E. N. DICKERSON.
Air-Filter for House.

No. 199,357. Patented Jan. 22, 1878.

Figure 1.

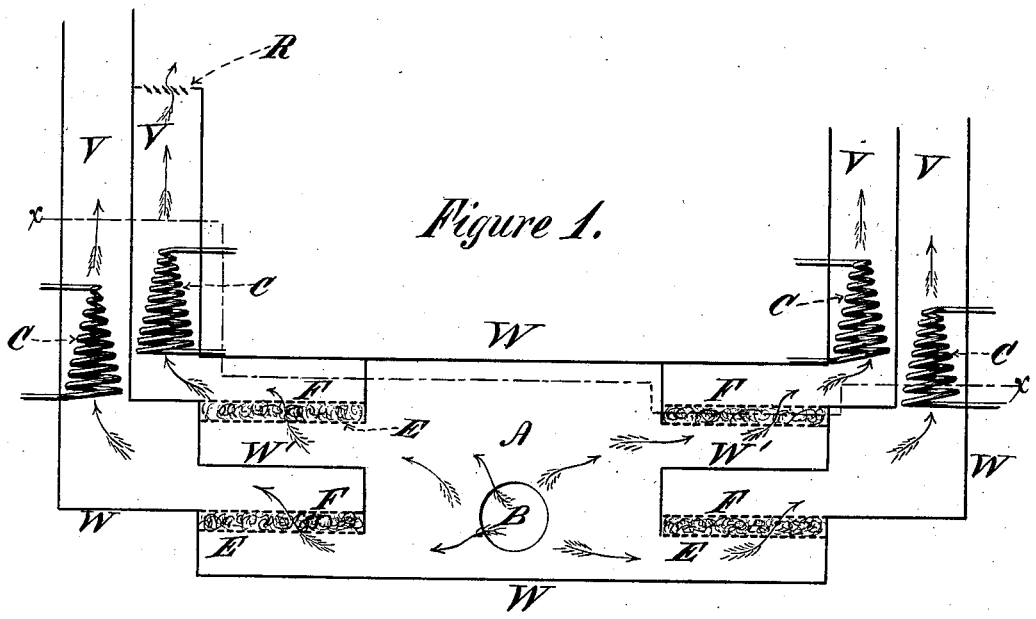
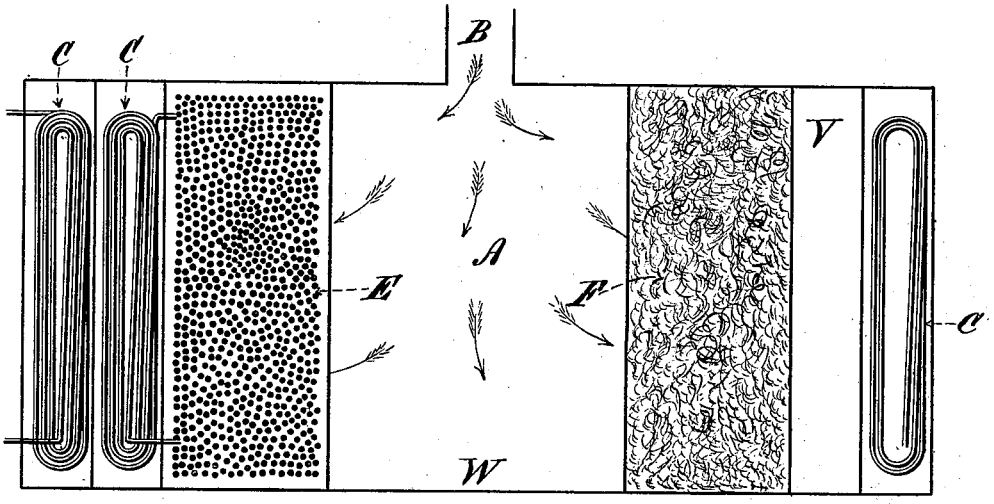


Figure 2.



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UNITED STATES PATENT OFFICE.

EDWARD N. DICKERSON, OF NEW YORK, N. Y.

IMPROVEMENT IN AIR-FILTERS FOR HOUSES.

Specification forming part of Letters Patent No. **199,357**, dated January 22, 1878; application filed December 1, 1877.

