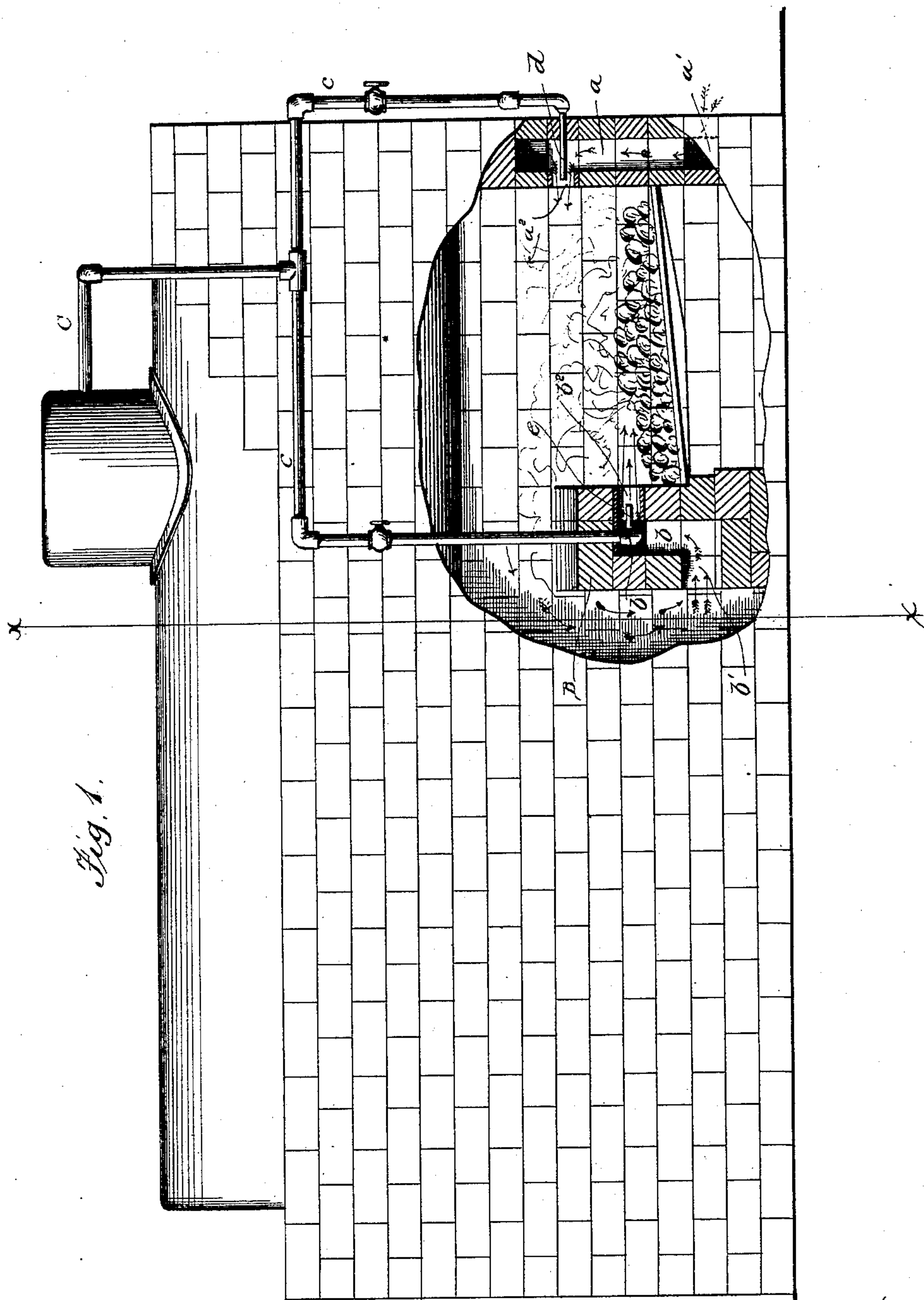


2 Sheets—Sheet 1.

No. 353,216.

