J. H. SAMPLE & E. D. FOUT.

FURNACE.

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1,126,873.

Patented Feb. 2, 1915.

2 SHEETS—SHEET 1.

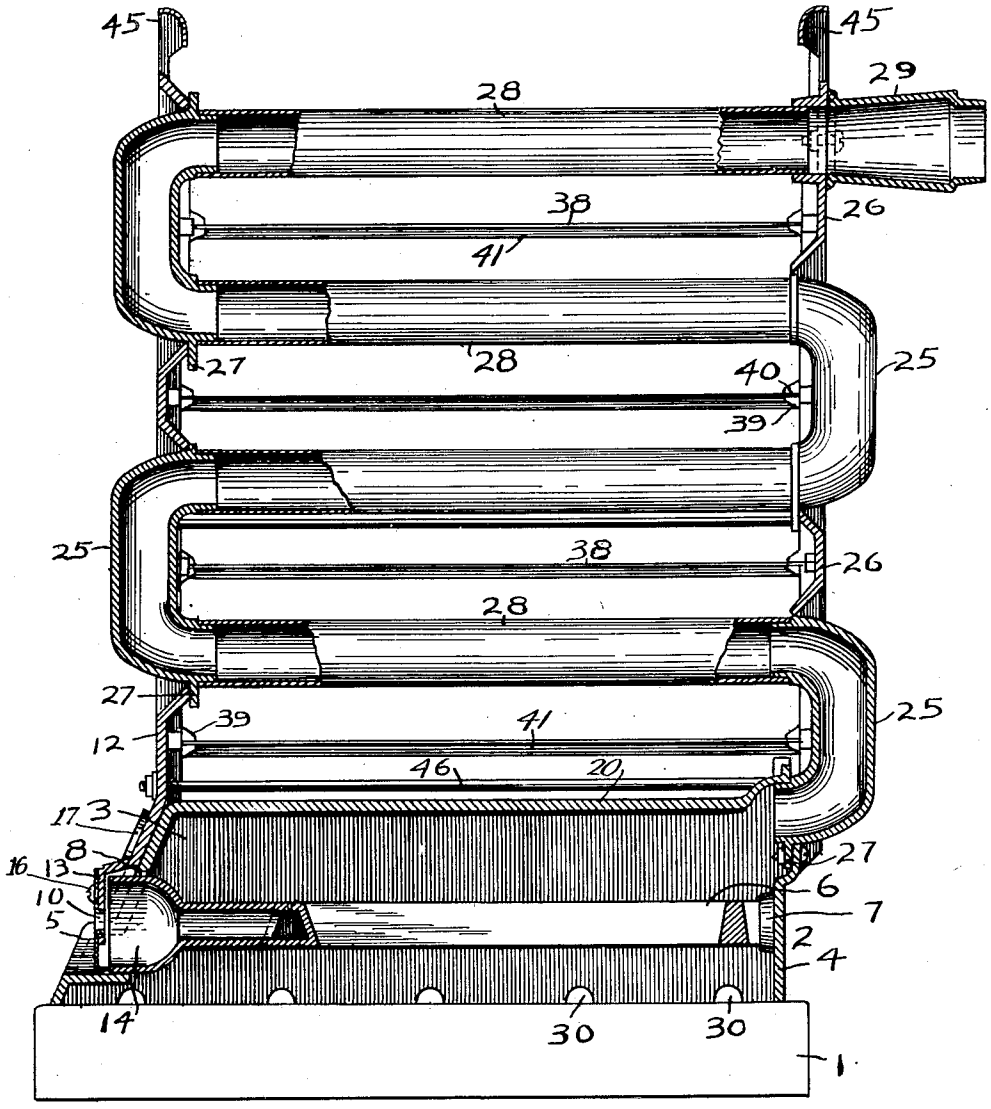


Fig. 1.

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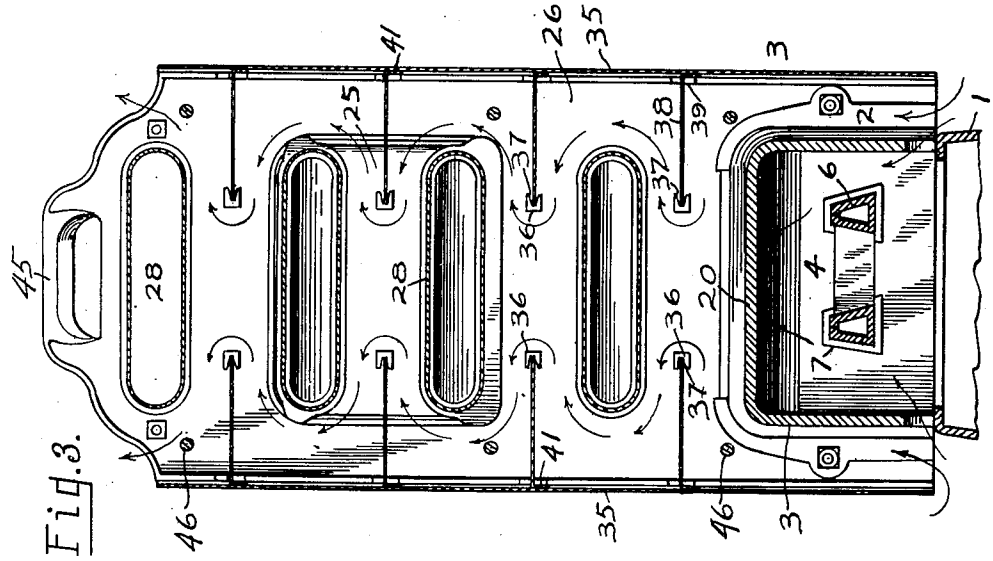


