F. K. LEARNED.

BASE HEATER.

APPLICATION FILED AUG. 21, 1911.

1,026,323.

Patented May 14, 1912.

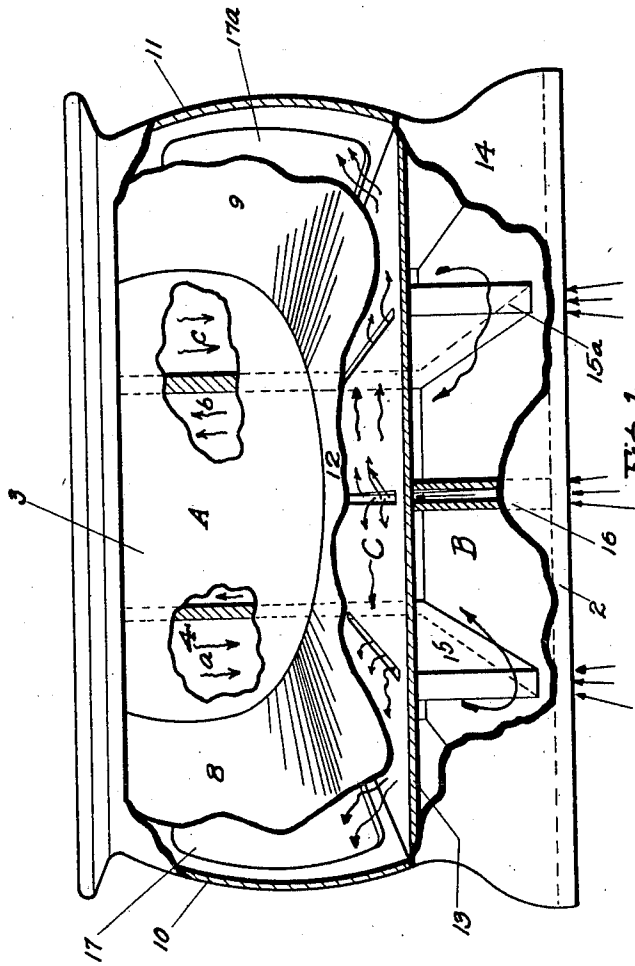

Fig. 1.

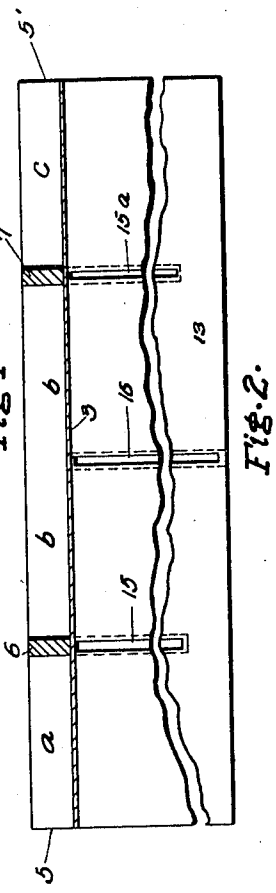

Fig. 2.

WITNESSES:

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BASE-HEATER.

1,026,323. Specification of Letters Patent. Patented May 14, 1912.

Application filed August 21, 1911. Serial No. 645,136.

To all whom it may concern:

Be it known that I, FRANK K. LEARNED, citizen of the United States, residing at Royal Oak, county of Oakland, State of Michigan, have invented a certain new and useful Improvement in Base-Heaters, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to base heaters for stoves.

It has for its object a form of construction adapted to circulate the air from the floor and to more evenly and efficiently heat the same. It is desideratum in stove making to secure a maximum heating surface in a stove of a given size. I secure a very material increase in the heating surface of the stove besides materially increasing the efficiency of the base heater in circulating and heating the cold air which lies at the floor.

Another improvement which is secured by my invention is the construction of the ash chamber so that it more efficiently allows the radiation of the heat from the fire pit, which will be more particularly described hereafter.

A further object of my invention is to direct the products of combustion through the heating chamber in such a manner that they will not interfere with each others movement, but will tend to aid each other. This I accomplish by causing the two separate currents of the heated gases which enter the base heater to unite while traveling parallel.

In the drawings:—Figure 1, is a broken section of the base heater. Fig. 2, is a horizontal section of the lowermost chamber of the heater.

