April 2, 1946. D. CAUCHANER 2,397,470

HEATING STOVE FOR CLOSED ROOMS OR THE LIKE

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Fig. 1.

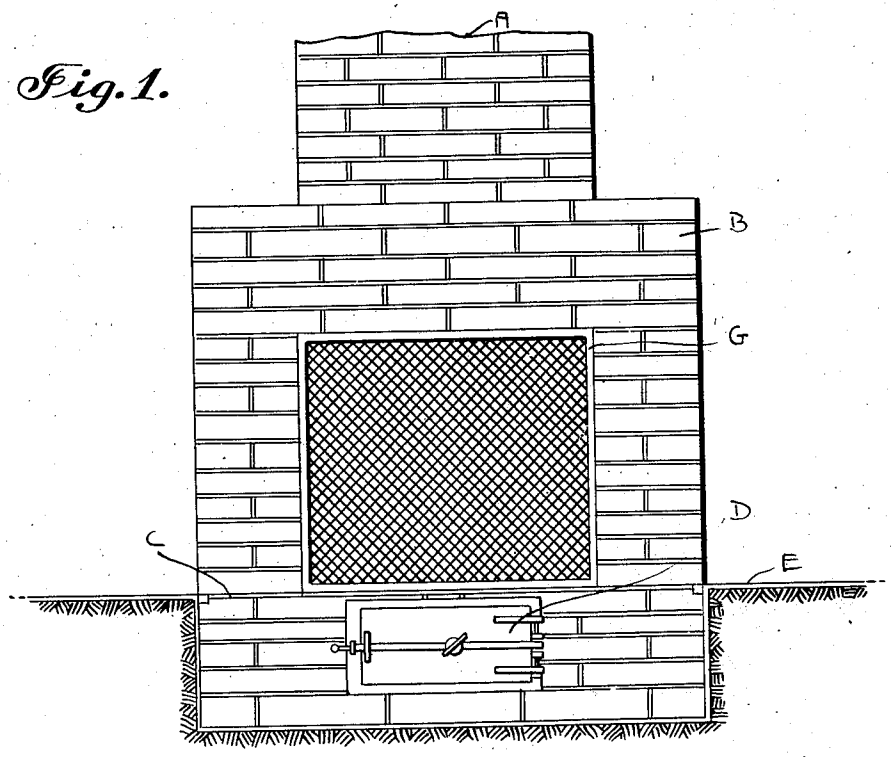
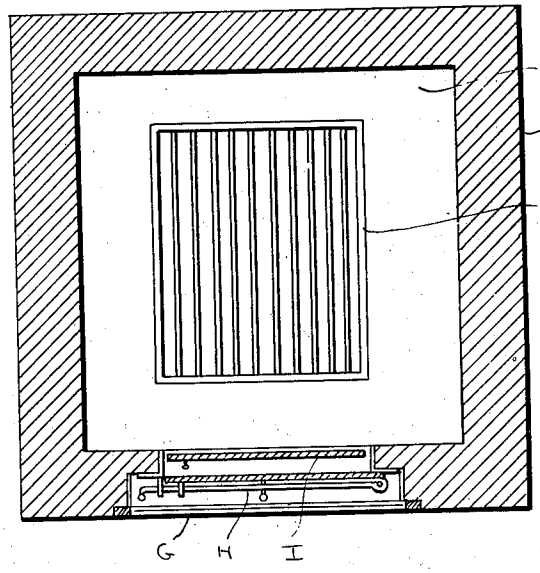


Fig. 2.



INVENTOR.
DAVID CAUCHANER

BY

Michael S. Stern
Agent

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Fig. 3.

