R. CHADWICK.

TRAIN VENTILATOR.

APPLICATION FILED APR. 12, 1909.

970,685.

Patented Sept. 20, 1910.

2 SHEETS—SHEET 1.

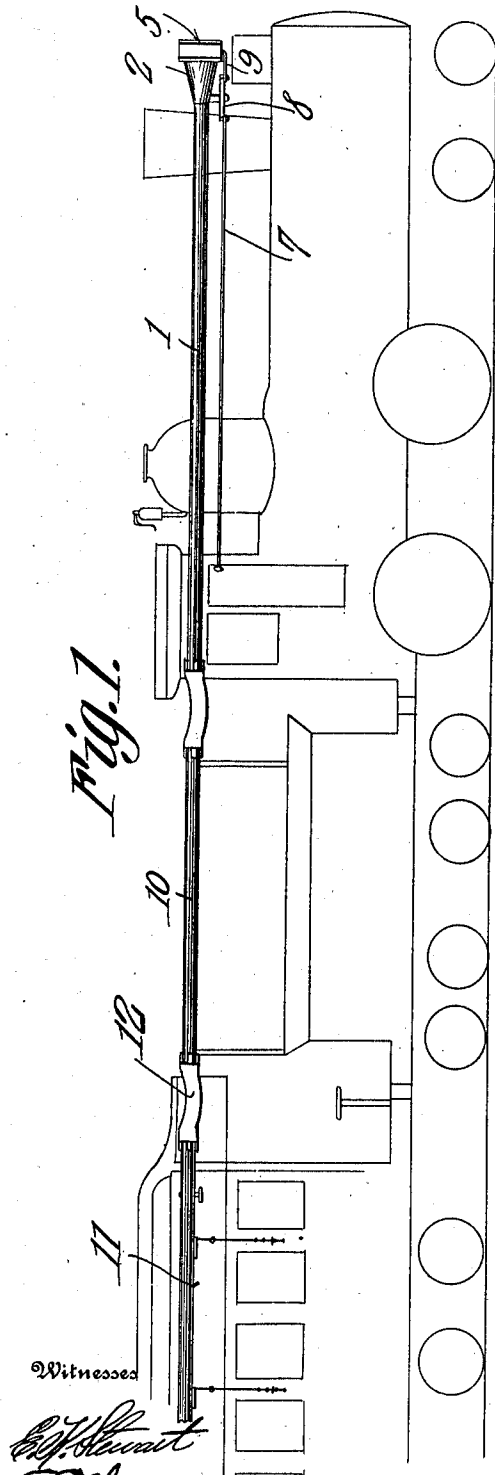

Fig. 1.

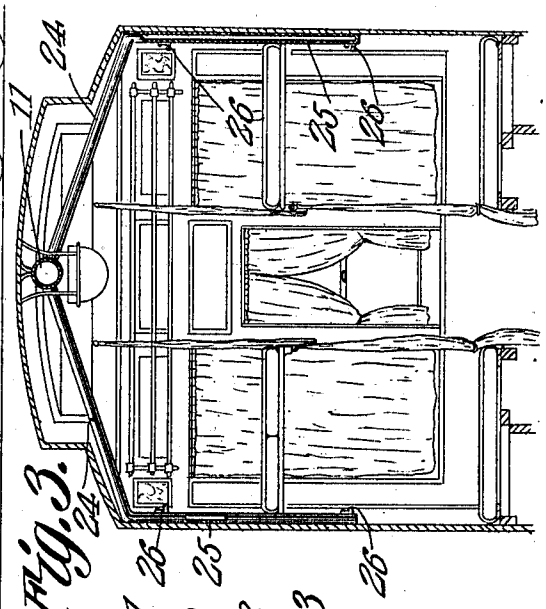

Fig. 3.

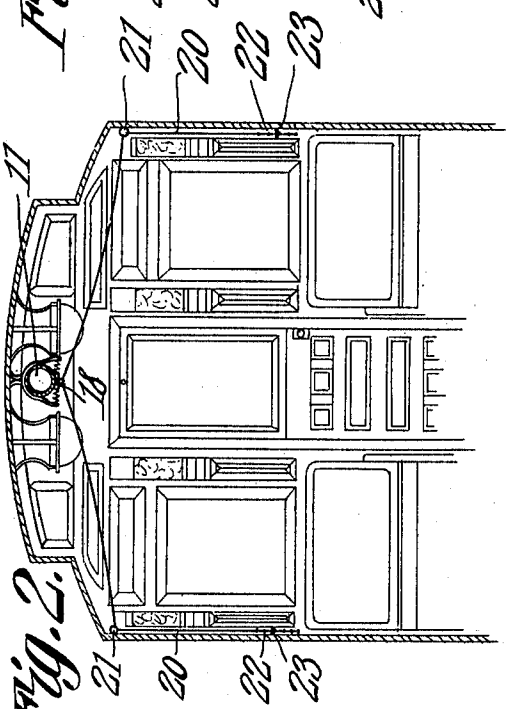

Fig. 2.

