

A. A. KEAYS.
HOT AIR FURNACE.
APPLICATION FILED FEB. 25, 1909.

1,043,941.

Patented Nov. 12, 1912.

Fig. 1

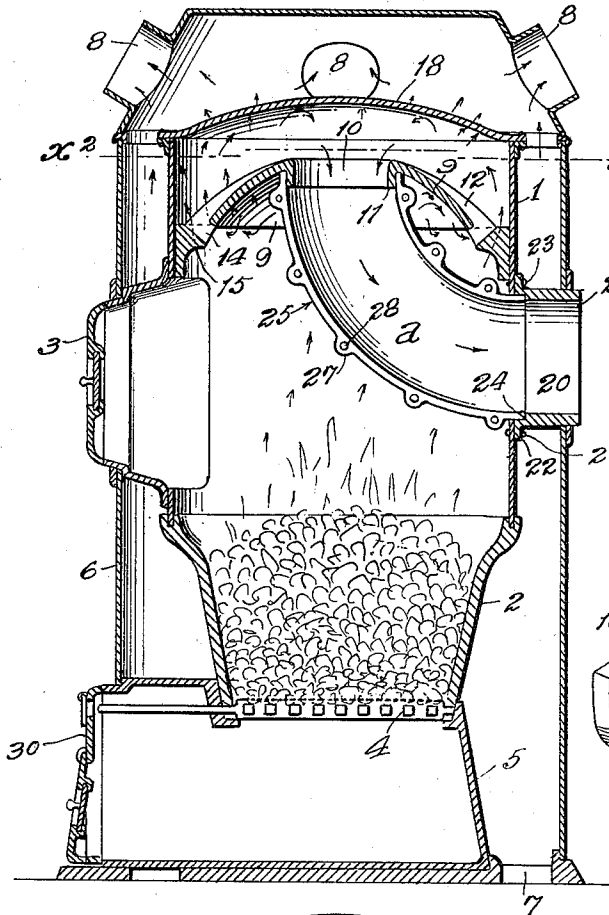


Fig. 3

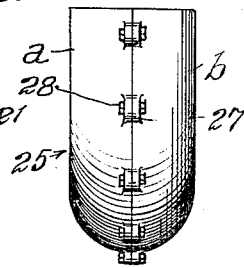


Fig. 4

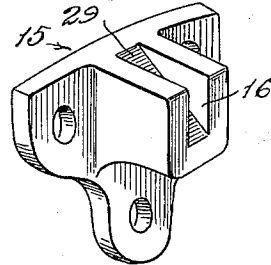
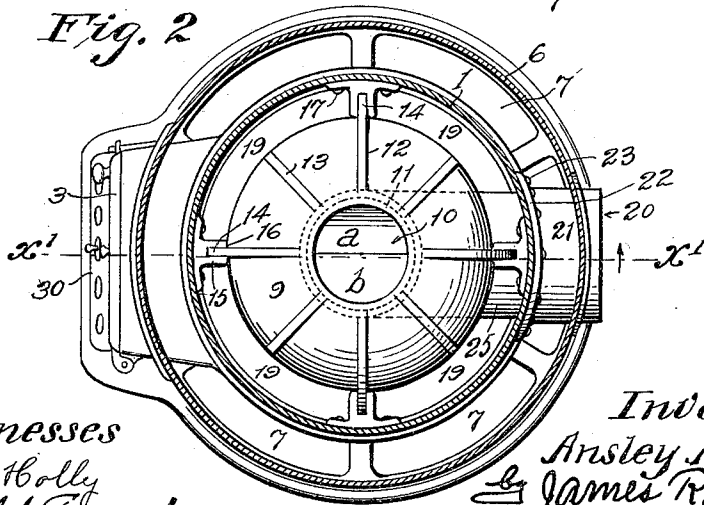


Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

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HOT-AIR FURNACE.

1,043,941.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed February 25, 1909. Serial No. 480,060.

To all whom it may concern:

Be it known that I, ANSLEY A. KEAYS, a citizen of Canada, having declared my intention of becoming a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Hot-Air Furnaces, of which the following is a specification.

This invention relates to that class of furnaces used for heating buildings by means of hot air, and is adapted to be used with coal, wood, oil, gas, or any other fuel.

An object of the invention is to provide superior means for directing the heat through the radiator, and to so construct the furnace as to minimize the amount of heat that will pass off through the smoke-flue.

Another object is to make provision whereby the return-flue which is subject to the direct heat of the fire may be readily removed and replaced with new.

In carrying out this invention the furnace is provided with an annular baffle-plate below the top of its radiator, and a smoke-flue leads downwardly from the central opening of such baffle-plate to the outside of the furnace for connection with the usual chimney or smoke-stack. Said baffle-plate may be variously constructed, the purpose being to direct the heat outward evenly as possible to the walls of the radiator and thence to the top of the radiator, and to draw off only the cooler gases which will flow downward through the smoke-flue to the wall. I at present deem it preferable to construct the baffle-plate of an inverted cup shape, preferably concave, with a downwardly-depending collar at the central opening to fit into the downwardly extending smoke-flue; and I also deem it desirable to lead the smoke-flue out through a smoke-collar on the outside of the radiator-wall, said smoke-flue engaging the baffle-plate and the smoke-collar so as to be held in place thereby when the parts are in position, but I do not limit myself to such specific constructions.

