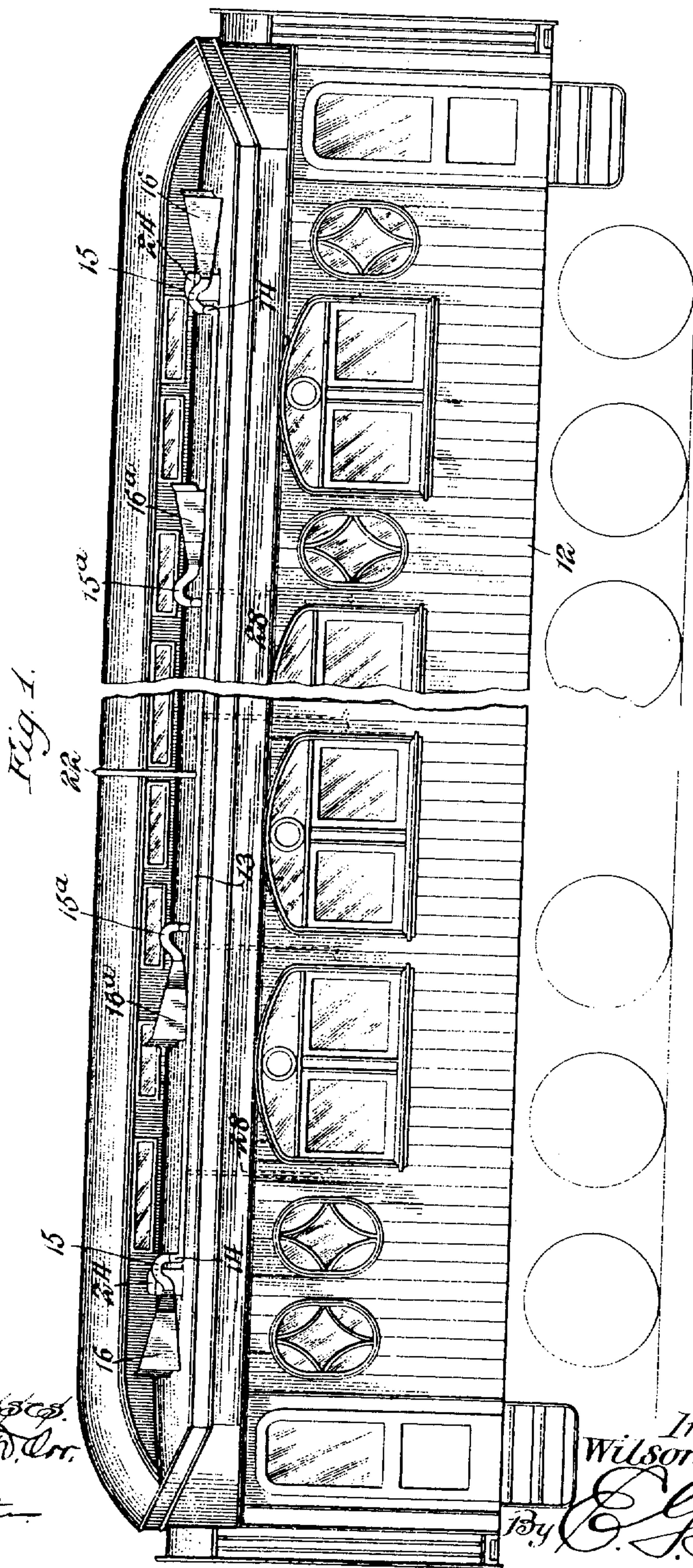


903,339

W. E. SYMONS.  
VENTILATING SYSTEM.  
APPLICATION FILED MAR. 23, 1907.

Patented Nov. 10, 1908.  
5 SHEETS—SHEET 1.



