(No Model.) 2 Sheets—Sheet 1.

# L. A. SPAULDING.

## HEATING AND VENTILATING BUILDINGS.

No. 251,309. Patented Dec. 20, 1881.

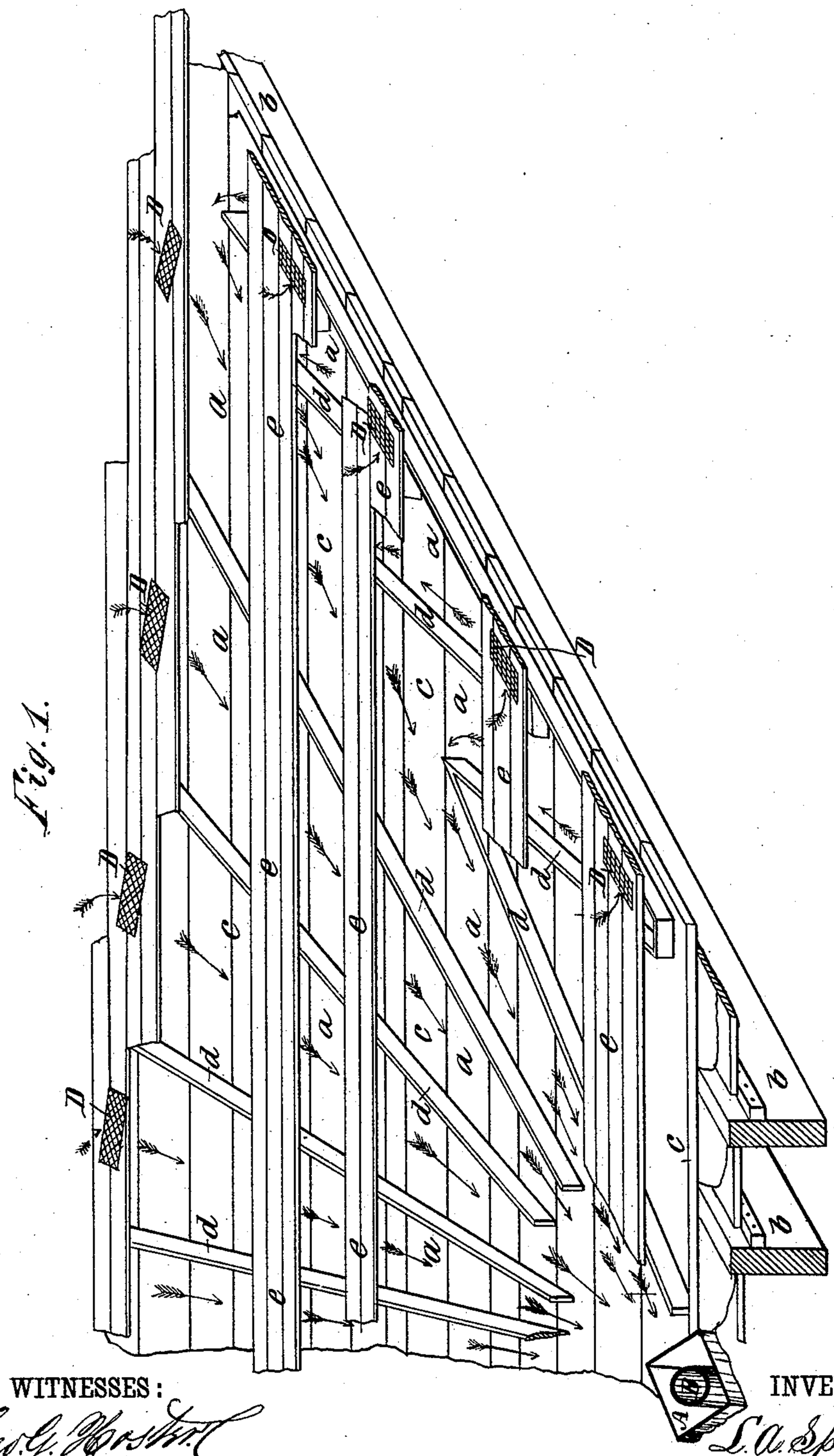

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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*Fig. 2.*

