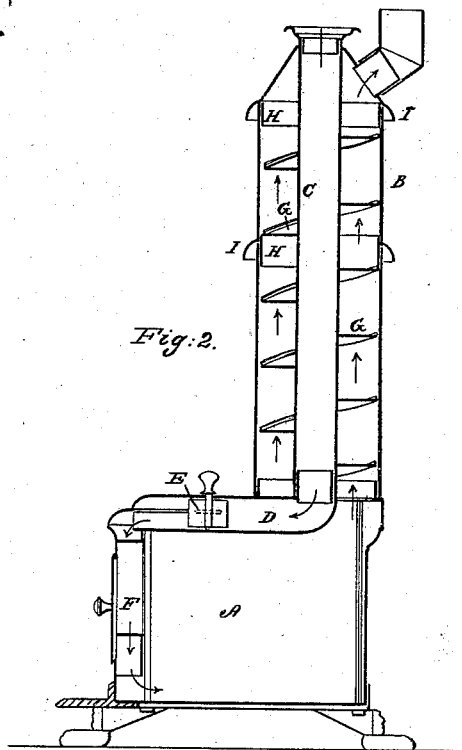
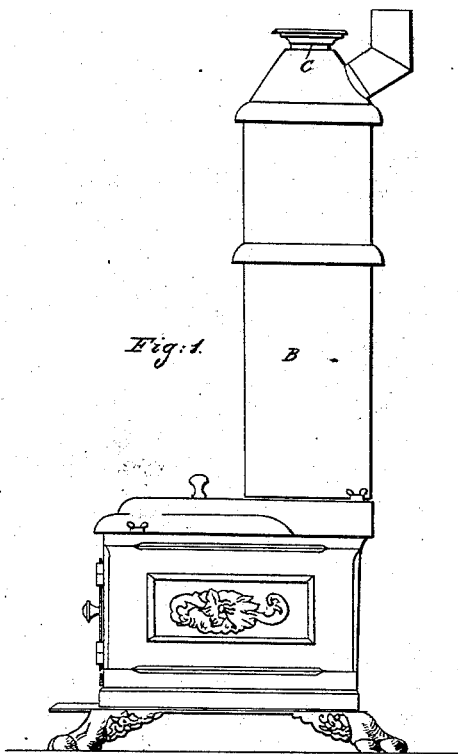


R. EATON.

Ventilating Stove for Railroad Cars.

No. 54,830.

Patented May 15, 1866.



Witnesses:
Wm. C. Lynne
Wm. C. Livingston

Inventor:
Richd. Eaton
Munn & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

RICHARD EATON, OF LONDON, ENGLAND.

VENTILATING-STOVE FOR RAILROAD-CARS.

Specification forming part of Letters Patent No. 54,830, dated May 15, 1866.

To all whom it may concern:

Be it known that I, RICHARD EATON, of London, England, have invented a new and useful Improvement in Stoves for Railroad-Cars and other places; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of a stove made according to my invention. Fig. 2 is a vertical section.

The object of this improvement is to produce a stove which shall give out a large amount of heat with a small amount of fuel in comparison with other stoves, which can be used with coal, wood, or other fuel, and which will, when in operation, serve to ventilate the apartment or car in which it is used. The door of the stove has a draft-register, which may be opened in starting a fire, but which is then closed, the supply of air for the support of combustion being brought into the stove through a pipe brought down the center of the chimney of the stove, thence over the top of the stove and down air-channels made in both of its front corners nearly to the bottom plate, where the air is delivered into the fire. The products of combustion pass out from the stove into the chimney and ascend in a spiral course formed therein around the air-pipe.

The letter A represents the fuel-chamber, which, in this example, is made of cast-iron, and is prepared for burning wood or peat. It can be prepared for burning coal or other concentrated fuel by placing therein a lining of fire-brick and the usual grate; but, as such preparations and arrangements are familiar to such persons as are skilled in the art of making stoves, no particular description thereof is necessary.

From the back end of the stove ascends a sheet-iron chimney, B, several feet in height, in whose center is placed an air-pipe, C, whose top is open, and whose lower end communicates with an air-passage, D, made on the top plate of the stove nearly its whole length. This air-passage is governed by a damper, E.

The air-passage D communicates with air-ducts F F, which are formed in each corner of

the stove, on its front end, on either side of the door, and which open within the stove near to its bottom plate. The annular space left in the chimney between its exterior walls and the exterior of the air-pipe C is closed over at top, and has a spiral channel made therein by a partition, G, which runs spirally therein from top to bottom. Through this spiral channel the products of combustion proceed on their way from the stove to the exit-flue, which is connected with the top of the chimney. One of the results of this construction is to cause the air which supports combustion to be heated on its way to the fire, first by heat radiated from the smoke and hot gases as they ascend the spiral channel, and next by heat imparted to it as it goes through the air-passage D on the top of the stove and down the air-ducts F F at the front. Another result is that the air taken to support combustion is drawn directly and immediately from the upper part of a room or car, instead of being taken altogether from the lower part, as in other stoves, thereby securing a ventilation of the apartment from that quarter where heated and impure air is first collected, and avoiding the common evil of creating cold currents of air about the feet of its occupants. The position of the damper in the air induction passage D enables me to control the volume of air that is supplied to the fire, and so to regulate the energy of the combustion, and it will be observed that even if the damper be wholly closed by accident the escape of the gases generated in the stove will not be hindered, since they are always at liberty to pass unimpeded up through the spiral chimney. The length of the course for the products of combustion through the chimney is greatly increased by the spiral chamber therein, and the radiating-surface of the chimney is more highly heated, because the time of their passage is thereby greatly prolonged.

The chimney B is made in sections, which are held together by a ring, H, from whose exterior, at the middle of its length, a convex curtain, I, is projected, which curtain extends between and beyond the adjacent ends of the sections, the ring itself being within them and serving to cover their joint on the inside. A similar ring and curtain is fixed at the top of the chimney.

This stove may be used with advantage by

closing the damper in the air-passage D and relying for draft-air wholly on the register in the door. In such case the chimney serves simply as an extension of the radiating-surface of the stove, and if an air-register be made in the air-passage D, at any suitable point, which can be opened to the air in the car or apartment while the draft-damper in that passage remains closed, it is plain that a constant upward current of treated air will be established through the air-passage in the center of the chimney.

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

1. The arrangement of the air-ducts F in the front corners of the stove and air-passage D in the top thereof, in combination with the air-pipe C, in the manner and for the purpose herein specified.

2. The arrangement of the chamber A, air-ducts F, air-passage D, air-pipe C, spiral chamber G, and chimney B, constructed and operating in the manner and for the purpose herein specified.

RICHARD EATON.

Witnesses:

C. G. DRUMMOND,
WILLIAM S. EVANS.