Witnesses  
Howard D. Carr

By *John*

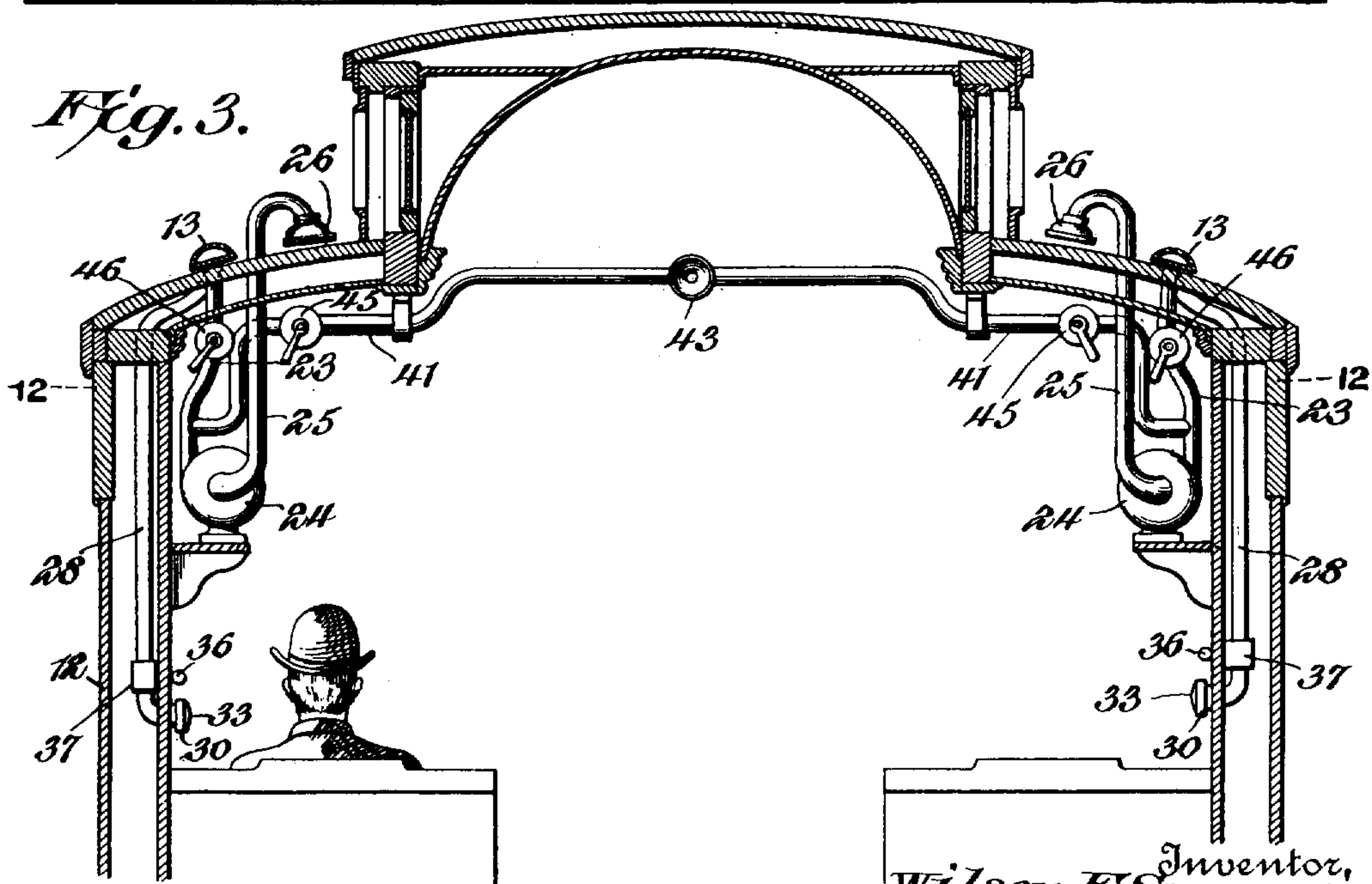
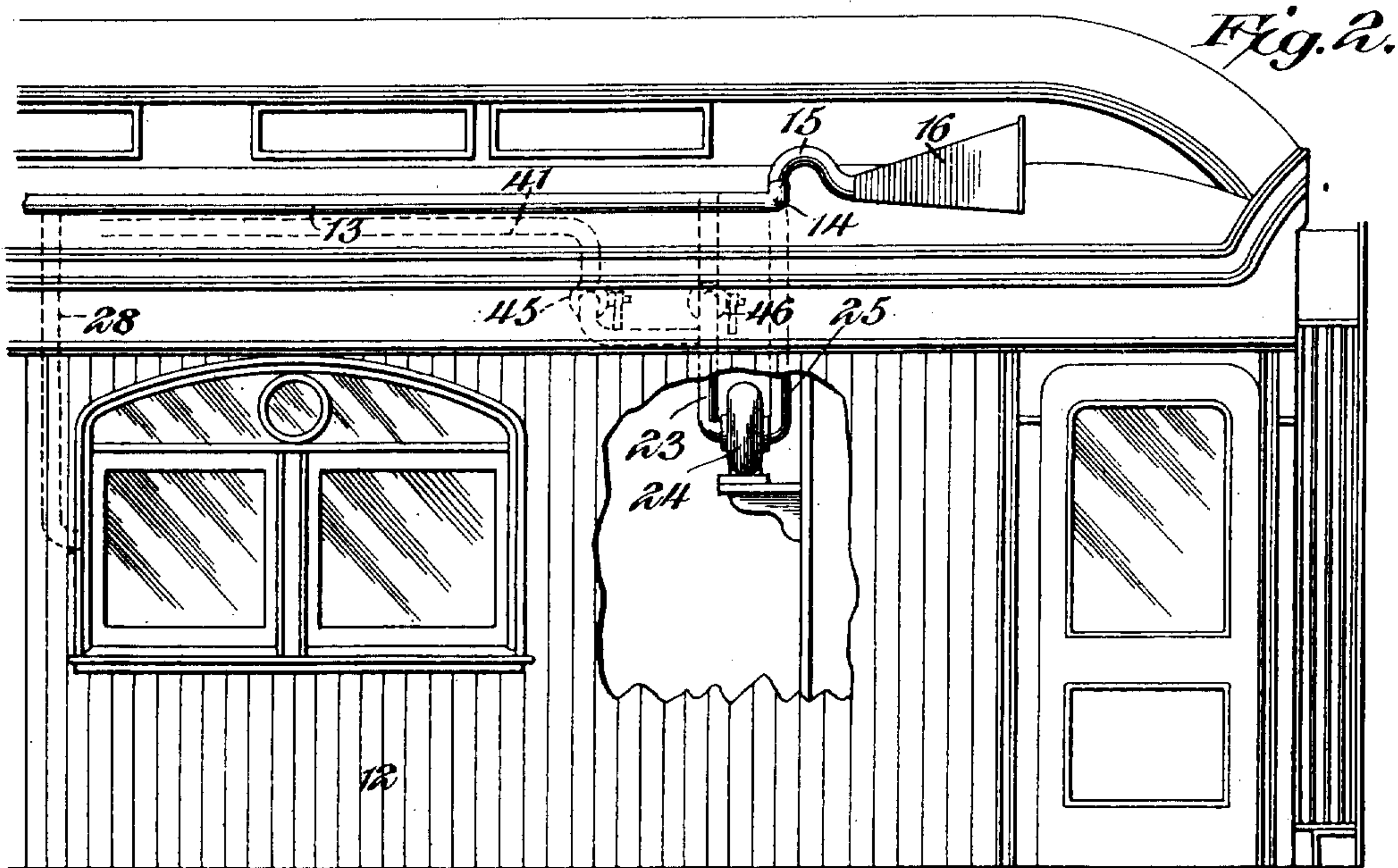
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903,339.

Patented Nov. 10, 1908.

6 SHEETS—SHEET 2.



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6 SHEETS—SHEET 3.

