

No. 819,700.

PATENTED MAY 1, 1906.

A. C. CALKINS.  
FURNACE.

APPLICATION FILED MAR. 26, 1904.

Fig. 1

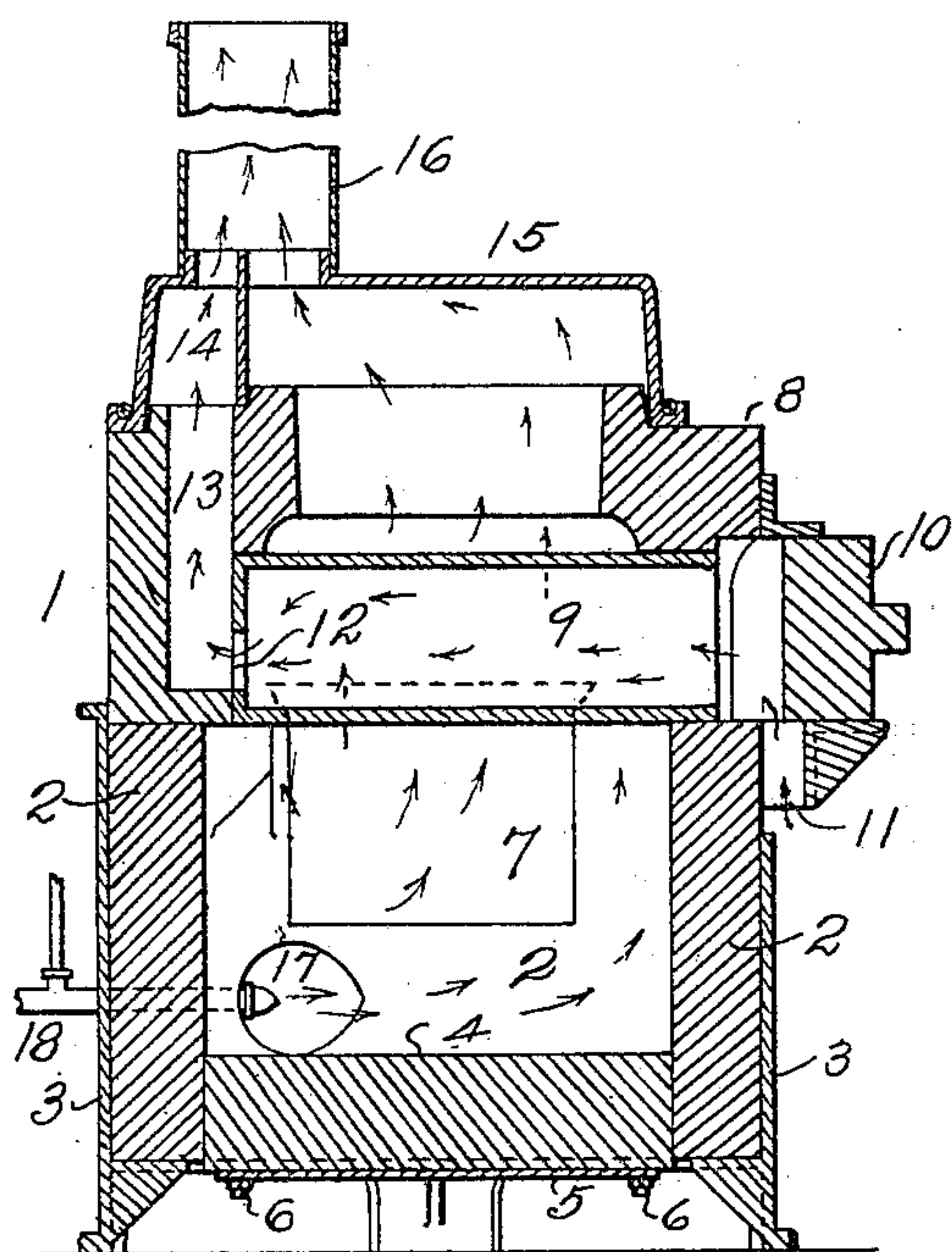


