

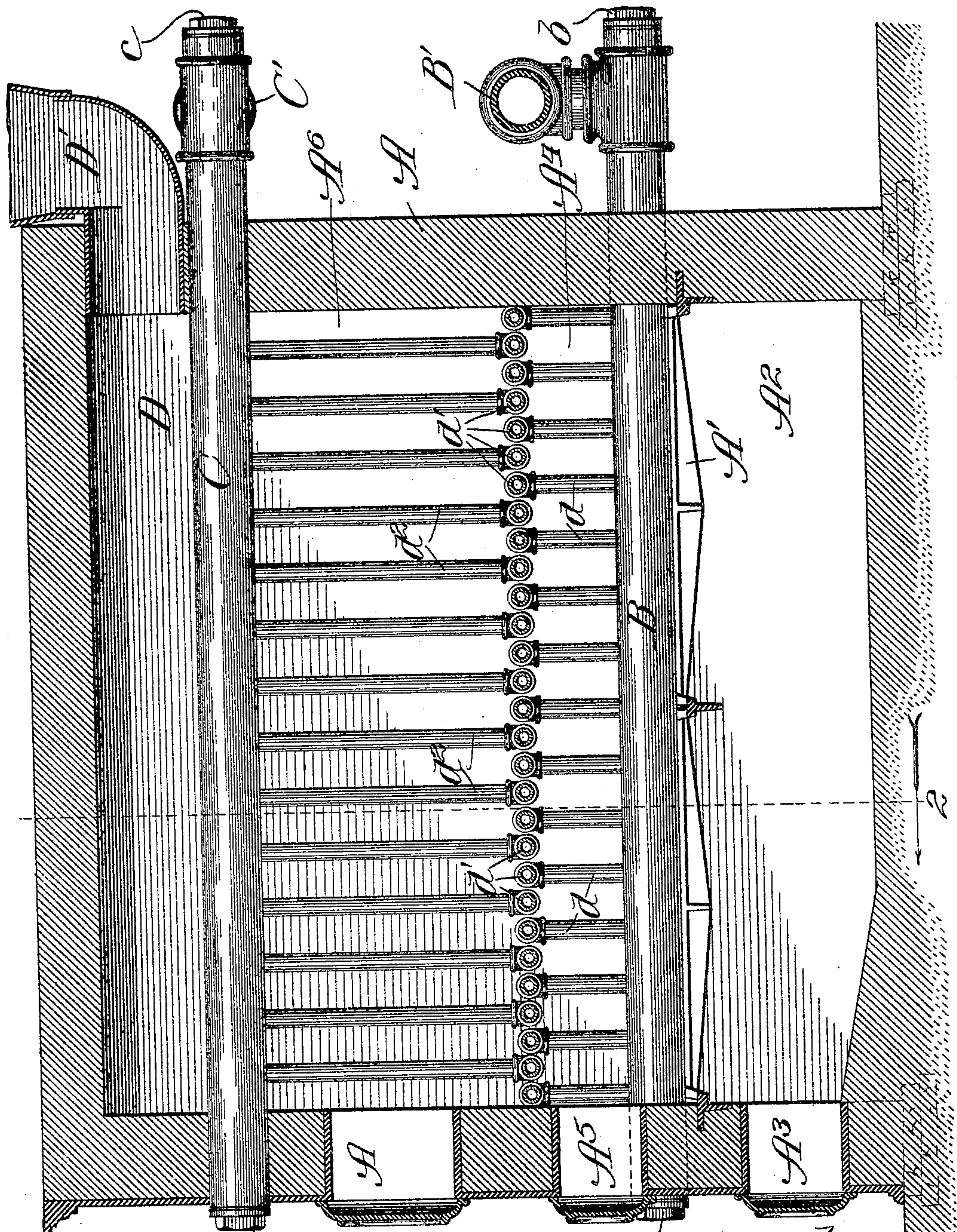
No. 816,248.

PATENTED MAR. 27, 1906.

J. J. O'SHEA.  
FURNACE.

APPLICATION FILED DEC. 16, 1905.

