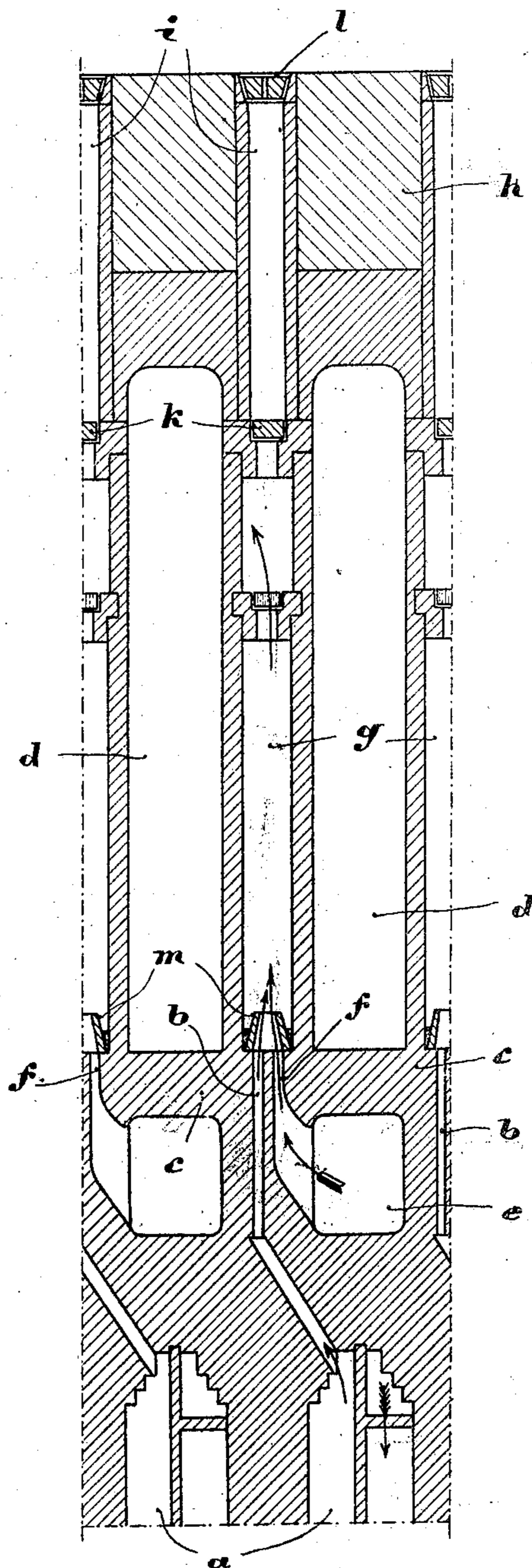


H. KOPPERS.  
GAS AND AIR SUPPLY TO LARGE CHAMBERED OVENS.  
APPLICATION FILED MAY 20, 1909.

933,993.

Patented Sept. 14, 1909.



Witnesses:  
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Edward Schorr.

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by his attorney  
Frank H. Lindsey

# UNITED STATES PATENT OFFICE.

HEINRICH KOPPERS; OF ESSEN-ON-THE-RUHR, GERMANY.

GAS AND AIR SUPPLY TO LARGE-CHAMBERED OVENS.

933,993.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed May 20, 1909. Serial No. 497,170.

To all whom it may concern:

Be it known that I, HEINRICH KOPPERS, a citizen of the German Empire, and resident of 30 Isenbergstrasse, Essen-on-the-Ruhr, Germany, have invented a new and useful Gas and Air Supply to Large Chambered Ovens, More Particularly Ovens for Generating Gas, of which the following is a specification.

10 The supply of gas and air to the vertical heating flues of large-chambered ovens by means of parallel gas and air channels, from the orifices of which the gas and air ascend side by side, causes a long flame of reduced

15 heat-density to be produced, owing to the retardation of the mixing of the gas and air. On the other hand, the mixing nozzles which have heretofore been used produce a too short flame, so that the fall of temperature

20 between the base and upper orifice of the flue is too great.

The present invention provides a device which allows of obtaining any desired intermediate effect between parallel air and gas

25 supply and complete mixture. This device substantially consists of a fire-proof nozzle surrounding the orifices of two parallel vertical ducts which supply air and gas respectively, the said nozzle having a bore which

30 tapers toward its upper end, so that it compels the two streams to converge and become mixed. This nozzle is very simple and easily renewable. Observation in each particular case enables the most efficient degree

35 of convergence to be ascertained. The shape may approximate with any desired degree of closeness to the fundamental shape which leaves the streams of air and gas parallel with each other. All the structural advantages of parallel air and gas supply are retained. The supply orifices are easy of access, and can be inspected and cleaned while

40 working, from an aperture in the top of the oven in the axis of the flue, if unpurified generator gas is used this is of the greatest importance for regular function of the apparatus.

The accompanying drawing shows in cross-

section a construction embodying this improvement as applied to an inclined chamber 50 oven, the type of oven mainly used for generating gas.

Air from the two-chambered heater *a* flows through the vertical duct *b* on the base *c* of the heating flue. Gas flows from 55 the conduit *e* below the chamber *d* through a duct *f* to the flue *g*; the upper part of the duct *f* is also vertical. In line with the ducts *b* and *f* there is the usual aperture *i* in the top of the oven, normally closed by plugs 60 *k* and *l*. Over the orifices of the ducts *b* and *f* is placed the tapering nozzle *m*, which is made fast by means of fire-proof cement and is in contact with the outer rims of the orifices. - The nozzle is preferably of elliptical cross-section, but may be of circular or 65 angular cross-section. The parallel streams of air and gas issuing from the ducts *b* and *f* are caused by the nozzle to converge, and the air and gas become more or less mixed. 70 Should the nozzle *m* or ducts *b* and *f* become obstructed by dust or the like, the obstruction can easily be removed by means of an iron bar inserted at *i*.

The principle of introducing the air and 75 gas in parallel streams, and then partly uniting them, is the sole means of effecting regular control with regard to the degree of intimacy of the mixture.

What I claim is:—

80 Air and gas supply for large chambered ovens with parallel ducts leading to the heating flue, more particularly for ovens for generating gas, with a nozzle which has a bore tapering toward its upper end and the 85 base of which embraces both orifices of the ducts, so that the streams of air and gas are deflected toward each other, and mixed, to a degree depending on the angle of inclination of the inner surface of the nozzle. 90

Signed by me at Joliet, Illinois, this 11th day of May 1909.

HEINRICH KOPPERS.

Witnesses:

LOUIS WILPETTE,  
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