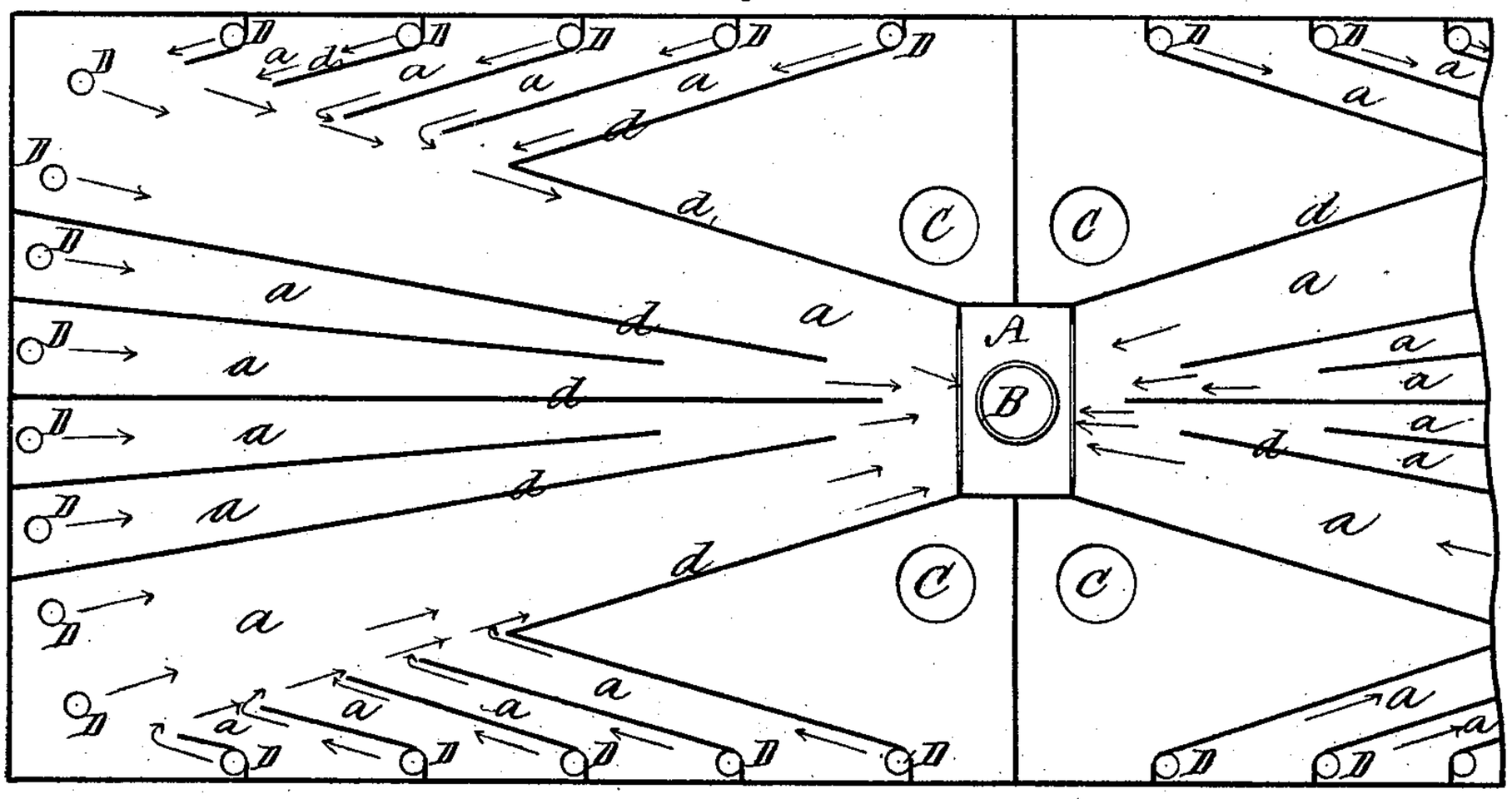