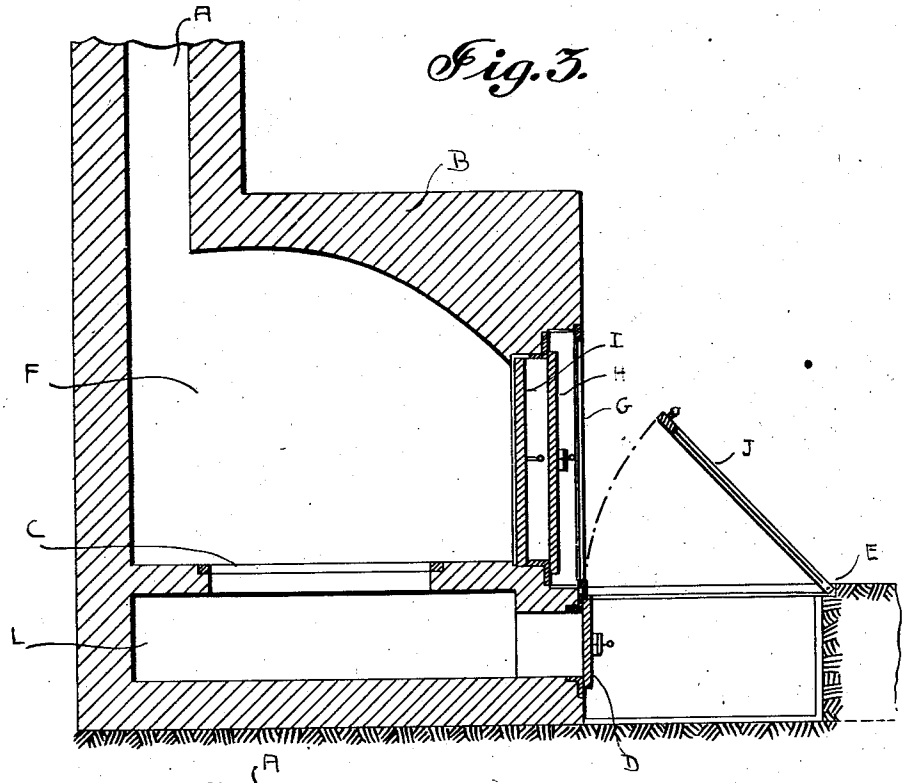
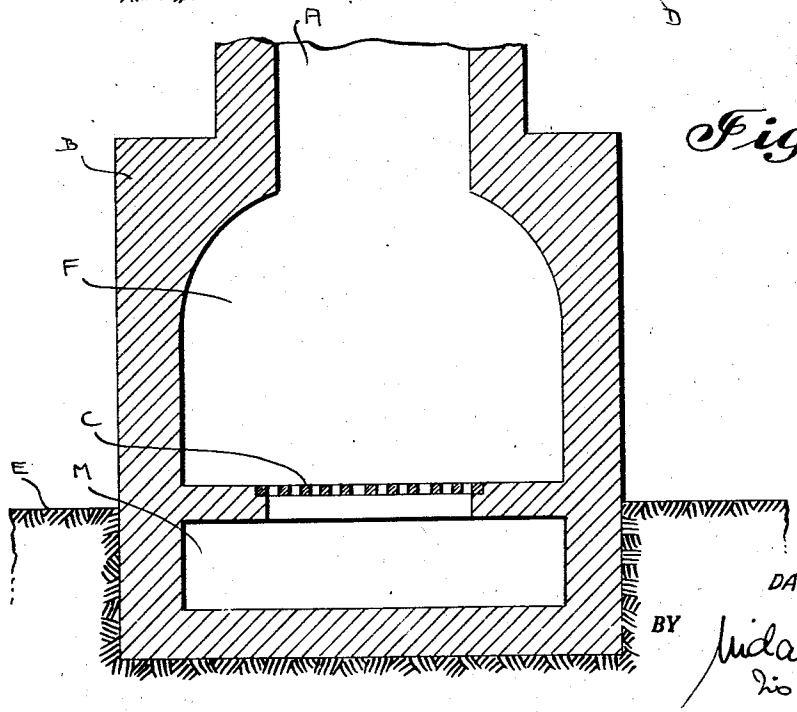


Fig. 4.



