

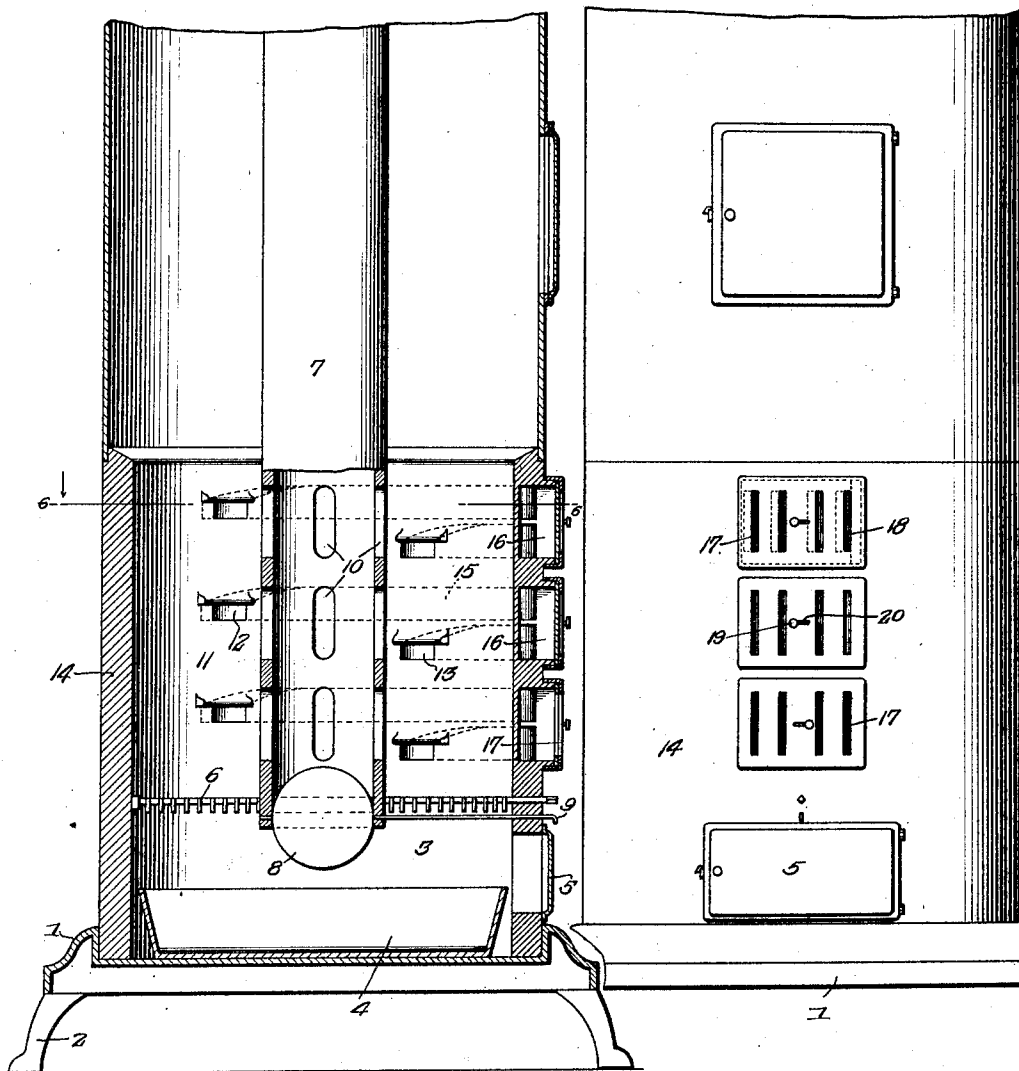
H. P. WILSON.
DRAFT APPLIANCE FOR STOVES AND FURNACES.
APPLICATION FILED APR. 12, 1921.

1,394,387.

Patented Oct. 18, 1921.
2 SHEETS—SHEET 1.

Fig. 2.

Fig. 1.



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Fig. 4.

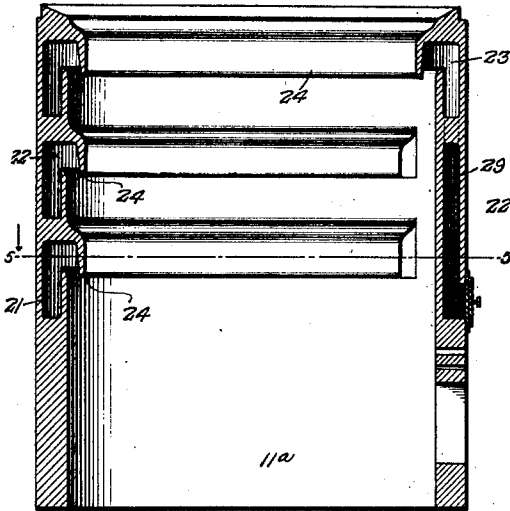


Fig. 3.

