

(No Model.)

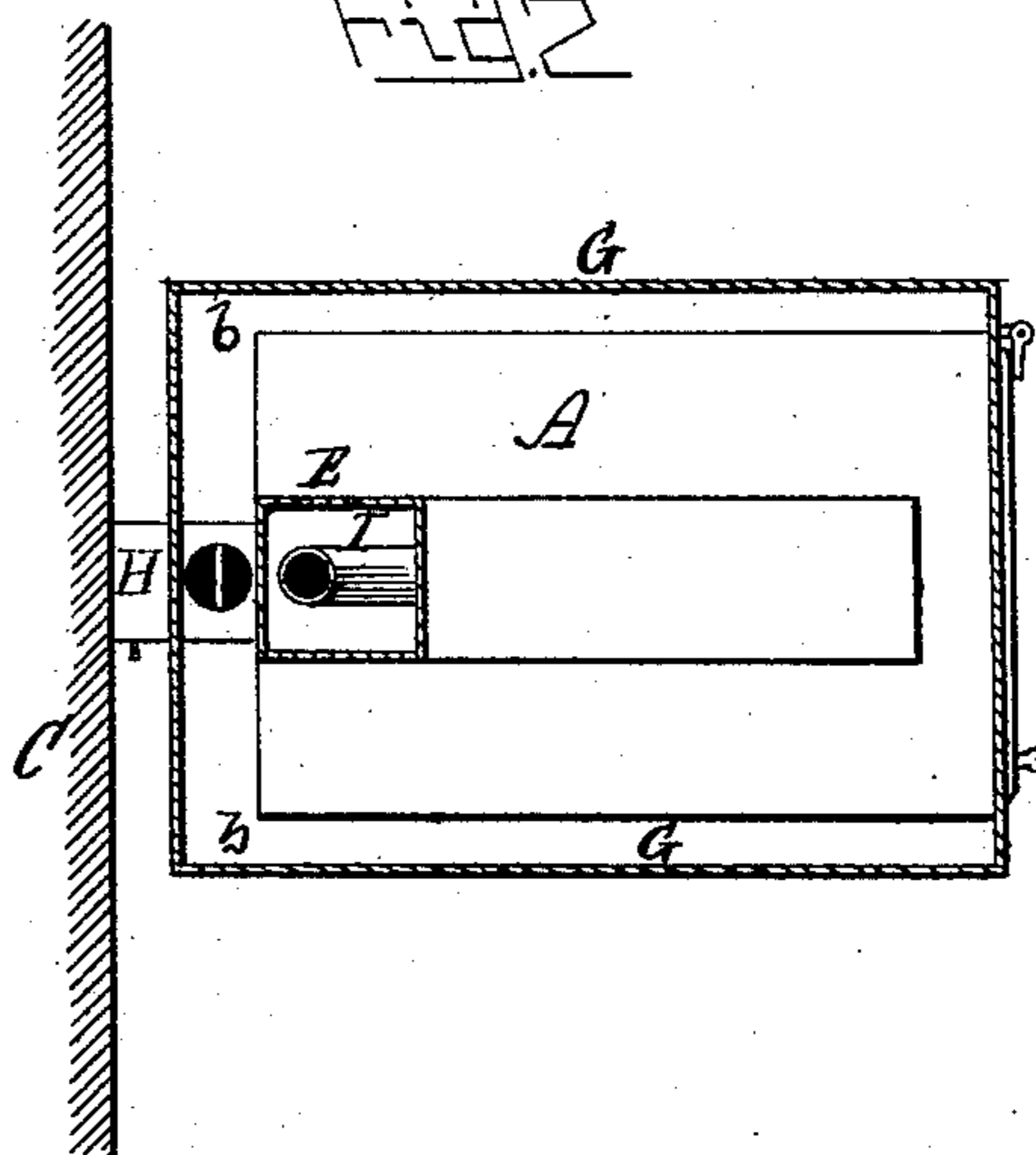

