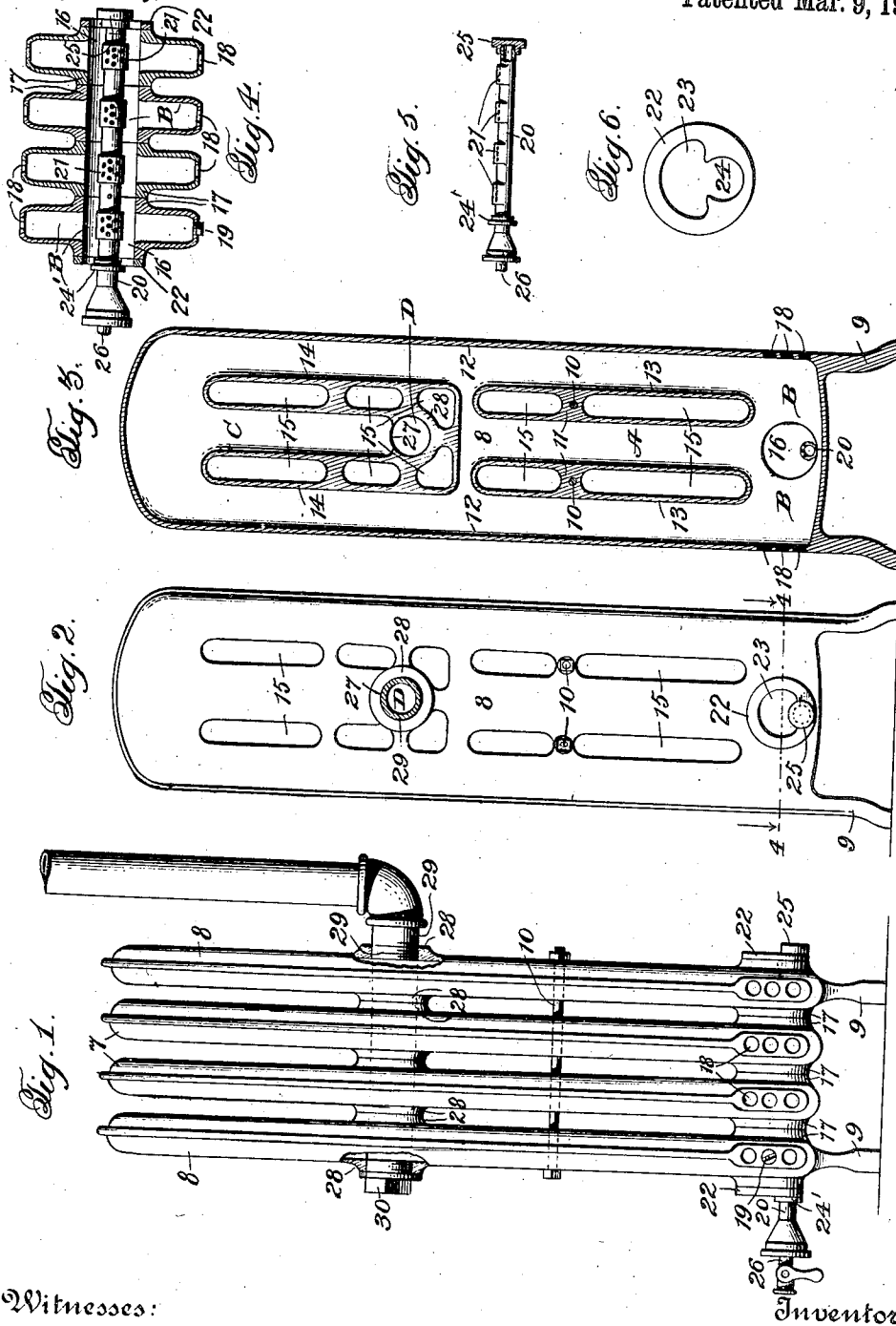


W. HAWKS.
RADIATOR.
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Patented Mar. 9, 1915.

1,131,372.



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RADIATOR.

Specification of Letters Patent.

Patented Mar. 9, 1915.

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To all whom it may concern:

Be it known that I, WILLIAM HAWKS, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Radiators, of which the following is a specification.

This invention provides a radiator so constructed that the maximum radiation of heat is obtained therefrom, and it comprises columns or sections arranged to be coupled together in any desired number so that the device may be made the size desired to meet the needs of the service to which it is put.

The radiator is arranged in such manner that fluid fuel may be burned efficiently therein, and also its formation is such that it may be used with steam, hot water, or the like with little change.

When fuel is burned in the radiator, it affords ventilation by drawing bad air through it and discharging it through a pipe to the exterior of the place being heated.

When read in connection with the description herein, the details of construction and arrangement of parts contemplated by the invention will be apparent from the accompanying drawing, forming part hereof, wherein an embodiment of the invention is disclosed, for purposes of illustration.

While the disclosures herein now are considered to represent a preferable embodiment of the invention, it is to be understood that it is not the intention necessarily to be limited thereto in interpretation of the claims, as alterations can be made within the scope of the claims without departing from the nature and spirit of the invention.