INVENTOR.
DAVID CAUCHANER

BY Michael Stern
his Agent

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HEATING STOVE FOR CLOSED ROOMS OR THE LIKE

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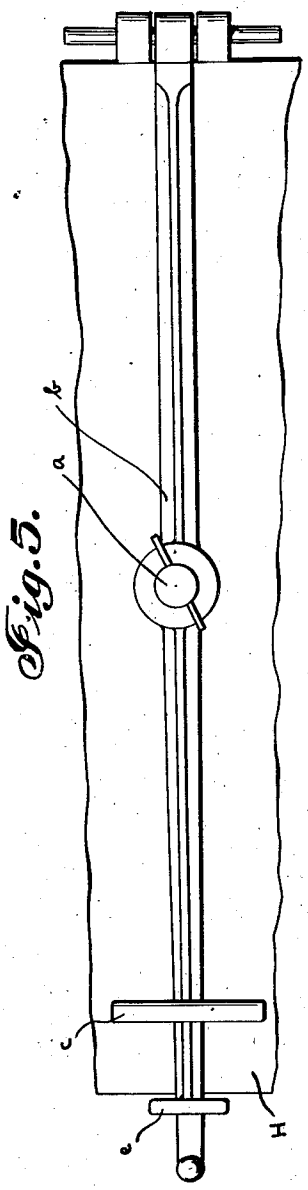


Fig. 5.

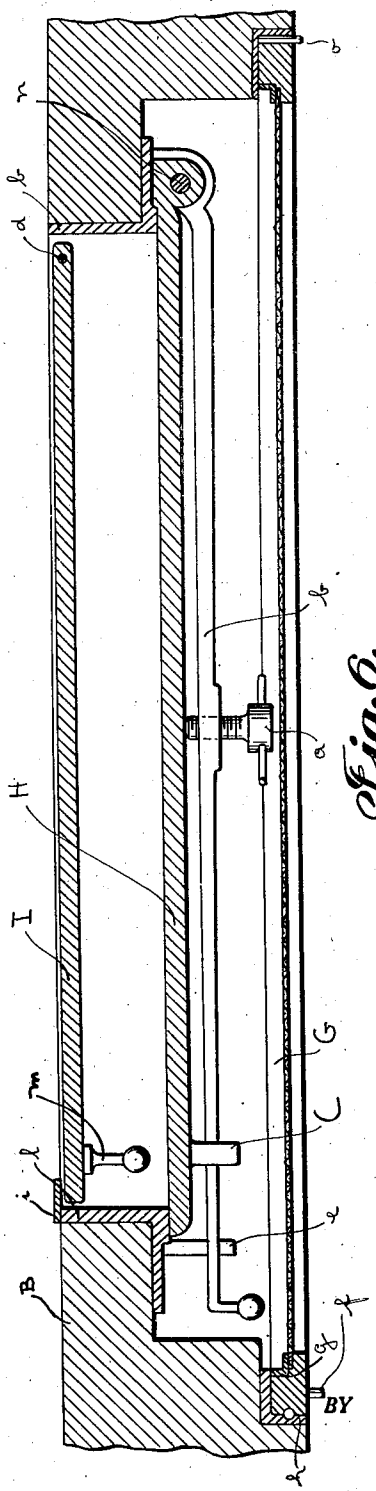


Fig. 6.

INVENTOR.
DAVID CAUCHANER
BY
Michael Stern
Its Agent

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UNITED STATES PATENT OFFICE

2,397,470

HEATING STOVE FOR CLOSED ROOMS OR THE LIKE

David Cauchaner, Buenos Aires, Argentina

Application February 26, 1944, Serial No. 524,108

2 Claims. (Cl. 126—120)

This invention relates to a heating stove for closed rooms or the like, and a main feature of the same consists in that there does not exist any duct or other opening of communication between the furnace of the stove and the room wherein the same is installed, with regard to which the stove is tightly closed.