Patented Nov. 23, 1886.



Attest:
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S. Edmunds.

Inventor:
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By their Attorneys,
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(No Model.)

2 Sheets—Sheet 2.

C. H. GREWCOX & F. YEITER.
FURNACE.

No. 353,216.

Patented Nov. 23, 1886.

Fig. 2.

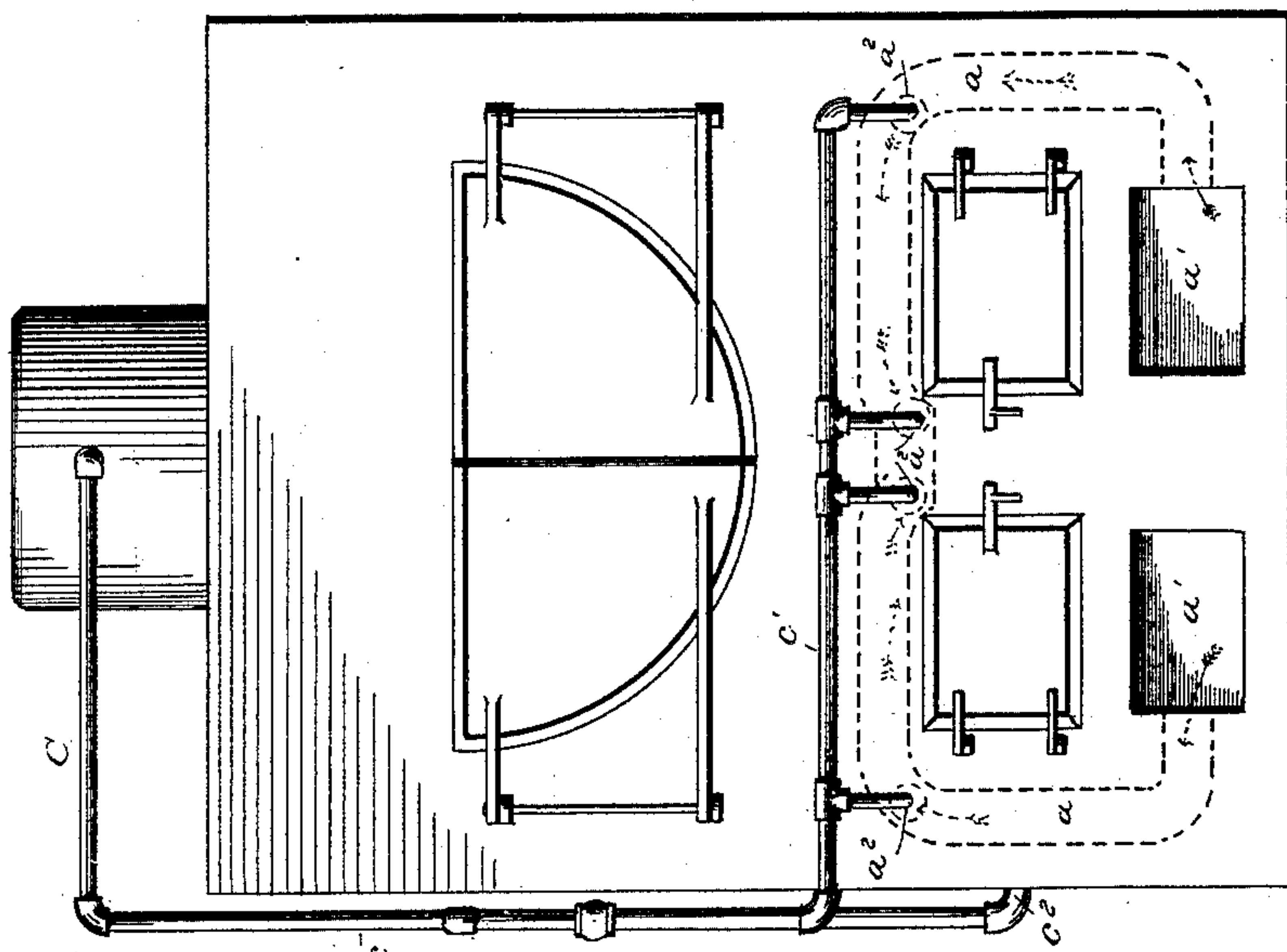
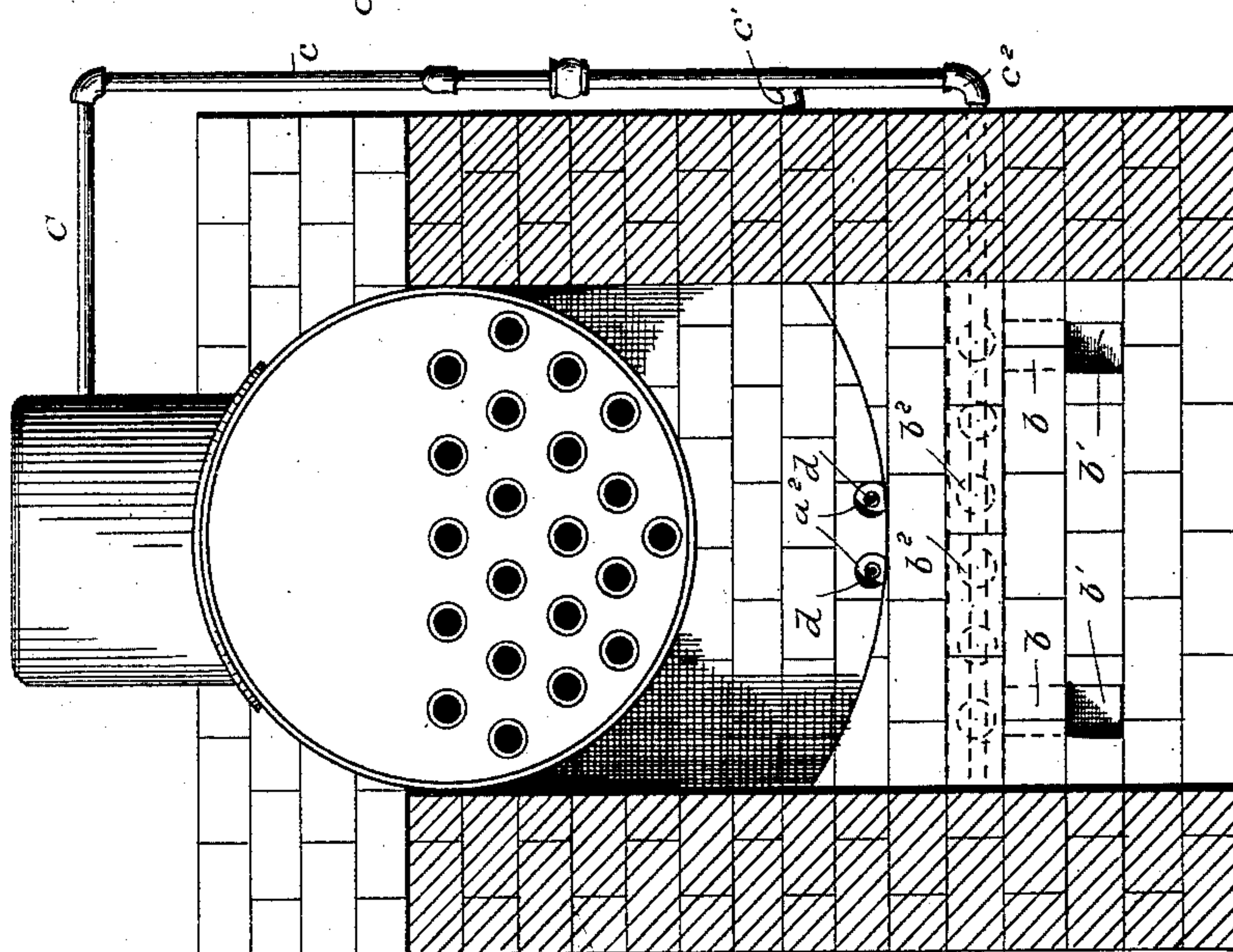


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES H. GREWCOX AND FRED YEITER, OF BRAINERD, MINNESOTA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 353,216, dated November 23, 1886.