To all whom it may concern:

Be it known that I, EDWARD N. DICKERSON, of the city and county of New York, State of New York, have invented a new and useful Improvement in Air-Filters for Houses, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

The filtration of air which is breathed by the inhabitants of houses is a matter of the greatest importance, and it has long been recognized as a scientific fact that air is a vehicle for the support and transfer of many particles and bodies, both organic and inorganic, which are very deleterious to animal life. This is particularly the case where men are crowded together, as in cities, and where sewer-gas and other noxious vapors are continually arising from animal products, and carrying with them deleterious particles.

It is also probably true that the germs of many diseases in the form of living animalcules are supported and carried about by the atmosphere, and with the entering air find an entrance to the innermost parts of our houses. It is to shut off these deleterious particles, as well as the dust of the street, that I have devised my air-filter. It is recognized as a scientific fact that a layer or stratum of loose cotton or cotton-wool will strain out or filter from air drawn through it all particles of any appreciable size; and, what is still more curious, it has been discovered that a person wearing a mask of such wool can, with impunity, enter the presence of the most infectious diseases, in which respect a filter composed of loose fiber differs from a filter of fine-wire net-work or other similar contrivance.

My invention consists, generally, in the introduction of a layer or diaphragm of cotton-wool into the air-passages of a house, and combining therewith heating-coils in such a way that a forced circulation is made through the filtering-diaphragm, and the heated air is subsequently allowed to escape into the house properly warmed and freed from all impurity. I find it advantageous to use a separate filter for each flue, and to place these filters in a horizontal position, so that any particles which may be caught in the diaphragm can be readily shaken out therefrom and removed in the form of dust from the receiver beneath.

My apparatus is also contrived for the ready substitution of a fresh diaphragm of cotton for one in use.

My invention can be readily understood from the accompanying drawings, in which similar letters refer to similar parts.

Figure 1 represents a vertical cross-section of my apparatus; Fig. 2, a horizontal cross-section through the line *x x*.

The whole apparatus is made practically air-tight by means of the casing W.

B represents the entering-air passage connected with the external air, the arrows showing, generally, the direction of the entering air. E represents screens for the purpose of containing and supporting the cotton-bat. These screens can be of tin, pierced with numerous holes; or a wire-net can be suitably employed. Between the upper and lower screens E is represented the cotton-wool F. Above the diaphragms in the air-passages are situated coils C C C C; but any equivalent heated surface could be employed.

By means of the horizontal and vertical partitions, (clearly shown in the drawing,) the entering air is forced to traverse the filter and straining-diaphragm F, and subsequently to pass through the heating-coils and ascend through the flues V, whence it escapes through register-valves R.

By placing the coil C above the diaphragms I make a forced circulation, owing to the difference in weight of the columns of air within and without the house.

In order that the best effects be obtained from this apparatus, it is advisable that the house be made as air-tight as possible, so that no air can enter excepting through the chamber A.

Ventilators should be, of course, employed to carry off the heated air at the roof.

It is plain that the coil C might be placed either above or below the diaphragms F; but by means of the present contrivance, in which each flue is provided with a separate diaphragm and heater, a more even distribution of the air within the house is obtained.

The upper screen E might be dispensed with

under certain circumstances; but both will probably be found useful. Both the diaphragms and the contained filter should be made movable, and I find it convenient to arrange them in slides or drawers, so that they can be drawn out longitudinally into the chamber A; but this I do not consider of the principle of my invention.

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

1. The combination of a diaphragm, F, composed of cotton-wool, placed within the air-passage of a house, and a heater, C, whereby the entering air is filtered and heated, while at the same time a forced circulation is maintained, substantially as described.

2. In combination with the closed chamber A, the series of diaphragms F, composed of cotton-wool, each arranged within its own air-passage, whereby an equal distribution of air is obtained, substantially as described.

3. In combination with the closed chamber A, the series of filtering-diaphragms F and heaters C, a diaphragm and heater being located in each flue, substantially as and for the purposes described.

4. In combination with the air-passage of a house, a filter, E, composed of cotton-wool or equivalent material, the heater C, and valve R, substantially as described.

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Witnesses:

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