

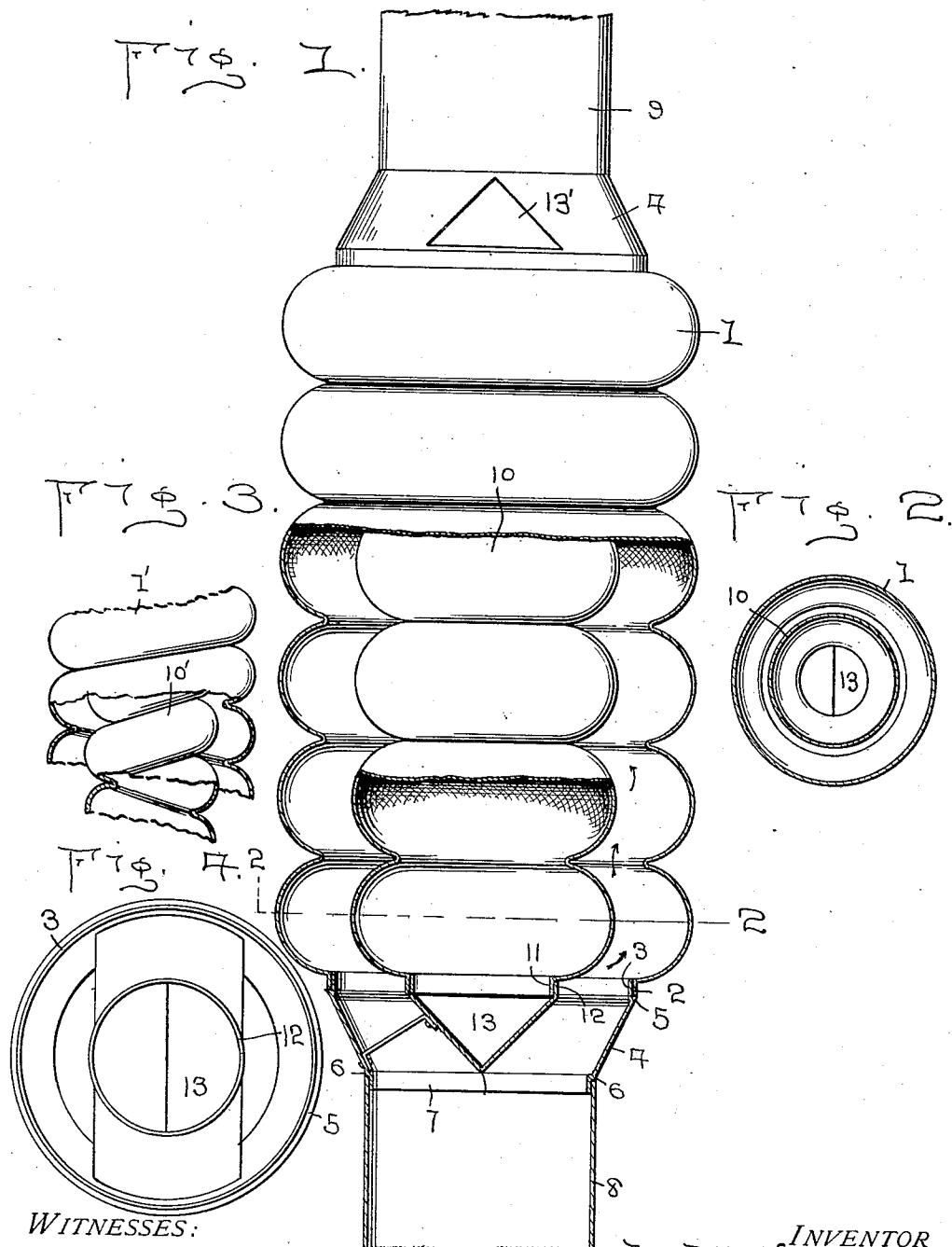
J. M. CROMLEY.

RADIATOR.

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1,065,663.

Patented June 24, 1913.



UNITED STATES PATENT OFFICE.

JOHN M. CROMLEY, OF LEWISBURG, PENNSYLVANIA.

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Specification of Letters Patent. Patented June 24, 1913.

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To all whom it may concern:

Be it known that I, JOHN M. CROMLEY, a citizen of the United States, residing at Lewisburg, in the county of Union and State of Pennsylvania, have invented certain new and useful Improvements in Radiators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to radiators, and it relates especially to an improved form of radiator wherein the products of combustion from a furnace or the like may be utilized for heating air in a room in which the radiator is located.

An object of the invention is to provide such construction that air will be drawn into and expelled from the heating drum and heated thereby.

A further object of the invention is to provide an annular passage around the heating drum, through which heated products of combustion are caused to pass, so as to heat the air that passes through the heating chamber.

A still further object is to provide a heating drum and a heating chamber having a large amount of radiating surface as compared with the amount of space occupied thereby.

Other objects and advantages may be recited hereinafter.

In the accompanying drawings, which form a part of this specification, Figure 1 is an elevation view of my improved radiator, certain parts thereof being shown in section; Fig. 2 is a horizontal sectional view, on a reduced scale, the section being taken on the line 2—2 of Fig. 1; Fig. 3 is a fragmental view, in elevation, of a modified form of drum and heating chamber; and, Fig. 4 is a top plan view of one of the frusto-conical heads of the drum or outer casing.