Fig. 3.

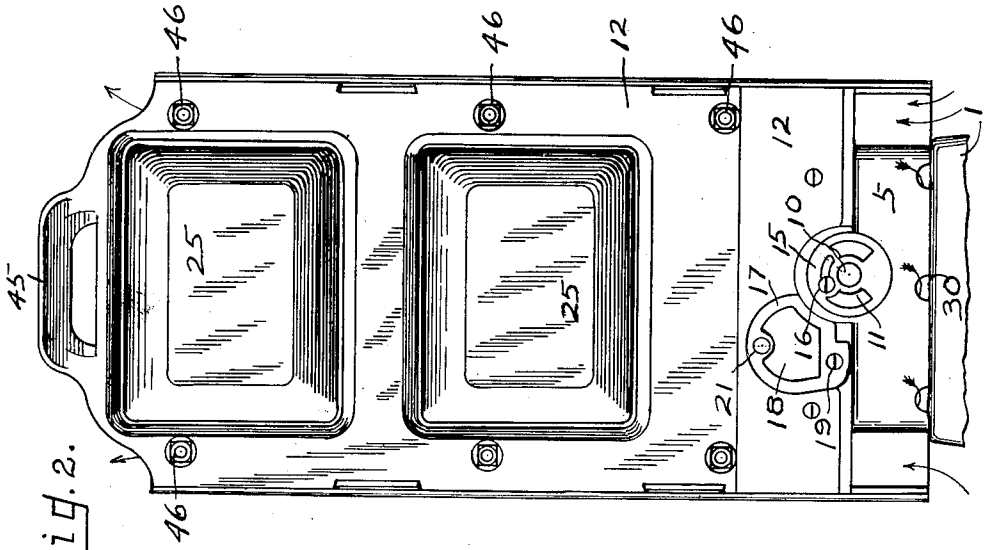


Fig. 2.

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UNITED STATES PATENT OFFICE.

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FURNACE.

1,126,873. Specification of Letters Patent. Patented Feb. 2, 1915.

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To all whom it may concern:

Be it known that we, JOHN H. SAMPLE and EMMET D. FOUT, citizens of the United States, and residents of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Furnace; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

Our invention relates to furnaces.

It particularly relates to compact furnaces which so baffle the products of combustion and permit free circulation of air and products of combustion and mix them to perfect the combustion and so baffle the air which is used for heating purposes that the combustible elements will be completely consumed, the heat produced thereby will be entirely used in heating the air and the heat of the gases leaving the furnace will be substantially the same as the air which is used for heating purposes.

The invention may be contained in many constructions all of which come within the purview of our claims hereinafter appended. To show the practicability of constructions embodying our invention, we have selected one of such constructions as an example and shall describe it hereinafter. The construction selected is illustrated in the accompanying drawings.

Figure 1 of the drawings illustrates a vertical side view of a furnace embodying our invention. It is shown in the figure partly in section to indicate the manner of construction and assembling parts of the furnace. Fig. 2 is a front view, and Fig. 3 shows a transverse vertical section of the furnace.

1 indicates the supporting base.

2 is the heater chamber having the side walls 3, end wall 4, and the front wall 5 and the top 20. It is provided with a gas burner 6 which is supported in the socket 7 located in the end wall 4 and in an opening 8 located in the front wall 5.

The burner 6 may be any suitable type of burner. The heater is provided with an opening 10 through which gas may be directed into the burner and openings 11 through which air passes to mix with the gas in the burner 6 in the manner well known in the art. If desired, a suitable pilot light may also be located adjacent to the burner 6. The burner 6 is also held in position by the front wall 12 of the furnace which has a flange 13 extending in front of the mouth 14 of the burner which supports the damper 15 for adjusting the size of the openings 11 to produce the desired mixture of gas and air entering the burner 6. The plate 15 may be locked in position by means of the screw 16. An opening in the front wall 5 of the heater chamber is also provided which registers with an opening in the front wall 12 of the furnace, and is closed by the door 17 having the isinglass front 18. The door 17 is pivoted on the screw 19 located in the furnace front wall 12. It is provided with a knob or handle 21 whereby the door may be swung to open and closed positions. The burner may be lighted through the opening covered by the door 17 and also the condition of the mixture and character of the blaze may be seen through the isinglass 18.

