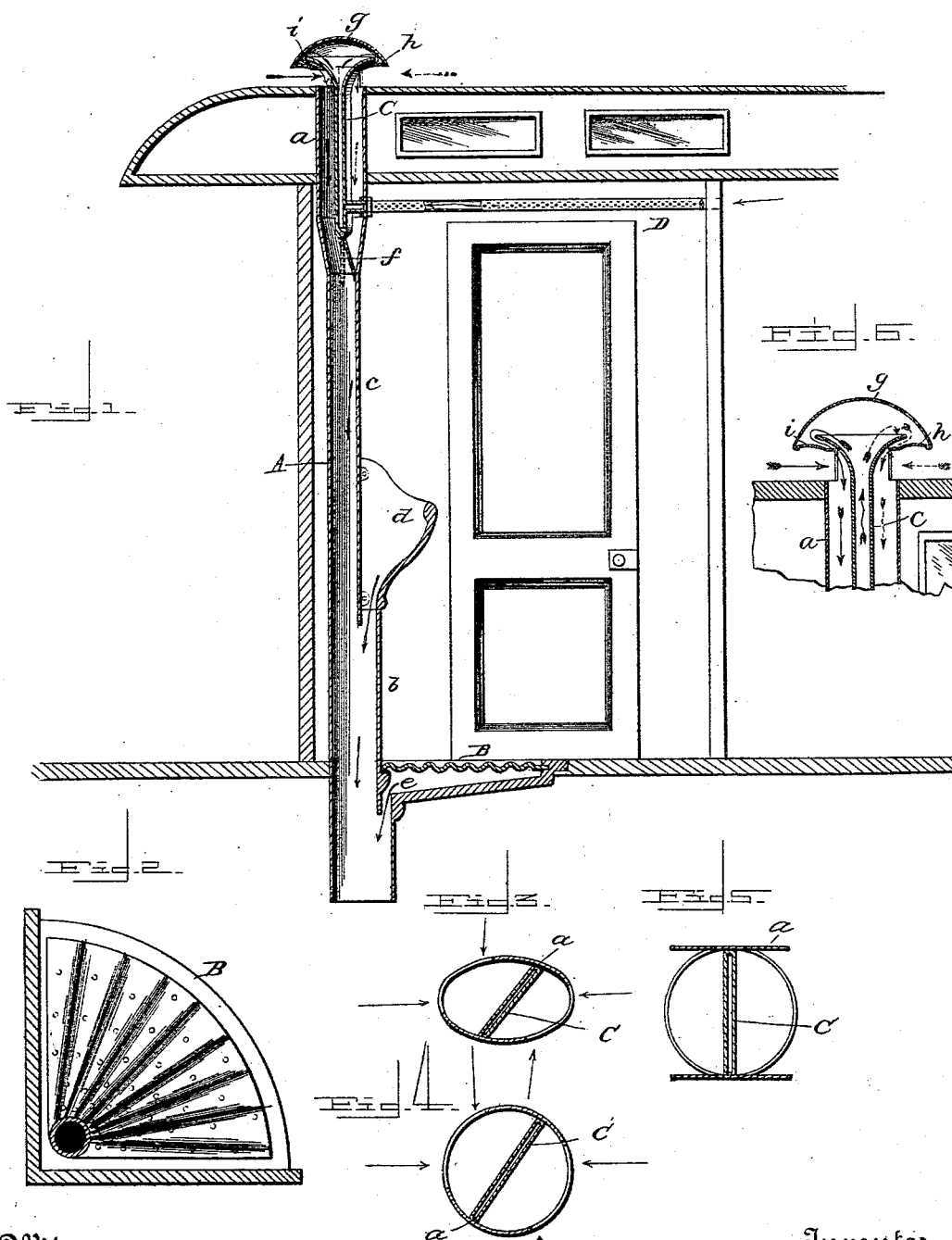


(No Model.)

I. A. LOVEJOY.
VENTILATOR.

No. 458,179.

