Nov. 18, 1924. 1,516,458

E. PROCTER ET AL

HEATING STOVE OR OVEN FOR DRYING AND OTHER INDUSTRIAL PURPOSES

Filed March 8, 1924 2 Sheets-Sheet 1

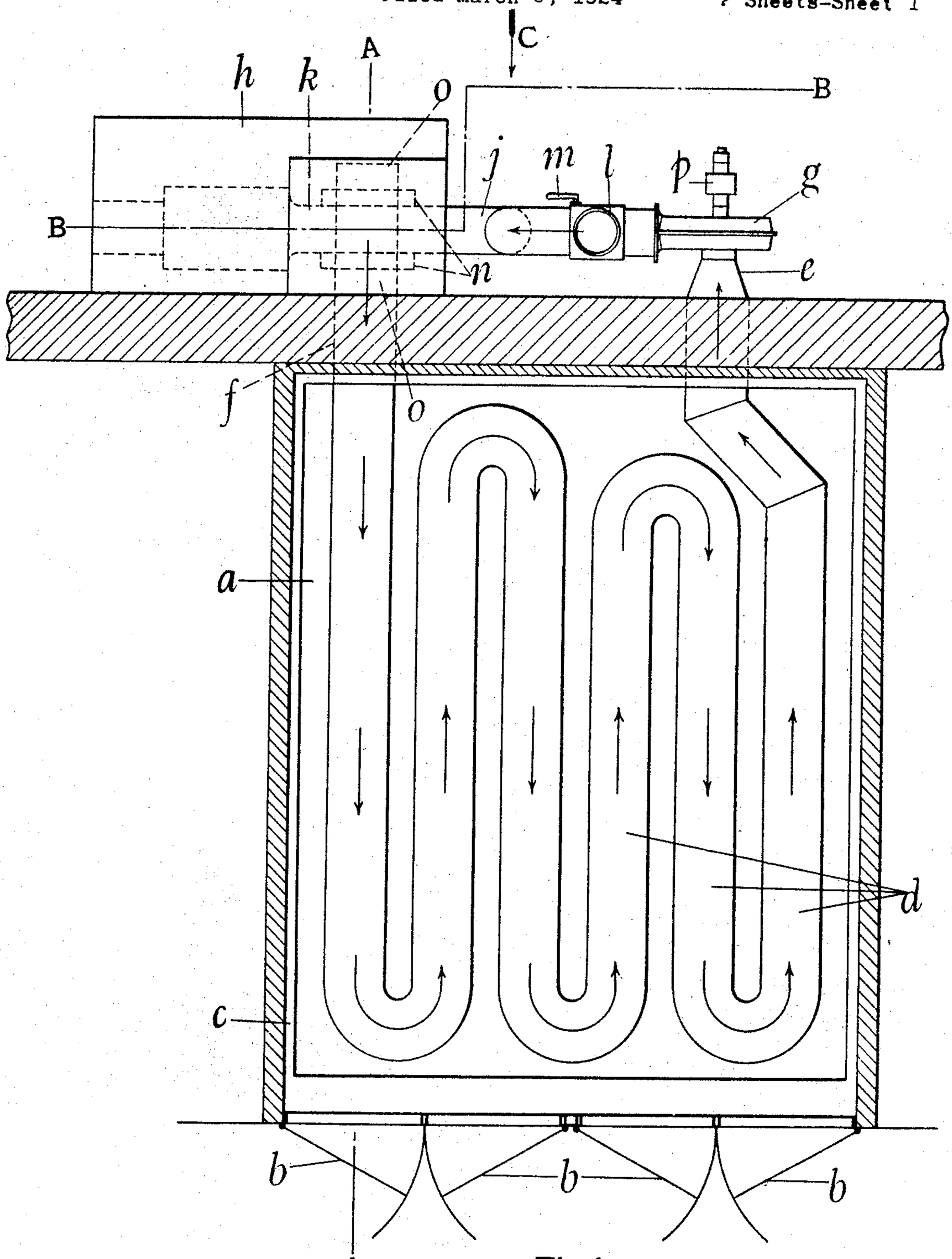

Fig.1

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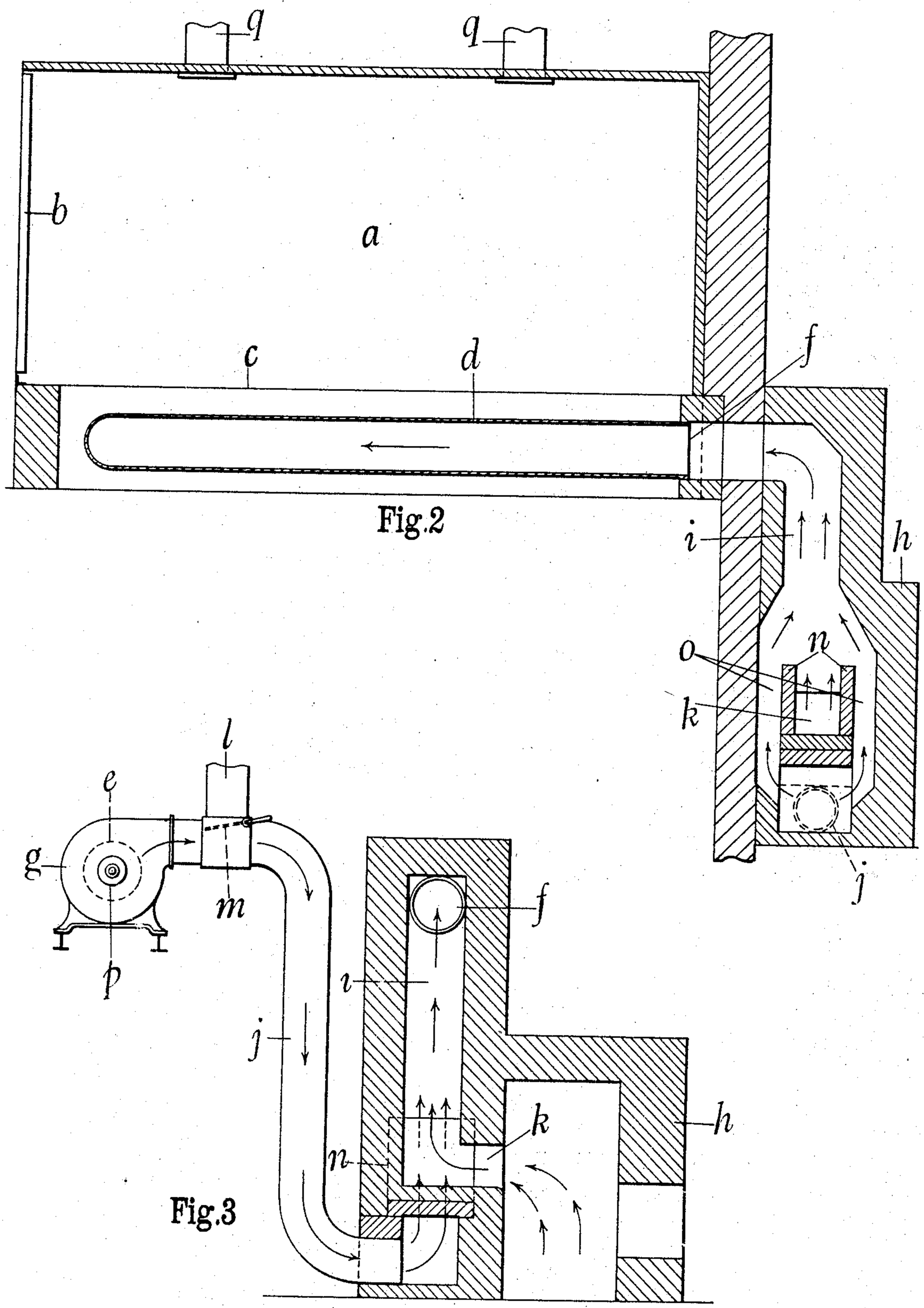

Fig.2

Fig.3

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UNITED STATES PATENT OFFICE.

EDWARD PROCTER AND HUGH WALTON, OF LONDON, ENGLAND.

HEATING STOVE OR OVEN FOR DRYING AND OTHER INDUSTRIAL PURPOSES.

Application filed March 8, 1924. Serial No. 697,784.

To all whom it may concern:

Be it known that we, EDWARD PROCTER and HUGH WALTON, both British subjects, residing at 83, St. Paul's Churchyard, London, E. C., England, have invented certain new and useful Improvements Relating to Heating Stoves or Ovens for Drying and Other Industrial Purposes, of which the following is a specification.

This invention relates to heating stoves for drying enamelled ware in the course of its manufacture, and also other stoves or ovens for various industrial purposes, including bread and other baking or cooking operations.

The invention comprises the provision with a chamber or container for the articles to be dried, baked, or subjected to heat treatment, of simple and reliable means for the efficient transfer to the said chamber of the heat contained in the gaseous products of combustion from a furnace (adapted for the burning of solid, liquid or gaseous fuel in any ordinary manner), whereby the articles placed in such chamber are subjected to the required heat treatment with economy, cleanliness and convenience.