Witnesses

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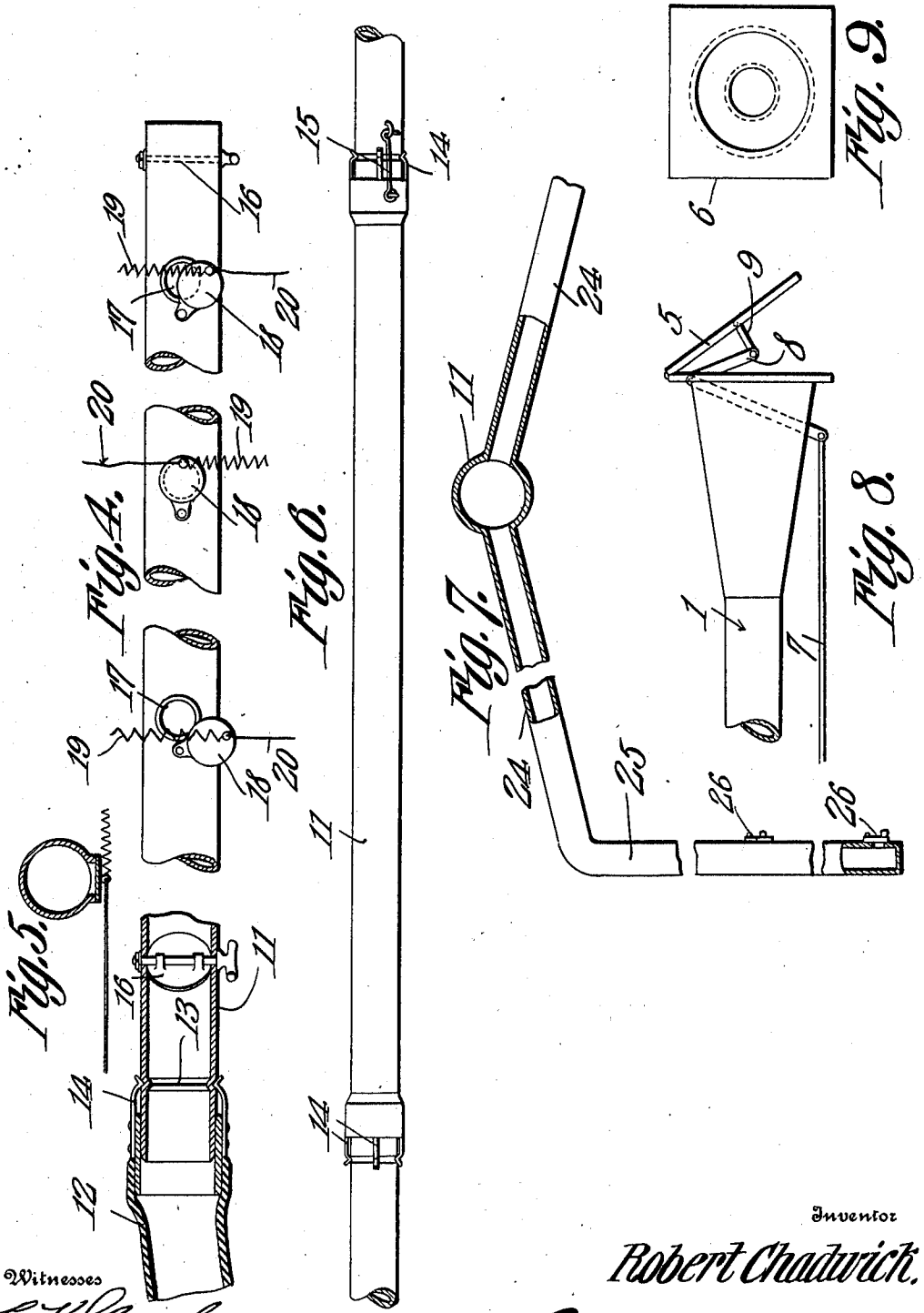

Witnesses

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UNITED STATES PATENT OFFICE.