Patented Aug. 25, 1891.



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UNITED STATES PATENT OFFICE.

IRA A. LOVEJOY, OF ROCHESTER, NEW YORK.

VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 458,179, dated August 25, 1891.

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To all whom it may concern:

Be it known that I, IRA A. LOVEJOY, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Ventilators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in ventilators, and, while it is particularly adapted to be used for ventilating purposes on steamboats and railway-cars, it is also designed to be used for ventilating the rooms of buildings, and is capable of being used in a variety of situations which will readily suggest themselves to those having occasion to use ventilators.

The object of my invention is to provide novel and improved means for removing impure air from passenger-cars, sleepers, and cabins on railroads and steamboats, and particularly the toilet-rooms thereof, and also to remove foul air from the rooms of buildings, and especially sleeping-apartments and toilet-rooms.

To this end my invention consists in new and improved means for accomplishing these results, all as hereinafter described, and particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, in which like letters of reference are used to designate similar parts, Figure 1 represents a sectional view of a portion of a railway-car, showing also my improved ventilating apparatus in section. Fig. 2 is a detail view of the corrugated and perforated drip-plate. Fig. 3 represents a cross-section of the ventilating-pipe, taken on the line *xx* of Fig. 1. Fig. 4 represents a similar section of a modified form of pipe; and Fig. 5 is a cross-section of the same, illustrating the method of cutting the pipe so as to form an air-passage with parallel guide-wings or plates on either side thereof. Fig. 6 is a detail sectional view of the top of the pipe and cowl.

The pipe proper (marked A) may be made in a single piece, or it may consist of several sections joined together in any suitable way according to the usual method of uniting

pipe-sections, and has preferably the enlarged end portions *a b* and the intermediate portion *c*, of less diameter than the end portions, as shown in Fig. 1.

At or near the lower end of the portion *c* is placed the urinal *d*, and beneath such urinal is placed a drip-pan B, which preferably consists of a single piece of corrugated sheet or cast metal, which may be stamped or cast in the form shown, or in any desired shape, so as to form a suitable cover for the trough *e*, which has a suitable outlet-opening into the lower end of the pipe A. The sheet-metal plate B is also provided with numerous perforations in the grooves or depressions thereof between the ribbed portions of the plate, which allow the waste water to escape into the trough *e*, and thence into the pipe A, while the ribs provide a surface on which a person may stand without wetting the feet.

The enlarged upper end of the pipe A is divided centrally by a suitable partition C, to the lower end of which is attached a rubber flap *f*, the purpose of which is to close that side of the end of the pipe opposite the rushing air accordingly as the train is running or the wind blowing in one direction or the other, as indicated by the arrows in Fig. 1. The partition C may consist of a solid interior wall integral with or removably secured within the upper portion *a* of the pipe A; but it is preferably composed of a hollow pipe-like portion which is oblong in cross-section and has a flared or funnel-shaped upper end, above which is secured the semi-spherical hood or cap *g*, which has an inwardly-projecting annular ring or flange *h*, between which and the concave overhanging rim of the hood is placed the flared or funnel-shaped end of the partition C, so as to leave an air-passage between the funnel and the flange *h*, for a purpose to be hereinafter described.

The inlet air ports or openings in the upper end of the part *a* of the ventilating-pipe may be formed by cutting the pipe-section so as to leave suitable openings on either side of the diagonally-arranged partition C; but these openings are so placed in respect to the partition and the direction of movement of the car as to afford a free entrance for the incoming air in the direct line of motion of

the train or boat, and at the same time provide a free entrance for the air-currents when the wind is blowing from any quarter of the globe, as indicated by the arrows in Fig. 3, 5 so that whether the ventilator is moving or stationary the air will enter the pipe in the direct line of motion of the car itself or the vehicle on which the ventilator is placed. This construction also facilitates the passage 10 of the air in a downward direction by confining the same against the pressure of the incoming air, so as to more effectually force the same down the pipe.