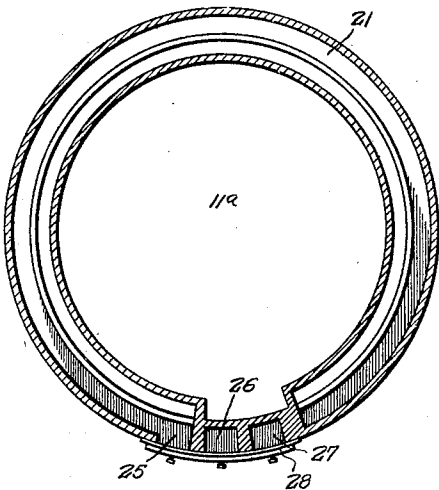
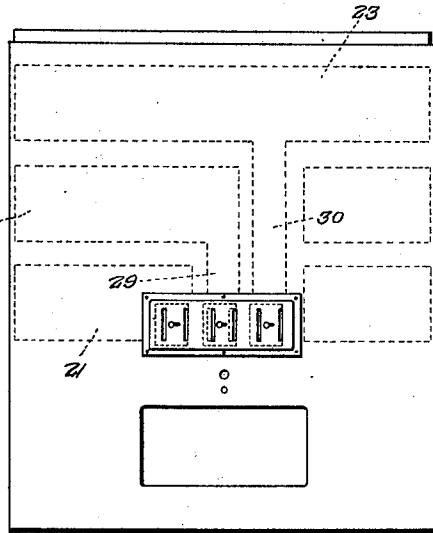


Fig. 5.

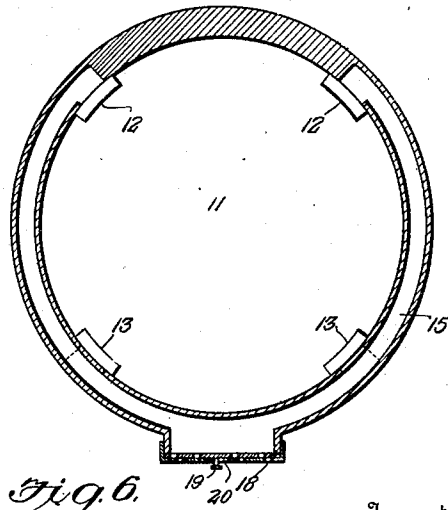


Fig. 6.

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UNITED STATES PATENT OFFICE.

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DRAFT APPLIANCE FOR STOVES AND FURNACES.

1,394,387.

Specification of Letters Patent.

Patented Oct. 18, 1921.

Application filed April 12, 1921. Serial No. 460,670.

To all whom it may concern:

Be it known that I, HAL P. WILSON, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in a Draft Appliance for Stoves and Furnaces, of which the following is a specification.

This invention relates to stoves and furnaces and more particularly to draft regulating means therefor.

The object of the invention is to provide a stove or furnace with means for directing a draft to any predetermined height in the fuel chamber or fire box according to the height of the burning fuel in the fire chamber.

Another object is to provide simple and efficient means of this character so constructed and operable that all the drafts used can be concentrated at the will of the operator on one or more particular spots.

Another object is to construct a furnace provided with means for admitting air to support combustion and also to heat the admitted air to increase its efficiency.

With these and other objects in view, the invention consists in certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims, and in the drawings illustrative of the preferred embodiment of the invention.

Figure 1 represents a front elevation of a furnace constructed in accordance with this invention with the upper part broken off for convenience in illustration.

Fig. 2 is a transverse vertical section thereof with the top broken off,

Fig. 3 is a front elevation showing another form of the invention applied,

Fig. 4 is a central transverse vertical section thereof,

Fig. 5 is a horizontal section taken on the line 5-5 of Fig. 4, and,

Fig. 6 is a similar view taken on the line 6-6 of Fig. 2.

In the embodiments illustrated in Figs. 1, 2 and 6, a heating stove is shown mounted upon a suitable base 1 preferably although not necessarily provided with legs 2. Above the base 1 is a closed tight chamber 3 which

constitutes the ash pit and in which is mounted the usual ash pan or tray 4 which is removable through a door 5 which while closing the ash pit air tight affords access to its interior.

A grate 6 of any ordinary or desired construction is mounted at the upper end of the ash pit chamber 3 and supports the lower end of a cylindrical combustion chamber 7. This chamber 7 is equipped at its lower terminal with a butterfly valve 8 operable by a rod 9 which extends through one side wall of the ash pit in position for convenient operation for controlling the draft through said chamber 7. The fire box 11 of this stove surrounds the combustion chamber 7 and is located above the grate 6 and is in communication with said combustion chamber through apertures 10, three series of which are here shown arranged in vertically spaced relation. The apertures 10 as shown are in the form of elongated slots arranged longitudinally of chamber 7 and positioned substantially in alinement with the mouths 12 and 13 of the air supply conduits 15 which are located in the outer wall of the fire box or fuel chamber 11.

These combined air heating and inlet conduits 15 are arranged in vertically spaced series around the fuel box there being two conduits in each series arranged in different vertical planes and of different lengths, each having a mouth at its inner end, clearly in Fig. 2, and which discharge the air admitted thereto by means, presently to be described, into the fuel chamber at substantially the same height and yet at different points peripherally of said chamber. These mouths are preferably spaced substantially the same distance apart as is shown clearly in Fig. 6 so that four air discharge points are formed in each series.