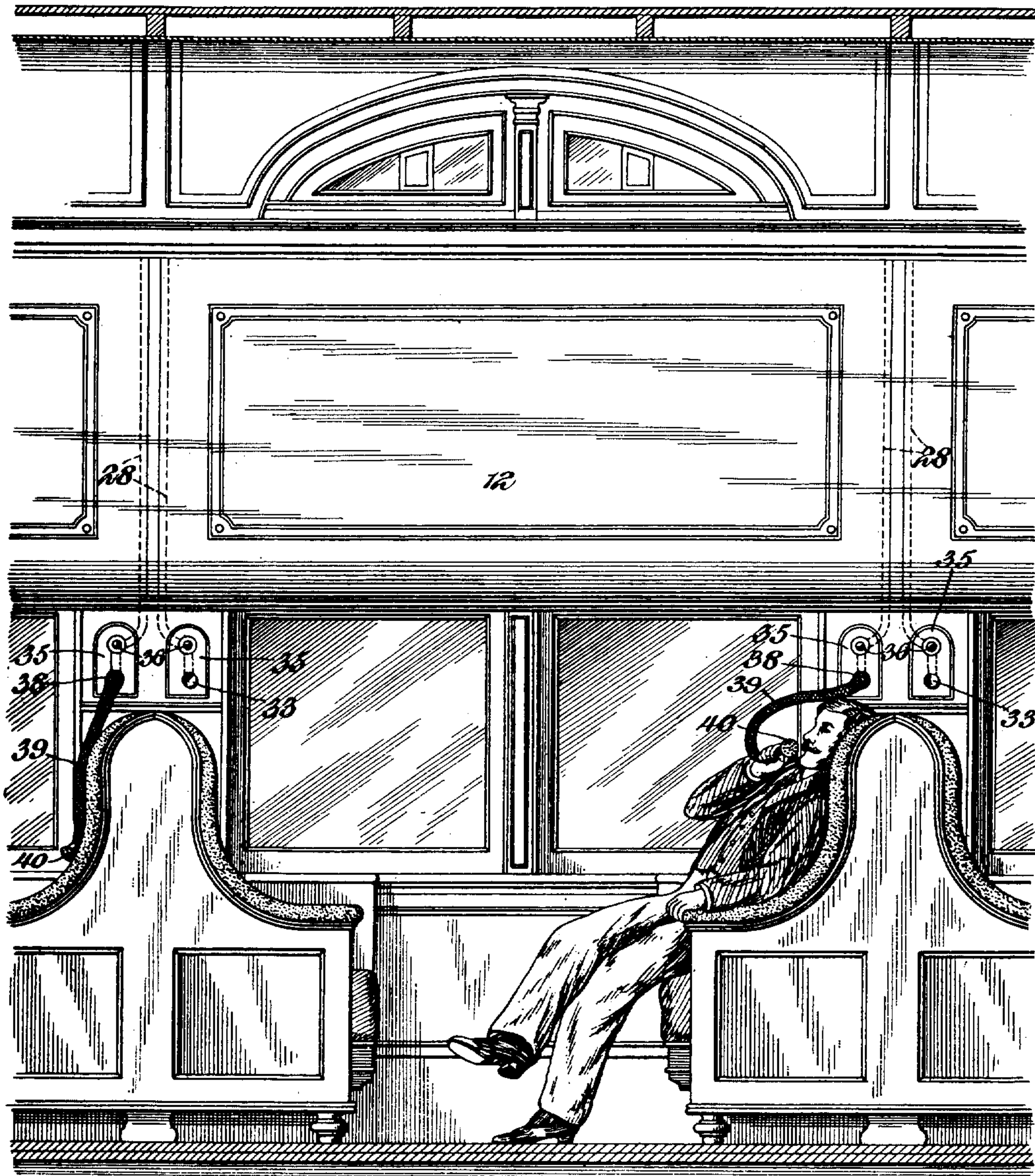


Fig. 4.

Witnesses

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B. L. Fenton.

