P. McLAUGHLIN.

HEATING SYSTEM.

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1,378,592. **Patented May 17, 1921.**

Fig. 1.

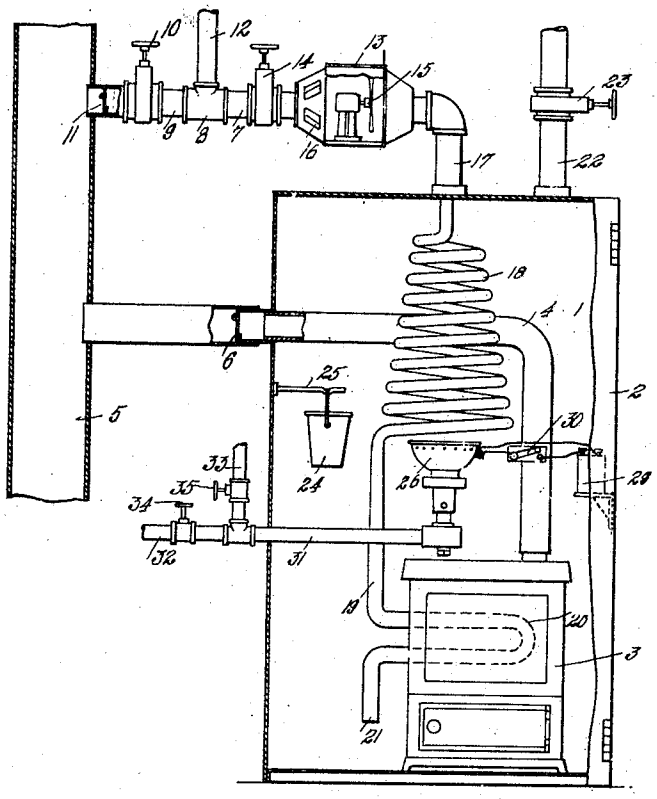
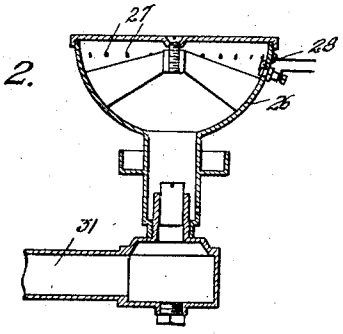


Fig. 2.



WITNESSES

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HEATING SYSTEM.

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To all whom it may concern:

Be it known that I, PATRICK McLAUGHLIN, a citizen of the United States, and a resident of Dover, in the county of Strafford and State of New Hampshire, have invented a new and Improved Heating System, of which the following is a full, clear, and exact description.

This invention relates to improvements in heating systems, an object of the invention being to provide improved means for heating air in an inclosed casing or housing and utilize the air as a heat conveying medium carrying with it the heat units from the apparatus used for heating the air.

A further object is to provide a heating system of the character stated in which the hot air is utilized to vaporize water and direct the moisture laden air together with the direct heat units of the heating means through any approved system for heating purposes.

A further object is to provide an apparatus or system of the character above described in which the air is directed by means of a fan or blower into and through the system and which results in an economy of fuel and permits an effective control of the circulating medium.

With these and other objects in view the invention consists in certain novel features of construction, and combinations and arrangements of parts, as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

Figure 1 is a sectional elevation, more or less diagrammatic, illustrating my invention.

Fig. 2 is an enlarged view in longitudinal section through the burner.

1 represents an airtight or substantially airtight casing or housing preferably provided with a hinged door 2 to permit access to the casing as occasion may require.

Within the casing 1 I provide a heater 3 which may constitute any approved form of gas, oil, coal, wood, or other fuel heater having a smoke pipe 4 extending out of the casing and communicating with a smoke stack 5, said pipe 4 having a check valve 6 therein as shown.

7 represents an air inlet pipe which is connected by a T 8 with a pipe 9 communicating with the stack 5 and having a manually operated valve 10 therein and a check valve 11. This T 8 is also connected with an air inlet or supply pipe 12 which may form a part of a system or which may take the fresh air from the outside as may be desired.

The pipe 7 communicates with a fan or blower casing 13 and is provided between the T 8 and the casing 13 with a manually operated valve 14. In the casing 13 a fan or blower 15 is provided and damper control air inlets 16 are formed in the casing 13.

