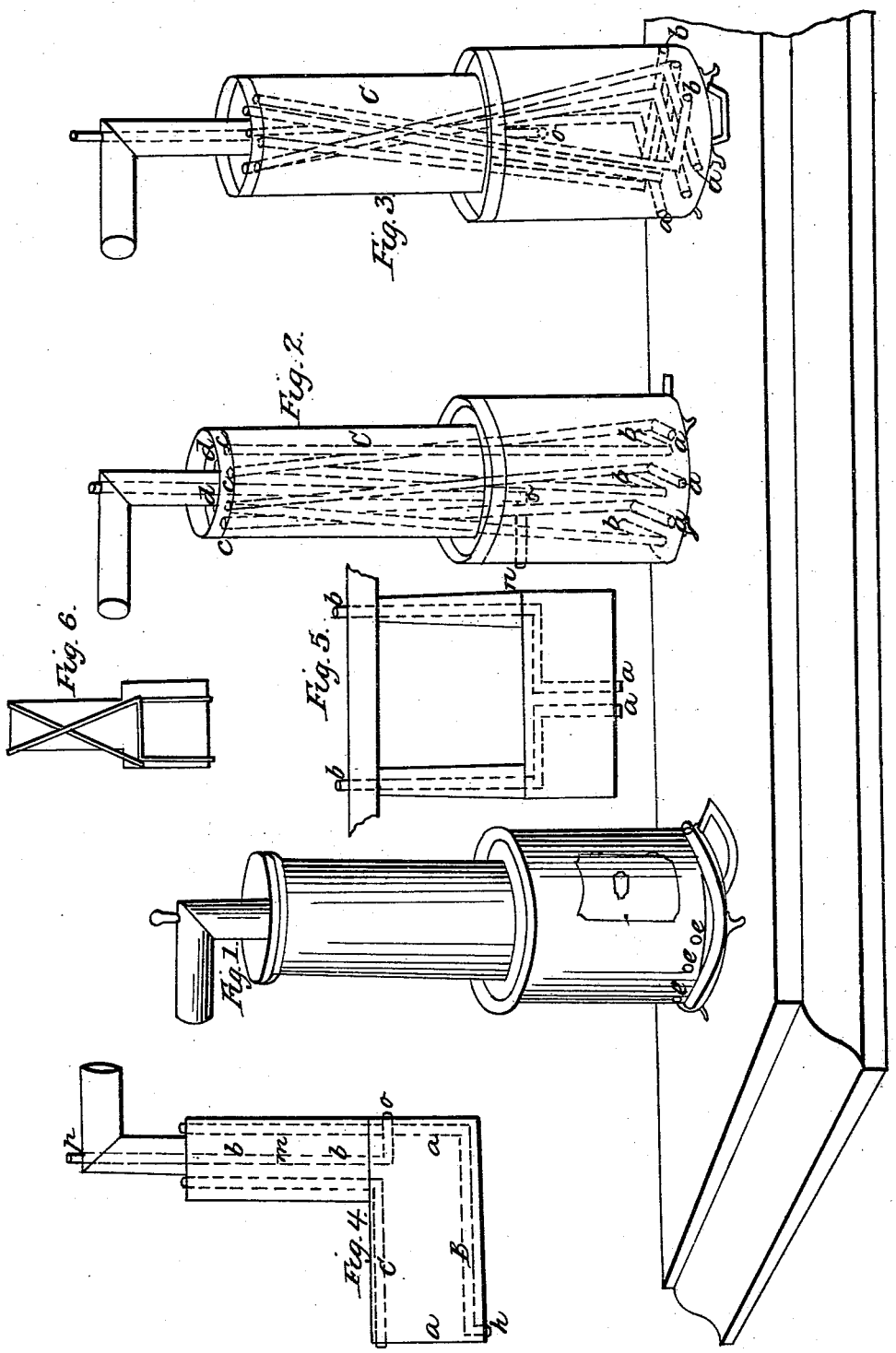
C. B. BOYNTON.

Stove.

No. 2,965. Patented Feb. 20, 1843.



UNITED STATES PATENT OFFICE.

CH. B. BOYNTON, OF HOUSATONIC, MASSACHUSETTS.

CAR-HEATING STOVE.

Specification of Letters Patent No. 2,965, dated February 20, 1843.

To all whom it may concern:

Be it known that I, CHARLES B. BOYNTON, of Housatonic, in the county of Berkshire and State of Massachusetts, have invented a new and improved apparatus for the purpose of arresting the escape heat in stoves and fireplaces and throwing it into the apartment, thus effecting a great saving in the consumption of fuel.

