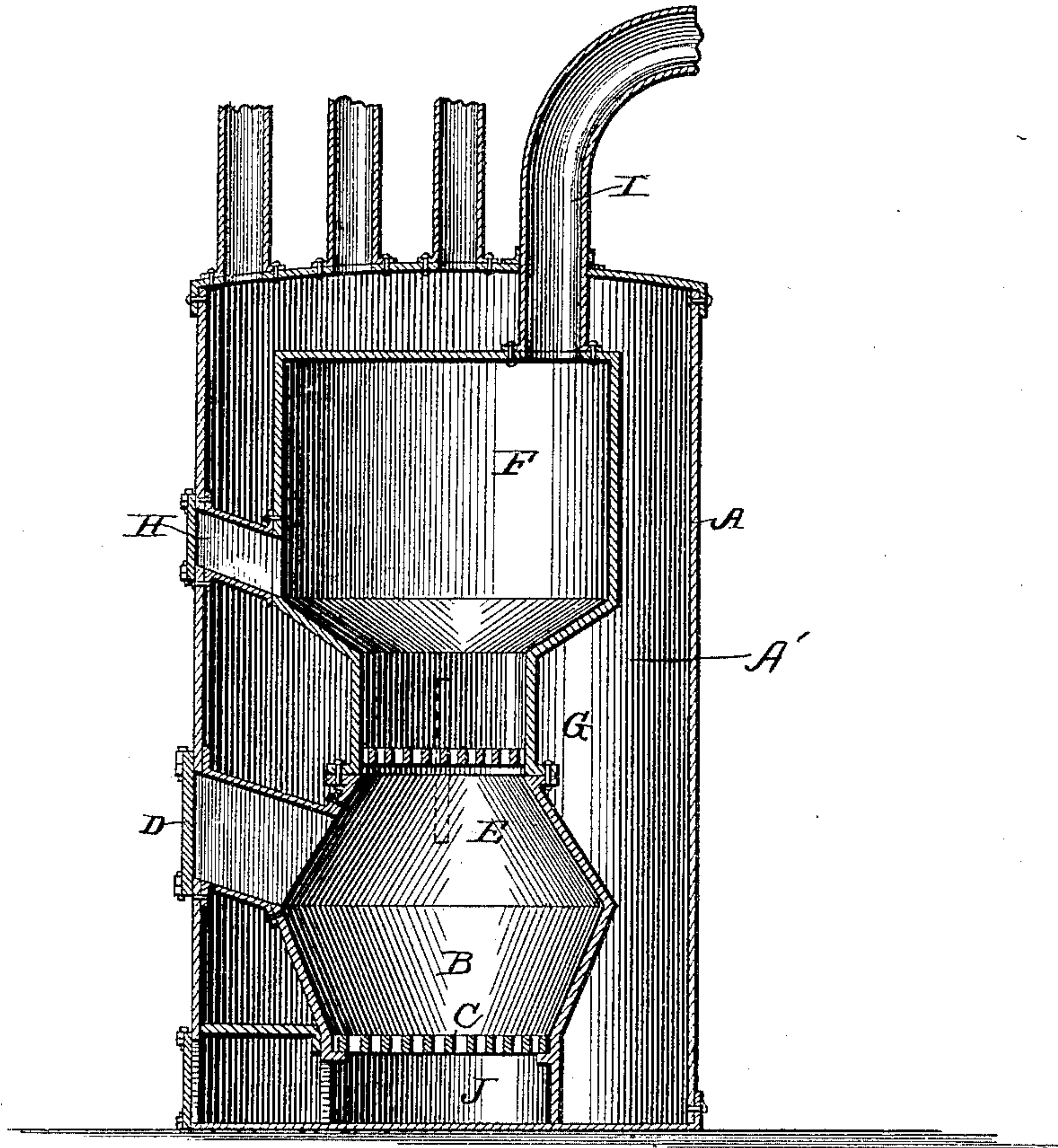


(No Model.)

W. E. SELLECK.
FURNACE.

No. 462,804.

Patented Nov. 10, 1891.



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FURNACE.

SPECIFICATION forming part of Letters Patent No. 462,804, dated November 10, 1891.

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To all whom it may concern:

Be it known that I, WILLIAM E. SELLECK, a citizen of the United States, residing in the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

This invention relates to improvements in furnaces designed for warming houses in cold weather, and therefore necessarily having a grate-surface of such an extent that a necessarily large amount of fuel must be used in order that a fire may be maintained, even in moderate weather, when only a small amount of heat is desirable, thus resulting in a needless waste of fuel and frequently in discomfort.

The prime object of this invention is to enable the maintenance of fires of different sizes in the same furnace, whereby in moderate weather a small fire may be maintained at its maximum capacity within the furnace, and thus avoid the maintenance of the ordinary large fire and the consequent waste of fuel.