Fig. 2

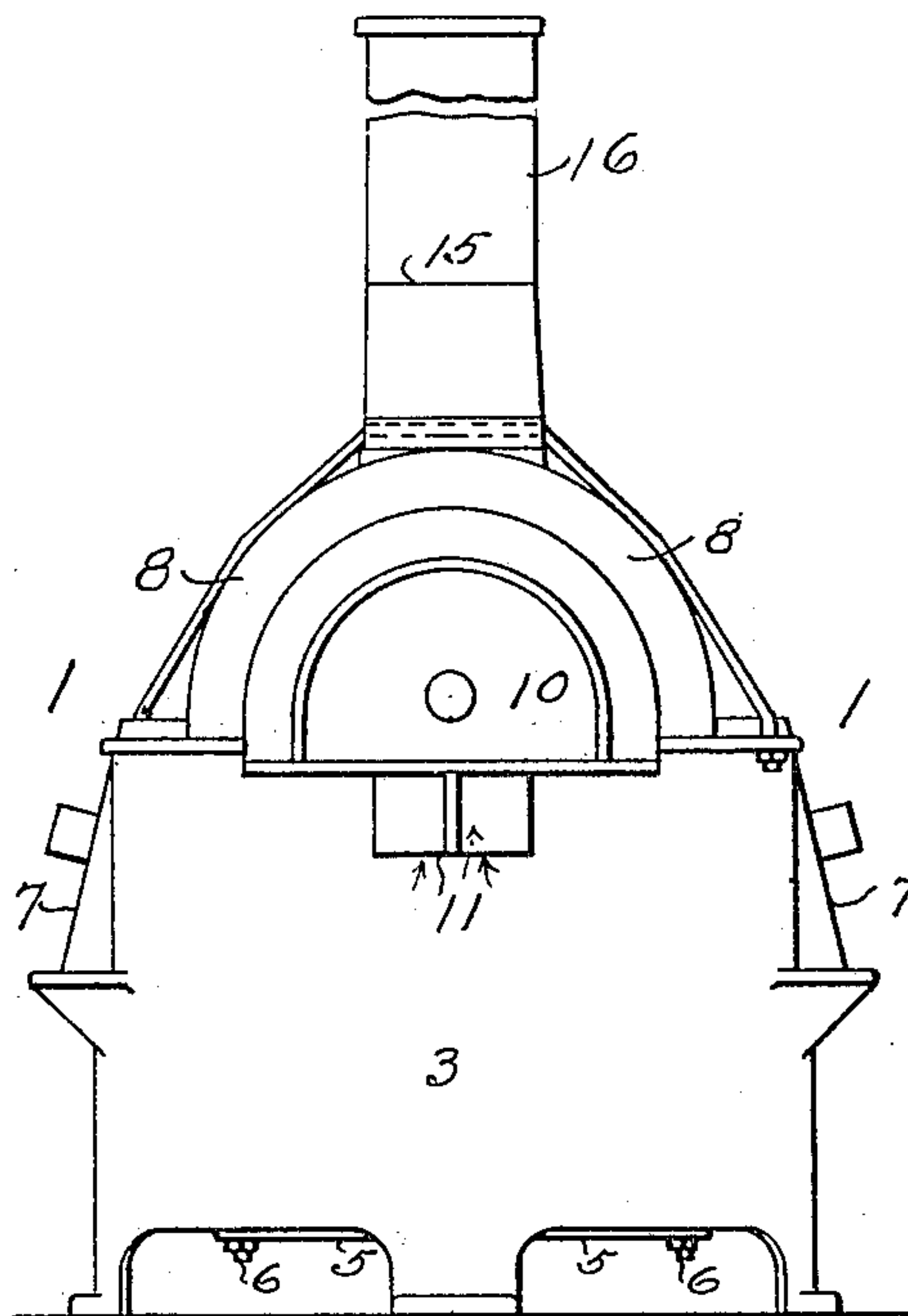
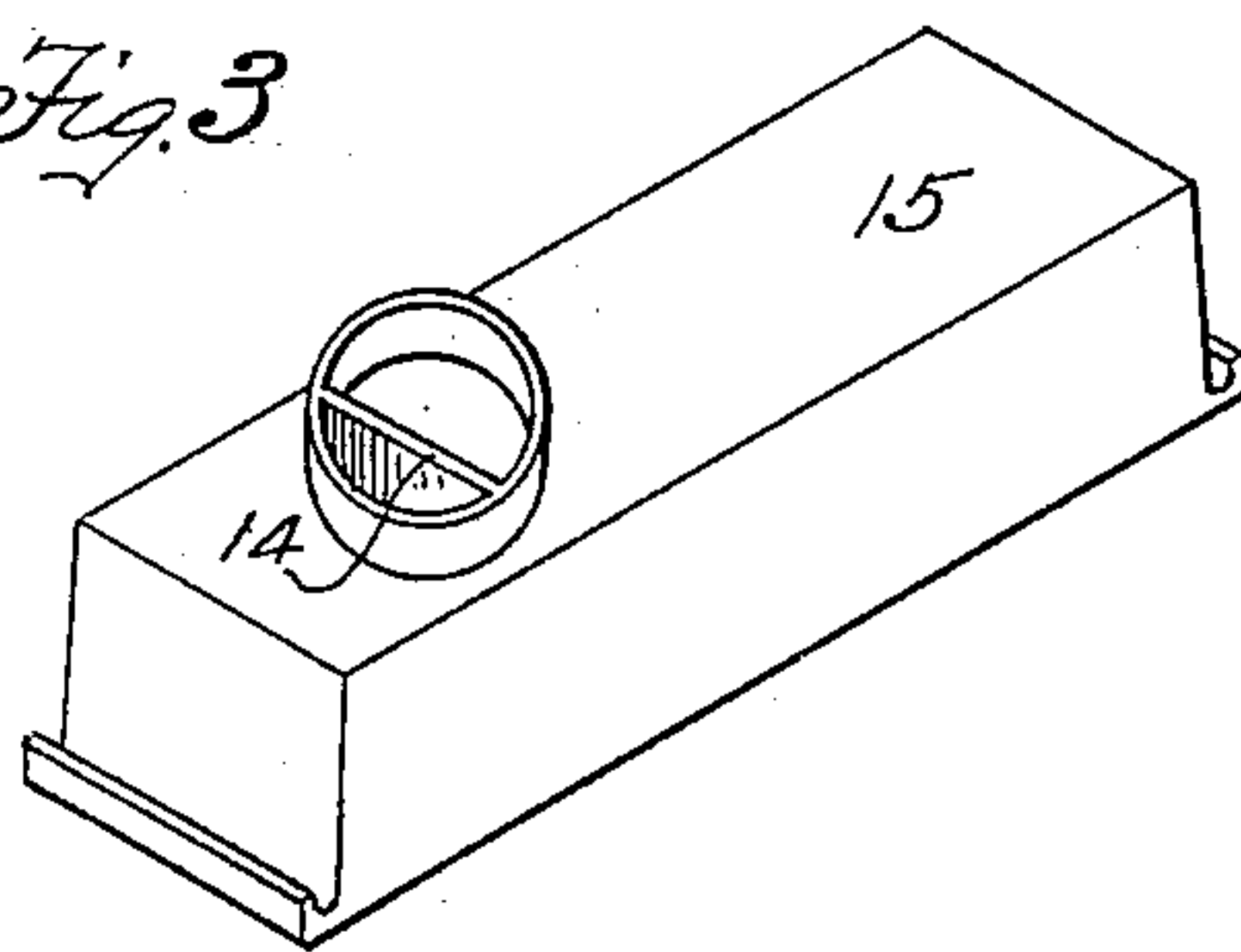


Fig. 3



WITNESSES:

*Wm. G. Cate*  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

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## FURNACE.

