J. D. McLACHLAN.

VENTILATING AND HUMIDIFYING APPARATUS.

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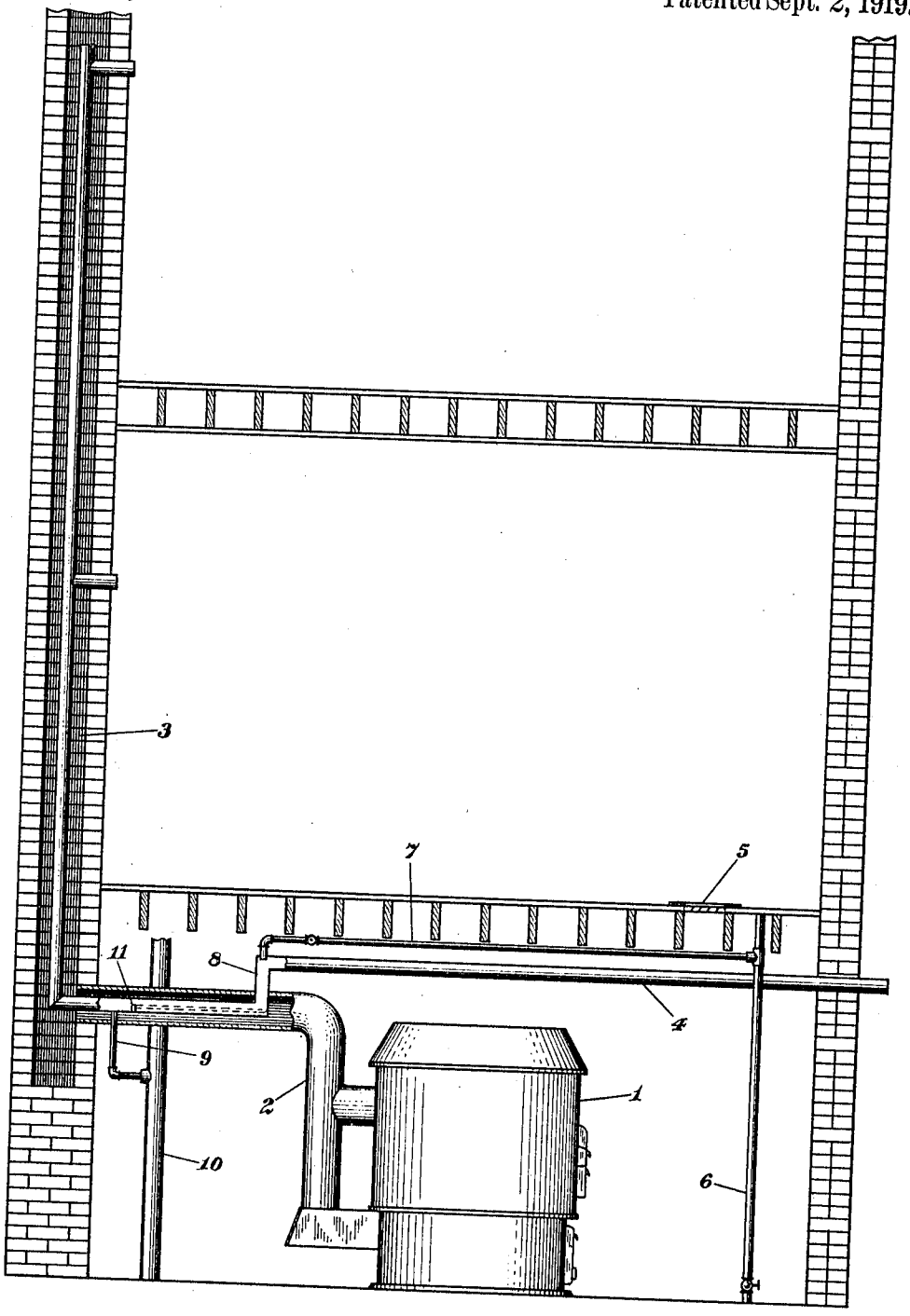
1,314,824.