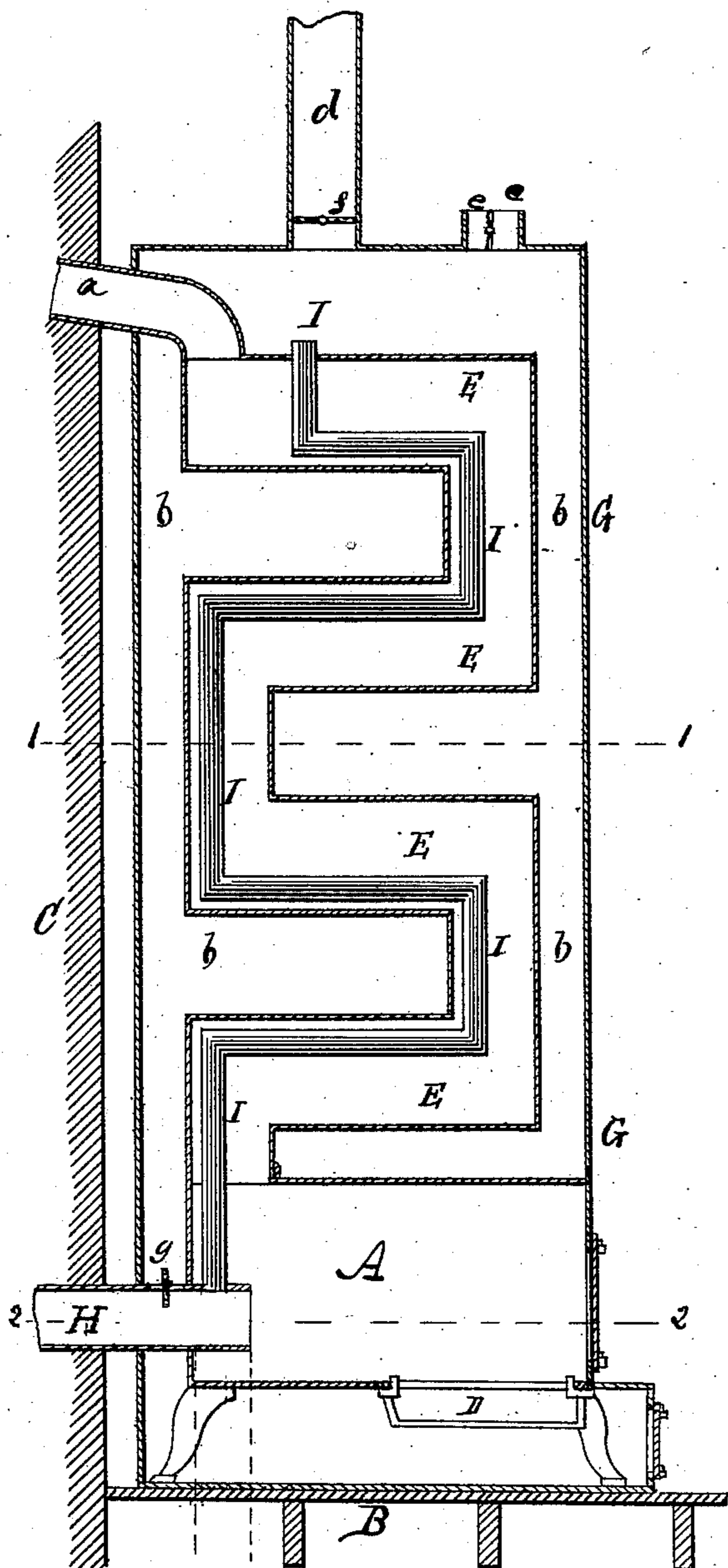
J. T. JENSEN.

