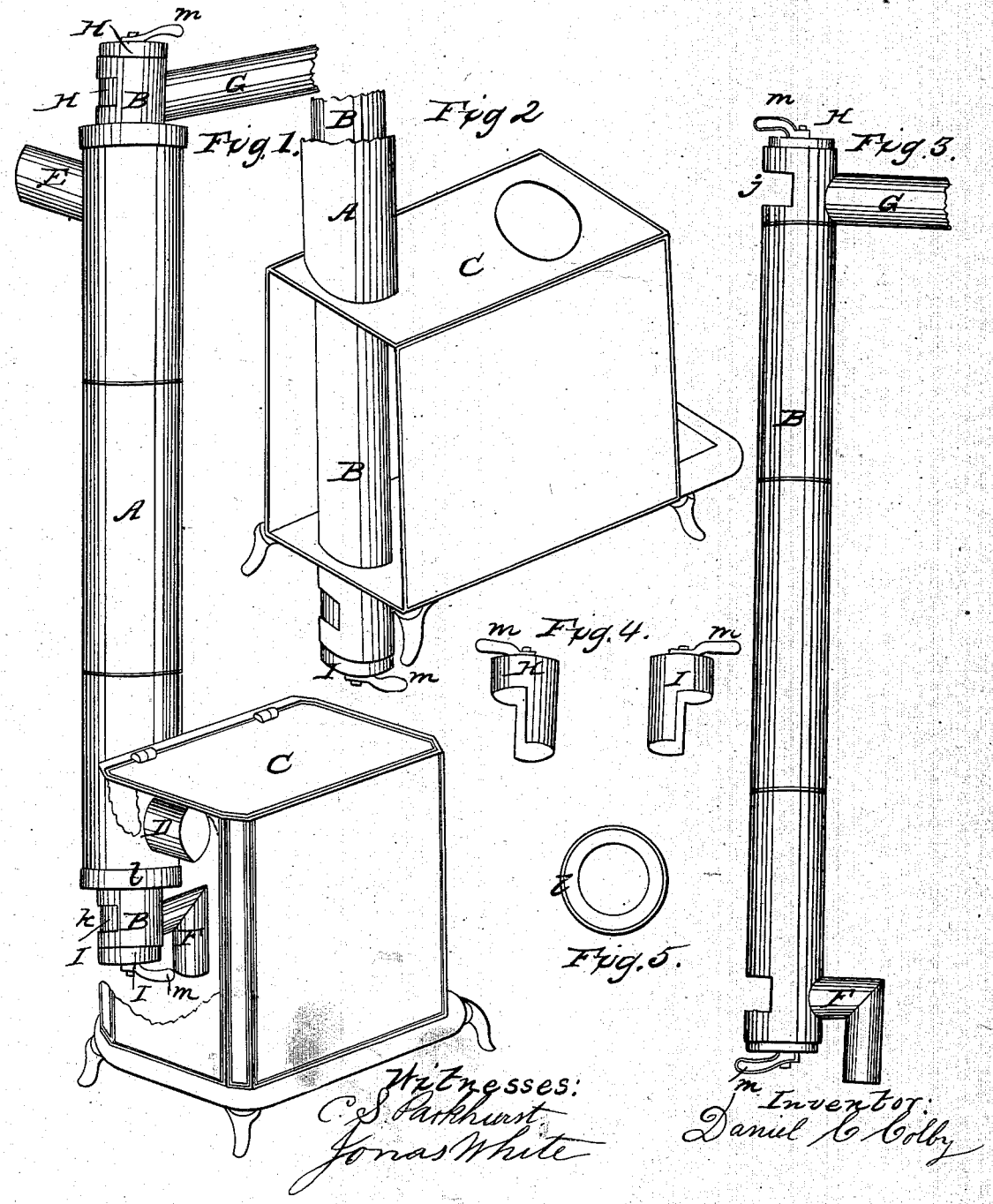
D. C. COLBY.

Heating and Fuel Device.

No. 47,489. Patented April 25, 1865.



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UNITED STATES PATENT OFFICE.

DANIEL C. COLBY, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO HIMSELF, D. W. RAWSON, J. REDDINGTON, AND THOMAS I. HARRIS.

HEATING AND FUEL-SAVING DEVICE.

Specification forming part of Letters Patent No. **47,489**, dated April 25, 1865.

To all whom it may concern:

Be it known that I, DANIEL C. COLBY, of Claremont, in the county of Sullivan and State of New Hampshire, have invented certain new and useful Improvements in Attachments to Stoves and Funnels for Saving Fuel, which I denominate "Colby's Heating and Fuel-Saving Device;" and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of the apparatus as applied to the funnel of stoves. Fig. 2 represents a convenient way of attaching it to stoves that have their funnel come out at the top. Fig. 3 represents a side view of the interior funnel and its immediate attachments; Fig. 4, a view of the dampers which regulate the flow of the heat and cold air; Fig. 5, one of the caps that go on to the ends of the large funnel or cylinder A.

