B. W. DUNKLEE.

Furnace.

No. 25,729. Patented Oct. 11, 1859.

Fig. 3

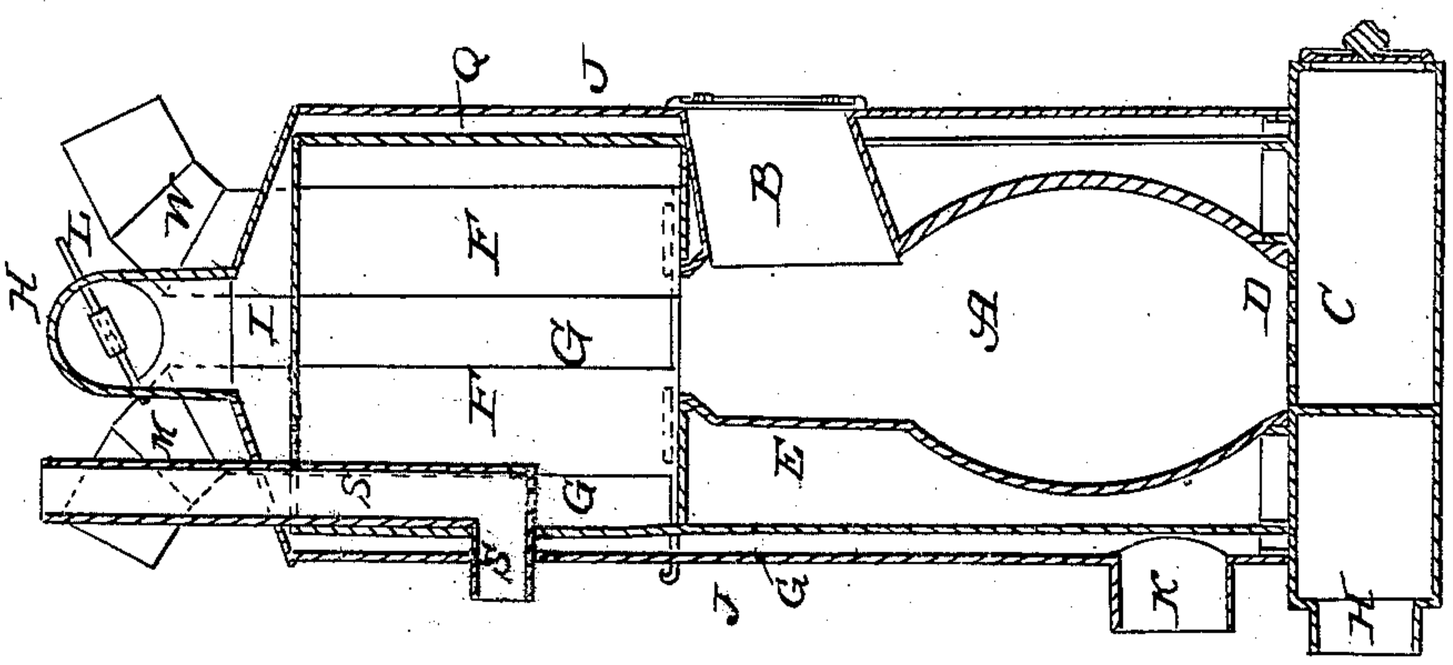


Fig. 2

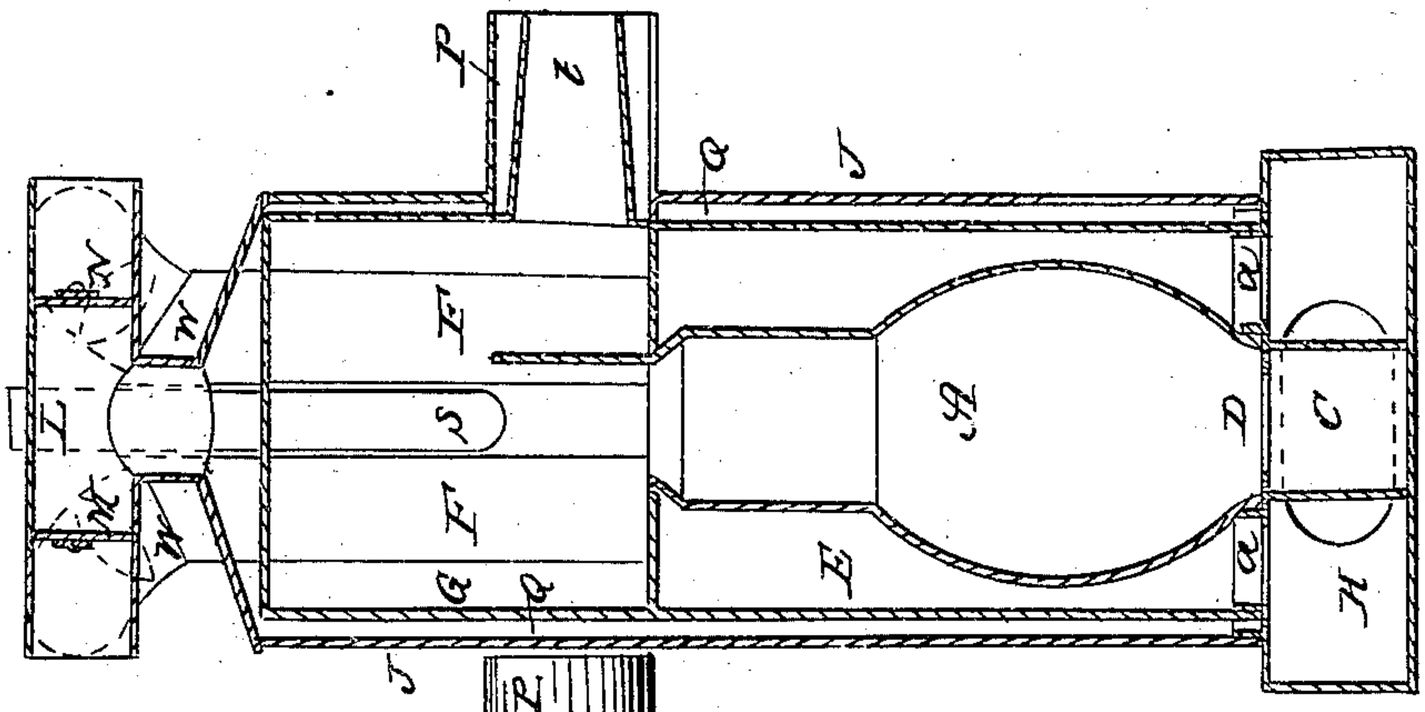
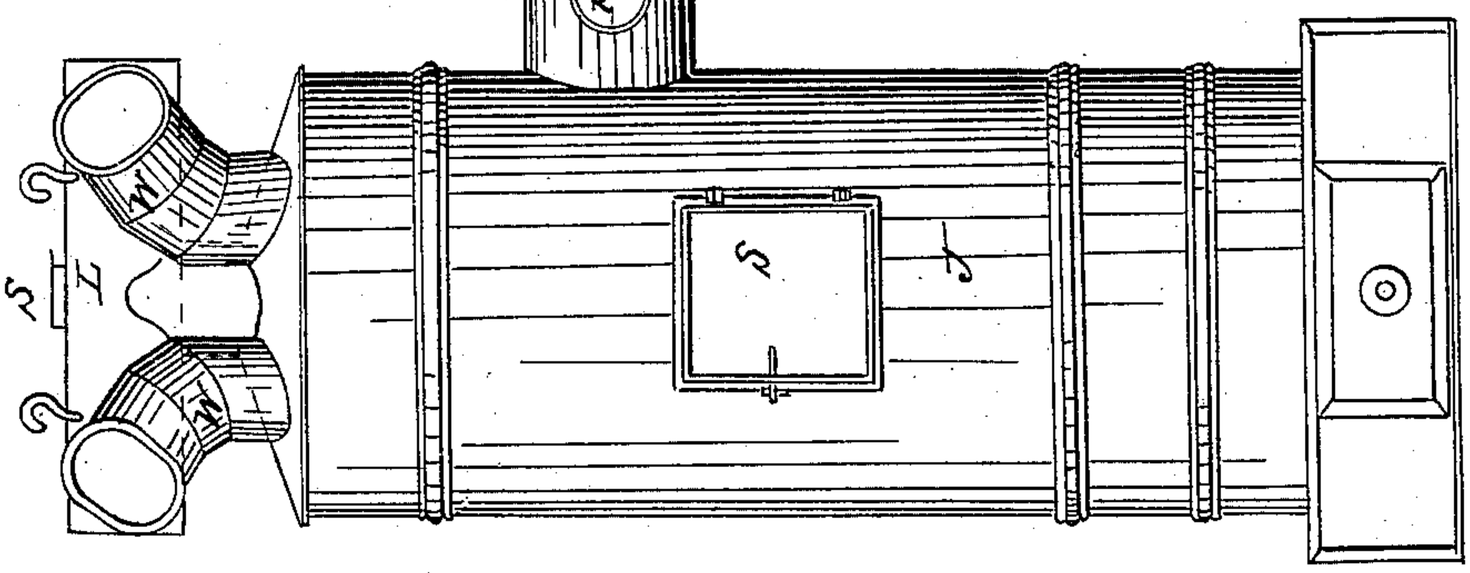


Fig. 1



WITNESSES

Charles E. Aggas
Wm. C. Smith

INVENTOR

B. Wells Dunklee

UNITED STATES PATENT OFFICE.

B. WELLS DUNKLEE, OF BOSTON, MASSACHUSETTS.

FURNACE.

Specification of Letters Patent No. 25,729, dated October 11, 1859.

To all whom it may concern:

Be it known that I, B. WELLS DUNKLEE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Air Heating and Ventilating Furnaces; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1 represents a front view of a furnace constructed on my plan. Fig. 2 is a vertical and transverse and Fig. 3 a vertical and longitudinal section of the same.