ROBERT CHADWICK, OF LEXINGTON, NEBRASKA.

TRAIN-VENTILATOR.

970,685. Specification of Letters Patent. Patented Sept. 20, 1910.

Application filed April 12, 1909. Serial No. 489,449.

To all whom it may concern:

Be it known that I, ROBERT CHADWICK, a citizen of the United States, residing at Lexington, in the county of Dawson and State of Nebraska, have invented a new and useful Train-Ventilator, of which the following is a specification.

This invention has reference to improvements in train ventilators being designed particularly for the supplying of fresh air to the occupants of trains of cars in such manner that the air shall be free from smoke or dust.

In carrying out the invention the air is drawn from in front of the locomotive of the train in advance of any point where there is likelihood of the smoke from the engine or the dust caused by the train from reaching the inlet to the ventilating device. The air so gathered is conveyed through the top portions of each car and may be there allowed to escape and fall gradually to the bottom of the car being more or less warmed in the descent through the already heated air in the car. Or conduits may be provided from the main conduit so that the air may reach points immediately adjacent to the occupants and these conduits may be under the control of the individual occupants so that fresh air may be utilized by the occupant as desired.

The invention will be best understood from a consideration of the following detail description taken in connection with the accompanying drawings, forming a part of this specification, in which drawings,

Figure 1 is a side elevation of a portion of a train more or less schematically represented and illustrating the application of the present invention. Fig. 2 is a cross section of a car of the type known as a passenger car showing one mode of applying the invention. Fig. 3 is a similar view showing another mode of applying the invention, the showing of Fig. 3 being typical of a sleeper. Fig. 4 is a detail view of a portion of the fresh air conduit. Fig. 5 is a cross section of the same at one of the valves. Fig. 6 is a view showing a complete length of the conduit and portions of connecting conduits. Fig. 7 is a cross section of the conduit showing branch conduits leading to the occupants of a car. Fig. 8 is another type of air gathering nozzle, and Fig. 9 is a front view of the showing of Fig. 8.

In Fig. 1 there is shown a locomotive and one single car but this showing may be taken as typical of an ordinary railroad train, the showing of the drawing being sufficient for the understanding of the invention.

Upon the locomotive there is mounted a conduit 1 of some light material such as sheet metal, and this conduit extends from in front of the smoke stack of the engine to a point to the rear of the cab thereof. In front of the smoke stack of the engine the conduit 1 is provided with a nozzle 2 which may be expanded into a bell of considerably larger area than the conduit 1 so as to gather the air as the train moves forward and cause more or less compression of the air in the conduit 1 so that the air will flow through the conduit with considerable force. There are occasions when it is desirable to prevent the entrance of air into the nozzle or bell 2 as for instance when the engine is entering a storm of rain or snow or a storm of wind causing considerable dust. For this purpose the front of the bell is provided with a door 5 as shown in Figs. 8 and 9, this door being hinged at one side to a frame 6 fast on the front of the bell and controlled from the cab of the engine through a link 7 connected to a bell crank lever 8 which latter may be in turn connected by a link 9 to the door 5, so that by a proper manipulation of the link 7 the door 5 may be opened or closed at the will of the engineman. By opening or closing the door 5 to a greater or less extent the entrance of air into the bell may be controlled, or may be entirely prevented by the closing of the door. This door as shown in the drawings is to be taken as typical of any suitable device for opening and closing the mouth of the bell 2 at the will of the engineman.

The air is conducted from the conduit 1 through another conduit 10 supported on the tender of the engine and this conduit may be connected to still another conduit 11 extending through the upper portion of the car immediately below the roof and preferably central to the car. Each car may be provided with such a conduit 11 and the conduits 1, 10 and 11 and the succeeding conduits 11 are connected together by suitable connections 12, somewhat similar to but of larger and lighter construction than the hose connections for air brake systems. Each conduit at each end may be provided with an

inwardly directed bead 13 and each end of each hose connection 12 may be of such size as to receive the corresponding end of the conduit 1, 10 or 11 and is provided with fingers 14 adapted to straddle the corresponding end of a conduit and lock in the hollow side of the bead 13 which hollow side is exposed on the exterior of the conduit end.

