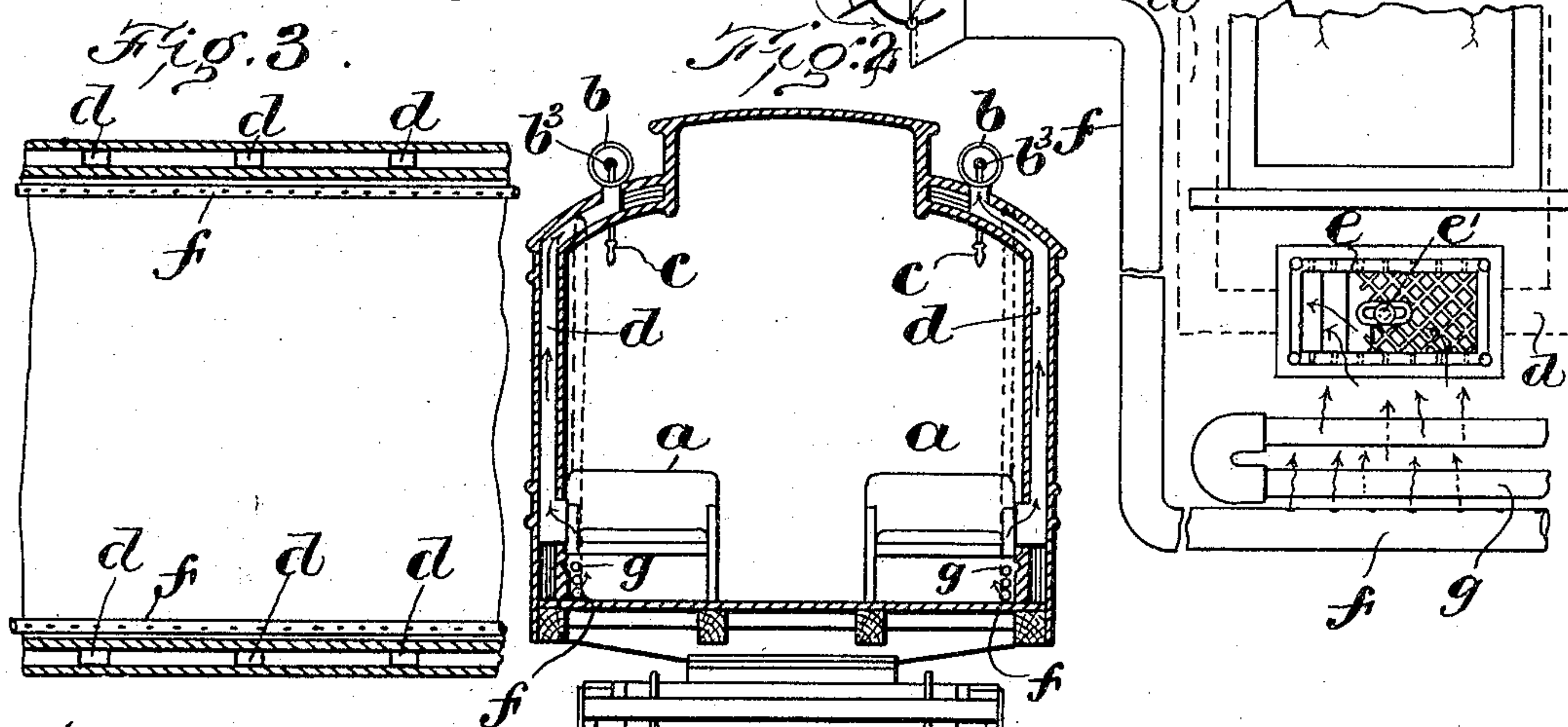
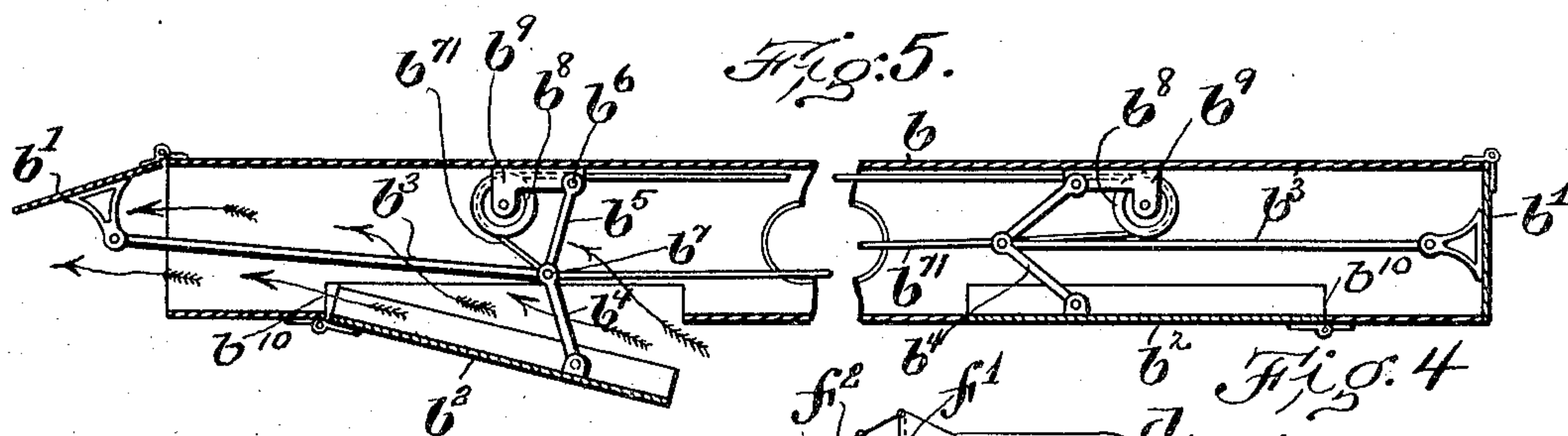