Wilson E. Symons, Inventor,

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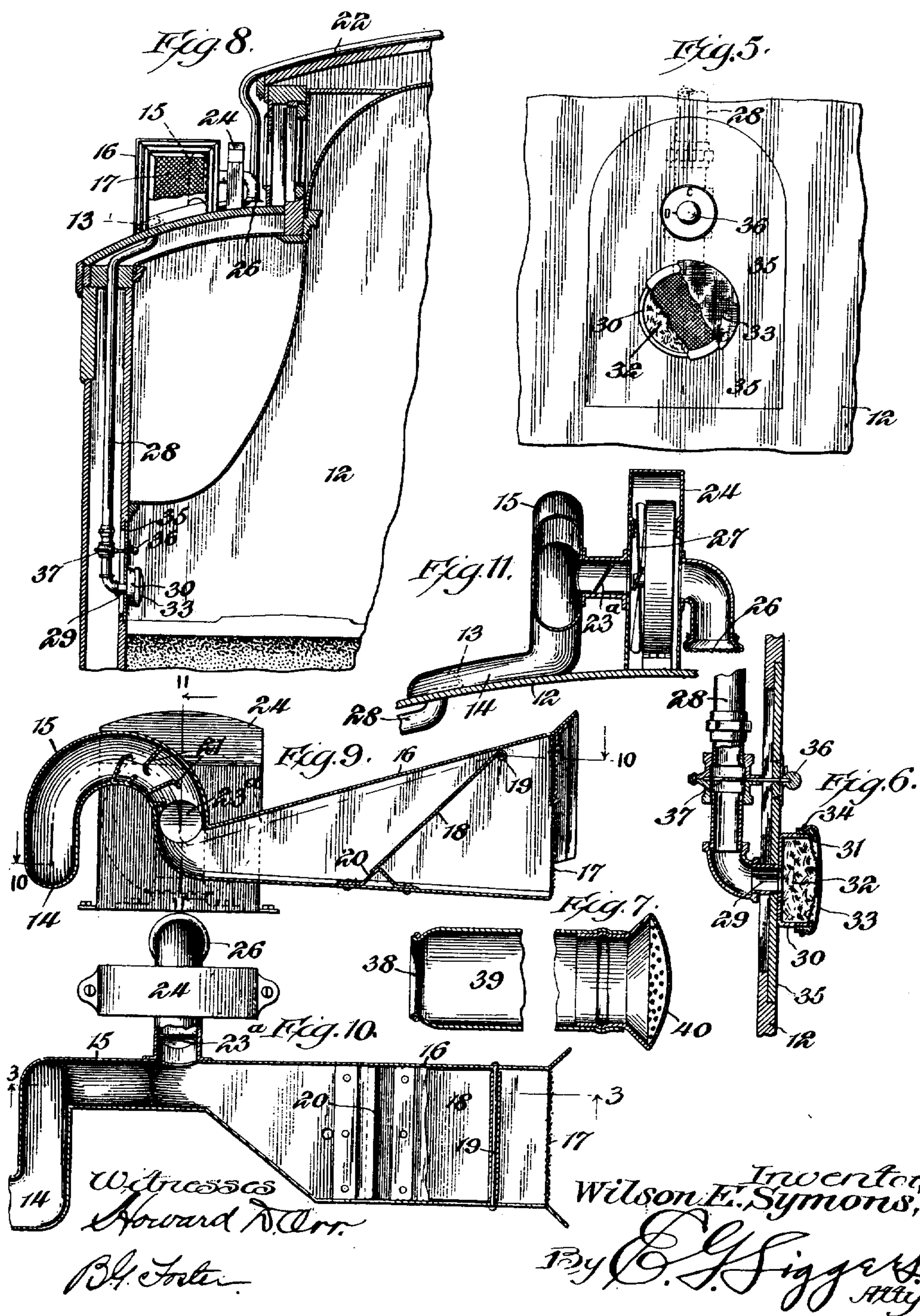
E. J. Figgert.

Attorney

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5 SHEETS—SHEET 4.





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5 SHEETS—SHEET 5.

Fig. 12.

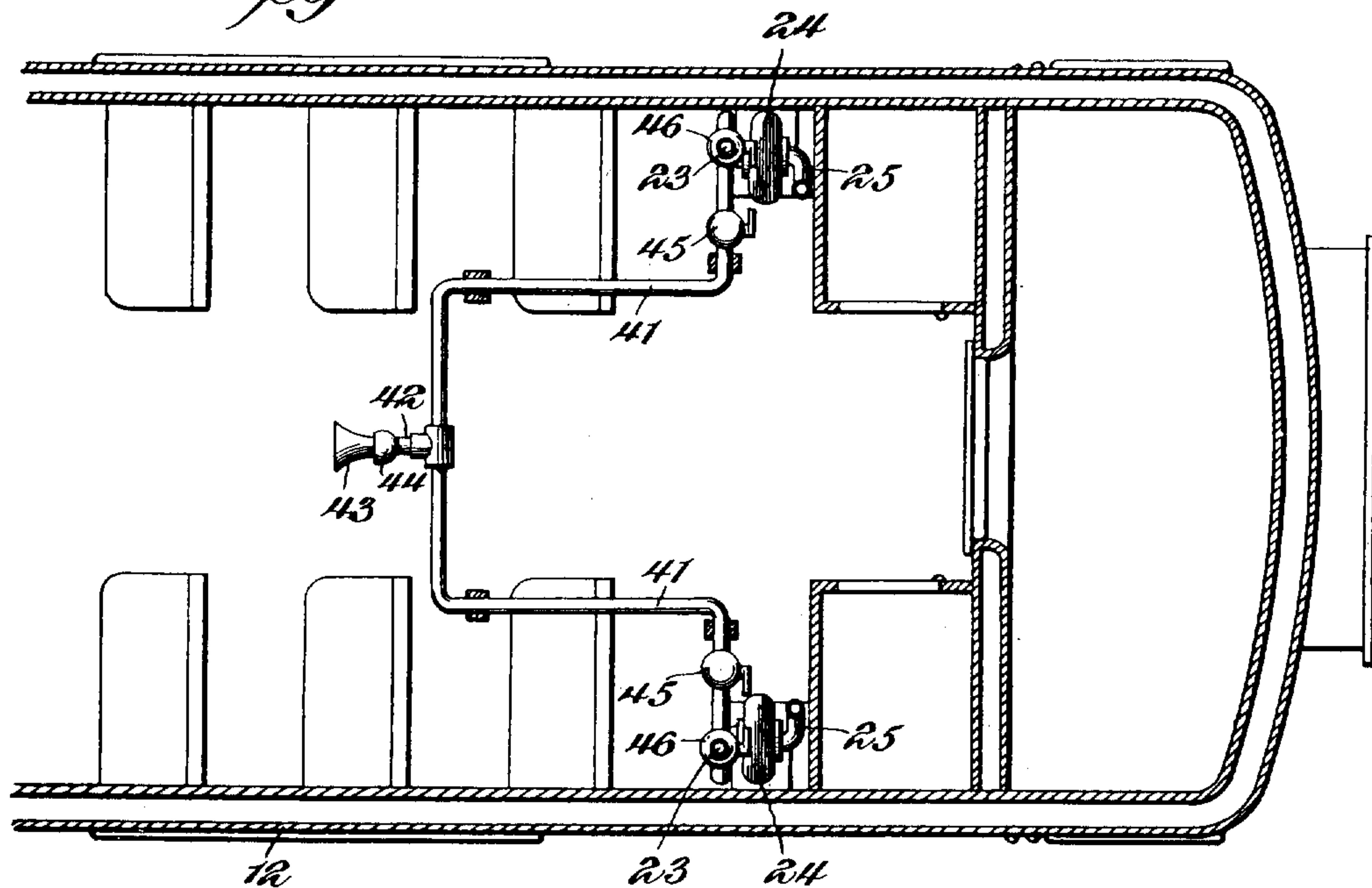


Fig. 13.