The accompanying drawings illustrate the invention.

Figure 1 is a vertical section of the furnace as arranged for burning coal. Line x^1 , Fig. 2 indicates the line of section. Fig. 2 is a sectional plan from line x^2 , Fig. 1. Fig. 3 is a view of the return flue detached.

Fig. 4 is a perspective view of one of the baffle plate brackets detached.

The radiator 1 is mounted upon the fire-pot 2 in the usual fashion, the fuel being admitted through door 3 and supported by grate-bars 4 below which is located the ash-pit 5. The drum 6 surrounds the whole. Air enters said drum through openings 7, is heated by the radiator 1 and delivered through pipes 8 to the place desired, in the usual manner.

An annular baffle-plate 9 in the form of an inverted cup of smaller diameter than the radiator 1 and provided around its central opening 10 with a depending collar 11, and provided on its upper face with radial strengthening ribs 12, 13, some of which project beyond the edge to form supporting arms 14, rests by means of said arms on brackets 15 that are provided with channels 16 to receive said arms. Said brackets 15 are fastened by rivets 17 to the wall of the radiator 1 at a distance below the top 18 of the distance equal to about one-third of the distance between such top and the top of the fire-pot. The baffle-plate when thus mounted may be three inches more or less below the top 18, and there are open spaces 19 between the baffle-plate and the radiator wall except where interrupted by the arms 14 and the brackets 15.

20 is the smoke outlet formed by a collar 21 having a flange 22 at one end fastened by rivets 23 to the outside of the wall of the radiator 1 and provided with a seat 24 at its inner end to receive the outer end of the return smoke flue 25 which is bent in the form of a quarter circle and is inserted through the door 3 into the radiator 1, and is seated by fitting its upper end against the baffle-plate and uplifting said baffle-plate until the lower end can be seated in the seat 24, and then allowing the baffle-plate to return to rest, with the lower end of the return smoke flue in the seat 24. The upper end of the return smoke flue is fitted to the collar 11 preferably on the outside thereof, as shown in Fig. 1. The smoke-flue 25 may be composed of two channeled members a , b , bent in the form of a quarter circle and provided with ears 27 through which are passed bolts 28 by which the two halves are fastened together. By this construction the flue is adapted to be readily and cheaply cast, put together, and taken apart.

The floors 29 of the channels 16 slant

downwardly and inwardly, and the underside of each supporting arm 14 slants correspondingly to fit thereon to center the baffle-plate relative to the radiator and to allow
5 said plate to be readily lifted and lowered when it is desired to remove and reseat the return smoke flue 25 for any purpose.

To remove the smoke-flue the baffle-plate may be lifted, the smoke-flue withdrawn
10 from its collar and from the seat 24, whereupon the baffle-plate may be again lowered into the channel seats until it is desired to again insert the smoke-flue, whereupon the baffle-plate may be again lifted, the smoke-
15 flue inserted into its seat and brought into position to receive the collar 11, and then the baffle-plate may be lowered with its collar in the smoke-flue, whereupon the furnace is again ready for operation.

20 The ash-pit is provided with the usual draft-regulating door 30.

In practical operation the flames and heat from the fire-pot flow in the direction indicated by the arrows in Fig. 1, impinging
25 against the underside of the return smoke flue 25 and the baffle-plate 9, and are thereby deflected thence against the radiator wall and pass upward from under the edge of said baffle-plate through the spaces 19 be-
30 tween the same and the radiator wall, and thence up to the top or dome 18 of the radiator against which they impinge throughout, thereby evenly heating said dome while

the smoke flows inwardly toward the center and thence escapes downwardly through the
35 flue 25. In this way the entire dome of the radiator is made to do radiating service. The heat accumulates in the top thereof and is radiated through the radiator walls in
40 the most efficient manner, and only the cooler gases escape through the flue. The radiating surface above the level of the brackets 15 is entirely free from internal obstructions, and consequent economy results.

I claim:—

45 A hot air furnace comprising a drum having a door and having a smoke outlet in its side, a fire-pot inside of the drum, a radiator mounted on the fire-pot and having a smoke-outlet in the side and provided with a top,
50 an inverted cup shaped baffle-plate of less diameter than and normally mounted in the radiator and provided with a central opening, collars surrounding the smoke outlet and baffle-plate opening respectively, and a
55 smoke-flue connected to the collars and removable from the collars through the furnace door when the baffle-plate has been raised for that purpose.

In testimony whereof, I have hereunto set
60 my hand at Los Angeles, California, this 16th day of February, 1909.

ANSLEY A. KEAYS.

In presence of—

JAMES R. TOWNSEND,
M. BEULAH TOWNSEND.