This apparatus I denominate a "tubular fire-grate or fire-box;" and it is applicable to stoves and fireplaces either for wood, coal or other fuel.

The nature of my invention consists in the application of a series of tubes to the formation of a fire-box or fire-grate to be placed within the stove or fire-place, and which contains the fuel. The lower ends of the tubes communicate with the external air through the sides of the stove, near the bottom, or through the bottom plate itself, or if a fire-place they should open as near the floor as possible. The upper ends of the tubes open into the apartment through the top of the stove, or through the smoke pipe or flue of the chimney, after the pipes have been carried as far as convenient along the direction of the flame or heated air which is escaping by the flues. Their effect, is to arrest the escape heat and throw it through the pipes into the apartment.

To enable others skilled in the art to make and use my invention, I will proceed to describe the manner of construction, and of its application to several kinds of stoves, reference being had to the drawings accompanying this specification. It is supposed that this description will enable others to understand the method of its application, and to adapt it to any other stoves or to fireplaces, by varying the form of the grate or firebox and the length and size of the tubes to suit circumstances.

For the size and form of stove represented by the Figures 1, 2, and 3 of the drawings, (which stove may be either of cast or sheet iron) I take tubes either of cast, sheet, or wrought iron, 2 in. in diameter, and place them within the stove so as to form a grate for the fuel and a triangular firebox as shown by the model, and also by Figs. 2 and 3 of the drawings, where *a*, *a*, *a*, and *b*, *b*, *b*, are the lower ends of the pipes lying parallel, or nearly so, with the bottom of the stove, about 2 in. from the bottom, and opening through the sides of the stove, three on one side of the cylinder, and three on the opposite side. These openings are seen in the drawings in Fig. 1 at *e*, *e*, *e*. The pipe marked O, coming out of the smoke pipe, Figs. 1, 2, and 3, has its lower opening in the upper part of the lower cylinder of the stove, as shown at *n*, Fig. 2. The pipes are placed about $\frac{3}{4}$ of an inch apart. Another, and for certain purposes a better method of placing the pipes, is to omit that portion forming the grate, which lies parallel with the bottom of the stove, and let the pipes open directly through the bottom of the stove, then rising perpendicularly, and turning at the requisite height, (about 12 in. in the stove described), at a right angle across the flame, so as to form the roof of the firebox, then passing obliquely toward the top of the stove, and crossing before passing out through the cap. Fig. 6 shows the two front pipes of such a firebox.

Fig. 4 shows the manner of applying the tubes to a common box stove; *a*, *a*, the box of the stove 2 feet long and 12 in. square; *b*, *b*, a sheet iron cylinder 9 in. in diameter and 2 feet high. It may be of any size sufficient to admit the pipes, and of any height. C represents one of three pipes 2 in. in diameter all opening through the end of the stove over the door, and passing under the upper plate and up the cylinder *b*, *b*, and opening through its top. B represents one of three pipes placed as a grate on the bottom of the stove, opening through the bottom as at *h*. They pass along the bottom plate and up the cylinder and through its top. M is an additional pipe one end opening through the end of the stove at O, and the other opening through the smoke-pipe at *p*.

Fig. 5 shows the method of using this apparatus in a common cast or sheet iron stove with pillars. Where the stove has four pillars and a flat flue, a pipe is passed after the manner shown in this figure along each pillar, and two more along the flue, all opening through the cap of the stove. *a*, *a*, the lower openings of these pipes, and *b*, *b*, their upper openings. In a similar manner the apparatus can be adapted to any stove or to fireplaces.

The advantage of the apparatus consists

in this. The tubes are placed directly in the column of the escape heat. By the well known laws of heat, as soon as a fire is kindled the warm air in the pipes rises, and its place being supplied with colder air, a current is formed through the pipes. These currents of air passing through the pipes being at a lower temperature than the escape heat, which is rising in the stove, and along the flues, the escaping heat imparts its caloric to the pipes and the air within them, and thus it is saved and thrown into the room. The greater the number and length of the pipes, the greater of course the effect.

What I claim as my invention, and for which I desire to obtain Letters Patent, is—

The particular arrangement of the hot air tubes as herein described. The peculiarity of this arrangement consists in so prolonging the hot air tubes above the grates, or firebed, as to carry them upward along the column of escape heat, and through the chamber of combustion, in the manner set forth.

CHARLES B. BOYNTON.

Witnesses:

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