

(No Model.)

G. T. BRUCKMANN.
FURNACE FOR HEATING AND OTHER PURPOSES.

No. 461,313.

Patented Oct. 13, 1891.

Fig. 1.

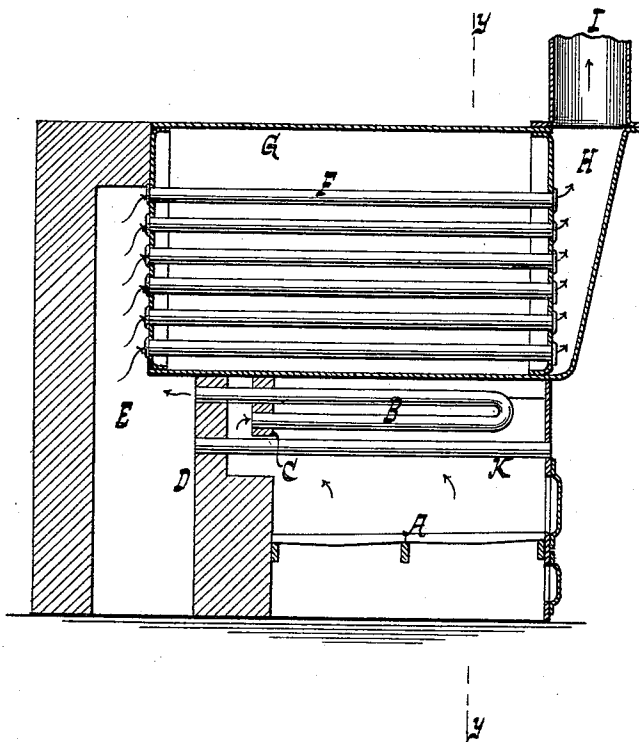
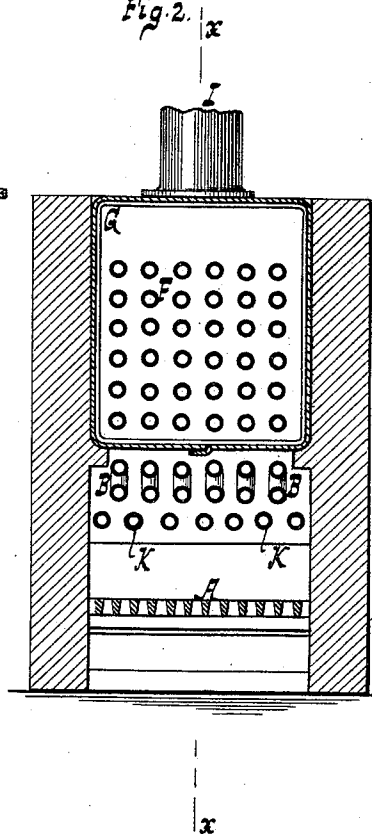


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GUSTAV T. BRUCKMANN, OF BROOKLYN, NEW YORK.

FURNACE FOR HEATING AND OTHER PURPOSES.

SPECIFICATION forming part of Letters Patent No. 461,313, dated October 13, 1891.

Application filed August 13, 1891. Serial No. 402,535. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV T. BRUCKMANN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Furnaces for Heating and other Purposes, of which the following is a specification.

This invention relates to an improvement in furnaces for heating, steam-generating, and other purposes; and the invention consists in the details of construction set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a section of the furnace along *xx*, Fig. 2. Fig. 2 is a section along *yy*, Fig. 1.

The fire-grate A is situated in the fire-box. Over this grate are situated return-bend pipes B. One branch of each return-bend pipe extends through the brick arch C, while the other branch extends through the brick arch C and also through the brick wall D into the combustion-chamber E, from which the products of combustion pass through the flues F to the smoke-box H and chimney I.

The flues F are shown as passing through a boiler G. An air pipe or pipes K pass from the outer air through the fire-box to the combustion-chamber E. The return-bend pipes B and air-pipes K, being situated in the fire-box, are thoroughly heated.

As the combustion in the fire-box is not complete, the products of combustion which pass from the fire-box through the return-bend pipes B into the combustion-chamber carry along considerable combustible material—such, for example, as carbon particles or carbon monoxide. As such combustible matter emerges from the return-bend pipes into the combustion-chamber it meets the hot air from the pipes K and becomes thoroughly consumed or oxidized. The fuel thus not only is fully consumed and utilized, but the boiler G, when arranged as shown, is heated by the fire in the fire-box and also by the heat from the flues F, so that considerable heat is utilized from a comparatively small quantity of fuel.

In burning soft coal carbon or coal particles carried into the incandescent tubes B, where there is also considerable carbon dioxide, will generate carbon monoxide with said carbon dioxide, which monoxide, as it enters the combustion-chamber E, is then consumed or converted into carbon dioxide and passes off as such through the flues F and through the chimney.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the fire-box and the combustion-chamber, of a return-bend pipe leading from the fire-box to the combustion-chamber, an air-pipe for the combustion-chamber, a smoke-box or chimney, and flues leading from the combustion-chamber to the chimney, substantially as described.

2. The combination, with the fire-box and the combustion-chamber, of a return-bend pipe leading from the fire-box to the combustion-chamber, an air-pipe for the combustion-chamber, a smoke-box or chimney, and flues leading from the combustion-chamber to the chimney, said return-bend pipe and air-pipe being passed through the fire-box to be heated, substantially as described.

3. The combination, with the fire-box and the combustion-chamber, of a return-bend pipe leading from the fire-box to the combustion-chamber, and an air-pipe for the combustion-chamber, substantially as described.

4. The combination, with the fire-box having an arch C and a combustion-chamber, of a wall D, separating the fire-box and combustion-chamber, a return-bend pipe having one end extended through the arch and the other extended through the wall, and an air-pipe extending through said wall to the combustion-chamber, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GUSTAV T. BRUCKMANN.

Witnesses:

WM. C. HAUFF,
E. F. KASTENHUBER.