Referring to these drawings, in which similar reference characters designate similar parts throughout the several views; 1 designates the outer casing or drum of my air-heating and radiating device, which is formed with a series of successive corrugations, each corrugation being preferably of spheroidal form.

The end portions of the casing have collars 2 formed thereon, and these collars are

fitted around collars 3 which are formed on the frusto-conical heads 4, flanges or shoulders 5 being formed at the bases of the collars 3, so as to form rests or seats for the collars 2. The frusto-conical heads 4 may be formed either of cast iron or of any proper material and in any proper way, and these heads converge outwardly from their respective connections with the medial portion of the drum, and they have shoulders 6 formed at the respective bases of the collars 7, which latter are formed integrally with the frusto-conical heads. These collars 7 are smaller than the shoulders, and are adapted to have fitted therearound the ends, respectively, of pipe sections 8 and 9; the latter being adapted to convey the products of combustion from a stove, furnace, or other heat generating plants, into the outer casing 1.

The conduits 13 and 13' are preferably of prismatic outline; that is, they are triangular in vertical cross section, and are seated in the walls of the frusto-conical heads 4, extending diametrically therethrough, the apex of the air-receiving conduit 13 pointing downward, so that the products of combustion will be divided thereby. These conduits communicate with the outer air, on opposite sides of the frusto-conical heads, and they also communicate with the chamber 10 through the collars 11 and 12, the latter being formed around openings in the opposite faces of the conduits 13 and 13', so that air may enter the conduit 13, pass through the chamber 10 and out through the ends of the conduit 13'.

An air-heating chamber 10, which is of smaller diameter than the casing 1, and formed in a similar manner, with spheroidal corrugations, is disposed within said casing 1, so that the convexed surfaces of the corrugations of said heating chamber will be disposed opposite to the corrugations of the casing 1. The lower ends of said heating chamber 10 terminate in collars 11, which are adapted to fit closely within collars 12, described.

When my improved radiator is in use, the products of combustion pass through the pipe section 8, and thence through the annular space between the casing and the air-heating chamber, and thence out to the pipe section 9. Owing to the fact that said casing and heating chamber are similarly and oppositely corrugated, the products of com-

bustion are caused to move in a zig-zag or tortuous path, being first directed against one portion of the heat chamber and then against a portion of the corrugated surface 5 of the casing; thus continuing throughout the entire length of the corrugated portions. The air in the heating chamber will consequently be intensely heated and will escape, by means of the conduit 13' into the room, 10 while cool air enters said heating chamber by means of the conduit 13; thus insuring the circulation and heating of all of the air in the room in which the radiator is located. The air which surrounds the casing 15 1 will also be heated, as the corrugated surface of said casing will be intensely heated by the products of combustion, and consequently, the air around said corrugated surface will be heated to a high degree.

20 By the construction herein described it will be seen that I have provided a heating device which has a comparatively large radiating surface, and which will cause the circulation of all of the air in the room.

25 In Fig. 3 is shown a modified form of construction in which the outer casing and the heating chamber are formed within similarly and oppositely arranged corrugations which extend helically therearound.

30 In this construction, it will be seen that the products of combustion will be caused to move helically between the casing 1' and the air-heating chamber 10', beside moving in a zig-zag course between the casing and 35 air-heating chamber.

While I have shown and described certain forms of my invention, it should be understood that certain modifications may be made without departing from the spirit and 40 scope of my invention.

I claim:

1. In combination with a pipe adapted to have heated products of combustion passed therethrough, an air heater and radiator 45 comprising a casing having outwardly converging frusto-conical heads fitted between two sections of said pipe and communicating therewith, air conduits of triangular

cross section seated in the respective frusto-conical heads and extending diametrically 50 therethrough and converging in the direction of convergence of the respective frusto-conical heads supporting them and thereby dividing the products of combustion that pass through the pipe sections and casing, 55 the opposite faces of the air conduits being parallel and apertured, and an air chamber fitted between the apertures of the conduits and thereby communicating with the interior of the conduits so as to receive air 60 through one of said conduits and to discharge air through the other of said conduits.

2. In combination with a pipe adapted to have heated products of combustion passed 65 therethrough, an air heater and radiator comprising a corrugated casing having outwardly converging frusto-conical heads fitted between two sections of said pipe and communicating therewith, air conduits of 70 triangular cross section seated in the respective frusto-conical heads and extending diametrically therethrough and converging in the direction of convergence of the respective frusto-conical heads supporting 75 them and thereby dividing the products of combustion that ascend through the pipe sections and casing, the opposite faces of the air conduits being parallel and apertured, and a corrugated air chamber fitted 80 between the apertures of the conduits and thereby communicating with the interior of the conduits so as to receive air through one of said conduits and to discharge air 85 through the other of said conduits, the corrugations of said casing being opposite to those of said air chamber so as to provide a tortuous passage for retarding said products of combustion while ascending.

In testimony whereof I have signed my 90 name to this specification in the presence of two subscribing witnesses.

JOHN M. CROMLEY.

Witnesses:

I. S. SECHRIST,
W. F. BARNES.