June 9, 1931. C. F. BRAND 1,808,761

HEATING SYSTEM

Filed May 15, 1929

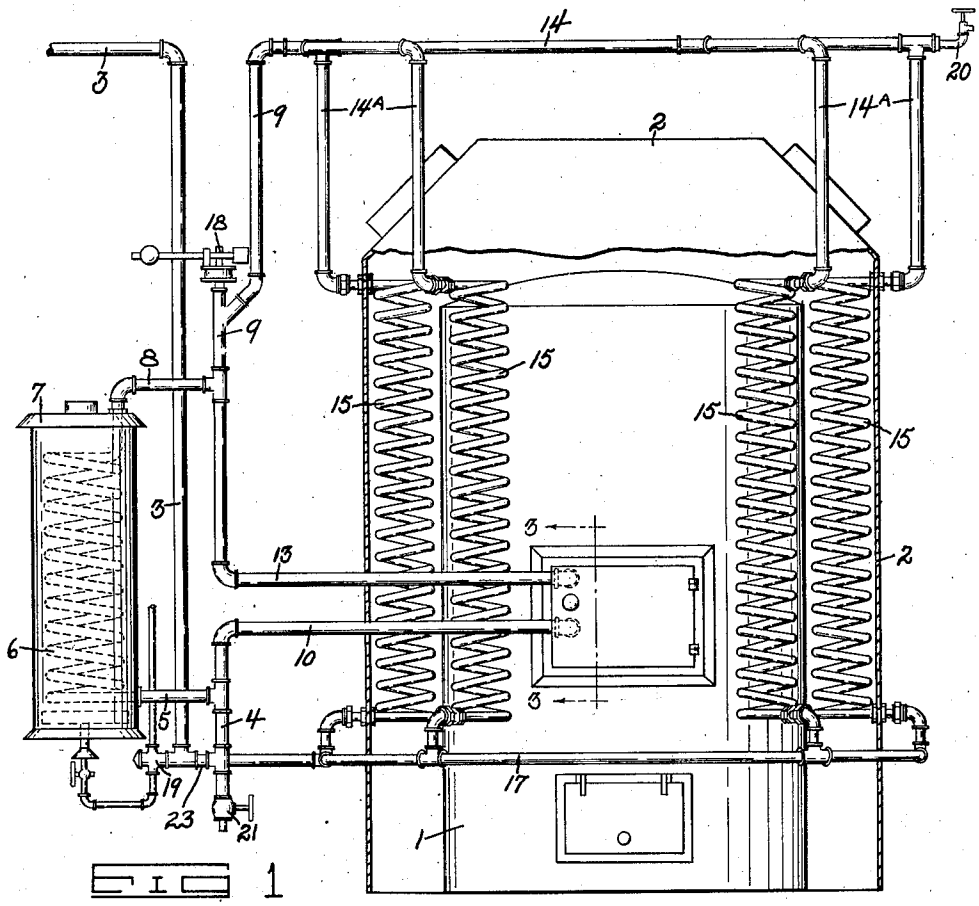


FIG 1

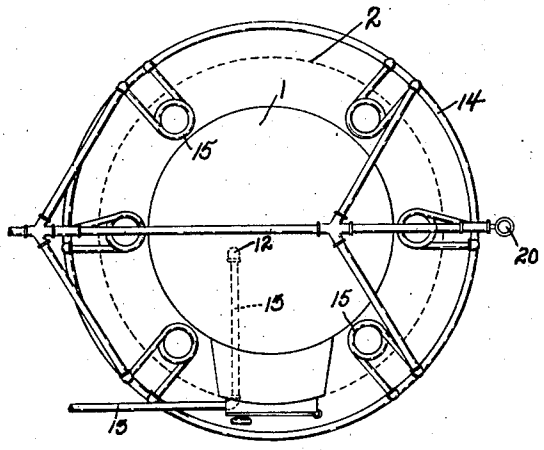


FIG 2

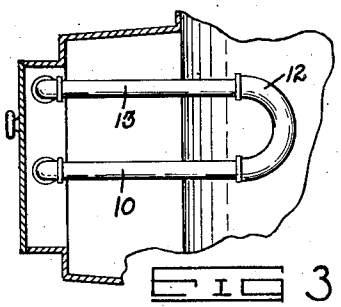


FIG 3

INVENTOR

Charles F. Brand

BY H. E. Dunlap,

ATTORNEY

Patented June 9, 1931 1,808,761

UNITED STATES PATENT OFFICE

CHARLES F. BRAND, OF WHEELING, WEST VIRGINIA

HEATING SYSTEM

Application filed May 15, 1929. Serial No. 363,269.

This invention relates broadly to heating systems, and more particularly to an auxiliary hot water heating system for hot air furnaces.

