(No Model.)

T. P. KINSEY.

PASSENGER CAR VENTILATION.

No. 249,533. Patented Nov. 15, 1881.

Fig 1

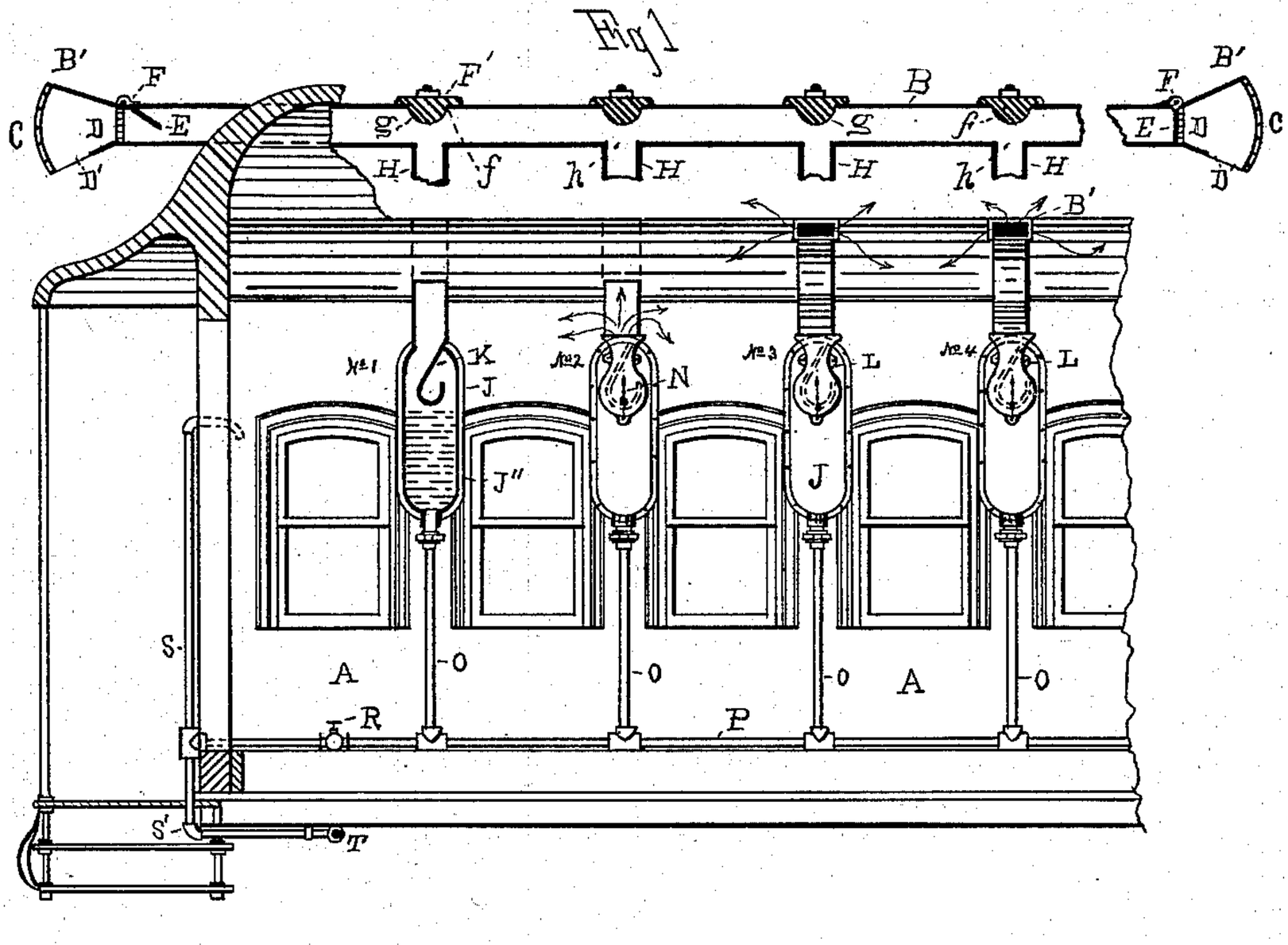


Fig 3

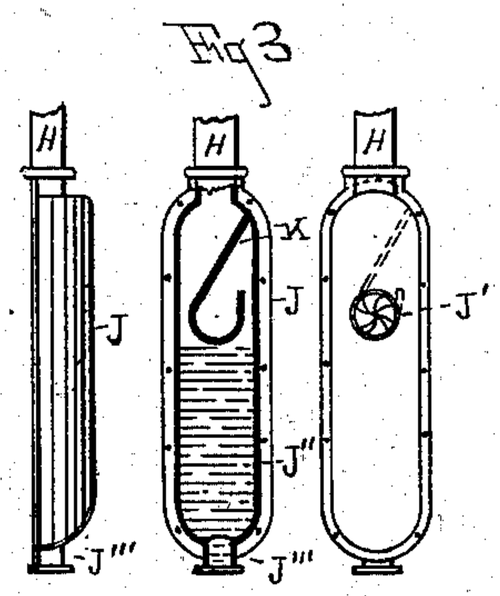