No. 819,700.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed March 26, 1904. Serial No. 200,150.

*To all whom it may concern:*

Be it known that I, ALBERT C. CALKINS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Furnaces; 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 appertains to make and use the same.

This invention relates to furnaces, and particularly to that class of furnaces known as "assayers' " furnaces; and some of the objects of the invention are to provide a furnace of this general character which will be simple and cheap in construction and at the same time efficient for the purpose intended.

Another object of the invention is to provide a furnace so constructed that the heat from the products of combustion can be utilized without interfering with or impairing the efficiency of the furnace.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts substantially as more fully described in the following specification and as illustrated in the accompanying drawings, forming part of this application, in which—

Figure 1 is a longitudinal central sectional view of the furnace embodying this invention. Fig. 2 is a front elevational view of the furnace, and Fig. 3 is an enlarged detail perspective view of a form of the bonnet employed.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings, and particularly to the construction illustrated in Figs. 1 and 2 thereof, the reference character 1 designates a furnace structure which may be of any desired size or construction and which may be formed of any suitable material and is preferably partially inclosed with a metallic sheath or casing.

The furnace is desirably constructed of side walls 2, desirably retained in position by a metallic or other sheath or casing 3 and with a removable bottom 4, which may be supported or retained in position by a metal plate 5, retained by bolts or other devices 6, substantially as shown.

Removable blocks or plugs 7 may close openings in the walls of the furnace, which may also be provided with an arched dome or roof 8 to receive a muffle 9, and a removable block or plug 10 may be employed to close the opening in said dome or to be moved outwardly to permit the ingress of air to the muffle through the opening 11, which latter may be provided with an opening or port 12 in the opposite end thereof, from which the air may pass into a vertical back flue 13 and thence into a flue-chamber 14 in one end of the bonnet 15 into the stack or chimney 16.

An opening 17 may be formed in the walls of the furnace to receive an ignition device 18, of any suitable construction, by means of which the heating medium is introduced into the lower portion of the furnace and caused to ascend around the muffle and pass upwardly into the bonnet 15, thereby heating the same, and thence passing out through the stack or chimney 15, essentially as indicated by arrows in Fig. 1 of the drawings.

By reason of the construction of the bonnet 15 in the manner herein shown a large area is subjected to the action of the escaping products of combustion, which will heat the bonnet to such an extent that the same may be utilized for heating or warming other articles without impairing or interfering with the action or efficiency of the furnace, as will be readily understood by those skilled in the art to which this invention appertains.

The form of bonnet herein shown may be employed with a furnace of different construction from that herein shown and described, which is only typical and is employed to illustrate an application of the invention.

The operation of this invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings and the following explanation thereof. The heating medium generated or produced by or from the ignition device 18 passes into the lower portion or crucible-chamber of the furnace and rises from thence into the upper portion of the furnace, around the muffle 9, and thence into the bonnet 15, heating the latter before finally escaping into the chimney or stack 16, as will be readily understood.

I claim—

1. A furnace having an open upper portion and a vertical back flue, a metallic bonnet

over said upper portion having a flue-chamber communicating with said flue, and constructed with a flat top, whereby the bonnet receives and is heated by the escaping products of combustion for use as an auxiliary heater and means for heating the furnace.

2. A furnace having an open upper portion and a vertical back flue, a metallic bonnet removably secured over said upper portion having a flue-chamber communicating with said flue, and having a flat heating portion, whereby the bonnet receives and is heated by the

escaping products of combustion for use as an auxiliary heater and means for heating the furnace.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, county of Los Angeles, State of California, this 12th day of March, 1904.

ALBERT C. CALKINS

Witnesses:

CHARLES S. ROGERS,  
MIGNON FORD.