The heater is formed into two main chambers, an upper ash chamber A which receives the ashes, usually in a pan, and a lower chamber B through which the products of combustion or the hot gases are passed. The ash chamber A is formed by the back wall 3 and by the side walls 8 and 9 and the floor 12. The walls 8, 9 and the floor 12 are, however, one continuous piece which is bent on a long sweeping curve so that the ash chamber approximates the interior of a section of a cylinder. The back wall 3 may also be integral with the piece which forms the sides and bottom thus assuring an air tight ash pit which is quite important. The long sweeping curve of the side walls brings these members somewhat nearer the fire pit and presents the surface at practically right angles to the heat radiation from the combustion chamber. The curves also tend to cause the ashes, whether contained in a pan of similar shape, not shown, or whether allowed to drop directly into the chamber, to settle toward the bottom leaving the side walls free, thus to some degree removing the ashes as an interfering agent to the radiation of the heat.

The back wall 3 of the ash chamber A and the rear inclosing wall 4 of the heater with portions 5 and 5′ of the side walls of the heater form an intervening space which is divided by partitions 6 and 7 into three flues *a*, *b* and *c*. The side walls 8 and 9 of the chamber A are spaced from the side walls 10 and 11 respectively of the heater, while the floor 12 of the ash chamber is spaced a short distance above the horizontal partition 13; this forms a shallow but wide passage-way C surrounding the floor and the two side walls of the ash chamber.

Below the horizontal partition 13 the heating chamber B is located and formed by the lower portions of the side walls 10 and the rear wall 3 and the front wall 14. The chamber B is divided off into passage-ways by the baffles 15, 15ª and 16. The baffles 15 and 15ª are set in the same plane with the partitions 6 and 7 and extend from the rear wall 3 the greater part of the distance to the front wall 14, and the baffle plate 16 extends from the rear wall 3 to the front wall 14 forming a complete partition. This forms what is called a "four flue" base heater. The heated gas currents are united by the central baffle plate 16 so that in passing into the middle flue *b* they enter running parallel. This is a distinctive advantage for, if they enter either opposed or at an angle to each other, they interfere with each other and impair the draft. Each one of these baffle plates has a hollow interior which at the top communicates with the intervening passage-way and at the bottom opens through the floor 12 of the heater. Each of the flues opens into the heating chamber B. The side walls 10 and 11 are largely cut away for the opening 17 and 17ª to allow

for the uninterrupted radiation of the heat from the fire pit through the ash chamber as above described and for the outlet of the air drawn from the floor through the heating chamber B and passage-way C.

The heated gases from the stove above (not shown) are drawn down through the flues *a* and *c* at each side and then pass into the end divisions of the chamber B circulating about the baffle plates 15 and 15ª, as shown by the arrows, and uniting, while traveling parallel, pass through the central flue *b* to the chimney (not shown). The cold air from the floor is drawn up through the opening in the baffle plates and passes into the intermediate passage-way C and thence through the slots 17 into the air. It is seen that the baffle plates are heated on three sides and the passage-way being narrow a maximum heating surface is afforded for a film of air which is admitted through the interior of the baffle-plate; this assures a thorough heating of the air which starts the circulation drawing the cold air from the base and liberating it through the openings at the sides. The hot gases are drawn down from each side and circulated through the chamber B and discharged through the central flue *b*, which assures an equality of heating. The horizontal partition 13 also allows the heating of the air as it passes thereabove. This form of construction forms a rigid support for the longitudinal partition 13 and is also cheaply produced.

What I claim is:—

A base heater having in combination, a chamber through which the products of combustion are circulated, an ash chamber, an intermediate chamber located between the ash chamber and the chamber through which the products of combustion are circulated and adapted to be heated by these two chambers, three hollow baffle plates having long and narrow passage ways for the air drawn from the floor through the chamber through which the products of combustion are circulated and delivering such air into the intermediate chamber, the said baffle plates also dividing the said chamber through which the products of combustion are circulated into four flues, one baffle plate being attached to the back of the chamber, at the center and the other two baffle plates being attached to the back of the chamber, one midway between the center plate and each side, whereby the placing of the baffle plates affords a circulating passage way that does not obstruct the draft and the long and narrow passage ways for the air drawn from the floor through the chamber in which the products of combustion so circulate, efficiently heat the air and deliver it into the intermediate chamber where it is further heated before being liberated at the sides, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

FRANK K. LEARNED.

Witnesses:
STUART C. BARNES,
HUBERT E. SLOMAN.