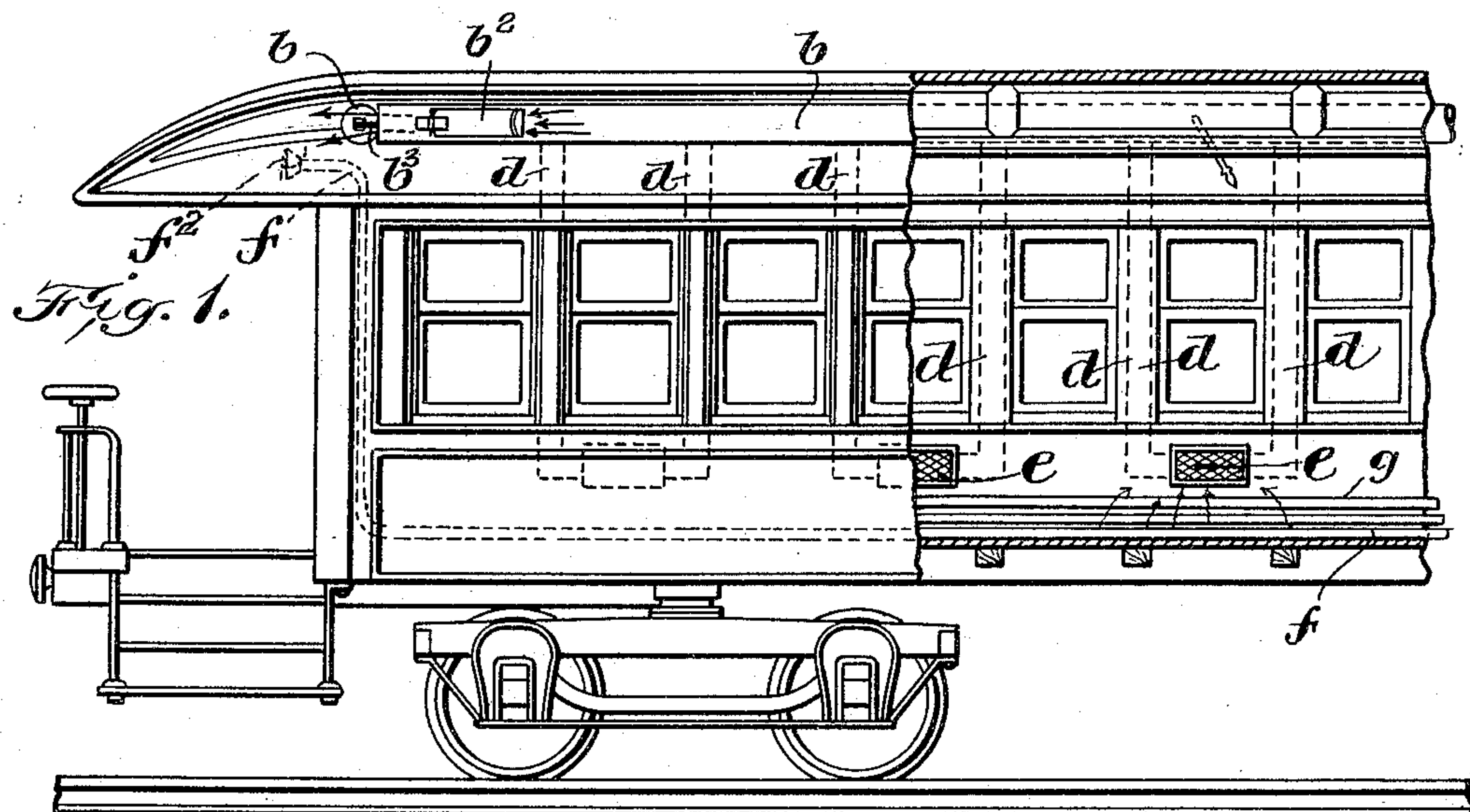
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L. C. LANPHEAR.