## HEATING AND VENTILATING STOVE.

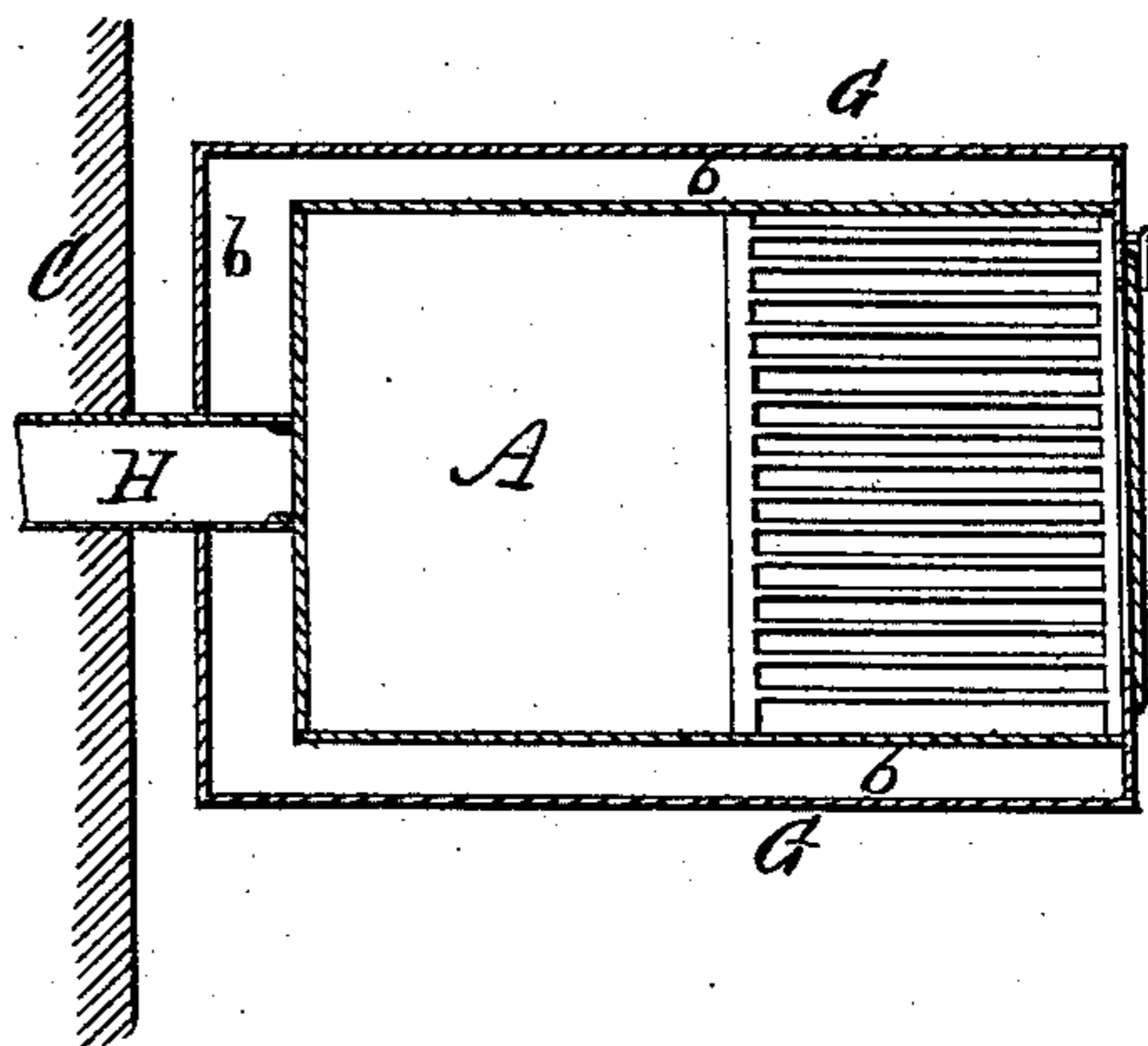
No. 360,885.

Patented Apr. 12, 1887.

Fig. 1



**F-123**



Witnesses  
Norris A. Clark  
Chas. P. Bailey

Inventor,  
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# UNITED STATES PATENT OFFICE.

JENS THORVALD JENSEN, OF BENSON, MINNESOTA.

## HEATING AND VENTILATING STOVE.

SPECIFICATION forming part of Letters Patent No. 360,885, dated April 12, 1887.

Application filed March 22, 1886. Serial No. 196,076. (No model.)