Referring to the accompanying sheet of explanatory drawings:—

Figure 1 is a plan of a drying or like stove constructed in accordance with this invention.

Figure 2 is a sectional side elevation of the stove on the line A. A. (Figure 1) whilst Figure 3 is a sectional end elevation on the line B. B. looking in the direction indicated by the arrow C (Figure 1).

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

The chamber *a* is of any suitable construction and provided with doors such as *b* for the admission and withdrawal of the articles to be subjected to heat treatment therein. Below the false base or platform as *c* of the chamber, there is placed the circuitously arranged or looped iron or other metal pipe *d;* the ends *e* and *f* of such pipe project through the rear wall of the chamber. On the exterior of said wall (which in this example is also the end wall of the building containing the chamber *a*), there is arranged a fan or blower *g* and a furnace *h*. The outlet *e* of the pipe *d* is attached to the suction or inlet side of the said blower *g*. With the furnace *h* there is provided the mixing duct *i* associated in series with the pipe *j* and forming therewith the conduit or connection between the delivery or outlet side of the blower *g* and the inlet *f* of the pipe *d*. The communication between the furnace *h* and the duct *i* is effected by means of the lateral flue *k*; the pipe *j* is in lateral communication with the chimney or outlet flue *l* the said communication being controlled or adjusted by means of a valve or regulator *m*. The junction of the said lateral flue *k* with the mixing duct *i* is preferably formed, as shown at Figure 2 and 3, by a trough or channel *n* extending across the said duct, the sectional area of which is enlarged to receive the trough and provide the passages *o*, adjacent the trough sides, to maintain the communication between the lower and upper parts of duct *i*.

When starting up or putting the aforesaid apparatus into use, the valve *m* is moved into the position for closing or cutting off communication between the blower *g* and the pipe *j*. By the action of the blower (which is driven by an electric motor or through the belt pulley *p* or otherwise) the gaseous products of combustion from the furnace *h* are then drawn through the flue *k* and duct *i* to the inlet *f* of the circuitous pipe *d*, thence through the said pipe *d* to the inlet side of the blower. From the blower the gaseous products pass direct to chimney or outlet flue *l* for discharge.

During the aforesaid operation of starting up the apparatus, and passing the furnace gases to the chimney, the pipe *j* does not function, being cut out of the circuit by the regulator *m*. But when the apparatus has become sufficiently heated to permit of a reduction in the supply of hot gaseous products from the furnace the regulator *m* may be adjusted to permit and desired proportion of the gas flow to be shut off from the chimney and caused, under the blower action, to pass down the pipe *j* to the mixing duct *i* and so re-circulated through the circuitous pipe *d* in the drying or heat treatment chamber *a*.

In this manner the temperature in the chamber *a* may be varied from that obtainable from the slowest possible rate of combustion in the furnace *h* up to a rate of combustion giving the highest temperature the iron or metal pipes *d* and *j* will satisfactorily with-stand. The said chamber *a* may be

fitted with ventilators as *q* for the escape of vapour driven off from the articles placed therein for drying or heat treatment.

The direction of flow of the hot gases through the apparatus is indicated by the arrows shown in the drawings.

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

1. In stoves or ovens, the combination comprising a chamber, a pipe extending circuitously through said chamber and having its inlet and outlet ends on the exterior of the chamber wall, a blower with inlet connected to the outlet end of said circuitous pipe, a connection between the outlet of said blower and the inlet end of the circuitous pipe, a chimney, a lateral communication between the said connection and said chimney, a regulator for said communication, a furnace, and means admitting the gaseous products of combustion from said furnace to said connection, as set forth.

2. In stoves or ovens, the combination comprising a chamber, a pipe extending circuitously through said chamber and having its inlet and outlet ends on the exterior of the chamber wall, a blower with inlet connected to the outlet end of said circuitous pipe, a furnace, a duct connected to the inlet end of said circuitous pipe, a connecting pipe between such duct and the outlet of said blower, a chimney, a lateral communication between said connecting pipe and said chimney, a regulator for said communication, and a flue putting said duct in communication with said furnace, as set forth.

3. In stoves or ovens, the combination comprising a chamber, a pipe extending circuitously through said chamber and having its inlet and outlet ends on the exterior of the chamber wall, a blower with inlet connected to the outlet end of said circuitous pipe, a furnace, a duct connected to the inlet end of said circuitous pipe, a connecting pipe between said duct and the outlet of said blower, a chimney, a lateral communication between said connecting pipe and said chimney, a regulator for said communication, a flue from said furnace, and a trough extending from said flue across said duct and providing therein central and side passages, as set forth.

In testimony whereof we have signed our names to this specification.

EDWARD PROCTER.
HUGH WALTON.