F. C. IHLEE.

BAKER'S OVEN.

APPLICATION FILED FEB. 20, 1912.

**1,084,439.**

Patented Jan. 13, 1914.

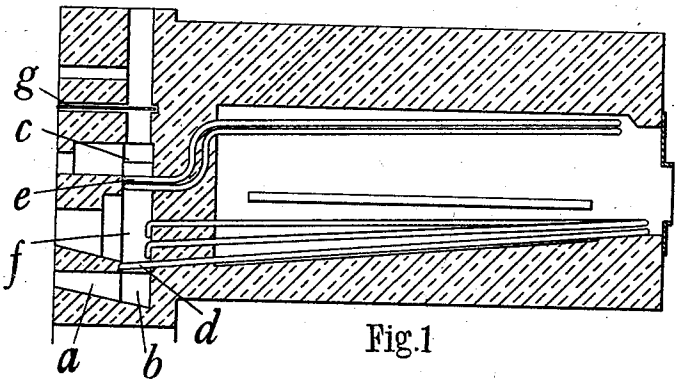



Fig.1

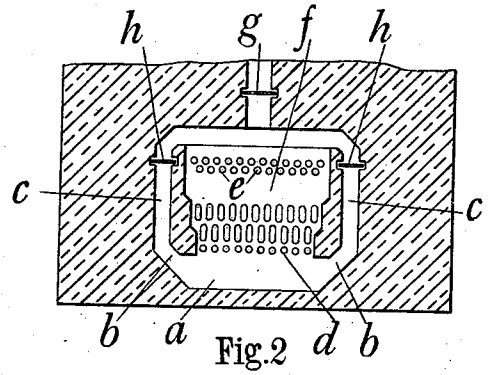



Fig.2

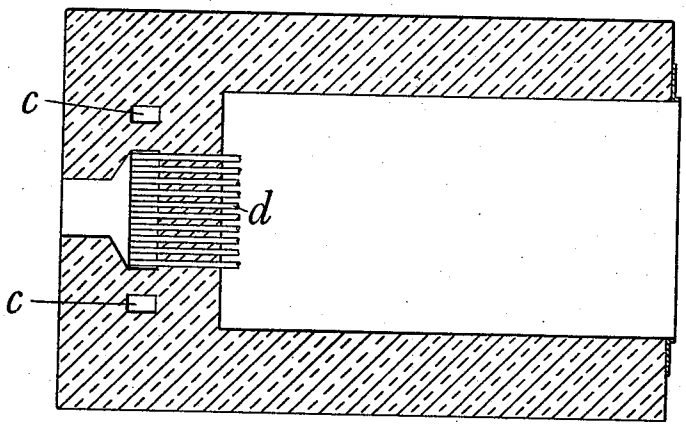



Fig.3

WITNESSES

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# UNITED STATES PATENT OFFICE.

FREDERICK C. IHLEE, OF PETERBOROUGH, ENGLAND.

## BAKER'S OVEN.

1,084,439. Specification of Letters Patent. Patented Jan. 13, 1914.

Application filed February 20, 1912. Serial No. 678,827.

*To all whom it may concern:*

Be it known that I, FREDERICK CHARLES IHLEE, subject of the King of Great Britain, residing at Westwood Works, Peterborough, in the county of Northants, England, engineer, have invented certain new and useful Improvements Relating to Bakers' Ovens, of which the following is a specification.

This invention relates to bakers' ovens of the type in which the heating elements comprise closed tubes containing water or other fluid known as "Perkins tubes," "circulating tubes" and "loop tubes," and arranged to project at one end into the furnace to be acted upon by the heat generated in the latter.

The object of the invention is to provide with great convenience, simplicity and certainty, for the control of the temperature attainable in the furnace with effective combustion of fuel.

The invention comprises the combination with the air supply through the grate of a furnace as aforesaid, under the inducing action of the chimney draft, of a by-pass or like air supply which, under the same action, is caused to flow into the chimney without passing through the fuel on the fire grate or furnace whereby a limitation is imposed on the maximum rate of combustion permissible on the fire grate.

In the accompanying sheet of explanatory drawings: Figure 1 is a longitudinal section, Fig. 2 a cross section and Fig. 3 a sectional plan of a baker's oven having this invention applied thereto.

The same reference letters in the different views indicate the same parts.

In the application of the invention as shown to a drawplate oven such as is now generally used in bread bakeries, the ash pit or space *a* beneath the fire-bars, into which the air is admitted, has lateral ports or apertures *b* therein which admit a portion of the incoming air, under the inducing action of the chimney draft, to ducts or passages *c* which pass up through the furnace walls and communicate with the furnace and chimney above or clear of the fuel to be consumed. The air which enters the said ducts is thus by-passed with respect to the fuel, and in this manner the supply of air which flows through the fire-grate and through the fuel can be readily limited to the amount necessary to support the combustion of the fuel at the rate necessary for the attainment and maintenance of the desired temperature.

Dampers or valves *h* to regulate the amount of air by-passed may be provided in any convenient position and controlled either independently of or in conjunction with the main dampers *g* and air inlets. Instead of a by-pass or diverted air way on each side of the furnace as aforesaid, a single by-pass for air may be formed.

The fire-grate may be made up of solid or other fire-bars in the known manner, or by extensions as shown of the lower or a portion of the lower tubular elements *d* adapted to serve for the support of the fuel. When the grate is formed by extensions of a portion of the said elements, the remaining lower tubes project into the furnace above those forming the fire-grate and the projecting ends may be bent down to form a protection for the furnace wall. This arrangement is shown in the drawings. An upper set of tubes *e* is also shown. The ordinary combustion space is indicated by *f*. The tubular elements may be in rows of single tubes or may be formed into endless coils or loops or a series of such.

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

In bakers' ovens, the combination consisting of a fire box with tubular heat receiving and distributing elements projecting thereinto, a vent flue above the fire box, an ash pit beneath the fire box, by-pass air ducts opening at one end into the ash pit and at the other end into the vent flue, and adjustable dampers in said ducts, substantially as described.

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

FREDERICK C. IHLEE.

Witnesses:
LAWRENCE H. KING,
BERTRAM H. MATTHEWS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."