

(No Model.)

F. DENZ.
FURNACE FOR NATURAL GAS.

No. 514,310.

Patented Feb. 6, 1894.

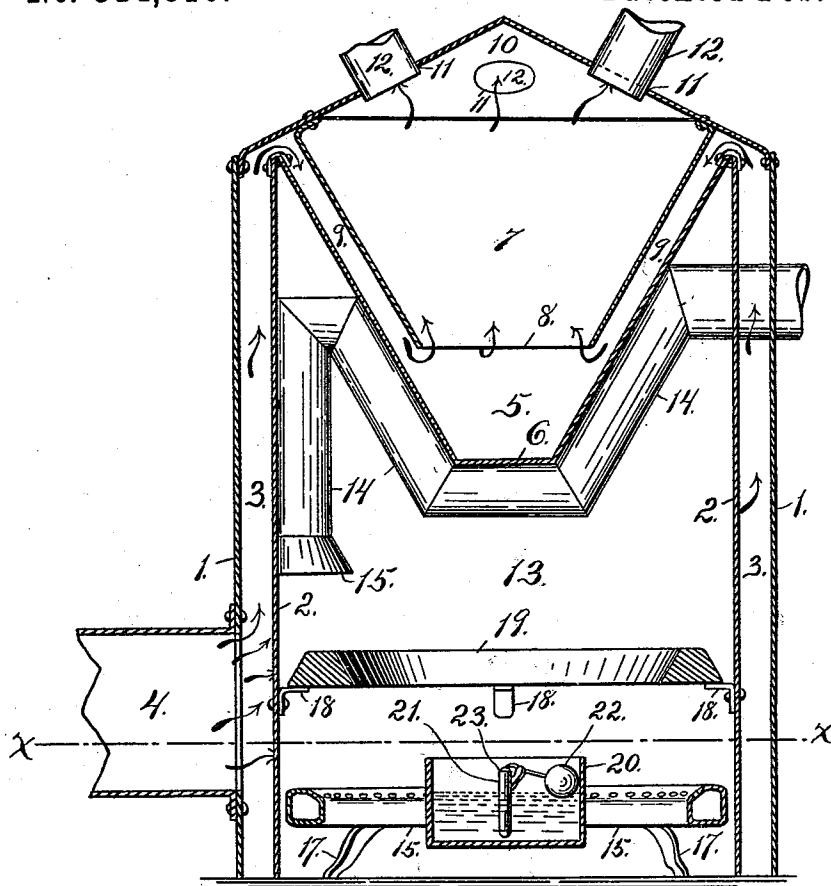


Fig. 1.

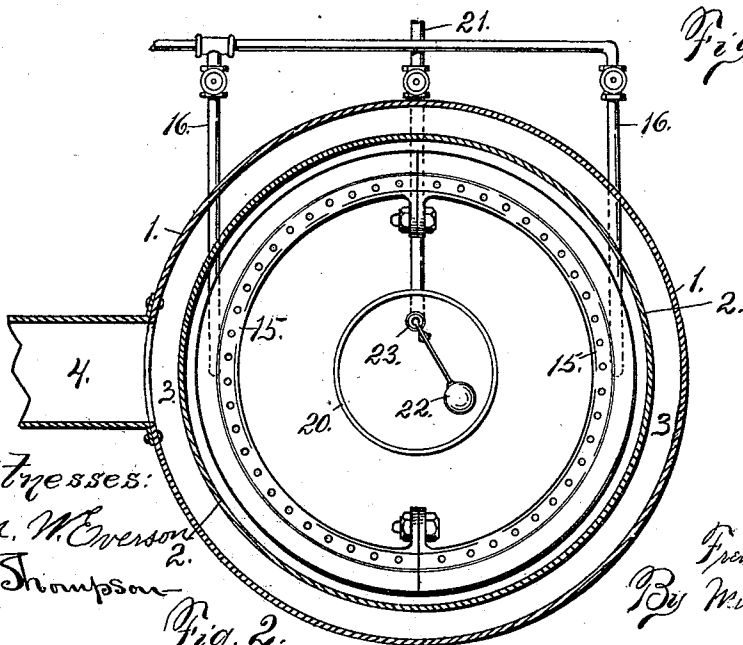


Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

FRED DENZ, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO FELIX DENZ, OF SAME PLACE.

