S. C. MAINE.

Car-Ventilators.

No. 142,799. Patented September 16, 1873.

Fig. 1

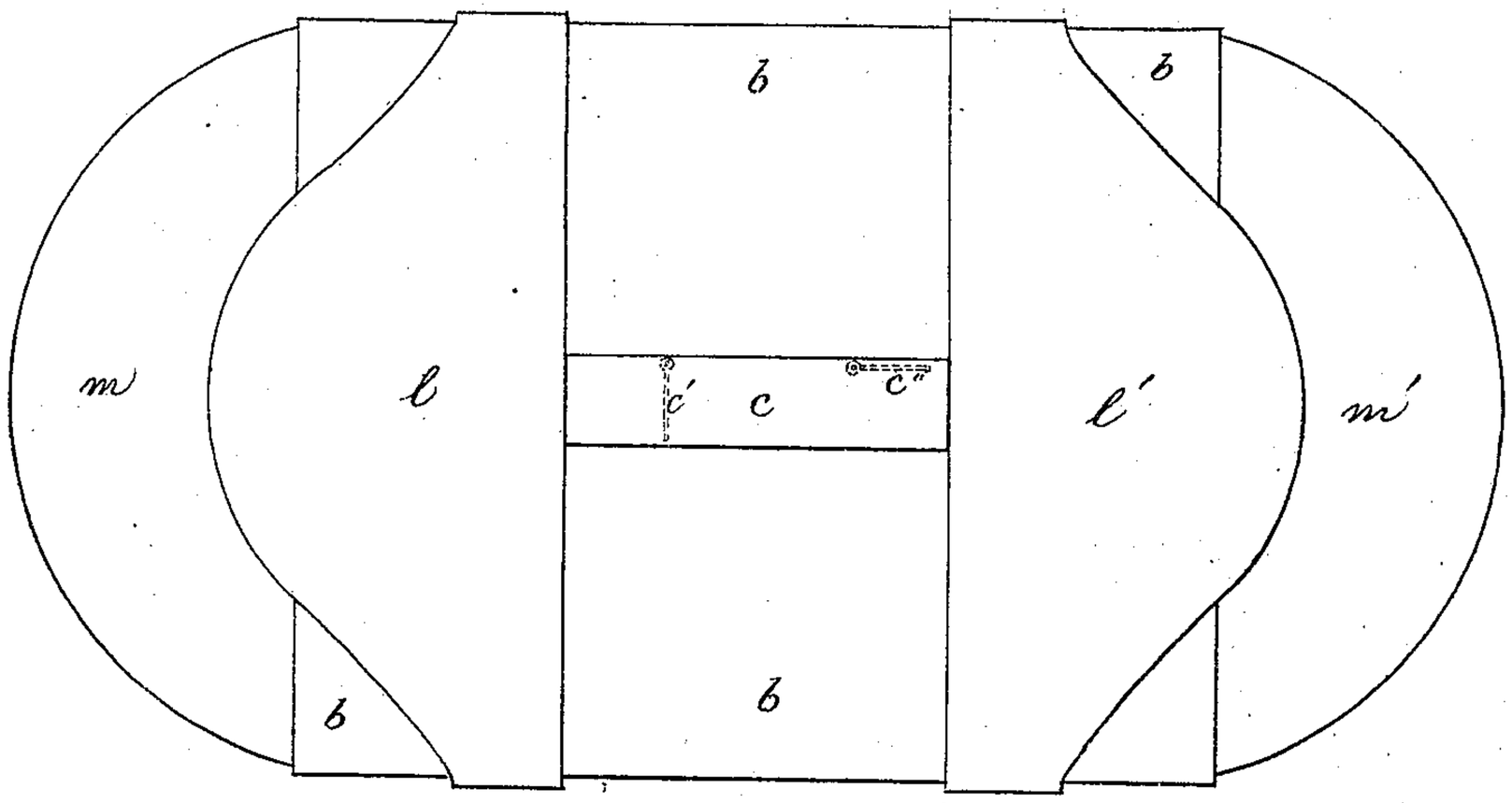


Fig. 2

