Aug. 3, 1926. 1,594,458

E. H. GENTRY

HEATING FURNACE

Filed Feb. 27, 1926

Fig. 1.

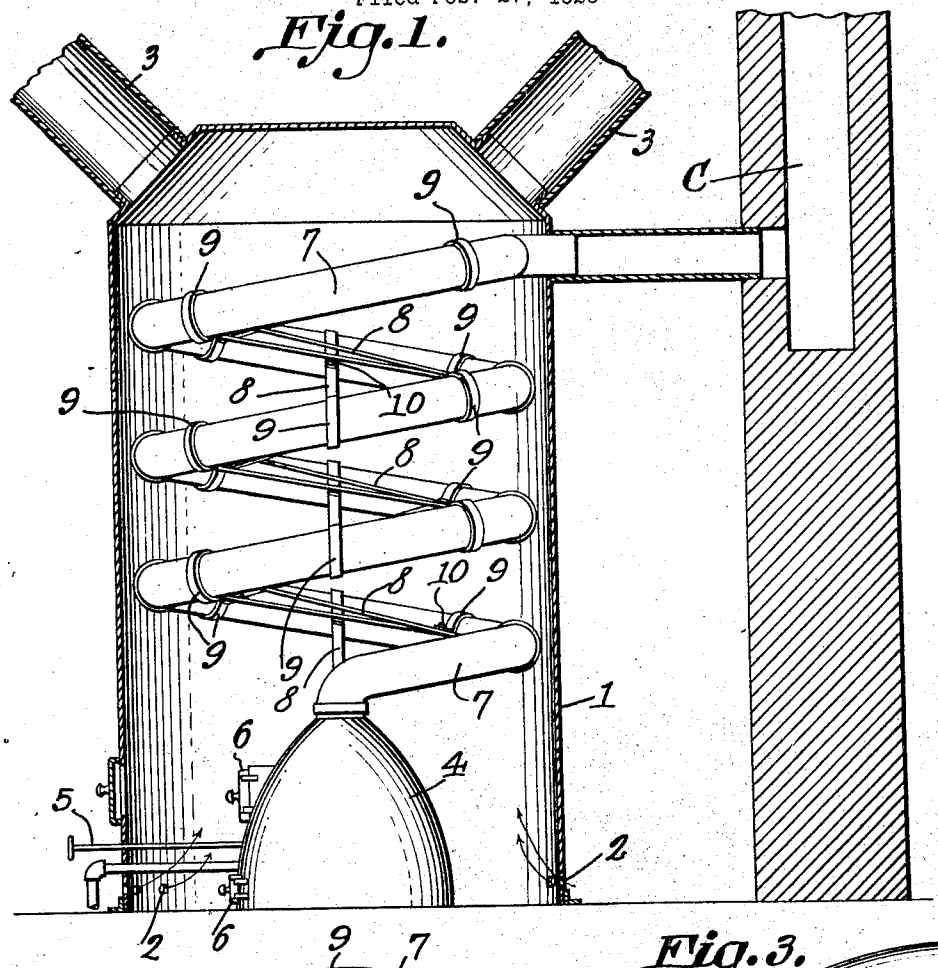


Fig. 2.

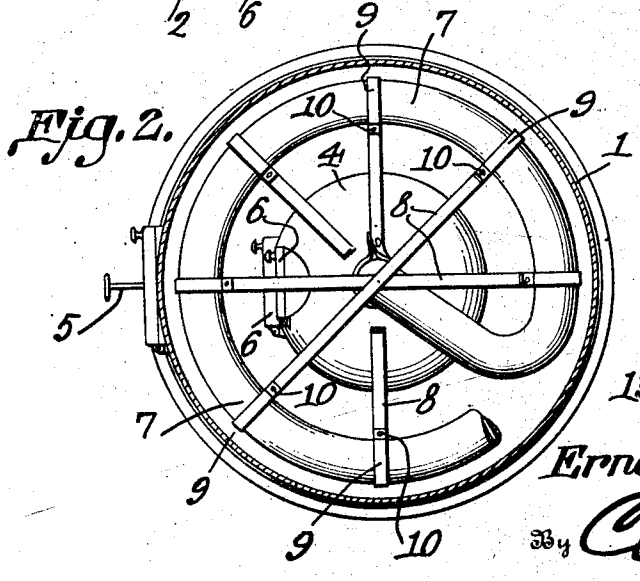


Fig. 3.

