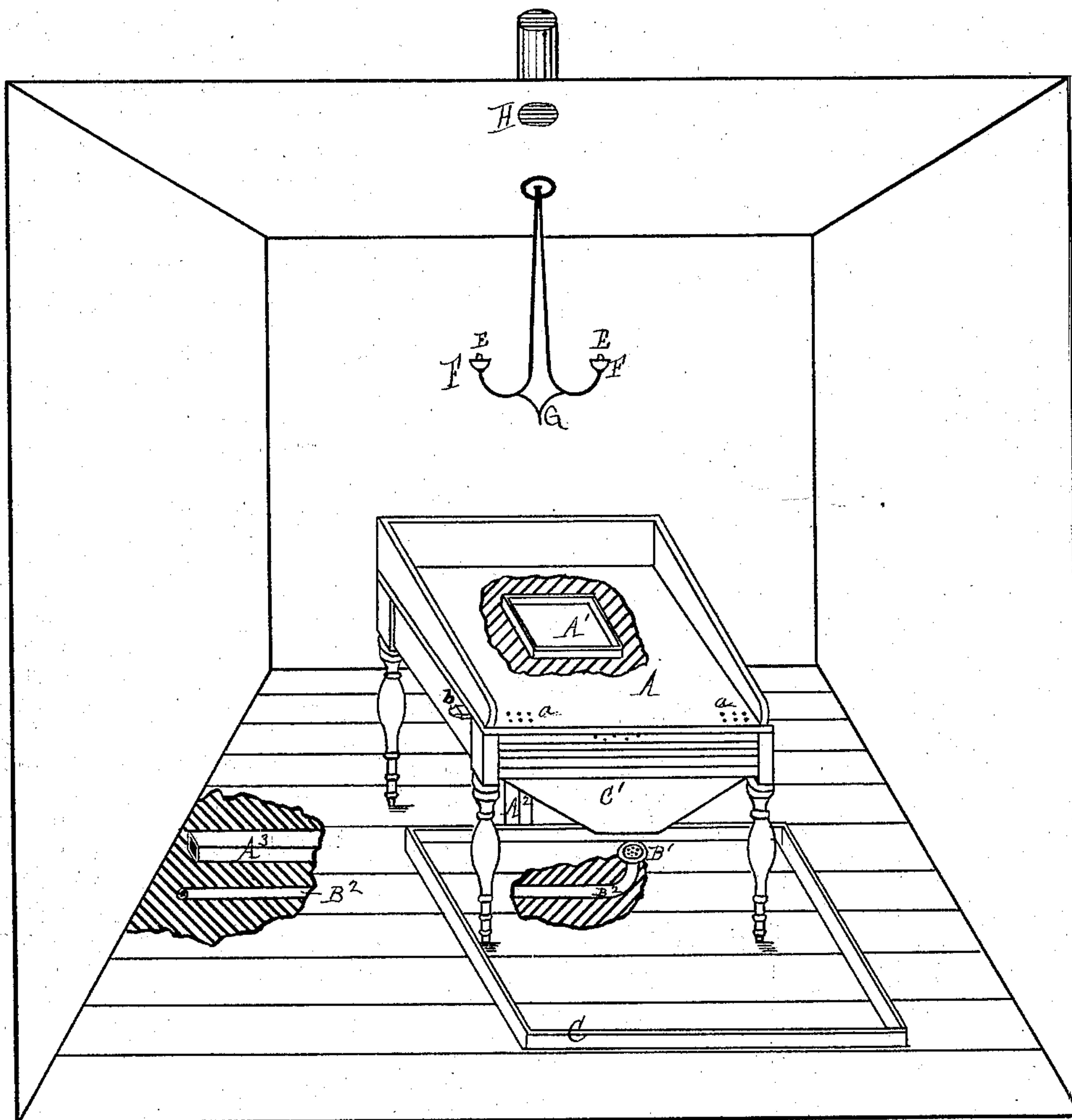


J. BURT.  
System of Ventilation.

No. 209,455.

Patented Oct. 29, 1878.



Attest.

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# UNITED STATES PATENT OFFICE.

JOHN BURT, OF DETROIT, MICHIGAN.

## IMPROVEMENT IN SYSTEMS OF VENTILATION.

Specification forming part of Letters Patent No. **209,455**, dated October 29, 1878; application filed April 19, 1878.

*To all whom it may concern:*

Be it known that I, JOHN BURT, of Detroit, in the county of Wayne and State of Michigan, have invented an Improved System of Ventilation, of which the following is a specification:

The nature of my invention relates to a new and improved system of ventilation, by means of which pure air may be delivered at any necessary point, and the air made foul by breathing or other combustion removed and purified.

The invention consists in the system hereinafter more fully described, and in the construction and arrangement of the necessary appliances for accomplishing the desired result of delivering the fresh and pure air as direct as possible to the point desired, and of disposing of the foul air immediately after the same has been exhaled from the lungs or deprived of its oxygen by combustion.

One method of accomplishing this result is as follows:

I construct a desk, table, or stand of the usual height for writing or work, and preferably as near the central part of the apartment to be supplied with fresh air as possible. Under the top of this desk, stand, or table I construct an air-box, which is connected by a pipe extending down to or through the floor, where it communicates with the main fresh-air flue, which, in turn, communicates with the outer air. In the top of this air-box, which top is the top of the desk or table or stand, or in its sides, are registers under the control of and within easy reach of the occupant, and by means of which the fresh air is delivered directly to the person occupying the table. There is placed in this air-box a suitable pan, which should be supplied with lime, lime-water, or any other absorbent or neutralizer of foul air, by means of which any impurity in the air-supply which may exist therein will be absorbed or neutralized before it is inhaled.

