E. N. CUMMINGS.

Heating Stove.

No. 58,782. Patented Oct. 16, 1866.

Fig. 1.

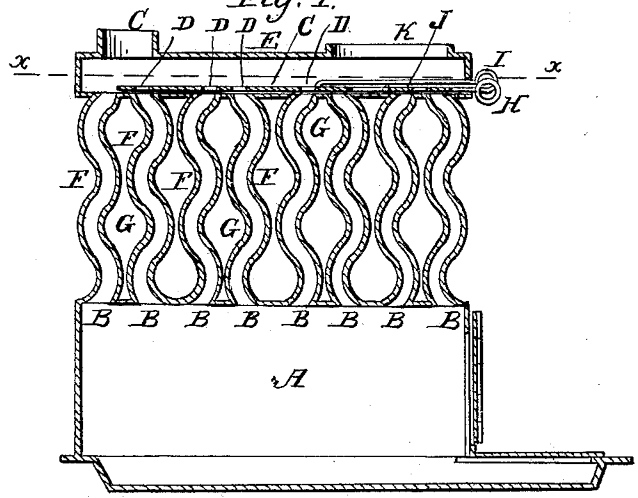
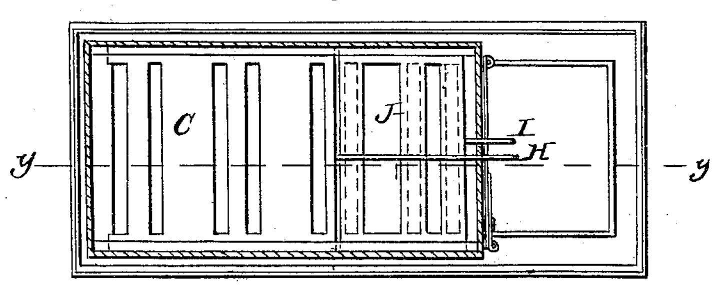


Fig. 2.



Witnesses:

J. W. B. Coughton

Wm Trewin

Inventor:

E. N. Cummings

Per Munn & Co

Attys

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

E. N. CUMMINGS, OF COLEBROOK, NEW HAMPSHIRE.

HEATING-STOVE.

Specification forming part of Letters Patent No. **58,782**, dated October 16, 1866; antedated October 4, 1866.

To all whom it may concern:

Be it known that I, E. N. CUMMINGS, of Colebrook, in the county of Coos and State of New Hampshire, have invented a new and useful Improvement in Stoves; 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 a part of this specification, in which—

Figure 1 is a vertical section taken in the direction of its length in the line *y y*, Fig 2, of a stove made according to my invention. Fig. 2 is a horizontal section on the line *x* of Fig. 1.

Similar letters of reference indicate like parts.

The object of this invention is to improve heating-stoves by increasing their radiating-surfaces without enlarging their size or increasing their cost. It is adapted for wood or other fuel.

The letter A designates the lower part of the stove. This part may be cast of any convenient size and shape, with a door for receiving fuel and a draft-register. If it is intended for burning coal, it should have a grate and an ash-pit.

In this example I have shown it made with parallel sides and without a grate. Its top is made or cast with a series of oblong slots, B, that extend across it, and which receive flat pipes or flues F, that are extended upward to a drum, E, whose lower side they enter.

The drum E is of less height than the fuel-chamber A, and has two openings on its top—one, C, for a flue-pipe, and another, K, for culinary uses or for ventilation.

The flues F are serpentine in form, as shown in the drawings. They may be of any desired length, and may be made of cast or wrought iron. Their embouchures in the drum E are controlled by dampers C J, having handles H I, that project from the front of the drum.

The damper J controls those flues or pipes F which open beneath the cover-opening K, so as to allow the products of combustion to ascend in a line with it and against any vessel placed in it. The damper C controls those openings F which are behind damper J.

When the forward damper is open, the damper C may be closed, and vice versa, and both may be partially closed to regulate the fire.

The air-spaces G between the flues F are, of course, of like serpentine form, and their shape insures not only a large radiating-surface for the flues, but has a tendency to promote the formation of currents in the air. The salient portions of the interior of each flue are those which become more highly heated by the gases from the fire, and consequently the re-entering portions of the air-spaces which are opposite to the salient portions of the interior of the flues will be more heated than the other parts along the exterior of the flues.

The inequality in the heat of different parts of the pipes will promote the formation of currents of air, in addition to the ordinary tendency in heated air to ascend.

The serpentine form of the flues gives several advantages:

First. It presents a very large heating-surface, which may be increased to any extent by lengthening the pipe.

Second. It brings the heat in contact with the surface, thereby affording it a chance to radiate.

Third. The straight draft, by which nearly two-thirds of the heat is lost, is done away with, the heat being obliged to pass through the several serpentine pipes, which constitute a succession of angles.

Fourth. There is no draft from the mouth to the extreme back and top or exit flue, as in common stoves. Therefore the box part itself radiates much more heat, since more time is allowed for the passage of the gases.

Fifth. The dampers are so arranged that the fire can be controlled and the fuel saved, by nearly shutting them both, leaving just room enough for the smoke to pass off, at the same time opening the register at the mouth, giving the fire air enough to make it burn slowly without draft. Thus the heat is nearly all saved, requiring but little wood.

Sixth, the dampers are so arranged that they may be wholly or partly closed, thereby throwing the draft to the front or back part of the stove. The stove presents such a large heating-surface, and the fire is so controlled and the heat so economized, that no part of the stove is overheated; consequently the air is not scorched, but is heated as by a furnace, It will produce a large amount of heat so gradually that the room is warmed nearly the same in every part, thus making it desirable for school-rooms in particular.

I claim that my arrangement will save fully one-half the fuel.

I claim as new and desire to secure by Letters Patent—

A stove for heating purposes made substantially as above described, its upper and lower parts, A E, being connected by serpentine flues, whose openings in the upper part, E, are controlled by two independent dampers, substantially as shown.

E. N. CUMMINGS.

Witnesses:

W. W. TITUS,

G. W. BRACKETT.