FURNACE FOR NATURAL GAS.

SPECIFICATION forming part of Letters Patent No. 514,310, dated February 6, 1894.

Application filed September 11, 1893. Serial No. 485,220. (No model.)

To all whom it may concern:

Be it known that I, FRED DENZ, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have
5 invented certain new and useful Improvements in Furnaces for Natural Gas; 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
10 appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of furnace
15 which are specially adapted for the use of natural gas as fuel and its object is to provide an improved construction and arrangement by means of which a maximum amount of heat is obtained.

20 I will now minutely describe the manner in which I have carried out my invention, and then claim what I believe to be novel.

In the drawings:—Figure 1 is a central vertical section of my improved furnace, and Fig.
25 2 is a horizontal section taken in the line $x-x$ of Fig. 1.

Referring to the drawings, 1 is the outer jacket and 2 the inner jacket of my improved furnace having the circular chamber 3 between the same, and 4 is the cold air passage leading into this chamber. Secured along the top edge of the inner jacket 2 and extending
30 downwardly is the inverted cone-shaped wall 5, with closed bottom 6. Just over this wall 5 and secured to the outer jacket 1 is another inverted cone-shaped wall 7, having the open bottom 8, and between these two walls 5 and 7 is the passage 9 which opens into and forms
35 a continuation of the passage 3 between the jackets 1 and 2. This passage 9 connects through the open bottom 8 with the hot-air chamber 10 in the top of the furnace from which the heated air passes through openings 11, and flues 12 to the points desired. Below
40 the wall 5, 6 is the combustion chamber 13 in which is arranged the smoke pipe 14. The open end 15 of this smoke pipe is located against the wall of the jacket 2 on one side thereof and from this point the pipe extends
45 up and across to the cone-shaped wall 5, then

down along said wall across its closed bottom 6, up the other side and out through both jackets 1 and 3, to the chimney as clearly shown in Fig. 1. The burner is made of two
55 semicircular sections 15, 15, bolted together and gas is supplied to each section through the pipes 16, 16.

17 are the standards upon which the burner rests. Above the burner 15 and resting upon
60 the standards 18, is the annular ring 19, of metal against which the circular flame from the burner 15 strikes.

Centrally arranged within the burner is the small water-tank 20 which is open at the top and to which water is supplied from the pipe
65 21. The water in this tank is kept automatically at the proper level by the float valve 22 arranged upon the upper end 23 of the pipe 21.

The operation of my improved furnace just described is as follows: The gas being lighted,
70 generates the heat required within the chamber 13. It is intensified by the heat thrown off from the ring 19 just above the burner. The vertical wall of the inner jacket 2 and the conical wall 5 impart their heat to the air
75 from the cold air passage 4 as it passes up through the passage 3 and down the passage 9 into the chamber 10. The heated products of combustion passing through the smoke
80 pipe 14 which is in contact with the conical wall 9 as shown permits of the utilization of this extra heat before it leaves the combustion chamber 13, thus additionally heating
85 the conical wall 9 with greatly improved results. The water in the tank 20 is being continually evaporated and automatically replaced by means of the float valve 22. The
90 moisture thus generated serves to reduce the injurious effects upon the lining of the chimney through which it passes, to a minimum. The upward passage 3 between the jackets 1
95 and 2, and the downward passage 9 between the conical walls 5 and 7, afford a large extent of heating surface for the air which passes through them into the chamber 10 thus materially increasing the efficiency of the furnace.

I claim—

1. A furnace for natural gas having two jackets with a circulating space between

them, a heating wall above the combustion chamber having an inverted cone-shaped surface and a smoke pipe which passes across the combustion chamber in contact with such
5 wall substantially as and for the purpose stated.

2. A furnace for natural gas having two jackets with a circulating space between them a heating wall above the combustion chamber
10 having an inverted cone-shaped surface above which is a similar inverted cone-shaped wall with open bottom forming a continuation of

the circulating space between the jackets and a smoke-pipe which passes across the combustion chamber and in contact with the lower
15 cone shaped wall substantially as and for the purpose stated.

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

FRED DENZ.

Witnesses:

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O. E. HODDICK.