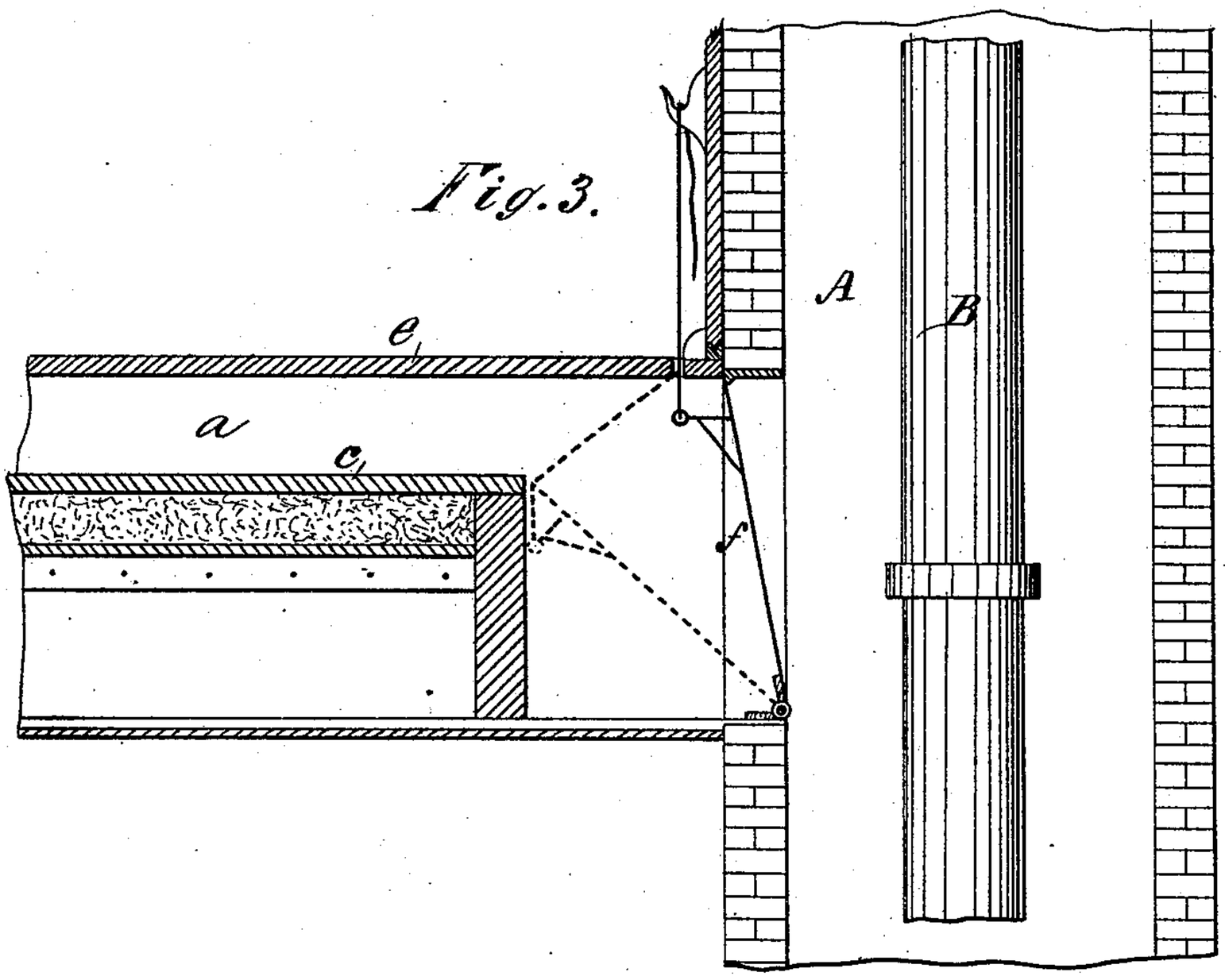