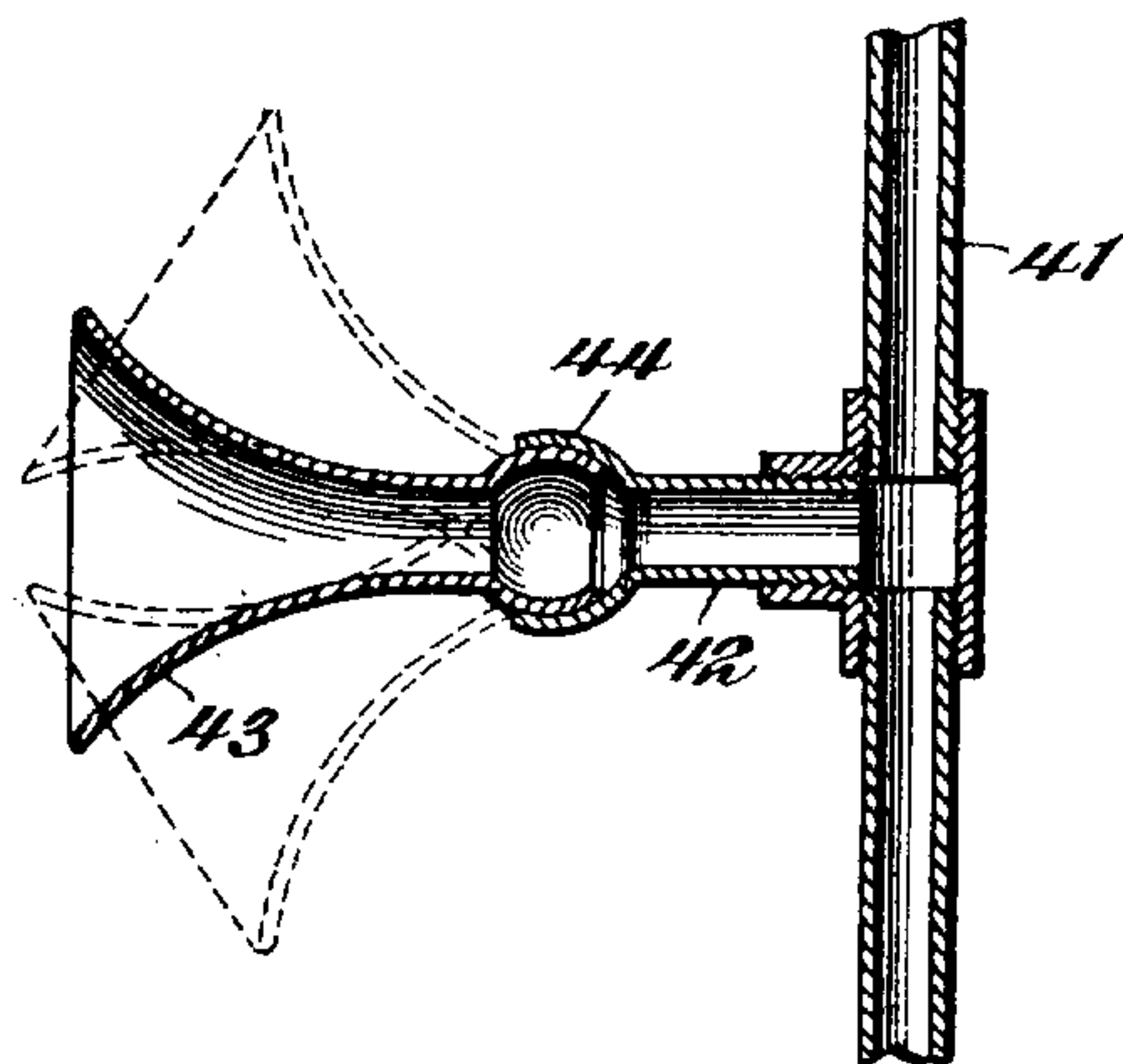
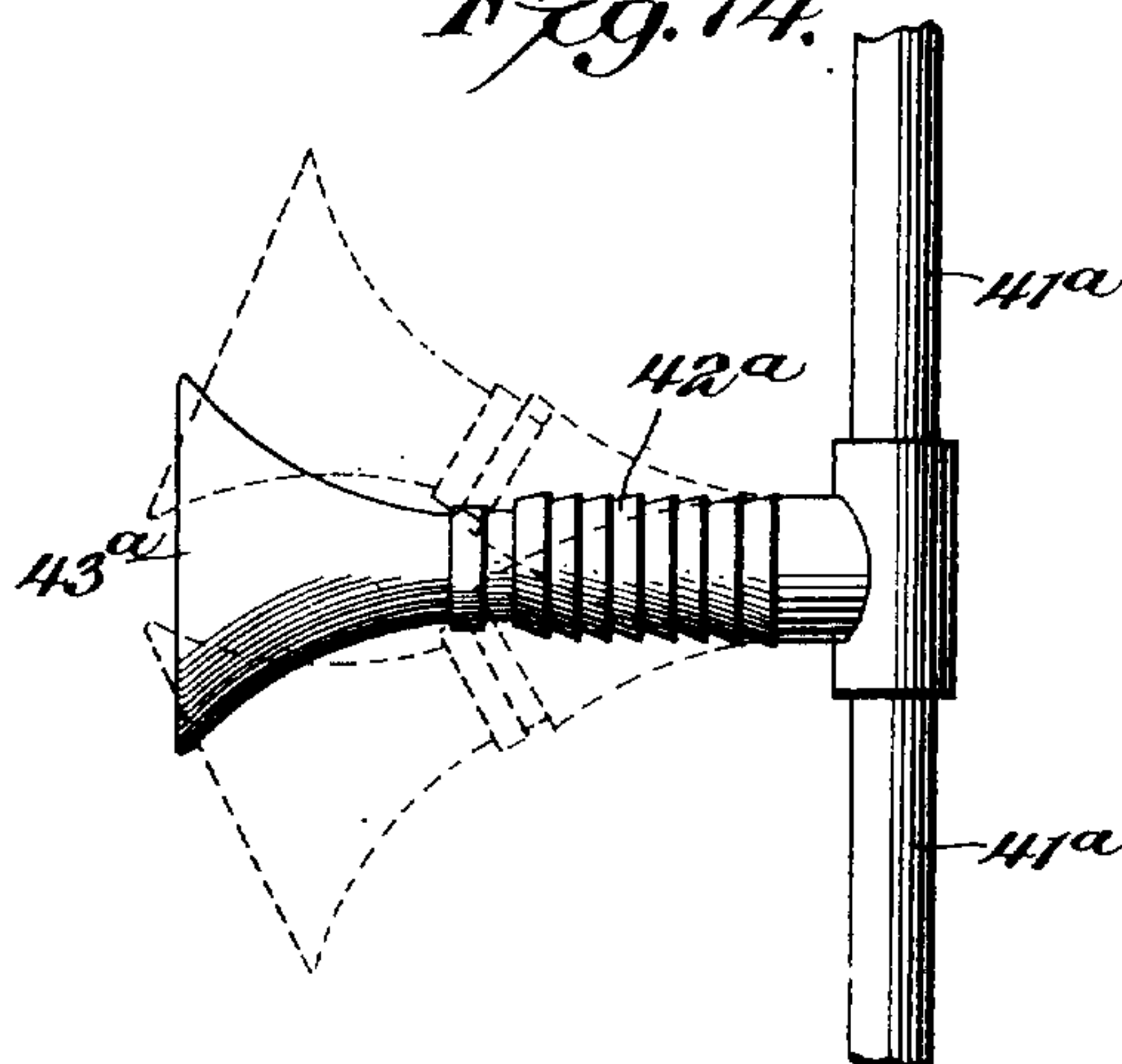