MEANS FOR VENTILATING CARS.

APPLICATION FILED MAY 16, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

LEWIS C. LANPHEAR, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO MAY E. CARR, OF BOSTON, MASSACHUSETTS.

MEANS FOR VENTILATING CARS.

SPECIFICATION forming part of Letters Patent No. 770,759, dated September 27, 1904.

Application filed May 16, 1903. Serial No. 157,381. (No model.)

To all whom it may concern:

Be it known that I, LEWIS C. LANPHEAR, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Means for Ventilating Cars, of which the following is a specification.

This invention has for its object the thorough and effective ventilation of railway-cars, it being designed not only to secure the withdrawal of vitiated air, but also to supply fresh air in a desirable volume.

In modern sleeping-cars containing double berths one above the other it is practically impossible to withdraw the vitiated air from and to supply fresh air to the lower berth when the berths are "made up." According to the present invention, however, provision is made for withdrawing the air from each lower berth and also for supplying fresh air, the supply-conduit being located in proximity to the heating pipes or devices, so that as the air is admitted it is properly heated.

In the drawings, Figure 1 represents, partly in side elevation and partly in section, a portion of a railway-car embodying the invention. Fig. 2 represents a transverse section through the same. Fig. 3 represents a portion of a longitudinal section through the same. Fig. 4 represents a portion of the interior wall of the car, together with the inlet-pipe for the fresh air. Fig. 5 represents an enlarged longitudinal section through one of the trunks or conduits arranged on the top of the car.

In the drawings the car is shown in Fig. 2 as being provided with seats *a a*, which may be transformed into berths. The devices by which the upper berths are made are not shown; but it will be understood that the car may be constructed in the form of the ordinary Pullman sleeping-car. On each side of the monitor top of the car there is a conduit or trunk *b*, which is shown as cylindrical in form, although it may be of any suitable shape in cross-section. At each end of each of the conduits there is a door *b' b'*, by which the end may be closed. Near each end of each of the conduits there is a wing, vane, or deflector *b²*, which may be opened or closed, as shown in Fig. 5, being hinged at its outer end. The

vane or deflector and the door at each end of the conduit are connected together by links *b³ b⁴*, so that when one of the doors *b'* is opened the corresponding deflector *b²* is likewise opened or so that when one is closed the other is likewise closed. The links *b³ b⁴* are pivoted together and are also pivoted to a swinging link *b⁵*, in turn pivoted at *b⁶*. The pivotal connection *b⁷* for the three links *b³ b⁴ b⁵* is connected to an endless band *b⁷¹*, which passes around pulleys *b⁸ b⁸*, journaled in brackets *b⁹* in the interior of the conduit near the end thereof. This endless flexible connection in each of the conduits or trunks is fastened to one end of a lever *c*, by which it may be moved endwise, so as to operate the doors and deflectors at the two ends of the conduits alternately, so that when the deflector and door at one end of the conduit are closed the deflector and the door at the other end of the conduit are opened. When the car is moving in one direction, the door *b'* and the deflector *b²* at the front end are closed and those at the rear ends are opened. A current of air is therefore deflected into the rear end of the conduit, as shown by arrows in Fig. 5, through the aperture *b¹⁰*, so as to induce a current of air through the inner conduit for the exhaustion of the vitiated air, as will be explained. Communicating with each conduit are a plurality of ducts *d d*, arranged in pairs on each side of the car. These may extend down from the roof of the car between the interior and exterior walls to a point below the windows or to any other convenient point. As shown in Fig. 1, the ducts on each side are arranged in pairs, each pair communicating with an inlet equipped with a register *e*. Each register is provided with the usual blades, which may be opened and closed by the knob *e'*, as shown in Fig. 4, so that each pair of ducts may be opened and closed as desired independently of the others. Thus the interior of the car is connected with the conduits by a plurality of independent ducts, and consequently when a current of air is induced through the rear end of the conduit the vitiated air is withdrawn from the interior of the car through the registers and ducts. It is quite apparent that these registers may be lo-