Application filed May 18, 1886. Serial No. 202,547. (No model.)

To all whom it may concern:

Be it known that we, CHARLES H. GREWCOX and FRED YEITER, citizens of the United States, residing at Brainerd, in the county of Crow Wing and State of Minnesota, have invented certain new and useful Improvements in Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention has relation to improvements upon our improved smoke-consuming furnace for which Letters Patent were granted to us September 30, 1884, No. 305,918, the present invention having reference more particularly to the
15 appliance proper for consuming the smoke or other products of combustion; and it consists of the combination, with the furnace-wall, including the bridge-wall thereof, wherein air inlets or passages are provided, of steam-in-
20 jecting pipes arranged in different planes of elevation and adapted to inject steam into the furnace-chamber, substantially as hereinafter more fully set forth, and pointed out in the claims.

25 In the accompanying drawings, Figure 1 is a side elevation of a boiler and its furnace with our invention applied thereto, a portion of the side wall of the furnace being broken away and its front and bridge wall being shown in
30 section. Fig. 2 is a front elevation thereof, and Fig. 3 is a sectional elevation taken on the line $x x$ of Fig. 1.

In carrying out our invention we construct the front wall of the furnace with an air-pas-
35 sage, a , with its lower ends connecting with air-inlets a' a' at the lower front end of the furnace, one near each side, which passage extends up over the door-openings and connects
40 at a point about intermediately of the said door-openings and at the upper corners of said passage with the combustion-chamber by short pipes a^2 .

An air-passage, b , is provided in the bridge-wall B, which connects the inlet b' with the
45 horizontal passage, with which the short pipes b^2 , opening in the combustion-chamber, connect.

C is a steam-pipe connecting with the steam-dome of the boiler, and branching off into arms
50 $c c$, which extend down at one side of the fur-

nace, one arm connecting with a pipe, c' , extending along and continuously to the front of the furnace, and having a number of jet-pipes, d , projecting into the short pipes a^2 , while the other arm of the pipe C connects with a pipe, 55
 c^2 , extending into the horizontal portion of the passage a , and having a series of jet-pipes, e , which project into the short pipes b^2 .

It will be observed that the two series of jet-pipes $d e$ are arranged in different planes of 60 elevation, the front series, d , being preferably the higher, whereby the jets of steam issuing therefrom into the combustion-chamber will, instead of meeting, as would otherwise be the case, pass each other and set up a continuous 65 circulation of air-currents, as indicated by the numerous arrows, and thus produce a strong suction at the air-inlets both at the rear and front of the furnace, which will create an in-
70 creased draft to the fuel, to effect the thorough consumption of the smoke and other liberated products of combustion.

What we claim is—

1. In a smoke-consuming furnace, the combination, with the fire-box and front and rear 75 steam-pipes, of the front wall having an air-passage connecting with an air-inlet in said wall and with the combustion-chamber above the grate, a transverse bridge-wall having an air-passage connecting the air-space in the rear 80 of said wall with the combustion-chamber, substantially as shown and described.

2. In a smoke-consuming chamber, the combination, with a steam-pipe and a combustion-chamber having an air-passage in its front wall 85 and an air-passage in its bridge-wall connecting the space in rear of said wall with the combustion-chamber, of the two series of steam-jet pipes disposed in different planes of elevation and projecting into short pipes of said air-pas- 90 sages, which pipes open into the combustion-chamber, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES H. GREWCOX.
FRED YEITER.

Witnesses:

WILLIAM LOUIS KELLY,
WILLIAM LOUIS KELLY, Jr.