Fig. 14.



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Howard N. Carr.

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# UNITED STATES PATENT OFFICE.

WILSON E. SYMONS, OF CHICAGO, ILLINOIS.

## VENTILATING SYSTEM.

No. 903,339.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed March 23, 1907. Serial No. 364,144.

*To all whom it may concern:*

Be it known that I, WILSON E. SYMONS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Ventilating System, of which the following is a specification.

This invention relates to means for ventilating passenger cars, either day coaches, parlor cars, sleepers or the like.

The primary object of the present invention is to provide a novel and practicable system that can be readily installed, and with which each passenger may control and regulate a supply of fresh air to himself individually without causing discomfort or inconvenience to other passengers who may be of a different temperament or disposition.

A further object is to provide in a system of the above character, means which will insure a supply of fresh air when the car is moving in either direction or is at a standstill, filtering and stop mechanisms being provided that will eliminate cinders and dust as well as prohibit the ingress of water.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of a car equipped with the improved system. Fig. 2 is a detail view, showing a portion of the car broken away in order to illustrate the above mechanism. Fig. 3 is a cross sectional view through the car. Fig. 4 is a longitudinal sectional view through a portion of the same. Fig. 5 is a detail view, showing the discharge end of one of the lateral pipes. Fig. 6 is a sectional view therethrough. Fig. 7 is a detail view of one of the hose sections. Fig. 8 is a cross sectional view through a portion of a car showing a different arrangement of the vent. Fig. 9 is a vertical longitudinal sectional view through one of the funnels. Fig. 10 is a horizontal view of the same. Fig. 11 is a cross sectional view on the line 11—11 of Fig. 9. Fig. 12 is a horizontal sectional view on the line 12—12 of Fig. 3. Fig. 13 is a horizontal sectional view through the discharge nozzle shown in Fig. 12. Fig. 14 is a plan view of a slightly modified form of nozzle.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, the car body 12 may be of any desired form or construc-

tion. Mounted longitudinally upon the roof thereof on opposite sides of the deck lights are air conduits 13. These conduits are connected at their ends by offsets 14 and up- 60 standing goose necks 15 with the smaller ends of longitudinally disposed funnels 16. The open ends of said funnels are covered by screens 17. It will be noted that portions of the sides of the funnels are parallel and that 65 the tops and bottoms are convergently disposed. Inwardly swinging valves 18 are pivoted at their upper ends, as shown at 19, within the upper portions of the funnels between the parallel portions of the side walls, 70 while their inner and lower ends are arranged to abut against stop ribs 20 secured to the bottom walls of the funnels. When moved by an intruding current of air, they can swing inwardly and upwardly, but if the air at- 75 tempts to flow outwardly through said funnels, the valves are automatically closed, as will be evident, the valves being located and operating wholly in advance of the goose-necks. In the goose necks are preferably lo- 80 cated spaced overlapping baffle plates 21, but these are not entirely necessary and may be dispensed with if desired. The bottom of each funnel inclines downwardly towards its outer end from the goose neck, as will be 85 evident by reference to Fig. 9. While under ordinary conditions, funnels at the ends of the pipes will probably be sufficient, corresponding funnels 16<sup>a</sup> may be located at in- 90 termediate points, and connected to the longitudinal conduits by corresponding goose necks 15<sup>a</sup>, as illustrated in Fig. 1. The two longitudinal conduits 13 are preferably connected by a transverse conduit 22 extending over the top of the car, illustrated in Figs. 1 95 and 8.

Connected to the end portions of the air conduits and preferably to the terminal goose necks are delivery pipes 23 that extend from fan casings 24, which may be suitably located 100 within the car, as shown in Fig. 3, or mounted on the top thereof. Inwardly opening swinging valves 23<sup>a</sup> are located in the delivery pipes 23, and operate in the same manner as the automatic valves 18 of the funnels. 105 Supply pipes 25 are also connected to the casings, and have screened inlet ends 26 disposed exteriorly of the car, and preferably downturned. Within the fan casings 24 are mounted suitable electric fans 27, which may 110 be of any well known type, and supplied from any suitable source of power.