In the heating devices known as fireplaces, the front part is completely open, so that the air required for combustion is withdrawn in a large amount from the room where the same is placed, owing to which the coal or wood used as fuel will be consumed with considerable speed and in an irregular manner, on account of the continuous fluctuations in the draft.

An important drawback of this type of heating systems consists in that by their front opening an abundant radiation of heat takes place, which does not allow of any person staying near the front of a fireplace owing to the high temperature caused by radiation on its impact with a surface of any kind, this being the main reason why the use of such fireplaces has been excluded from small rooms.

A further deficiency is caused by the fact that the furnace is in direct communication with the room to be heated, so that at the times when the draft is reduced or even nil, as is frequently the case, the room is invaded by smoke and combustion gases which are highly noxious to health.

The stove which forms the object of this invention is adapted for operating in a built-in position as well as in the middle of a room, and by its use all the drawbacks above referred to are avoided, owing to the completely isolated arrangement of the furnace, for which purpose two doors are provided, between which a suitable amount of air remains enclosed which besides serving as a thermic isolating means, prevents the overheating of the outer door, so that a person may approach the stove without risk of being submitted to an excessive heat.

The air intake is formed by the same duct or flue used for the escape of the combustion gases, so that in said flue two opposed currents are formed, one, in a rising direction, by the smoke and combustion gases, and the other, in a descending direction, formed by the air for combustion. The amount of descending air is rather small, owing to which the combustion in the furnace of the stove will be effected in a regular and slow manner, without formation of large flames, which allows of assuring a suitable caloric yield from the fuel used; besides, the descent of the air in counter-current causes an exchange of heat between the latter and the combustion gases, which permits the use of the calories which heretofore were lost with the combustion gases, so that the air will arrive at the furnace at a suitable high temperature which facilitates combustion. In this way a homogeneous heating of the walls of the furnace is secured through which the heat is then transmitted to the room, and as such heating and transmission is effected over a surface of considerable extension, the temperature of the radiating surfaces will not be raised to an excessive degree.

The stove in accordance with this invention is also provided with an ash pit arranged below the grate which forms the base of the furnace; this arrangement not only offers the advantage of collecting the residues of combustion, but also permits of the access of air to the entire mass of fuel, from above as well as from below, thereby facilitating combustion, without the necessity of periodically raking or stirring the burning fuel, such operation being indispensable in the stoves of known construction, in which the ashes formed by the combustion of the upper layers of fuel choke or hinder the combustion in the lower layers, causing the fire to go out as no grate was provided at the bottom of the stove.

The ash pit, like the furnace, is tightly closed by means of a door and a grid, or by two doors, between which an air chamber is formed.

In order to facilitate the understanding of the details of this invention, a preferred embodiment of the same will now be described with reference to the accompanying sheets of drawings wherein:

Figure 1 illustrates a front view of a stove constructed in accordance with the features of this invention.

Figure 2 shows a section of the same stove, taken along a horizontal plane at the level of the furnace.

Figure 3 is a longitudinal section of the stove.

Figure 4 shows a section of the same stove, taken along a vertical plane and normal to the section shown in Fig. 3.

Figure 5 illustrates a front view of part of one of the doors of the furnace, and

Figure 6 illustrates, in horizontal section, some details of the several doors for closing the furnace.

Similar letters of reference are used to indicate like or corresponding parts in all the views.

In the interior of a casing B of suitable shape and partially built-in in the wall of a room, are arranged two chambers, an upper one F which forms the furnace, provided with an

arched ceiling, and a lower chamber L, of the shape of a rectangular parallelopiped, which serves as an ash pit. The two chambers are separated one from the other by the grate C, arranged at the level of the floor E of the room. From the back end and top of the chamber F extends a draft channel or flue A, designed to serve at the same time as an intake duct for the air for combustion. The front part of the chamber F is provided with a rectangular opening adapted to be closed by three doors, of which the outer one G only serves for a decorative purpose and may be constructed in the shape of a metallic grid, of wrought iron or other suitable metal; the door H of the middle establishes a tight closure for the opening, while the inner door I may be provided with any suitable means for closing the same, as its purpose is to protect the door H against the direct heat radiated by combustion.