*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

LYMAN A. SPAULDING, OF PORT HURON, MICHIGAN.

## HEATING AND VENTILATING BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 251,309, dated December 20, 1881.

Application filed June 30, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, LYMAN A. SPAULDING, of Port Huron, in the county of St. Clair and State of Michigan, have invented a new and useful Improvement in Heating and Ventilating Buildings, of which the following is a specification.

The object of my invention is to obtain thorough and uniform ventilation of large rooms—such as public halls, school-rooms, churches, and railroad-cars—and as a consequence a uniform distribution of the heated air from the registers or other source of supply. To that end I use floor-registers connecting by passages with a ventilating-shaft, such passages being so arranged that they are of uniform length between the shaft and registers wheresoever the registers be placed, so that instead of the exit of air being entirely at the registers nearest to the shaft there will be a uniform action at every register.

The construction and operation will be explained in detail hereinafter with reference to the accompanying drawings, wherein—

Figure 1 is a perspective view, showing the construction of a floor in accordance with my invention. Fig. 2 is a plan view, showing the passages as arranged in relation to the ventilating-shaft; and Fig. 3 is a vertical section at the point of the connection between the main passage and shaft.

Similar letters indicate corresponding parts.

The ventilating-shaft A, Figs. 2 and 3, will be placed at the end, side, or corner of the room, as most convenient; or in the case of a long and narrow hall, or in a railroad-car, it may be at the middle. Usually the shaft A will contain the smoke-flue, as shown at B, so as to utilize the heat in obtaining an artificial draft.

The hot-air inlets or registers shown at C may also be placed as most convenient, and the ventilation outlets or registers D will be fitted in the floor next to the side and end walls, equidistant from each other, or otherwise, as most convenient.

Beneath the floor are the passages *a* from the registers D to shaft A, such passages being arranged so that the air passing out is compelled to travel an equal distance, or nearly so, to the shaft.

The construction of the floor for obtaining the passages is shown in Figs. 1 and 3. *b b* are the joists or floor-beams, on which is laid a floor, *c*. Upon this floor *c* furring-strips *d d* are secured, and upon the strips *d* is the floor *e*, of matched boards. There is thus a space obtained between the floors *c e*, which space is divided by the furring-strips to form the ventilating-passages *a*. For the registers at the end of the room, or most distant from the shaft A, the furring-strips are laid to form straight passages that run together near the shaft, as shown in Fig. 2. For the side registers the strips *d* are laid to form V-shape passages, each of equal length. A simple method is, as shown, to utilize the passage from the corner-registers as a main for all the side inclined passages.

When the ventilating-shaft A is at the center the arrangement will be similar at each end of the room. In the case of a church, where the registers are in the aisles, the strips will be arranged accordingly, and other modifications to conform to the shape of the room and location of the shaft will be readily understood.

At the opening into the shaft A is a hinged flap or valve, *f*, fitted for being raised to close the opening more or less, and thus wholly or partially arrest the exit of air at all the registers at once. This method of controlling the exit of air insures uniform ventilation and heating. The cold air lying next to the floor will pass by the registers to the ventilating-passages, and they being of equal length, the amount of air escaping will be equal at every register. The heated air will consequently be drawn down uniformly in every part of the room. The natural tendency of the air to escape by the registers nearest to the shaft and by the shortest passages is thus overcome, and the work of the ventilating-shaft is distributed equally.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

In a system of ventilating rooms, the combination and arrangement of the shaft A, hot-air inlets C, floor-outlets D, and passages *a*, of uniform length between the several outlets and the shaft, substantially as described.

LYMAN A. SPAULDING.

Witnesses:
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