Fig 2

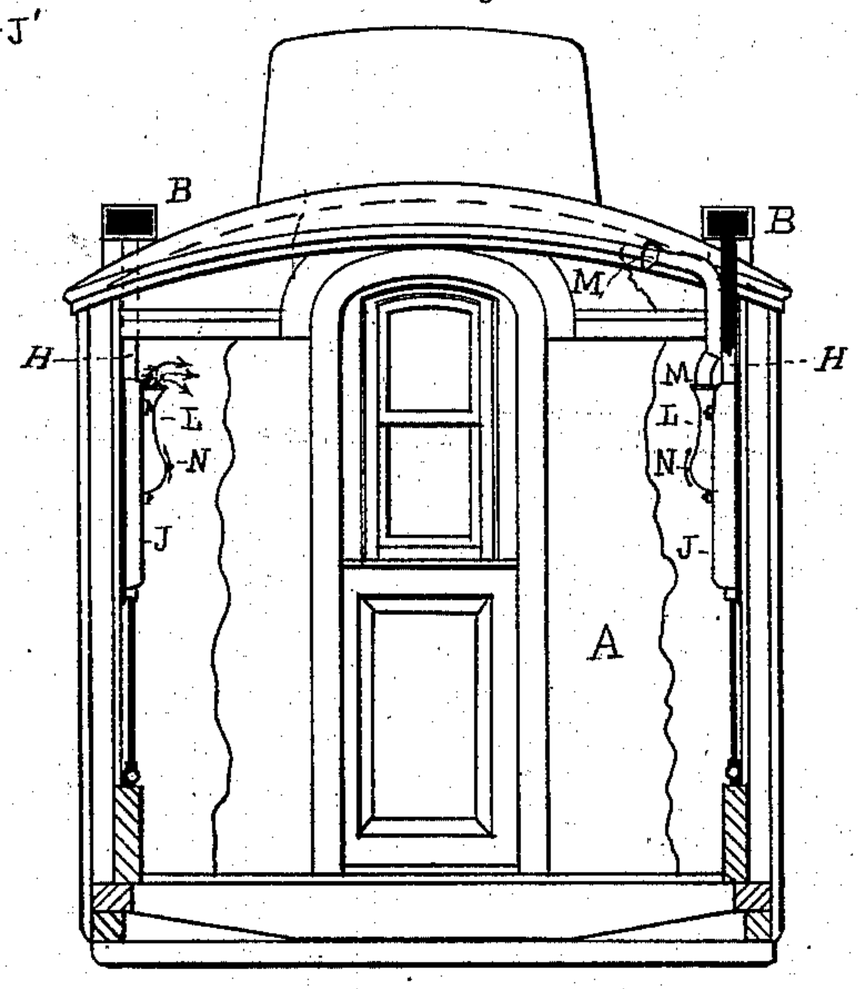
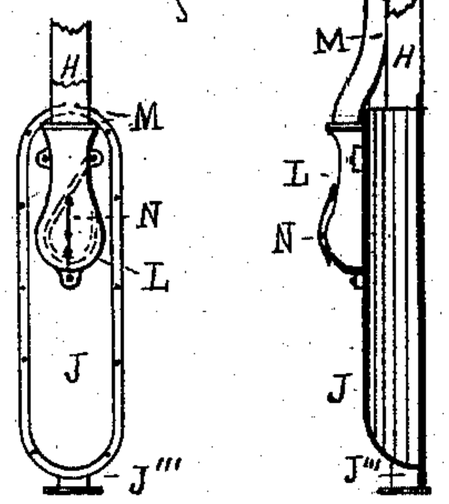


Fig 4



Witnesses
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PASSENGER-CAR VENTILATION.