Letter A represents a cylinder forming a part of the funnel leading from the stove.

Letter B represents a cylinder of less diameter, and is placed so as to stand in the center of the cylinder A, and extends somewhat beyond at each end, as may be seen in Fig. 1.

Letter C represents the stove, one end broken off.

Letter D represents the funnel leading from the stove C.

Letter E represents the funnel leading into the chimney.

Letter F represents a cold-air pipe leading from an adjoining room to the lower end of the funnel B.

Letter G represents a pipe to conduct the heated air back to the said adjoining room.

Letter H represents a damper to regulate the flow of heated air.

Letter I represents another like damper to regulate the flow of cold air.

Letter *j* represents a space open in the central funnel, B, and is for the purpose of letting the hot air from this interior funnel out into the room where the stove is when such is desired.

Letter *k* represents an opening in the inteiror funnel, B, just below the lower end of the cylinder A, and is to allow the cold air near the floor to pass up through this interior funnel, and, being heated on its passage, to be thrown out at *j*.

Letters *l l* are caps, one on each end of the cylinder A.

Letters *m m* are short handles or levers attached to the dampers H and I to turn them by.

Letters *n n* are arrows indicating the direction of the currents of air.

The same letters represent corresponding parts in the different figures.

The object of my invention is to secure a ready way of utilizing the heat that passes off so rapidly in the center of the funnel, which by the usual arrangements is almost entirely lost, and to provide such a structure and arrangement of parts that it may be made operative either upon the air in the room where it stands, or upon the air in an adjoining room, or in both at the same time.

To enable others to make and use my invention, I will describe its construction and mode of operation.

The cylinder A may be made as in Fig. 1, or it may be a part of an ordinary funnel. The interior tube, B, I make of common funnel-iron, with the joints very tight; the cold-air pipe F of iron or tin. The pipe G should be made of galvanized iron, as being the best material to conduct hot air without radiating the heat. The dampers H and I may be made of tin, galvanized iron, or Russia iron, and in form as seen in Fig. 4.

In order not to disturb the free passage of the smoke in the outer cylinder, A, the inner one, B, should not in its diameter be more than two-thirds that of A. The cold-air pipe F, when coming from an adjoining room, would generally pass under the floor. Suppose the dampers are turned as in Fig. 1, the air in the interior funnel becomes heated and passes up and through the tube G, and is poured hot into the adjoining room. The cold air, meanwhile leaving the room at the bottom, is hurried along through the tube F to take the place of that just gone before, and is itself heated and sent on its way to return to the room from whence it came. This process is constant and very effectual. It is desired to make use of this interior funnel to heat the room in which it stands—the dampers are

turned as in Fig. 3, thus closing the tube F and the pipe G, and opening the orifices *j* and *k*. Arranged thus, the cold air enters at *k*, and, passing up the funnel B, is poured out well heated at *j*.

The arrangement of parts as seen in Fig. 2 is the one most effectual when the funnel leads off from the top of the stove. In this case, so much of the funnel B as passes up through the stove should be cast-iron.

The great economy of fuel exhibited by the use of my invention might at first seem strange, but when we call to mind the fact that the heated air in a stove-funnel is not only hottest at the center, but rushes along with much greater rapidity, like the current of a river, than at the sides, then we are prepared to see how, in accordance with the laws of nature, do I proceed in this arrangement of mine.

The great convenience of being able to warm a sleeping-apartment, a study, or parlor without having a stove therein, and that in houses which are not provided with furnaces, will, we think, be very highly prized by the public, and economy in fuel in these days is of much importance.

By the insertion of the funnel B within the outer one, A, I not only add to the radiating-surface all of the interior of this inner funnel, but by compelling, as I do by this arrangement, the vapor and smoke from the stove to seek its passage to the chimney through the narrow space between the two funnels A and B, the former is heated to a much greater extent than otherwise, and is consequently radiating much more caloric. To such an extent is this true that the inner pipe, B, may be connected by means of the tube G with an adjoining room, and sufficient heat carried away in this manner to supply such adjoining room, even in cold weather, without any other appliance, and this without any necessity arising for increasing the quantity of fuel over what would be required to heat the one room alone without this arrangement of mine.

When this invention of mine is used to apply to one room only, then is the quantity of fuel decreased one-half.

Now, I do not claim, broadly, the insertion of one pipe within another for the purpose of utilizing heat; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of the damper H, the pipe G, and the orifice *j* on the upper end of the funnel B, the damper I, the pipe F, and the orifice *k* on the other end, substantially as described, and the combination of this funnel B, thus provided, with the outer funnel, A, and the stove C, one or both, as and for the purposes set forth.

DANIEL C. COLBY.

Witnesses:

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