A plurality of lateral pipes 28 extend downwardly from the longitudinal conduits 13 between the inner and outer sections of the side walls, and have delivery ends 29 disposed in convenient relation to the passengers or occupants of the seats, compartments or berths according to the character of the car. In the preferred form of construction, these outlet ends open into chambers 30 closed by screen caps 31 screwed thereupon and having filtering material 32 arranged in said chambers. Cloth coverings 33 preferably extend over the screens, and are held in place by flexible bands 34. These coverings can be readily removed and replaced by clean ones as often as found desirable or necessary. The chambers 30 are preferably mounted on detachable panels 35, and extending through said panels directly above the chambers, are stems 36 of controlling valves 37, said valves in the present embodiment being rotatable, though any desired type may be employed. The chambers 30, which project within the car, furthermore constitute nipples upon which the inlet ends 38 of flexible hose sections 39 may be placed, these sections having foraminous discharge nozzles 40 at their free ends.

Branch pipes 41 lead from the pipes 23 at the ends of the car, and are connected to a common discharge spout 42, which terminates in an adjustable flared nozzle 43 located directly over the companionway or aisle of the car. As shown in Fig. 13, the nozzle 43 preferably has a ball and socket connection 44 with the spout 42, which permits the adjustment of the nozzle in any direction, the friction being sufficient to hold said nozzle as positioned. Instead of this arrangement, the structure disclosed in Fig. 14 may be employed, wherein the branch pipes are designated 41<sup>a</sup>, and the spout 42<sup>a</sup> consists of a flexible hose, to the end of which is secured the nozzle 43<sup>a</sup>. Valves 45 and 46 are preferably located in the pipes 23, and branches 41 so that the passage of air through either may be readily controlled.

The operation of the system may be briefly outlined as follows. As long as the car is moving in one direction or the other, the valves 18 in the funnels facing the front ends thereof, will be swung to open position by the intruding air, while the valves in the funnels facing the rear end, will be held in closed condition by the air pressure within the conduits. In like manner, the valves 23<sup>a</sup> will be closed. If now a passenger desires fresh air, he has only to open the valve 37 contiguous to his seat, whereupon the air in the conduit will pass through the lateral pipe, through the filtering material, and be delivered in close proximity to said passenger. Thus, each passenger can control an individual supply of fresh air without consulting or causing inconvenience to any other passenger. In case, a supply of air is desired

by a person in a reclining position, one of the hose sections 39 may be attached to the filtering chamber 30 and the nozzle may be held as desired, as shown in Fig. 4. These hose sections may be of different lengths, and can be kept in stock to be supplied by the porters on request. When the train is at a standstill, the conductor or trainmen have only to cut in the electric fans, and thus insure a proper air pressure or supply, when the same would be otherwise lacking. It also will be observed by means of the branch pipes 41 and delivery nozzles 43, the aisle or passageway of the car can be readily ventilated with air from the outside and the supply through the lateral pipes 28 or through the branches 41 can be readily controlled. This latter mechanism is particularly useful in connection with sleepers. It is well known that these cars are often placed at stations and are opened for passengers in the early evening, whereas they are not moved out of the station until late at night. It is also well known that very little ventilation is secured when the car is at a standstill, and efforts have been made recently to overcome this objection by placing fans in the cars. These fans, however, merely stir up the air in the aisles or passageways without securing fresh air from the outside. The present mechanism therefore is advantageous over the above method, inasmuch as the air is drawn from outside the car, and is delivered into the body of the car generally or to the passengers individually. It will be observed that in this system therefore an adequate supply of fresh air is provided for each passenger, as already outlined, this air is free from dust and cinders, and the mechanism is such that no water can drive into it. Moreover, by having the conduits on opposite sides of the car connected by the transverse conduit, if the fans on one side should from any cause, become inoperative, air will be supplied to the entire system from the fans on the other side only.

From the foregoing, it is thought that the construction, operation, and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In ventilating mechanism of the character set forth, the combination with a car or vehicle, of an air conduit disposed longitudinally along the same and having communication with the interior thereof, a forwardly projecting funnel tapering from its front to



its rear end, an upstanding gooseneck disposed in longitudinal alinement with the funnel, said gooseneck being connected to the rear contracted end of the funnel and to the conduit, and a rearwardly opening swinging automatic valve located in the funnel between the ends thereof and operating wholly in advance of the connection of said funnel with the gooseneck.

2. In ventilating mechanism of the character set forth, the combination with a car or vehicle, of an air conduit disposed longitudinally of the same, a flared forwardly extending inlet funnel for the conduit having an open front end, an upstanding goose neck connection between the rear contracted end of the funnel and conduit, spaced overlapping baffle plates located in the elevated portion of the goose neck connection, lateral pipes leading from the conduit, and means located in the pipes for controlling the passage of air therethrough.

3. In ventilating mechanism of the character set forth, the combination with a car or vehicle, of a conduit communicating with the interior thereof, a funnel having portions of its side walls substantially parallel and having top and bottom walls convergently disposed, said funnel having its contracted end connected to the conduit, and a rearwardly opening swinging valve mounted in the funnel between the parallel portions of the side walls and between the convergent top and bottom walls, said valve operating wholly in advance of the connection between the funnel and conduit.

4. In ventilating mechanism of the character set forth, the combination with a car or vehicle, of an air conduit disposed longitudinally of the car or vehicle, flared oppositely extending inlet funnels located at the ends of the conduit, upstanding goosenecks connecting the contracted ends of the funnels and the ends of the conduit, screens located over the open ends of the funnels, oppositely disposed inwardly opening swinging valves located in the tapered portions of the funnels between the screens and the goose necks and operating wholly between the two, lateral pipes leading from the conduits and having discharge ends opening into the vehicle contiguous to the places for the occupants, and separate valves located in the pipes to control the passage of air through each, independently of the others.