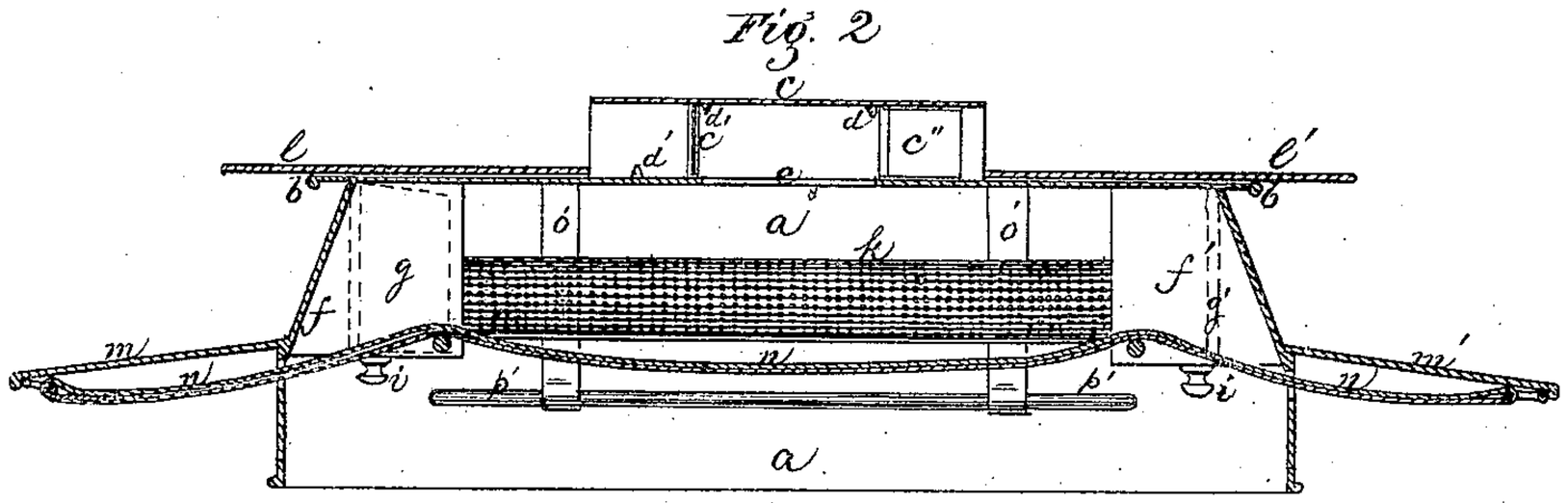


Fig. 3

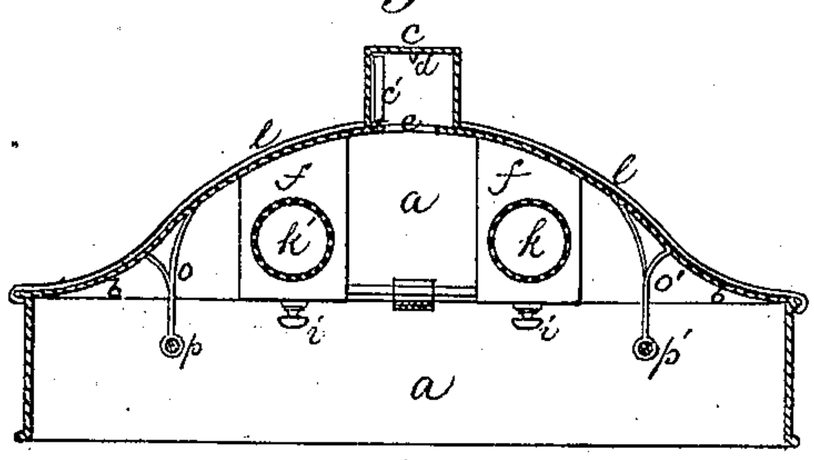
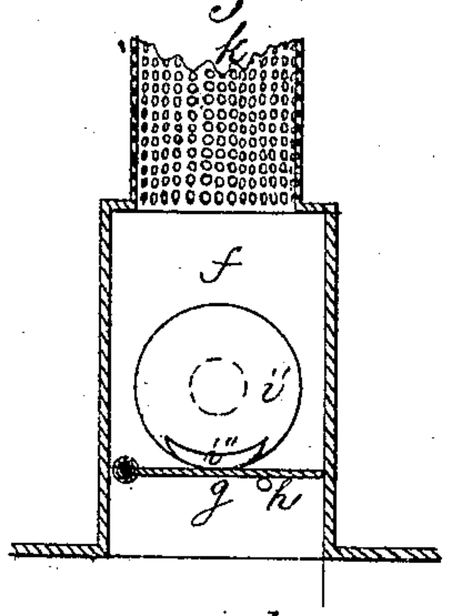