The manner of connecting the members 12 with the sections 11 is sufficient to hold the parts together under normal running conditions but should the train break in two these parts will readily separate. Furthermore, since the pressures within the conduits 11 and connecting sections 12 are very light the coupling means constitutes a very simple means for connecting the sections together. Where the parts are not to be uncoupled except occasionally they may be further held together by any suitable means such as a hook 15 indicated in Fig. 6.

At each end of each conduit 11 there is installed a valve or damper 16 so that the passage of air through the conduit may be throttled or in the case of the end conduit of a train, the rear end of the conduit may be entirely closed by a suitable manipulation of the damper 16.

Where it is desirable to have the air enter the car at the top of the car then each conduit 11 is provided with a suitable number of lateral passages 17 each normally closed by a hinged lid or valve 18 held in the closed position by a suitable spring 19. Attached to the valve is a cord or strand 20 so located as to move the valve in opposition to the spring 19 when properly manipulated. Such strand 20 may be carried to the side of the car where its course may be diverted by an eye 21 or a pulley or other suitable means and the free end of the strand may be provided with a number of spaced knots or buttons 22 adapted to engage a catch 23 so that an operator may draw on the strand 20 and so open the valve 18 to the desired extent and there fix it by the engagement of one or the other of the buttons 22 with the clip 23. When it is desired to close the valve then it is only necessary to release the strand from the clip 23 when the action of the spring 19 will return the valve to its normal closed position.

The structure just described, that is the conduit 11 with valves directly attached thereto is more especially adapted for day coaches, allowing the air to enter the coach at the top which is naturally the hottest part of the coach so that in cold weather the incoming fresh air becomes more or less heated before reaching the passengers, and therefore there is no danger of the passengers becoming chilled by streams of cold air. In sleeping cars it is desirable that the fresh air be conducted to the berth and in some instances it may be desirable in other types of cars to conduct the fresh air to the sides of the cars. In such instance the structure best shown in Fig. 7 is utilized. Branched off from the conduit 11 are pipes 24 leading to the sides of the cars and each of these pipes is then branched downward as shown at 25 to the berth and each downward portion 25 of the pipe 24 may have a valve or outlet 26 within reach of the occupants of either or both the upper and lower berths. In addition to these pipes 24 the conduit 11 may have valved openings 17 like those shown in Fig. 4. By this means each occupant of a berth has within his control the admission of a large or small quantity of fresh air as he may desire.

Since practically all passenger cars have means of producing an outlet for the air at either end, usually in the form of a sliding sash in the door, such opening should be provided or the sash lowered so that a circulation is produced in the car in order that the fresh air may enter through the conduits 11.

By this invention there is provided a means whereby passengers may receive an adequate supply of fresh air without the necessity of subjecting themselves or others to uncomfortable drafts as would occur were the windows opened. Provision is made for the localizing of the incoming air and such incoming air is gathered from a point where it is free from dust or smoke or other deleterious matters and should occasion arise where there is danger of undesirable matters entering the intake portion of the conduit then it is within the engineman's province to prevent the entrance of such undesirable air during the prevalence of such undesirable conditions.

What is claimed is:—

1. A ventilating system for railway cars, comprising an air conduit centrally located immediately beneath the roof of each car, another conduit leading to the front of the locomotive and there provided with an expanded bell having controllable means for opening or closing the intake end of the bell, and coupling means between the conduits, the car conduits each being provided with controllable means for the inlets therefrom to the interior of the car.

2. A ventilating system for railway trains, comprising an air conduit upon the locomotive and upon the cars, connecting means for coupling the conduits into one continuous conduit, a collecting bell at the front of the locomotive-carried conduit and provided with means controllable from the cab of the engine for regulating the area of the intake end of the bell, and branch conduits in each car leading from the main conduit extending therethrough and provided with controllable vents within reach of the occupants of the car.

3. A railway train ventilating system comprising a conduit extending centrally through each car immediately beneath the roof of the car, valves or dampers at each end of each conduit, controllable means in each conduit for the entrance of air from the conduit to the car, connections for coupling the conduits of the cars together, and an engine-carried conduit having an air inlet bell at the front of the engine, and controllable connections between the bell and the engine cab for admitting or preventing the admission of air to the mouth of the bell.

4. In a ventilating system for railway trains, an engine-carried conduit having an air inlet bell at the front of the engine, a valve or damper for closing the mouth of the bell, and means extending to the cab of the engine for operating said valve or damper.

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

ROBERT CHADWICK.

Witnesses:
C. J. WELDEN,
H. C. SKADE.