Patented Sept. 2, 1919.



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UNITED STATES PATENT OFFICE.

JOHN D. McLACHLAN, OF STRATHROY, ONTARIO, CANADA.

VENTILATING AND HUMIDIFYING APPARATUS.

1,314,824. Specification of Letters Patent. Patented Sept. 2, 1919.

Application filed November 4, 1918. Serial No. 261,125.

To all whom it may concern:

Be it known that I, (Rev.) JOHN D. McLACHLAN, of the town of Strathroy, in the county of Middlesex, Province of Ontario, Canada, have invented certain new and useful Improvements in Ventilating and Humidifying Apparatus, of which the following is a specification.

In the present invention my object is to devise means for utilizing otherwise waste heat to provide warm moist air for the ventilation of houses and other buildings.

I attain my object by means of the constructions hereinafter described and illustrated in the accompanying drawing, which is a diagrammatic view showing a house provided with ventilating and humidifying apparatus constructed in accordance with my invention.

1 is the heater, which may be a hot air, hot water, or steam furnace. 2 represents the smoke pipe leading from the heater to the flue of a chimney 3. 4 is a cold air pipe leading from the outer air into and through the smoke pipe 2. This pipe 4, after passing through the smoke pipe 2, is led into the flue of the chimney, up the same and out into one or more of the rooms of the house.

The result of this arrangement is that cold air from outside is brought in and is heated by waste heat from the products of combustion to a temperature greater than that of the interior of the building, and is discharged into said interior to provide air for ventilation.

In order to provide heated air for the maintenance of combustion in the heater, I prefer to locate a register 5 in the floor of the room above the furnace compartment so that the cool air from the room, which, however, is very much warmer than the outside air, may pass through to the basement and so to the furnace.

It is important that the cold air pipe pass into the smoke pipe or flue without passing through any hot air chamber in the heater itself, as otherwise the cold air would be heated in the heater itself to such a high temperature that it would absorb heat which may be utilized in other ways and would be raised to such a high temperature that it would not extract the waste heat from the products of combustion. An important result from my construction is that the air for sustaining combustion in the heater does not require to be drawn through cracks or chinks, but is drawn from the room into which it has been led for ventilating purposes and after it has been heated by otherwise waste heat. Marked fuel economy results from this arrangement.

The necessity for maintaining a considerable moisture content in the air is more clearly recognized than ever before. I therefore provide in connection with my apparatus an arrangement whereby an ample quantity of water may be evaporated to supply this necessary moisture.

6 represents the water service pipe of the house, from which a pipe 7 is led to discharge into a portion of the cold air pipe 4. Preferably the pipe 4 is jogged downwardly to pass through the upper part of the smoke pipe 2. This provides a vertical portion 8 in the pipe into the upper end of which the pipe 7 discharges. Water is thereby supplied to the short substantially horizontal section of the pipe 4 which passes through the smoke pipe 2. In the pipe 4 I place a small dam 11 to form a water pan of this horizontal part of the pipe. From this portion of the pipe below the dam a drainage pipe 9 leads, which discharges into the main drainage pipe 10 of the house and carries off any overflow from the pan. Of course, in places where a regular water supply and drainage system is not installed, other arrangements would require to be made to feed a proper quantity of water to the pipe 7 and to take the discharge from the pipe 9.

The water in the pan is maintained at a high temperature and as the air itself is raised considerably in temperature by its passage through the pipe and over the hot water, it rapidly becomes saturated with moisture. Much more moisture will be imparted to the air in this way than is possible by the use of the ordinary water pans in a hot air furnace.

What I claim as my invention is:—

A building provided with heating appara-

tus having a smoke pipe; a cold air pipe leading from the outside to the interior of a room in the building and for part of its length passing in a horizontal direction through a part of the smoke pipe; a dam in the air pipe forming a water pan; a water supply pipe adapted to supply water to said water pan; and a drainage pipe leading from the air pipe below the dam to draw off surplus water from said part of the cold air pipe.

Signed at Strathroy, this 28th day of October, 1918.

JOHN D. McLACHLAN.