Under the desk, table, or stand, and in the floor, is placed a receptacle, connected with a discharge-pipe under the floor, for the purpose of discharging the foul air made impure by breathing or combustion, and conveying the same to fresh or lime water, which may be flowing through the pipe or placed at any convenient point. By these means the vitiated and

impure air in the apartment is immediately removed. For general purposes this receptacle may be located at any convenient or desired point.

The desk or table or stand, for special and local purposes, is provided with a conductor to carry the air fouled by breathing or otherwise directly to and over the receptacle, and a paling or shield surrounding the table and on the floor, and as high as may be necessary, prevents such foul air from spreading, and secures its more immediate discharge through the receptacle in the floor for conveying such air away to the outer atmosphere, or to a point where it may be mingled with other substances, as above described.

Having thus secured a supply of pure air and the withdrawal of the impure air charged carbonic acid and other noxious vapors, which so add to the specific gravity of the air as to compel it to fall to the floor, the next step in my improved system is to provide for removing from the upper part of the apartment such impure air and noxious vapors and overheated air as may accumulate there. For this purpose I introduce a suitable ventilator, made of any non-conducting material, into the ceiling or into the side walls of the apartment, near the top thereof, and communicating with a pipe or flue, which will conduct the air to any desired point. This ventilator is provided with an indicator-governor of any desired construction, so arranged that when the heated air is above a certain temperature the governor will open the ventilator, and when below will close it.

To provide for the disposition of foul air generated by gas or other burners, I surround each burner with a cup, or a number of burners with a single cup or vessel, connected by a pipe or pipes connecting with a pipe at the bottom or center of the chandelier, where one is used, or in other kinds of burners in the most convenient way that their peculiar construction may require. Directly under this latter-named pipe there should be a receptacle, which should be connected, when the burners are in use, and preferably by a flexible tube, with a receptacle for foul air at the floor, and hereinbefore described, and thus secure the discharge of foul air made by combustion at the



burners directly, and without its being brought into contact with the occupants of the desk or apartment.

One method of using this system of ventilation is as follows: A person seated at the desk, table, or stand A will breathe or inhale the air admitted through the registers *a*, which are provided with valves *b* of the usual construction, by means of which the registers may be opened or closed at will. The air, when exhaled from the lungs, becomes fouled by noxious gases, and will fall downward, and be conveyed by the conductor C<sup>1</sup> and shield C to the receptacle B<sup>1</sup> in the floor, and thence be conveyed away by the moving fluid passing through the pipe B<sup>2</sup>, with which the receptacle connects, or become incorporated with it, to be subsequently removed by a fresh supply of lime or lime-water or other substances that will neutralize the carbonic-acid gas or otherwise destroy its injurious effects. When the burners, gas or others, E, are used, the foul air thereby created falls into the cups F, and are, in the manner already described, conveyed, by a flexible or other pipe, G, to the receptacle B<sup>1</sup>. The ascending air or oxygen-gas will be carried away by and through the tin or non-conducting hot-air ventilator H to the outside air, and thus, by judicious care, an almost if not an entirely pure air may be secured at all times. Of course, for general and miscellaneous purposes, the receptacles in the floor and ventilators in the ceiling, combined with the means described of supplying fresh air, will be depended upon to secure pure air.

In the drawings which accompany and form a part of this specification is shown a perspective view of a room partially in section, and with portions of the floor broken away to show the connecting-pipes beneath.

A represents a desk, the top of which is broken, and to show the pan A<sup>1</sup> in the space below the top of the desk, which connects with the fresh-air pipe A<sup>2</sup>, which, in turn, connects with the pipe A<sup>3</sup>, which brings the air-supply from the outside. The registers *a*, provided with valves *b*, admit the air from the desk to the apartment.

B<sup>1</sup> is the receptacle in the floor, hereinbefore described, to receive the foul air, and this receptacle connects with the pipe B<sup>2</sup>.

C<sup>1</sup> is a conductor or inclined-plane conveyer, to catch the foul air as it is exhaled by the occupant of the desk and convey it to the receptacle. This conductor may be made in any desired shape. In the drawings it is shown as a drawer to the desk.

E represents burners provided with caps F, which connect with pipe G, to which, when the burners are in use, a removable pipe (not shown) will be attached to conduct the foul air from the cups to the receptacle in the floor.

C is the paling or shield, hereinbefore described, and H is the ventilator in the ceiling, which is constructed as above mentioned.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A desk, table, or stand provided with registers communicating with fresh-air ducts, in combination with a foul-air exit below such desk or stand, substantially as and for the purpose set forth.

2. A desk, stand, or table, provided with a register communicating with a box or pan inclosed within the desk, said box or pan communicating with fresh-air ducts, substantially as and for the purposes set forth.

3. A desk, stand, or table constructed substantially as described, in combination with the receptacle B<sup>1</sup>, and surrounded by a shield, substantially as and for the purposes specified.

4. The receptacle B<sup>1</sup> for delivering foul air and noxious vapors to the pipe B<sup>2</sup>, wherein water, lime-water, or any other substance that will neutralize such foul air may be utilized, substantially as and for the purposes described.

5. The cups F below the burners E, to catch the carbonic-acid gas generated thereby, in combination with a foul-air exit at a lower elevation than said burners, substantially as and for the purpose set forth.

JOHN BURT.

Witnesses:

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