The furnace is provided with a plurality of rectangular shaped end flues 25 which are locked to the front and rear walls 12 and 26 by means of ears and flanges 27 and by means of the inter-connecting horizontal pipes 28. The pipes 28 connect the end flues located in one furnace wall with the end flues of the other furnace wall alternately so as to form a continued passageway back and forth from one furnace wall to the other, and to the uppermost pipe 28 located in the top of the furnace. The lowermost end flue 25 is connected to the heater chamber. The pipes 28 are made of sheet metal which brings the elements of combustion rising from the burner 6 into close heatable relation with respect to the air surrounding the pipes 28. A connector 29 may be secured to the rear wall 26 of the furnace for connecting the rear end of the uppermost pipe 28 with any suitable chimney or exit flue.

In order to perfect the combustion of the gases passing from the flame of the burner 6, air may be allowed to pass into the heater chamber tube. Openings 30 may be located in the lower corners of the chamber 2. They may be formed in the side walls 3 and front wall 5 of the chamber. The air passing through the openings 30 will then mix with the heated elements passing from the flame and perfect the combustion of the

heated gases or elements produced in the burning of the gas.

The furnace is inclosed by the side walls 35 which extend from the bottom to the top of the furnace and the end walls 12 and 26 to which they are secured at their edges.

The side walls 35 are so disposed as to form spaces between the side walls 3 of the heater chamber and the walls 35 and between the side of the oblong pipes 28. The furnace walls 12 and 26 are provided with lugs 36 having notches or recesses 37 which are adapted to receive the inner corners of the baffle plates 38. The outer corners of the baffle plates are supported by lugs 39 having channels 40 which receive the ends of the baffle plates 38 and support the outer corners thereof. The baffle plates are provided with downwardly extending flanges 41 which press against the side walls 35 of the furnace and are thus held in position in the notches 37 and the channels 40. The parts are secured or tied together by the bolts 46.

The air passes through the bottom of the furnace and between the side walls 3 of the heater chamber and the side walls 35 of the furnace, over the top of the heater chamber and upward, past the lower baffle plates 38 on each side of the furnace and above and near the top of the heater chamber and near the lower side of the lower horizontal pipes 28 and along the sides of the lower oblong pipe 28 and over and near the top of the lower oblong pipe by the next pair of baffle plates 38 and so on by the pipes 28 and the baffle plates 38 in succession, the parts being so disposed as to allow free movement of the air and yet direct it close to heating elements of the surface, namely, the walls of the heater chamber and the surfaces of the pipes 28.

The upper ends of the front and rear furnace walls 12 and 26 are provided with handles 45, whereby the furnace may be handled and moved as may be desired.

The furnace, by reason of its compactness, may be inserted in a register opening and the air heated as desired. Furthermore, the furnace may be inserted in a recess beneath a floor of the room and covered by a register, the air passing down from the room on the outside of the furnace walls 12, 26 and 35 and then up through the furnace and baffled by the pipes 28 and the plates 38 as described.

The construction selected and described may be greatly varied in the arrangement and construction of its parts and in the substitution of the elements having equivalent functions and such modifications may still contain the invention which is described in the claims in the language of the elements shown.

What we claim as new and desire to secure by Letters Patent is as follows:

1. In an air heating furnace, the combination of a supporting base, an air heating chamber, said chamber comprising side and end walls, the end walls being provided with suitable openings, end flues removably supported within said openings, the ends of said flues projecting into the casing, and formed with flanges against the outer sides of which the ends of the casing bear, pipes fitting the ends of said flues, and bearing against the inner side of said flanges, and tie bolts for holding said end walls, end flues, and pipes in their operative positions, the end flues and pipes constituting an exit flue for the products of combustion from said base.

2. In an air heating furnace, the combination of a supporting base, an air heating chamber, said chamber comprising side and end walls, the end walls being provided with suitable openings, end flues removably supported within said openings, the ends of said flues projecting into the casing, and formed with flanges against the outer sides of which the ends of the casing bear, pipes fitting the ends of said flues, and bearing against the inner side of said flanges, baffle plates located intermediate the pipes, and tie bolts for holding said end walls, end flues, pipes and baffle plates in their operative positions, the end flues and pipes constituting an exit flue for the products of combustion from said base.

In testimony whereof, we have hereunto signed our names to this specification in the presence of two subscribing witnesses.

JOHN H. SAMPLE.
EMMET D. FOUT.

Witnesses:
C. W. OWEN,
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