SPECIFICATION forming part of Letters Patent No. 249,533, dated November 15, 1881.

Application filed August 17, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS P. KINSEY, of the city of Reading, county of Berks, State of Pennsylvania, have invented certain new and useful Improvements in Passenger-Car Ventilation, of which the following is a specification.

This invention is an improvement upon the Patent No. 238,777, March 15, 1881, Fox and Kinsey, and is more particularly intended to obviate some objections to said patent occasioned by the encroachment on the clearing space between the tracks (on double-track lines) by the additional width given the passenger-cars over the original standard. For single-track or wide clearance roads there is no occasion to deviate from the previous devices.

The accompanying drawings form a part of this specification, and represent what I consider the best means of attaining the desired result.

Similar letters represent similar parts.

Figure 1 is a sectional view of the interior of a passenger-car from the floor to lower edge of the monitor top, the latter being removed, and the air-receiving box shown detached and in section above. Fig. 2 is a partial front and cross-sectional elevation of a passenger-car. Fig. 3 is a detail view of the air-ducts. Fig. 4 is a detail view of the air-distributers.

A represents the car; B, the air-receiving box, of which there are two, placed one on each side of the monitor top upon the roof of the car. Preferably they will be made of zinc or tin, in size of oblong section six by eight inches, and extend the entire length of the car-roof, and provided with enlarged cone-heads B′ at either end, covered with a coarse wire-screen, C. Back of the cone at the entrance to B is placed a fine wire screen, D.

On the lower side of the cone, and between the wire-screens C D, is an opening, D′, and back of the screens D, in the pipe or box B, are placed automatic flap-valves E E suspended from a cap, F, fastened on top of the box B.

At points in the length of the air-receiver B, indicated by the number of air-ducts affixed to that side upon the interior of the car, are branch pipes H H, connecting the air-ducts and the pipe B. Immediately over said branch pipes are openings *f*, left in the cover of the box, which are closed by caps F′, upon the under side of which are secured deflectors *g g*, projecting the requisite distance in the box to deflect a certain portion of the entering air into and down the connecting-pipes H H.

J represents the improved air-ducts, which may be of cast-iron or stamped out of zinc or tin. Fig. 1 gives their general appearance in the car, while Fig. 3 shows more clearly their construction. A good working size would be about two feet long, eight inches wide, and four inches deep. A partition, K, starts from one side of the opening of pipe H into J, and is carried nearly across at a tangent to the register opening in the cap, makes a semicircle around the lower edge of the opening and a perpendicular rise to the height of the diameter of the same. The register-opening J′ in the cap of the air-duct is provided with the usual register-wheel, and is covered over by the air-distributer case L. A stem cast with or secured in the register-wheel projects through the front of the distributer-case, and has a pointer on the end, so arranged with reference to markings on the case as to indicate the opening or closing of the air-duct register. Underneath, at the base of the air-duct case, is a boss, J‴, threaded for gas-pipe, by which it is connected with the system of filling and discharge or flushing pipes O and P. These pipes are controlled on both sides of the car by stop-cocks R, placed at each end of and within the car, being so arranged that they may be operated from the exterior of the car. At each end of and on the outside of the car are placed stand or gage pipes S, so adjusted that when the water in filling of the air-duct reservoirs reaches the proper height it will be indicated by the flow of water from the pipes S.

To get the filling and discharging apparatus out of the way of the entrance to the cars, I use a return-bend, short length of pipe, elbow S′, and hose-coupling T, which brings the apparatus at the side of the car (outside) and within reach of the stop-cock communicating with the ducts inside of the car. The stop-cock, as is usual with cocks designed to cut off back of an open pipe, will have an air-hole so

arranged that when the water is cut off the air shall enter, and the stand and horizontal pipe between the cock and the hose-coupling will immediately free itself of the water, and thus prevent freezing. The water-reservoirs of the air-ducts cannot freeze, being inside of the car.