The chamber L is also provided at its front end with a rectangular opening, adapted to be tightly closed by means of a door, and the cavity or recess formed in front of the same is closed by means of a second door or grid J, which, when in its closed position, is flush with and forms an extension of the floor E.

The opening of the chamber F is formed with several frames, arranged in a stepped relation. The inner frame *l* is provided along its edge adjacent to the chamber F, with a flange *i*, against which closes the door I, mounted to swing on a vertical hinge pin *d*, said door I being provided for handling the same with a handle or knob *m*. Against the outer part of said frame *l* is the door H, mounted to swing on a vertical hinge pin *n*, secured to the frame *l*; the door H is provided on its outer side with a bar *b*, loosely connected to the hinge pin *n* and arranged to extend through a clamp *c*, which allows of a limited motion of the bar *b* in a vertical direction, of sufficient extent to enable the same to engage with the hook *e*, provided for that purpose on the frame *l*. The bar *b* is formed at the middle with a threaded opening, normal to the plane of the door H, through which passes a screw *a* which by bearing against the door H tends to separate the bar *b* from the same, thereby causing the bar, through its connection to the pin *n* and engagement with the hook *e*, to press the door H against its frame I and thus establish a tight closure.

On its outer part, the opening of the chamber F is formed with another frame *h*, against which is the door G, formed by a frame of metallic rods *g* to which is secured a metallic grid or the like. The door G swings on a spindle *o* and is provided with a suitable handle or the like, indicated at *f*.

From the foregoing description it will have been understood that the particular construction of the improved stove entirely avoids any possible danger of fire, as well as of escape of gases, which is an important advantage over the stoves of known construction.

The fire started in the furnace F will heat the walls B, the outer parts of which will transmit the heat to the air in contact therewith and thus cause the same to circulate through the entire room.

It should be understood that the foregoing description only has been given by way of example and that the invention is not limited thereto, as many modifications of form, construction and details may be introduced without departing from the scope of the invention, as set forth in the claiming clause hereunto annexed.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim and desire to secure by Letters Patent is:

1. A heating stove comprising a furnace compartment and an ash compartment, said furnace compartment being located above the level of the ground surrounding said stove, and said ash compartment being located below said ground level embedded in the ground; a free grid separating said furnace compartment and said ash compartment and arranged at least substantially on the same level as the ground surrounding said stove; a feeding opening in said furnace compartment arranged above said ground level; an ash removing opening in said ash compartment arranged below said ground level; means for closing said feeding opening of said furnace compartment, said means consisting of at least two doors at least one of which tightly closes said furnace compartment, said doors being arranged in such manner as to form an air chamber between each other when closed; and means for closing said ash removing opening of said ash compartment arranged at least partly below said ground level and consisting of a tightly closing door and a grid door arranged in such a manner as to form an air chamber between each other when closed.

2. A heating stove comprising a furnace compartment and an ash compartment, said furnace compartment being located above the level of the ground surrounding said stove, and said ash compartment being located below said ground level embedded in the ground; a free grid separating said furnace compartment and said ash compartment and arranged at least substantially on the same level as the ground surrounding said stove; a feeding opening in said furnace compartment arranged above said ground level; an ash removing opening in said ash compartment arranged below said ground level; means for closing said feeding opening of said furnace compartment, said means consisting of at least two doors at least one of which tightly closes said furnace compartment, said doors being arranged in such a manner as to form an air chamber between each other when closed; an open compartment in front of said ash compartment arranged below said ground level; a tightly closing door between said ash compartment and said open compartment; and a grid door for closing said open compartment, the same thus serving as air chamber when said tightly closing ash door and said grid door are closed.

D. CAUCHANER.