Fig. 4



Witnesses
Sam'l M. Barton
A. R. Wright.

Inventor
Lebens C. Maine
by his Attys
Carter & Wright

UNITED STATES PATENT OFFICE.

SEBEUS C. MAINE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN CAR-VENTILATORS.

Specification forming part of Letters Patent No. **142,799**, dated September 16, 1873; application filed July 22, 1872.

To all whom it may concern:

Be it known that I, SEBEUS C. MAINE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Ventilators, of which the following is a specification:

Figure 1 of the accompanying drawing is a top view, Fig. 2 is a central vertical longitudinal section, and Fig. 3 is a central vertical transverse section, of the upper portion of a horse-railroad car, showing my improved method of ventilation. Fig. 4 is a horizontal section, on an enlarged scale, of the end of one of the ventilating-ducts.

The present invention relates to certain new and useful improvements in the method of ventilating horse or steam railroad cars, &c.; and has for its principal object the diminishing the cost of construction of the car, and the introduction of a constant and regulated flow of fresh air in such a manner as to gently diffuse it throughout the car without subjecting the passengers to the inconvenience and danger of a strong direct draft, to which they are exposed by admitting the cold air, as heretofore, through windows or ventilators situated in the top of the car and over the doors; also, the providing adequate means for the eduction of any foul or heated air that may be generated within the car. My improvements consist, mainly, in a series of devices arranged and operating, as will be hereinafter more fully described, so that the passage of the car, &c., causes the current of air produced thereby to open swing valves or doors of ventilating-ducts connected, by longitudinal perforated tubes, with opposite similar ducts, whose valves or doors are closed by the entrance of the air, so as to exclude its exit except through the perforations of the tube or tubes in the top of the car, from which it is gently disseminated throughout the car as it passes to the bottom; and, at the same time, the current of air produced by the passage of the car causes a valve arranged to swing in one end of a longitudinal ventilator on the top of the car to close while a swing-valve on its opposite end is opened, so as to produce a perfect exhaust-draft for the heated and vitiated air within the car. It also consists of adjustable hoods or awnings attached to the top of the car ends to increase the air-draft when necessary.

In the drawing, *a* represents the upper portion of a horse-railroad car formed with a curved top, *b*, in the center of which is a longitudinal box or ventilator, *c*, provided at each end with swing doors or valves *c' c''* opening outward, and held in the required position when open or closed by pins or stems *d d'*. The bottom of the ventilator *c* is formed with an aperture, *e*, opening into the car-top *b*. At each end of the upper portion of the car are formed, at a proper distance from each other, two ventilating boxes or ducts, *f f'*, each provided with a swing door or valve, *g g'*, opening inward, and prevented from swinging outward by a stem, *h*. These doors or valves *g g'* are arranged so that they may be turned from within the car and held in any desired position by means of a knob, *i*, connected with a revolving disk, *i'*, provided with a beveled lug or flange, *i''*, which, by the operation of the disk *i*, is made to impinge against or be released from the valves *g* or *g'*. Connecting the ducts *f f'* are parallel longitudinal perforated tubes or conductors *k k'*, through which the air is admitted from the ducts *f* or *f'*, and through whose perforations it flows into the car, &c. Arranged on the top *b* of the car at each end, so as to slide backward and forward, are hoods *l l'*, of canvas, galvanized iron, or any other suitable material, for the purpose of increasing the draft when necessary, in which case they are drawn out over the end roofs *m m'*; or they may be attached to an adjustable frame connected with the top of the car, so as to be raised and lowered or turned down over the platform-roofs *m m'* when an increased draft is required, and turned back on the car-top when not required. *n* is a bell-strap, and *o o'* are supports to hand-rods *p p'*.