The air-distributer case L is also stamped out of zinc or tin, and so constructed that the discharge-mouth M shall project the air upward and outward in curves from the distributers toward the center and sides of the car. Nos. 1 and 2 in Fig. 1 show the air-distributers as arranged for the ordinary parlor-car, while Nos. 3 and 4, Fig. 1, show them as arranged for distributers in a sleeper.

In operation the car, supposed to be running to the left, the flap-valve E at the advancing end of the pipe B will open, while that at the rear end will close against the fine screen D. Air will now enter with more or less force, governed by the speed of the car, the larger cinders being stripped therefrom by the screen C, and those that pass through C being intercepted by D will drop out of the opening D′, provided for that purpose between the two screens. The air, freed from cinder but carrying more or less dust along, will fill up the box B, and through the operation of the deflectors *g g*, assisted by the reduction of pressure in the car from the exhaustion of the same by the fan, (as described in Patent No. 238,777, March 15, 1881, Fox and Kinsey,) will pass down the connecting-pipes H, be deflected by the partition K down upon the water in the reservoir, where it will be freed from dust, and rising over the rear of the partition pass through the air-duct register and out of the air-distributers into the car.

The sectional area of the pipes H and the clear opening of the air-registers are governed by the number of air-ducts placed at the side of the car, and to be supplied by the air-receiving pipe B. Dividing the area of B by the number of air-ducts will give the area of H and J. This mode of furnishing fresh air for ventilation is not confined to cars exhausted by a fan, but is applicable to all cars where a current of air is discharged from a car in any manner whatever.

I am aware that air receiving and discharging boxes on passenger and other cars are not new, that a box of that character having flaps automatically operated to open said pipe in the direction of the advancing car and closing the opposite end are also not new, (see Patent No. 171,611, December 28, 1875, G. F. Godley; No. 186,251, January 16, 1877, J. B. Hill; and No. 11,494, August 8, 1854, Reed and Mould, car-ventilators;) but I believe myself to be the first to so construct, arrange, and combine the same as to furnish a complete system of fresh-air supply, in combination with the discharge of foul and heated air by the exhaustion of the car.

What I claim, and desire to secure by Letters Patent, is as follows, to wit:

1. In combination with a passenger or other car, and placed on the roof of the same, an air-receiving box, B, preferably of oblong section, extending longitudinally from end to end of the car-roof, provided at each end with enlarged heads B′, the opening being covered with coarse wire C to exclude large cinders, a similar screen, D, of finer mesh placed at the entrance of the box proper and between the two screens, the opening D′, for the discharge of cinders passing the screen C, substantially as shown, and for the purpose described.

2. An air-receiving box, B, provided with openings *f* on its top and openings *h* beneath, the openings *f* being closed with caps F′, having secured to their inside face deflectors *g*, so arranged with relation to the openings *h* as to deflect a certain portion of air through the same, in combination with the connecting-pipes H and air-ducts J on the interior of the car, substantially as described, and for the purpose specified.

3. An air-duct reservoir or box, J, provided with a deflecting-partition, K, constructed as described, having a register-opening, J′, upon its face, controlled by the usual register-wheel plate, a water-reservoir, J″, and a boss, J‴, combined with the air-receiving pipes H and B above it, with the water-pipes and cock O, P, and R below it, and with the air-distributer L through spindle and pointer N, as described, and for the purpose set forth.

4. The combination of supply and discharge pipes O and P, stand-pipes S, return-bends S′, and hose-couplings T, with the air-duct boxes J on the interior of a passenger or other car, arranged and constructed to be controlled in their operation by cocks R, placed at each end of and inside the car, said cock being adapted to be operated from the outside of the car, substantially as shown, and for the purpose described.

5. The automatic flap-valves E, provided at each end of the air-box B, and in combination therewith, arranged to be removed and replaced through an oblong cross-slot in the top of the box B, said slot being covered by the cap F, to which the flap-valve is hung, substantially as shown and described.

6. The combination of the air-ducts J, with the air-distributers L, the back of the latter being secured to the face of the former, and both in combination with the air-receiving box B, pipe H, and register J′, as shown, and for the purpose described.

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Witnesses:
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A. R. WARNER.