*To all whom it may concern:*

Be it known that I, JENS THORVALD JENSEN, a subject of the King of Sweden and Norway, now residing in Benson, in the county of Swift and State of Minnesota, have invented an Improved Heating and Ventilating Stove; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 represents a vertical section, cutting from front to back, of a stove constructed with my improvements, also showing portions of the adjacent wall or chimney and of the floor beneath; Fig. 2, a horizontal section of the same in a plane indicated by the line 1 1, Fig. 1; Fig. 3, a horizontal section thereof in a plane indicated by the line 2 2, Fig. 1.

Like letters designate corresponding parts in all of the figures.

My improved stove is constructed to act upon the principle of bringing cold fresh air from the outside into the heating apparatus, heating the air in its passage through the apparatus, then discharging the heated air into the room or rooms, and at the same time expelling an equal volume of more or less foul air from the room or rooms, to make room for the fresh air, and thus ventilating as well as heating the said room or rooms.

In the accompanying drawings, A represents the stove proper or fire-chamber, shown as a simple rectangular fire-box for burning wood, or it may be coal or any other fuel; B, a portion of the floor on which the stove or fire-chamber rests; C, a portion of the adjacent wall or chimney back of the stove, and D an ash-pan beneath the fire-chamber.

First, as a part of my invention, I employ for conducting the products of combustion from the fire-chamber to the chimney a smoke pipe or flue, E, of zigzag form, having several (as many as convenient to have in the space allowed for it) rectangular or other form of bends equivalent in effect before it discharges the products of combustion into the chimney through the exit-pipe *a*.

Second, as another part of my invention, I inclose or surround the entire stove and smoke pipe or flue with a case or jacket, G, allowing inside of the same sufficient space *b b* for a

free circulation of air to be heated by the said stove and smoke-pipe.

Third, in combination with the stove, stove-pipe, and inclosing case or jacket, I employ a pipe or passage, H, through which cold fresh air is brought from the outside and discharged into the air space inside of the case or jacket and around the stove and smoke-pipe. This fresh-air pipe may lead through the side wall or the adjacent chimney of the building, as shown in full lines in Fig. 1, or up through the floor beneath, as shown by dotted lines in the same figure.

Fourth, as auxiliary to the heating of the fresh air by the outside surfaces of the stove and smoke-pipe, I locate inside of the smoke-pipe an air-pipe, I, and, if desired, also through the stove, the air-pipe bending with the smoke-pipe, so as to pass longitudinally through it. The lower end of this auxiliary air-pipe communicates with the air-inlet pipe or passage H, and at its upper end opens into the air-space *b* in the upper part of the case or jacket G, so that fresh air is caused to circulate through it and become heated by the heated products of combustion passing through the smoke-pipe. In using this auxiliary heating-pipe, the smoke-pipe E is best made of cast-iron, rectangular in cross-section, as shown in Fig. 2, and the air-pipe I of sheet-metal and of cylindrical form. All joints and seams between the smoke-passages and the air-passages should be entirely tight, so that the air may not become contaminated by the leakage of any of the products of combustion into the same.

A suitable exit-passage, *c*, leads from the upper part of the air-chamber through the case or jacket into the room, and, if another room is to be heated by the same stove, a pipe or passage, *d*, is to lead from the upper part of the air-chamber to the said additional room or rooms. These exit-passages are to be controlled by suitable valves or registers, *e f*, and the flow of air into the hot-air chamber and auxiliary pipe is or may be controlled by a valve or register, *g*.

The inclosing case or jacket G may be made of sheet metal, cast-iron, or, still better, of brick or porcelain, according to the place or use of the stove. All the parts are to be of suitable

capacity or size proportionate to the room to be heated and to one another.

I claim as my invention—

1. The combination of the stove A, zigzag  
5 smoke-pipe E, zigzag air-pipe I within the smoke-pipe, and cold-air-inlet pipe H, substantially as and for the purpose herein specified.

2. The combination of the stove A, zigzag  
10 smoke-pipe E, zigzag air-pipe I within the

smoke-pipe, inclosing case or jacket G, inclosing a heating-chamber, b, around the smoke-pipe, and air-inlet pipe H, substantially as and for the purpose herein specified.

In testimony whereof I have hereunto set my 15 hand in presence of two subscribing witnesses.

JENS THORVALD JENSEN.

Witnesses:

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