The primary object of the invetnion is to provide auxiliary means for augmenting heating of the air of the furnace, said auxiliary means, when there is fire in the furnace, being heated by said fire, said auxiliary means being also connected to a gas heater so that, during mild weather, or when there is no fire in the furnace, the gas heater may be used to heat the air in the furnace.

A still further object of the invention is to provide means for creating an increased volume of heat over that created by the furnace alone.

A still further object of the invention is to provide a system of this type which may be installed in present day furnaces with a minimum of alteration to such furnaces now in use.

In describing the invention in detail, reference is herein had to the accompanying drawings, in which—

Figure 1 is a front elevation of the invention;

Figure 2 is a top plan view of the upper header and associated water coils; and

Figure 3 is a section on line 3—3, Fig. 1.

Referring to said drawings, the invention is shown as applied to a furnace 1 having the usual jacket 2 so as to provide the usual hot air chamber between the furnace casing and the jacket. A water supply pipe 3 is connected, as by connected pipes 23, 4 and 5 to one end of a water coil 6 in a gas heater 7. The other end of the water coil 6 is connected by a lateral pipe 8 to a vertical pipe 9. A pipe 10 is connected to the upper end of the pipe 4 and to one end of a water back 12 and from the opposite end of the water back 12 to a pipe 13 which extends to the vertical pipe 9.

The pipe 9 is connected to a ring-like header 14 disposed at the top of the furnace and from which header a series of depending vertical pipes 14ª extend and are connected to the upper ends of a series of vertically disposed water coils 15 the hot air chamber of the furnace in encircling relation to the furnace casing 1. A similar ring-like header 17 is disposed exteriorly of the lower part of the furnace and is connected to the lower ends of the water coils 15 and also to the water supply 3.

If desired, a thermostatic control 19 may be employed for regulating the gas under the water heater. The upper header 14 has a valve 20 therein for releasing any air in the system, while the lower end of the pipe 4 is provided with a drainage valve 21.

In operation, after the system has been filled with water from the pipe 3, said water is shut off so that the system is maintained filled and no additional water is permitted to enter the system until such is required due to evaporation. During mild weather, or at such times when there is no fire in the firepot of the furnace, the gas heater is lighted thereby heating the water contained in the coil 6 which water then passes through the pipes 8 and 9 into the header 14 and from said header passes downwardly through the coils 15 into the lower header 17 and from the latter through the pipes 4 and 5 back into the coil 6. Thus, a circulation of heated water is maintained and the air within the furnace chamber is thereby heated.

When the fire in the furnace is maintained, it will be noted that the circulation of the water above described will be maintained and, in addition, the water heated in the water back 12 will augment the circulation of the water through the system so that the water is still further heated.

It will be understood that the number and type of the coils 6 and 15 may be varied, i. e., double, triple or finned type so as to further increase the heat radiated.

It is further to be understood that additional heating coils 15 may be located exteriorly of the furnace jacket and a second or auxiliary jacket provided about said coils, thereby forming two air chambers surrounding the furnace.

What is claimed is—

1. In combination with a hot air furnace having an air chamber, water headers located adjacent to the top and bottom portions of the chamber and disposed exteriorly of the

furnace, water coils disposed vertically within said chamber and connected at their ends to the upper and lower headers, a water back located within the furnace and connected to said headers, a gas heater located exteriorly of the furnace and embodying a water coil, and water connections between the ends of the water coil of the gas heater and the respective headers, said gas heater and its connections being auxiliary to said water back and the first mentioned water coils.

2. In combination with a furnace embodying a combustion chamber and a hot air chamber, the latter exterior to and encircling the former, and a gas heater having a water coil therein, water coils in the air chamber, water connections between the ends of the water coil of the gas heater and the water coils of the air chamber, and a water back in the combustion chamber, said water back having water connections with the first named connections.

3. In combination with a furnace embodying a combustion chamber and a hot air chamber, the latter in encircling relation to the former, and a gas heater having a water coil therein, water coils in the air chamber, and water connections between the water coil of the gas heater and the water coils in the furnace.

4. In combination with a furnace embodying a combustion chamber and a hot air chamber, the latter exteriorly to and encircling the former, and a gas heater having a water coil therein, an upper and a lower ring-like water header encircling the furnace, vertical water coils in the hot air chamber connected at their ends to said headers, water pipes connected to the headers, water pipes leading from the ends of the water coil of the gas heater and connected to the first named pipes, and a water back in the furnace having water pipes connected thereto and connected to the respective first named pipes.

5. In a hot air heater of the character described, a furnace including a combustion chamber and a hot air chamber, the latter encircling the former, water headers adjacent to the top and bottom of said air chamber, respectively, water coils within said air chamber and in communication at their ends with said headers, a water back within said combustion chamber and in open communication with both said headers, auxiliary heating means comprising a gas heater located exterior to said furnace and including a water coil, and water connections between the ends of the last mentioned coil and said headers.

In testimony whereof, I affix my signature.

CHARLES F. BRAND.