In the modified form shown in Fig. 5 the 15 cut portions of the pipe are turned outward at either side, so as to form parallel wings or plates to direct the air-currents into the pipe and against the downwardly-curved partition-wall, thence down through the pipe. For the 20 purpose of removing the foul or warm air which by natural causes rises and accumulates in the upper portions of the cars, sitting-rooms, or sleeping-apartments, I provide a perforated pipe D, (shown in dotted lines in Fig. 25 1,) which is detachably connected with the pipe or hollow partition C and forms an air-passage leading from the upper part of the car or room into the opening in the pipe C, so as to permit the heated or impure air from 30 the room to pass out at the top of the funnel, while the outer air, which enters the ventilating-pipe, passes downward through said pipe and out at its lower end. The perforated pipe D preferably extends through the car from 35 end to end, and may be connected with a ventilator at each end, so that foul or warm air will be drawn from all parts of the car, and thereby effect a more efficient ventilation. It will also be seen that the passage of warm air 40 through the pipe D and out through the top of the hollow partition C underneath the hood in cold weather will have the effect of keeping the parts warm at this point, and thus prevent the hood and cap from becoming 45 clogged with snow and ice.

The operation of my invention will be readily understood from what has already been said. As will be seen, the air entering the pipe A from either side, according to the 50 direction of motion of the train or the wind, will pass down through the pipe and out through the lower end. This motion of the air in the pipe will produce a suction at the urinal *d* and through trough *e*, thereby causing the impure air at these points to be drawn, as it were, 55 out into the pipe A and forced out at the upper end of the same. The intruding air at the upper end of the pipe will also have a similar effect upon the air which escapes from the 60 upper portion of the room or car through the pipes C and D and out at the funnel *z*, as indicated by the arrows in Fig. 1, producing at this point a suction which tends to create a vacuum in the semi-spherical hood, which in 65 effect will draw the air through the pipes C and D from the room or car.

Without limiting myself to the exact details of construction, which may be varied in obvious ways without departing from the spirit of my invention, I claim and desire to secure 70 by Letters Patent—

1. A ventilating apparatus comprising a pipe having an enlarged portion at each end, a hood or cap at the top, a diagonally-arranged partition within the upper enlarged portion, 75 and an intermediate inlet or inlets leading from the room or place to be ventilated, substantially as described.

2. A ventilating apparatus comprising a ventilating-pipe constructed substantially as 80 described and having at its upper end an enlarged portion which is divided by a central diagonally-arranged partition, said enlarged portion being cut away at its upper end at 85 opposite sides of the diagonal partition, so as to form free inlet-openings for the air in the direct line of motion of the vehicle or wind, for the purpose specified.

3. In combination with the ventilating-pipe constructed substantially as described and 90 having the enlarged upper portion and the semi-spherical hood or cap having an annular rim or flange, the hollow partition or pipe communicating with the interior of the car or room and having its upper flared end 95 arranged between the concave portion and flange of the cap, so as to form an air-passage for the escape of the air entering said hollow partition, for the purpose specified.

4. In combination with the ventilating-pipe 100 constructed substantially as described and a trough for the escape of waste water, the corrugated and perforated drip-plate arranged beneath the urinal, so as to provide a means of ventilation and an escape for waste water, 105 substantially as described.

5. The herein-described drip-plate, consisting of a solid sheet of metal corrugated and perforated, as described, for the purpose set 110 forth.

6. A ventilating apparatus comprising a pipe having an enlarged portion at each end, a hood or cap at the top, a partition in its upper enlarged portion, and an intermediate inlet or inlets leading from the place or room 115 to be ventilated, substantially as described.

7. In combination with the ventilating-pipe, the hollow or pipe-like partition arranged in the upper portion of said pipe, having a flared upper end and a flap or deflector at its lower 120 end, the overhanging hood or cap, and the perforated pipe extending from said hollow partition to the interior of the car, substantially as described.

In testimony whereof I affix my signature in 125 presence of two witnesses.

IRA A. LOVEJOY.

Witnesses:

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