The casing 13 has an outlet pipe 17 which extends into the casing 1 in the form of a coil 18, the outlet end of the pipe forming the coil extending downwardly as shown at 19, and thence into and out of the heater 3 by means of the return bend 20 and discharging at its open lower end 21 into the lower portion of casing 1. An air outlet or discharge pipe 22 communicates with the top of casing 1 and may be connected with any approved form of radiators or other air heated outlets, and this pipe 22 is provided with a manually operated valve 23.

A bucket or other water receptacle 24 is supported on a bracket 25 in the casing 1 and a burner 26 is provided in the casing 1 below the coil 18 to heat the latter. This burner 26 is preferably cup-shaped as shown most clearly in Fig. 2, so that it may constitute either an oil burner or a gas burner and is provided with orifices 27 through which the gas or vapor escapes and is burned.

An electric spark device 28 preferably communicates with the burner 26 and may be manually controlled for closing the circuit from a battery 29 by means of a switch 30 or other approved means to cause a spark and the ignition of the gas or vapor in the burner.

I have illustrated a pipe 31 communicating with the burner 26 and this pipe 31 may have a gas inlet pipe 32 or an oil inlet pipe 33 to supply either gas or oil to the burner and valves 34 and 35 are provided in the pipes 32 and 33 respectively.

It is to be understood that my invention is not limited to either the use of oil or gas for supplying the burner 26, but I desire to cover broadly the idea of the provision of a burner for any fuel which is located below or in proximity to the coil 18 for heating the latter so as to heat the air in said coil.

The heater 3 constitutes the main heating medium and the burner 26 is merely an auxiliary heater to heat the air when it is in-

troduced, but I, of course, utilize the heat of this burner and the gases radiating therefrom as well as the heat of the air and the heat units radiating from the heater 3 which cause a vaporization of the water in the receptacle 24 to form a heating gas or medium which is directed through the pipe 22.

In normal operation, the valve 10 is closed and valves 14 and 23 are open; also the damper air inlets 16 are open in the casing 13. When the fan or blower 15 is operated, it will draw the air through the pipes 12 and 7 and discharge the same through the pipe 17 and coil 18 and during passage through the coil, this air will be heated so that the burner 26 will operate as a heating medium for the air as well as the gas or other fuel operated heater 3.

The air when it escapes through the outlet end of pipe 21 into the lower portion of casing 1 is in a highly heated condition and a portion of this air can be utilized as a combustion gas for the fuel in the heater 3, the smoke from the latter escaping through the pipe 4 into the stack 5. The main portion of the air escaping from pipe 21 passes upwardly through the casing 1 and takes up the heat units radiated from the heater 3 and also the heat units and gas from the burner 26 causing a rapid vaporization of the water in the receptacle 24 which commingles with the air and is directed through the pipe 22 for heating purposes.

With my improved apparatus or system I utilize the maximum percentage of heat units both by radiation and by direct contact with flame and gases and moisten this mixture by the vapor from the water in the receptacle 24. This heating medium can be directed through any system and either returned or allowed to exhaust as may be desired.

If desired, the air may be blown up the stack 5 by merely opening the valves 14 and 10 and reversing the direction of the blower 15 and this may be desirable from time to time, it being, of course, understood that when the blower is reversed, the damper inlets 16 will be closed.

Various slight changes might be made in the general form and arrangement of parts described without departing from the invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

1. A heating apparatus, comprising a closed chamber having a relatively small hot air outlet at its upper portion, an air inlet pipe coil located within the chamber and discharging downwardly into the chamber, and a burner located below the coil, said burner operating to heat the coil and the air entering therethrough and the products of combustion from said burner commingling with said hot air and passing out through said outlet.

2. A heating apparatus, comprising a closed chamber having a relatively small hot air outlet at its upper portion, an air inlet pipe coil located within the chamber and discharging downwardly into the chamber, and a pair of heaters in said chamber, one heater adapted to directly heat the coil and the other a portion of the pipe communicating with the coil, and the products of combustion from one of said heaters and the heat radiation from the other of said heaters operating to heat the air in the chamber and the coil and commingling with the air in the chamber and escaping therewith through said outlet.

3. A heating apparatus, comprising a closed chamber, a coal heater in the chamber, an oil heater in the chamber, an air inlet pipe projecting into the chamber and heated by both the oil burner and the coal burner and discharging into the chamber, and an outlet from said chamber through which the hot air and the heat from both of the burners is utilized as a heating medium.

PATRICK McLAUGHLIN.