5. In ventilating apparatus, the combination with a car or vehicle, of an air conduit located longitudinally of the car or vehicle and having inlet ends disposed exteriorly of said car or vehicle, inwardly opening valves controlling said ends, lateral pipes connected to the longitudinal conduit and opening into the car or vehicle at different points, a fan including a casing, a delivery pipe from the fan casing connected to the longitudinal pipe,

an inwardly opening valve in said delivery pipe, and a supply pipe for the fan having its inlet end disposed exteriorly of the car or vehicle.

6. In ventilating apparatus, the combination with a car or vehicle, of an air conduit located longitudinally on the roof of the car or vehicle and having flared inlet ends disposed exteriorly thereof, inwardly opening valves controlling said ends, lateral pipes connected to the longitudinal conduit and opening into the car or vehicle at different points, separate valves for controlling the passage of air through each pipe independently of the others, a fan located within the car or vehicle and including a casing, a delivery pipe from the fan casing communicating with the longitudinal pipe, an inwardly opening valve in said delivery pipe, and a supply pipe for the fan casing having its inlet end disposed exteriorly of the car or vehicle.

7. In ventilating apparatus of the character set forth, the combination with a car or vehicle, of a supply conduit located longitudinally thereof, flared funnels disposed at the ends of the conduit, upstanding goose necks connecting the funnels and the conduit, inwardly opening valves located in said funnels, lateral pipes connected to the conduit, filtering chambers connected to the pipes and located contiguous to the places for the occupants of the car or vehicle, a separate valve in each pipe for independently controlling the passage of air therethrough, and flexible hose sections arranged to be detachably mounted on the filtering chambers and having discharge nozzles at their free ends.

8. In ventilating apparatus of the character set forth, the combination with a car or vehicle, of longitudinally disposed supply conduits located along the roof of the same, a transverse conduit connecting the supply conduit, flared funnels having goose neck connections with the longitudinal conduits, automatic inwardly opening valves located in said funnels, lateral pipes connected to the conduits and having discharge ends opening into the car or vehicle at the places for the occupants thereof, a separate valve for controlling the passage of air through each pipe independently of the others, fans including casings, delivery pipes connected to the fan casings and connected respectively to the longitudinal conduits, supply pipes connected to the casings and having inlet ends disposed exteriorly of the car or vehicle, and inwardly opening valves located in the delivery pipes and permitting the passage of air therethrough from the fans but prohibiting the passage of air to said fans through the delivery pipes.

9. In ventilating mechanism of the character described, the combination with a car or vehicle having an aisle or companionway, of a plurality of fans located in the car or ve-



hicle, means for separately operating the different fans when the car or vehicle is at a standstill delivery pipes extending from the fans, and terminating in a common discharge spout, an adjustable nozzle connected to the spout and located over the aisle or companionway to deliver air longitudinally thereof, and supply pipes connected to the fans and having their inlet ends disposed exteriorly of the car or vehicle.

10. In ventilating mechanism of the character described, the combination with a car or vehicle having seats or compartments for the passengers and having an aisle or companionway, of main conduits extending longitudinally of the car or vehicle, lateral conduits leading from the main conduit to the different seats or compartments, means for independently controlling the passage of air through each lateral conduit, fans located in the car or vehicle, delivery pipes leading from the fans and having connections with the main conduits, supply pipes connected to the fans and having inlet ends disposed exteriorly of the car or vehicle, branch pipes leading from the delivery pipes of the fans, means for discharging the air from said branch pipes over the aisle or companionway, and valves located in the branch pipes and in the delivery pipes for controlling the passage of air therethrough.

11. In ventilating apparatus of the character set forth, the combination with a car or vehicle having side walls, of a supply conduit located longitudinally of said car or vehicle, lateral pipes connected to the conduit and extending downwardly within and housed by the walls, chambers projecting from the inner sides of such walls and connected to the lateral pipes, said chambers having foraminous inner walls, flexible hose sections having discharge ends and having inlet ends that detachably fit upon the projecting chambers, said latter ends being provided with means that frictionally bind upon the chambers to maintain the ends of the sections thereupon.

12. In ventilating mechanism of the character set forth, the combination with a car

or vehicle, of an air conduit delivering to the interior thereof, funnels having open inlet ends arranged exteriorly of the car or vehicle to introduce air from outside the car or vehicle into the conduit when said car or vehicle is in motion, a fan casing having an inlet outside the car or vehicle, and a discharge that delivers into the same conduit to which the funnels are connected, and an electrically driven fan operating in the casing for delivering air into the said conduit when the car or vehicle is at a standstill.

13. In ventilating mechanism of the character described, the combination with a car or vehicle, of an air conduit delivering to the interior thereof, a funnel opening exteriorly of the car or vehicle and connected to the conduit for introducing air from outside the car or vehicle into the conduit when said car or vehicle is in motion, a fan casing having an inlet outside the car or vehicle and a discharge that delivers into the conduit, an electrically driven fan operating in the casing for delivering air into the conduit when the car or vehicle is at a standstill, and means for automatically preventing the exit of air through the funnel when the fan is in motion, said means permitting the inlet of air through said funnel.

14. In ventilating mechanism of the character set forth, the combination with a car or vehicle, of a conduit delivering to the interior thereof, opposite funnels connected to the conduit and arranged exteriorly of the car or vehicle for directing air into the conduit when said car or vehicle is in motion, outwardly closing valves located in the funnels, a fan casing having an inlet, and a discharge that delivers into the conduit between the valves, a fan operating in the casing, and means for operating the fan when the car or vehicle is at a standstill.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILSON E. SYMONS.

Witnesses:

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RAYMOND C. DUDLEY.