Both of the conduits of these series communicate with a chamber 16 preferably formed at the front of the furnace end which chamber is provided with damper controlled air inlets 17, the dampers 18 being slidable over these apertures 17 for admitting air to or cutting it off from the conduits, at the will of the operator.

Any suitable means may be provided for operating these dampers, a knob 19 being

here shown operating in a slot 20 in the front wall of the chamber 16. (See Fig. 1.)

In the form herein shown, three series of these conduits 15 are illustrated, although obviously any desired number may be employed according to the size of the fuel chamber. As shown the mouths 13 of the shorter conduits of each series are shown arranged in substantial alinement with the lower ends of the cooperating slots 10, while the mouths 12 of the longer conduits are arranged in alinement with the upper portions of said slots. (See Fig. 2.)

In the use of this draft regulating apparatus, it is of course understood that the furnace other than for the draft constituting this invention, is made air tight to provide for draft only on the level at which the fire is then burning. When the fire in the furnace or stove is first started, the fuel in the box 11 will be substantially in alinement with the first series of conduits 15 and consequently the damper 18 is opened as shown in Figs. 1 and 2 to permit air to pass into the conduits 15 and around through them to the mouths at their inner ends, through which it is discharged in a heated condition into the fuel chamber on a level with the burning fuel therein and after performing its function passes out with the products of combustion through the openings 10 into the combustion chamber 7 and is discharged into the discharge flue of the furnace, not shown.

As fuel is added to the fire in the fuel chamber 11 the level thereof will be raised gradually until it reaches the second series of conduits. The damper 18 of the lowermost chamber 16 is then closed and the damper for the intermediate or next chamber above it opened so that air is admitted through the second series of conduits and discharged through the mouths thereof after it is heated onto the burning fuel, and the operation just described is repeated.

The further filling of the fire box brings the level of the fuel into alinement with the third series of conduits, and the damper 18 of the intermediate series is then closed and that of the upper series opened.

From the above description it will be obvious that the different series of conduits may be opened to the atmosphere at the will of the operator and that they perform not only the function of admitting air to fuel box but also operate to heat the air admitted and discharge it in its heated condition just above the burning fuel so that it will have a maximum efficiency in consuming the fuel.

A different form of the invention is shown embodied in Figs. 3, 4 and 5, in which three air admitting and heating conduits 21, 22 and 23 are shown arranged concentrically around the walls of the fuel box 11^a and one spaced above the other and constructed in the form of channels having openings in

their upper inner walls and provided with overhanging lips 24. These conduits communicate respectively with air chambers 25, 26 and 27 arranged in peripheral alinement at the front of the furnace and each having openings to the atmosphere controlled by sliding dampers 28, so that any one of them may be opened to the atmosphere at the will of the operator.

The lowermost conduit 21 communicates directly with the chamber 25, while the next conduit above it is connected with the chamber 26 by a passage 29 and a similar passage 30 connects the upper conduit 23 with the chamber 27, as is shown in dotted lines in Fig. 3.

The conduits 21 and 22 are shown opening into the fuel box 11^a throughout the greater portion of their length, the heated air discharged therefrom being directed downwardly onto the burning fuel by the lips or flanges 24 which overhang the discharge mouths thereof. The uppermost conduit 23 is open throughout its entire length into the fuel chamber, as is shown clearly in Figs. 3 and 4.

From the above description it will be obvious that while the construction of the two forms are different, their principles are the same the admission of air through the various conduits being under the control of the operator by means of the dampers in the chambers 25, 26 and 27.

The preferred embodiment of the invention is disclosed in the drawings and set forth in the specification, but it will be understood that any modifications within the scope of the claimed invention may be made in the construction without departing from the principle of the invention or sacrificing any of its advantages.

I claim:—

1. In a stove, a fuel chamber, air supply conduits arranged peripherally in the wall thereof and opening into said chamber at different points both vertically and peripherally, air chambers communicating with the atmosphere and with which said conduits communicate, and dampers for opening and closing said chambers.

2. In a stove, a fuel chamber, a plurality of vertically spaced series of air conduits, arranged peripherally in the wall thereof, the conduits of each series being of different lengths and in different vertical planes and opening at one end into said fuel chamber, an air chamber for each series having openings to the atmosphere, a damper controlling said openings, the other ends of said conduits communicating with said air chamber.

3. In a stove, a fuel chamber, a plurality of vertically spaced series of air conduits, arranged peripherally in the wall thereof, the conduits of each series being of different lengths and in different vertical planes and

opening at one end into said fuel chamber,
an air chamber for each series having open-
ings to the atmosphere, a damper controlling
said openings, the other ends of said con-
5 duits communicating with said air chamber
the inlet ends of the conduits of the respec-
tive series being arranged in vertical aline-

ment, and a combustion chamber arranged in
said fuel chamber and having openings po-
sitioned opposite the mouths or inlets of said 10
conduits.

In testimony whereof, I affix my signature
hereto.

HAL P. WILSON.