cated at any suitable or convenient point, although I prefer to so arrange them that they will communicate with the space between the upper and lower berths when they are used in a sleeping-car. For street-cars and day-coaches these registers may be located relatively near the floor or relatively near the ceiling, as convenience may dictate. The ducts are preferably located between the windows.

For the supply of fresh air I employ a main conduit *f*, whose ends project through the ends of the car and are located below the extension ends of the roof. Each end of the conduit *f* is provided with a screen (shown in dotted lines in Fig. 4) and with a door or valve *f*², by which the end may be closed. The conduit extends through the car in proximity to the usual heating apparatus, such as steam-heating pipes *g*, and is perforated, so that air escaping therefrom passes in proximity to the heating apparatus and is heated to the proper temperature. The valve at the front end of the car is closed and that at the rear end is open, so that there will be no opportunity for the passage of dust and cinders into the car.

By this construction and arrangement it is apparent that the car will be constantly supplied with fresh air and the vitiated air will be constantly withdrawn, so as to secure the most effective ventilation.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. The combination with a car, of a conduit extending longitudinally thereof, ducts extending from said conduit downwardly in the side walls of the car and communicating with the interior of the latter, means for regulating the volume of air entering said ducts, and a movable vane or deflector adjacent the rear end of the conduit and adapted to direct an induction-current of air into the latter, whereby air is drawn from the interior of the car through said ducts.

2. The combination with a car, of a conduit extending longitudinally thereof, said conduit having an aperture formed therein adjacent its rear end, ducts leading downwardly from said conduit to the interior of the car, said ducts being located in the walls of the latter, and a vane or deflector located opposite the aperture in the conduit and adapted to direct an induction-current of air through said aperture into the bore of the conduit, whereby air is exhausted through said ducts.

3. The combination with a car, of a conduit extending longitudinally thereof, ducts arranged in pairs and extending downwardly from said conduit in the walls of the car and communicating with the interior of the latter, each pair of ducts being provided with a com-

mon inlet, means for regulating the volume of air entering said inlet, and a movable vane or deflector adjacent the rear end of the conduit and adapted to direct an induction-current of air into the latter, whereby air is exhausted through said ducts.

4. The combination with a car, of a conduit extending longitudinally thereof, ducts extending from said conduit downwardly in the side walls of the car and communicating with the interior of the latter, means for regulating the volume of air entering said ducts, a heating medium, means for discharging fresh air adjacent said heating medium, and a movable vane or deflector located adjacent the rear end of said conduit and adapted to direct an induction-current of air into the latter, whereby air is exhausted through said ducts.

5. The combination with a car, of a conduit extending longitudinally thereof, ducts extending from said conduit downwardly in the side walls of the car and communicating with the interior of the latter, means for regulating the volume of air entering said ducts, and movable vanes or deflectors located adjacent each end of said conduit, the forward deflector being normally closed and the rear deflector normally open, whereby the latter will direct an induction-current of air into the bore of said conduit and air is drawn from the interior of the car through said ducts.

6. As a means for ventilating a car, an exhaust-conduit arranged longitudinally of the car, and communicating with the interior thereof by a series of ducts whose inlet ends open into the car, said conduit having a movable blade and an aperture at the side thereof near its rear end and a pipe or conduit for supplying air to the car, said supply-conduit extending longitudinally of the car and having its ends opening to the atmosphere exteriorly to said car, said ends being located below the extension-roof at the ends of the car.

7. The combination with a car having heating-surfaces, of a fresh-air conduit located near said surfaces and having a series of perforations for permitting the escape of fresh air into impingement upon said surfaces as it is delivered to the car, said conduit having its ends opening to the atmosphere exterior to the car and having means for closing its end at the front end of the car, and an exhaust-conduit extending longitudinally of the car and having an open rear end, an opening in its side near its said end, and a deflector extending laterally from said conduit near said opening to deflect air therethrough.

In testimony whereof I have affixed my signature in presence of two witnesses.

LEWIS C. LANPHEAR.

Witnesses:

MARCUS B. MAY,
C. C. STECHER.