Like reference-characters refer to corresponding parts in the views of the drawing, of which—

Figure 1 is a side view; Fig. 2 is an end view; Fig. 3 is a transverse vertical sectional view through a column; Fig. 4 is a sectional view on the line 4—4, Fig. 2; Fig. 5 is a view of the burner; and Fig. 6 is a view of a burner-holder.

Referring more particularly to the drawing, 7 designates intermediate columns or sections and 8 end columns or sections of a radiator constructed in accordance with this invention. The columns are similar, except that the end ones are provided with legs 9 and are formed to have pipes coupled thereto as hereinafter described. The columns

are held together by bolts 10 extending longitudinally of the radiator in braces 11.

Every column is formed with an exterior casing 12 inclosing a chamber A for the heating medium, and within the chamber there are walls 13 in the lower portion and walls 14 in the upper portion extending as partitions from side to side of the casing and comprehending spaces 15 that are open to the atmosphere. Thus it will be seen that the arrangement is such that there is a large area of heat-radiating surface.

Every column in each end near its base has a passage 16 opening to its interior, and surrounding each opening on the exterior of the column there is an annular abutment 17 arranged to have fluid-tight contact with an abutment on the next adjacent column. Thus, when a number of columns are coupled together to form a radiator, there is a substantially horizontal continuous passage or opening from end to end thereof near its base, which opens to the interior of every column, and which constitutes a combustion chamber B. Every column has on each side one or more orifices 18 opening to the combustion-chamber and arranged to admit air thereto. These orifices may be made of any desired shape, but they are shown of circular form so that they are adapted to receive screw-threaded plugs when it is desired to close them, only one of which plugs, designated by 19, is shown for illustrative purposes.

A burner-tube 20, so called for convenience but which is not necessarily of tubular formation, is disposed in the combustion-chamber, and on its upper side it has a series of single, or sets of, orifices 21. The single orifices, or sets of them, are substantially the same distance apart as the columns, so that, when the burner is in place and fuel therefrom is being burned, heat will rise upwardly in the columns. The burner is supported by holders 22, one at each end. The holders are of annular formation, and each has an upper comparatively large air-admission segmental port 23 and a lower smaller opening or seat 24 in which the burner-tube is seated. Near one end the burner-tube has a flange 24', which is held against the holder at that end by a closing-cap 25 on the other end of the tube screwed against the other holder, the cap and flange operating to maintain the hold-

ers against the exterior abutments 17 of the end columns, in which positions they partially close the combustion-chamber at its ends. The burner may be withdrawn by loosening the cap and passing the holder on that end over the cap, the upper opening or port of the holder being of sufficient size for this purpose. The burner-tube at the end opposite the cap is arranged to be coupled with a pipe 26 leading from any suitable source of fluid fuel. It will be noted that the burner can be placed in the radiator from either end, and that, therefore, the receiving or coupled end may be located at the place suited to the position of the radiator in a room.

In every column, the upper partition walls 14 are of substantially U shape with a passage C leading downwardly therebetween from the upper portion of the column, and the column has on each end a passage 27 opening to passage C. Surrounding each passage 27 on the exterior of the column there is an annular abutment 28 arranged to have fluid-tight contact with an abutment on the next adjacent column. Thus, when a number of columns are coupled together, there is a substantially horizontal passage or opening from end to end thereof at a place intermediate its top and bottom, this passage communicating with the passage C of every column and constituting a discharge-conduit D. The exterior abutments of the end columns preferably are interiorly screw threaded, so that a discharge-pipe or flue 29 may be connected at either end of the radiator and the other end of the conduit closed by a plug 30.

When the burner is in use, air is drawn into the radiator at the base through the orifices 18 at the sides and ports 23 at the ends, hot air and products of combustion will rise to the top of the radiator and the walls thereof will become hot and heat will be radiated therefrom, and the draft in the flue-pipe will cause the products of combustion to flow downwardly from the top

of the radiator through passages C and out through the flue, which preferably should lead to the exterior of the room or other place in which the radiator is located, in order that the place may be ventilated by withdrawal of air from near the floor and that the products of combustion may not be permitted to accumulate in the place.

The abutments 17 preferably are interiorly screw threaded, so that, when it is desired to use the radiator for diffusing heat of preheated fluids, such as steam or hot water, a supply-pipe may be coupled at one of abutments 17 and the other closed by a plug such as that illustrated by 30, the orifices 18 closed by plugs such as 19, and the flue-pipe 29 replaced by a pipe more suited to such use.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A radiator-column having a combustion-chamber in its interior near its base, an air-admission orifice opening to said chamber, in the upper portion of the column substantially U-shaped partition-walls having a passage leading downwardly therebetween, and at the lower end of said passage a discharge-opening arranged to receive products of combustion from said passage.

2. A radiator comprising a plurality of hollow columns and having near its base a combustion-chamber opening to the interior of the columns and formed with an air-inlet thereto, a burner within said chamber, in the upper portion of each column substantially U-shaped partition-walls having a passage leading downwardly therebetween, and a discharge-conduit communicating with said passages at their bottoms and opening to the exterior of the radiator.

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

WILLIAM HAWKS.

Witnesses:

R. T. Hugo,
A. J. Roth.