To all whom it may concern:

Be it known that I, Boyd E. Rainey, a citizen of the United States, and residing at St. Louis, in the State of Missouri, have invented certain new and useful improvements in Double-Jacket Heating-Furnaces, of which the following is a specification.

This invention relates to furnaces, and more particularly, to furnaces having a double jacket and a single register.

The invention has among its objects to supply moisture to the air currents passing through the chambers formed by the furnace jackets, and, to this end, to provide within the path of the descending air currents a body of water over which the air passes before rising through the inner casing.

Further objects will appear from the detail description taken in connection with the accompanying drawings, in which:

Figure 1 is a front elevation of a furnace embodying this invention, Fig. 2 is a vertical section on the line 2—2, Fig. 1, Fig. 3 a section partly along the line 3—3, Fig. 1, the section through the inner casing being taken along the center of the ring 31, Fig. 4 is a view looking in the direction of the arrow, Fig. 3, and showing both the inner and outer casings, the joints being shown in line for the sake of convenience, Figs. 5, 6 and 7 are enlarged detail sections of Fig. 2, and Fig. 8 is a detail section on the line 8, Fig. 6.

Referring to the accompanying drawings, the furnace body consists of an ash pit 10, a fire pot 11, and a radiator 12 discharging into a smoke-pipe 13. The ash pit 10 is provided with a forwardly projecting part 14 forming the fire ash passage, the fire pot with a forwardly projecting part 15 forming the fire door passage, and the radiator with a forwardly projecting part 16 forming the clean-out passage. The furnace body sets on a base 17, provided with a ring 18 integral therewith, but eccentric with respect thereto so that the furnace body merges into the ring at the front but is spaced from the furnace body at the rear side of the furnace, and is connected thereto by radial arms 20, integral with the base and the ring. This ring is shouldered as shown at 19.

A dished front, preferably of cast iron, and which may be a single piece or composed of one or more sections 21 bolted together as shown at 22, is provided with forwardly projecting side flanges 23 and a forwardly projecting top flange 24. This front wall sets on the ring 18 and is bolted to the forwardly projecting parts 14, 15 and 16 of the 50 furnace body by bolts passing through the front and into lugs or ears on said parts, as is usual in furnace constructions, the lugs on the part 15 being shown in Fig. 2. The flanges 23 and 24 are turned laterally as 55 shown at 25 and 26 respectively. The front is provided with fire and ash pit doors 27 and 28, and with a removable door or plate 29 for the clean-out passage.

Rings 30 and 31, preferably of T-section, 70 are arranged in spaced relation with respect to the furnace body, and are secured at their ends to the dished front wall 21. In order to permit slight adjustment of the rings with respect to the front, their ends are 75 slotted as shown at 32 and secured in position by bolts 33. The rings 30 and 31 support the inside casing sections 34 and 35 in spaced relation with respect to the furnace body, and these casing sections are secured to the rings, and at their ends are bolted to the front wall. The bottom ring 30 is supported opposite the dished front by a bracket 36, shouldered at 37, and forked as shown at 38 to embrace and rest on one of the radial arms 20. The lower edge of the casing section 35, above the front, is supported directly by a shoulder on the upper edge of the front, as shown in Figs. 2 and 5. The inside casing is thus supported in spaced relation with respect to the furnace body, and this casing terminates at a point removed from the floor.

A continuous ring 39, preferably of T-section, is supported at its front end on the upper flange 34, and may be bolted to the edge 36 of the flange. The outer casing comprises a pair of sections 40 and 41, secured at their ends to the edges 25 of the side flanges 23 by bolts or otherwise. These sections are secured together by strips 42 and 43 provided with bolts 44 so as to clamp the sections theretobetween to form a good joint. The strips 42 and 43 may both be of thin metal of the same gauge as the casing, and these strips only extend to the edges 25 of the flanges so as to abut thereagainst, in order not to break the continuity between the casing sections and the flange. It will be understood, of course, that the casing sections 40 and 41 may be of a single piece or of sheet metal. The outside casing,
whether single or in sections, rests, at its bottom, on the continuous base ring 18, and engages, at its upper end, the continuous top ring 39. This casing may be secured to the top ring by bolts 45, although this will be ordinarily not necessary.

A top continuous outer casing section 46 rests on and is supported by the upper ring 39, and may be bolted thereto or simply rest thereon.

Spaced frusto-conical inner and outer casing connections 47 and 48 respectively, are provided with straight cylindrical necks 49 and 50, respectively, engaging flanges 51 and 52 respectively, of a single register 60 set into the floor, as shown in Fig. 2. These connecting sections are preferably secured together by braces 53, so as to form a unitary structure. The lower ends of these connections are provided with flanges 54 and 55, formed to provide shoulders 56 and 57 respectively, so as to telescope with and rest on the inner and outer casing sections 35 and 46 respectively. In this type of furnace only a single register is used, and this register comprises a central section 53 and an outside annular section 59, separated by the flange 51. A water pan 61 opens into the furnace below the lower ring 30.

The general operation of this furnace is well known. The cold air enters the annular section 59 and travels downwardly along the outer jacket and this air becoming heated travels upwardly along the inner jacket, and issues into the room through the central section 58. By constructing both connections 47 and 48 of conical form, there will be no interference with the air currents, whether descending or ascending.

The continuous ring 39 results in a braced construction, and also one which admits of the furnace being readily assembled. By constructing the outside casing of a single piece of metal, or of sections connected by a joint which terminates at the front, the joint between this front can be made tight. It will thus be seen that the outside casing is supported by continuous rings, both at the top and bottom, which, of course, results in a braced construction. It is obvious that various changes may be made in details of construction without departing from the spirit of this invention, and it is to be understood, therefore, that this invention is not to be limited to the specific construction shown and described.

Having thus described the invention, what is claimed is:

1. In a double jacket furnace, a furnace body, a front wall secured to said furnace body, said front wall being provided with forwardly projecting flanges at its edges and top, inner and outer casings spaced to form inner and outer jackets, said inner casing terminating above the lower end of said outer casing, a register having inner and outer sections, the inner jacket discharging air through said inner register section, the outer jacket receiving air through said outer register section, and a water pan extending through the outer jacket at a point below said inner jacket, whereby air currents descending between the outer and inner casing are caused to pass over the water in the pan and thereafter rise through the inner casing.

2. In a double jacket furnace, a furnace body, inner and outer casings spaced to form inner and outer jackets, said inner casing terminating above the lower end of said outer casing, a register having inner and outer sections, the inner jacket discharging air through said inner register section, the outer jacket receiving air through said outer register section, and a water pan extending through the outer jacket at a point below said inner jacket, whereby air currents descending between the outer and inner casing are caused to pass over the water in the pan and thereafter rise through the inner casing.

In testimony whereof I affix my signature in the presence of these two witnesses.

BOYD E. RAINNEY.

WITNESSES:

DOUGLAS H. JONES,
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Copies of this patent may be obtained for five cents each, by addressing the “Commissioner of Patents, Washington, D. C.”