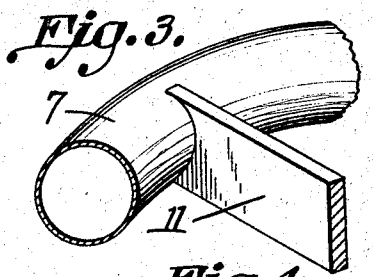
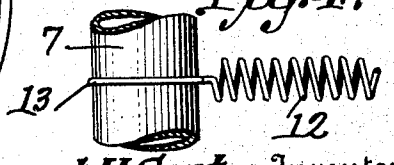


Fig. 4.



Ernest H. Gentry Inventor

By Cashow & Co.

Attorneys

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UNITED STATES PATENT OFFICE.

ERNEST H. GENTRY, OF GARDEN CITY, KANSAS.

HEATING FURNACE.

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This invention relates to heating furnaces, one of the objects being to provide a simple and compact structure with which any kind of fuel can be used as a heating medium, means being employed for conducting the hot gases or products of combustion through a spiral pipe or coil whereby fresh air circulating through the furnace casing will be heated prior to being distributed.

A further object is to provide efficient means for utilizing a greater percentage of the generated heat than has heretofore been possible, the means employed for this purpose consisting of heat conducting elements connected to the coil and adapted not only to heat the air but also to deflect the same during its passage through the furnace.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings,

Figure 1 is a vertical section through a furnace embodying the present improvements.

Figure 2 is a horizontal section.

Figure 3 is a view of a portion of a slightly modified structure.

Figure 4 is a similar view showing another modification.

Referring to the figures by characters of reference 1 designates the casing of the furnace which can be provided at suitable points at or near the bottom with fresh air inlets 2. This casing has one or more outlets for heated fresh air as shown at 3.

Arranged within the bottom portion of the casing is a burner housing 4 in which the heating fuel is consumed. This housing may contain an oil burner, a gas burner or any other heating medium. In the structure illustrated it is designed to use an oil burner, the fuel being controlled by a valve the stem of which has been indicated at 5 and which can be controlled from outside the casing 1. The housing 4 is of course provided with one or more openings 6 through which fresh air can be furnished to support combustion. This housing has a single outlet located preferably at the top thereof and opening into a coiled pipe 7 which is supported within the casing 1 and has its upper end extending from the casing and opening into a chimney C. It will be apparent that when a fuel is burned in housing 4 the hot gaseous products will flow upwardly through the coil 7 and heat the same to a high temperature. Thus any air entering the casing and flowing to the outlets 3 will be heated by contact with the coil. In practice, however, it has been found that where the coil alone is depended upon for heating the air the best results are not obtained and a considerable percentage of the heat is wasted. For the purpose of overcoming this objection heat conducting elements are attached to the convolutions of the coil and are extended diametrically across the casing. These elements can be of different types. For example, and as shown in Figure 1, each conducting element can be formed of a strip 8 of a metal having a high degree of conductivity. The ends of this strip are folded about opposed portions of the coil to constitute attaching bands 9 and these bands are clamped firmly upon the coil by means of clamping bolts 10 extending therethrough as shown. By arranging the strips 8 at various points so as to be superposed and located at different angles relative to each other it becomes practically impossible for any considerable amount of air to flow upwardly within the casing 1 without coming into direct contact either with the coil or with one of the conductors. These conductors also constitute deflectors with the result that as the air ascends it will be diverted laterally and, consequently, generally come into contact with two or more of the conductors or two or more of the convolutions. As the conducting strips serve to dissipate the heat units inwardly from the convolutions of the coils only small percentage of the heat is wasted.

As has already been stated the conducting elements can be of different types. For example, instead of providing flat strips of metal as shown in Figures 1 and 2, these strips being applied to the coils, elongated fins 11 can be brazed or otherwise attached permanently to the convolutions, these fins being extended diametrically within the coil and constituting both deflectors and heat dissipating means. Another modified structure has been shown in Figure 4 wherein a coiled

wire 12 is arranged diametrically within the coiled pipe and has terminal loops 13 tightly gripping the pipe. In both of these modified structures it is designed to space the conducting elements angularly as well as in superposed relation in the same manner as disclosed in Figures 1 and 2.

What is claimed is:

A heating furnace including a casing having a fresh air inlet adjacent the bottom and an outlet for heated fresh air adjacent the top, a housing within the bottom portion of the casing containing a heating unit, a coiled pipe extending from the top of said housing and opening at its upper end outside of the casing, the convolutions of the pipe being superposed and spaced from the casing for conducting hot products of combustion from the housing to a point outside the casing, and diametrically opposed stays carried by the convolutions of the pipe and disposed in superposed relation, said stays being crossed and constituting heat dissipating means as well as baffles for a current of air passing from the fresh air inlet to the fresh air outlet.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

ERNEST H. GENTRY.