Another object of my invention is to enable the utilization of either a part or the whole of the combustion-chamber for the maintenance of fires of different heating effects, whereby the fire used only in a portion of the combustion-chamber and producing the lowest desirable degree of heat may be instantly utilized for heating the entire combustion-chamber and for igniting the fresh fuel supplied to the fire, and all this without in the meantime substantially or materially reducing the heat produced by the furnace, or at best the temperature of the apartments to be heated.

Further objects are the economizing of fuel and the reduction to the simplest and cheapest possible form of construction a furnace capable of producing the desirable and important results hereinbefore set forth. These objects are attained by the devices hereinafter described and claimed, and illustrated in the accompanying drawing, in which—

The figure represents a central vertical section of a furnace embodying my invention.

Referring by letter to the said drawing, A indicates the ordinary outer shell or casing of

the furnace, between which and the combustion-chamber is formed the usual heating-chamber A'; B, a fire-pot, having therein a grate C, supplied with fuel through the chute D, opening upon the outside of the furnace, which grate has a surface of the usual extent for a supply of fuel necessary to produce the maximum degree of heat. Above this fire-pot is the combustion-chamber of the furnace, which in this case is contracted about the center of height thereof, practically dividing the chamber into two parts E and F, one immediately above the fire-pot B and the other above the contracted portion of said chamber, in which latter is located a second and supplemental grate G, of considerably less dimensions than the lower and main grate C, and for which the contracted portion of the combustion-chamber forms a fire-pot of less dimensions than the fire-pot of the main grate, to which fuel is supplied through a chute H, located in a plane above the chute D of the lower main fire-pot, the waste products of combustion from either or both of the fire-pots being discharged from the combustion-chamber through a flue I leading to the usual chimney or smoke-stack.

When the main grate C is in use, the entire combustion-chamber is employed, the upper or supplemental grate G being preferably removed or turned to a vertical position, although if left in position it would offer no material obstruction to the escape of the products of combustion; but when the grate G is in use, the lower portion E of the combustion-chamber and the fire-pot B are merely air-flues for the said grate. In other words, the upper supplemental grate uses only the upper portion F of the combustion-chamber, and the ashes therefrom will be discharged through the lower fire-pot into the ash-pit J, in the same manner as if the main fire-pot were in use. The grate G is preferably so hinged or constructed that it may be swung to a vertical position, leaving a substantially clear passage for the products of combustion from the lower portion of the combustion-chamber through the contracted and upper portion F of the combustion-chamber to the flue I, or else be entirely removed therefrom when not in use. Now the advantages of having two separate and distinct grates of differ-

ing area, and consequently two fire-pots of different dimensions in the same furnace, are that in mild weather, when a minimum degree of heat is required, or even in cold weather when a uniform average degree of heat between a maximum and a minimum is desirable the smaller or supplemental fire-pot may be successfully used for this purpose, thereby not only promoting comfort, but economy of fuel, and the furnace will require less frequent attendance, for obviously a lower degree of heat may be produced in the heating-chamber by the use of a small fire-pot than by the use of a larger fire-pot, and it is equally well understood how difficult it is, even with frequent attendance and great care, to uniformly maintain in a furnace a degree of heat between its maximum and minimum, although no difficulty is experienced in maintaining the maximum degree though somewhat more is required to keep a minimum degree of heat without the fire dying out.

The merit of my invention lies in the practicability of producing the lowest possible degree of heat in a furnace and also of maintaining in a furnace of large heating capacity a uniform degree of heat between its minimum and its maximum heating capacity without the exercise of either skill or constant care. Important advantages also arise from my peculiar relative arrangement of the two fire-pots—namely, that of having the smaller fire-pot arranged above the larger one—for by this arrangement, when the smaller fire-pot is in use and the temperature suddenly becomes lowered, requiring the use of the larger fire-pot, the fire of the smaller pot may be quickly and conveniently dumped upon the lower grate, and in such a live condition that it will readily ignite the fresh supply of coal necessary or desirable for running the main and larger

fire-pot, while by the same manipulation the passage for the products of combustion from the lower portion of the combustion-chamber to the discharge-flue is immediately cleared, and at the same time the upper grate is cleaned for subsequent use. Furthermore, the embodiment of my invention in a furnace does not substantially increase its cost, and, besides, any ordinary furnace having a combustion-chamber of sufficient height, may, at a very small cost, have secured therein a smaller grate, in which event the desired contraction of the combustion-chamber may be made by an inclined annular flange supporting and extending from the grate to the walls of the combustion-chamber, or the same result may be attained in numerous other ways, which will readily suggest themselves to one skilled in the art to which my invention appertains, and therefore need not be herein illustrated or described in detail.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

A furnace composed of two fire-chambers arranged one above the other, connected by a contracted throat, both chambers being provided with a grate, the upper grate having less fuel capacity than and adapted to dump its contents upon the lower grate and leave an open communication between both of said fire-chambers, whereby a minimum fire maintained in a furnace may be converted into a large and maximum fire, and the upper fire-chamber is simultaneously merged into the combustion-chamber of the larger fire-chamber, substantially as described.

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