The object of my invention is so to construct a furnace, that the heated air shall be conducted from the hot air chamber to the discharge flues without coming in contact with the open air, or any other cooling surfaces; and I also increase rather than diminish the quantity of heat in its passage to and until it enters the conducting flues, thus economizing the heat, and of course the fuel. I am also enabled to concentrate the whole power of heat of the furnace into one distinct flue if necessary, by closing any number of the flues at their lower end, thus shutting the heat into the hot air chamber, without allowing it to stand in the flues, as is generally the case. Secondly I am enabled to ventilate several rooms at the same time, more effectually and perfectly, than by any other method now in use.

In the drawings A, denotes the fire pot and cone, as provided with a throat B, for the introduction of fuel, and a door *s*.

C is the ash pit, and D, the grate.

Surrounding the fire pot A, is a hot air chamber E, communicating with which are four or any other desirable number of hot air discharge flues F, F, F, F, provided with dampers at their lower ends, or where they connect with the hot air chamber, as shown in dotted lines in the drawings in Fig. 3. By means of said dampers I am enabled to exclude the heat from one or more of the said discharge flues F, and concentrate it into the remaining pipe or pipes, thereby saving much heat which would otherwise be lost by allowing it to stand in the flues, as would be the case, were the dampers placed outside the furnace.

Directly over the hot air discharge chamber E, and surrounding the flues F, is a smoke drum or chamber G, leading directly from the fire pot or cone. In rear of the ash pit is an air inlet H. By means of this inlet the air passes through two large apertures *a*, *a*, made in the base of the furnace, and into the hot air chamber E. By having the hot air chamber closed at top by means of the smoke drum, the cold air is prevented from coming in direct contact with the flues F. By this means, and by means of the smoke chamber or drum around the discharge flues, the heated air, in its passage through the said flues, is constantly receiving an increase of heat, until its final entrance into the non conducting metallic flues or conducting pipes W, which carry it to the apartments to be warmed, without circulating in any chamber over the smoke drum, as is usually the case.

Entirely surrounding the hot air chamber and smoke drum and forming a space Q, around them, and also forming a dome or chamber I, over the smoke drum, is a non-conducting casing J, at the lower part of which is an air inlet or pipe K, leading from the bottom of one or more rooms to be ventilated, and extending into said space Q. The air after entering the space Q, through the pipe K, becomes heated and rarefied by coming in contact with the casing of the hot air chamber and smoke drum, thereby creating a draft of air from the lower part of the room, and not only ventilating said room perfectly, but by means of the air circulating between the outer and inner casings as above described, I prevent the outer casing from becoming hot, and consequently from heating the cellar in which the furnace may be situated.

The air after passing through the space Q and through the space or chamber over the smoke drum, passes into a horizontal pipe or T L. The said pipe or T is furnished with two dampers M, N, one of which viz., M, by being closed, and by opening the other, N, the air having previously been heated as above described, will pass into the room from which it was originally taken or into any other room into which it may be desirable to carry it, thereby warming and ventilating the room at the same time.

By closing the damper N, and opening the damper M, the aforesaid air may be carried off into a chimney or smoke pipe or flue, for the purpose of ventilating the aforesaid room, when it is not desirable to warm it.

For the purpose of ventilating one or more additional rooms, I carry a pipe out

from the side, or down, through the floor of the room or rooms to be ventilated, and I connect with this pipe a ventiduct S, leading to the furnace, and through the space Q, and smoke drum, as shown in Fig. 3, of the drawings. By this means the heat from the space Q, and the smoke drum, acting on the pipe or ventiduct S, causes a strong current of air to pass from said room, and becoming heated in its passage through the space Q and smoke drum, serves to partially or wholly heat an additional room to which it may be carried, or it may be discharged into the chimney or smoke flue.

We now come to the means for ventilating still other additional room or rooms. Surrounding the smoke discharge pipe *t*, is another pipe P, which extends through the space Q, and is joined tightly to the inner casing of the hot air chamber, and from thence it is carried into the chimney. The inner pipe *t*, is to be extended a short distance from the casing, and so far therefrom as to cause the air passing from a pipe R, leading down from the side or floor of a room to be ventilated, to circulate around it, and between it and the outer pipe P, and to be heated to such a degree in its passage on to unite with the smoke, as to give it the same velocity with the smoke in its passage to the chimney, thereby creating a current of air from the said room for the purpose of ventilating it.

For the purpose of warming and ventilating a number of rooms simultaneously, I claim—

The general arrangement as above described of the space Q, the chamber or dome I the dampers M, and N, and pipe or T L, and the ventilating pipe S, and smoke drum Q, and ventilating pipe P, and smoke pipe *t*, and air duct R and series of dampers in flues F in relation to each other and with respect to the flues F and hot air chamber E, the whole being made to operate substantially in manner and for the purposes as above set forth.

In testimony whereof I have hereunto set my signature.

B. WELLS DUNKLEE.

Witnesses:

CHARLES C. WIGGIN,

WM. E. SMITH.