The operation of my invention is as follows: When it is desired to admit fresh air into the car, &c., the disks *i'* in the ducts *f* are turned by means of the knobs *i*, so that the current of air produced by the passage of the car, &c., opens the valves or doors *g* and flows into the perforated tubes or conductors *k k'*, and closes the valves *g'* of the rear ducts, thus compressing the air and obliging it to find an exit through the perforations of the tubes *k k'*, which break the force of the draft and allow the gentle admission and diffusion of the fresh air into and throughout the car, the cold air

thus admitted naturally falling to the bottom and the heated air rising to the top of the car, where the latter is carried out at the rear end of the ventilator or exhaust opening *c*, the doors or valves *c' c''* of which operate in reverse order to those of the ducts *f f'*—that is, the forward valve or door *c'* is closed by the current of air created by the passage of the car, &c., while, at the same time, the rear valve or door *c''* is opened, thus producing an exhaust-draft for the heated and vitiated air, and supplying a continual current of fresh air to the car without subjecting the passengers to any direct draft.

The amount of fresh air admitted into the car may at any time be regulated by turning the knobs *i*, which open, close, hold, or allow the free action of the doors or valves *g g'*, as above described.

Reference being had to the drawings, it will readily be seen that my improvements may be introduced at very little expense, the tubes being of tin, galvanized iron, or any other suitable light, inexpensive material, and, like the ducts and other portions of the ventilating apparatus, are simple and economical in construction. Moreover, by the use of my invention, the expensive arrangement of ventilators and monitor windows in the top of the car is obviated.

If desired, the box or ventilator *c* on top of street-cars may be extended and arranged to form seats for outside passengers.

When the invention is applied to steam-cars, wire or other suitable gauze may be placed over the mouth of the aperture through which the air passes, so as to exclude the entrance of dust and cinders into the perforated tubes.

My invention is applicable to buildings and other purposes as well as to railroad-cars, and either one or more perforated tubes or conductors may be employed, as the occasion requires.

When applied to any stationary object, a fan or blower may, if necessary, be employed to create a current of air that is produced by the passage of a car.

The tubes or conductors may be formed of any desired shape, and the perforations may, if desired, be made only in one-half of the periphery of the tube, or in one or more sides of the conductor, so that the tube or conductor may be turned, and the current of air passing through the perforations may be directed upward or in any required direction.

I am aware that perforated metal and gauze-wire have been employed in the construction of ventilators, both in the ventilators patented by me March 1, 1870, No. 100,429, and April 9, 1872, No. 125,401, and in the Rollstone patent. I am also aware that tubes with openings extending the length of the car for distributing the air are not new.

Having thus fully described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. The swing doors or valves *g g'*, arranged in the ducts *f f'*, in combination with the knob *e'* and revolving disk *i'*, provided with a beveled lug, all arranged to operate as specified.

2. The adjustable hood or hoods *l l'*, arranged and operated as and for the purpose specified.

3. The combination of the ducts *f f'*, swing-doors *g g'*, perforated tube or conductor *k*, and ventilator *c*, provided with swing doors or valves acting reversely to those of the ducts *f f'*, all arranged to operate as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SEBEUS C. MAINE.

Witnesses:
CARROLL D. WRIGHT,
N. R. WRIGHT.