2 SHEETS—SHEET 1.



Witnesses:  
Ed. Gaylord.  
Harry F. Strott,

Fig. 1

Inventor:  
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Attys.



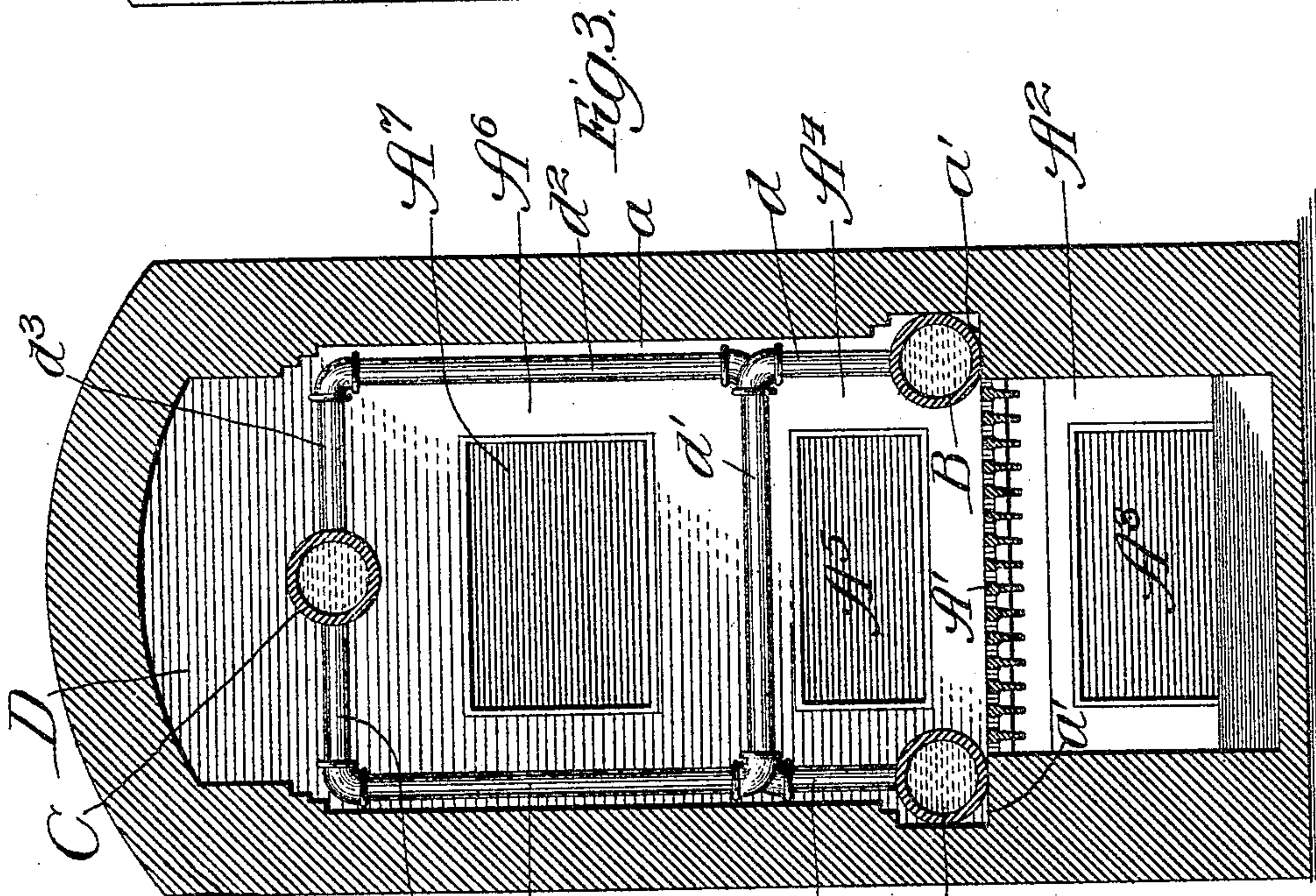
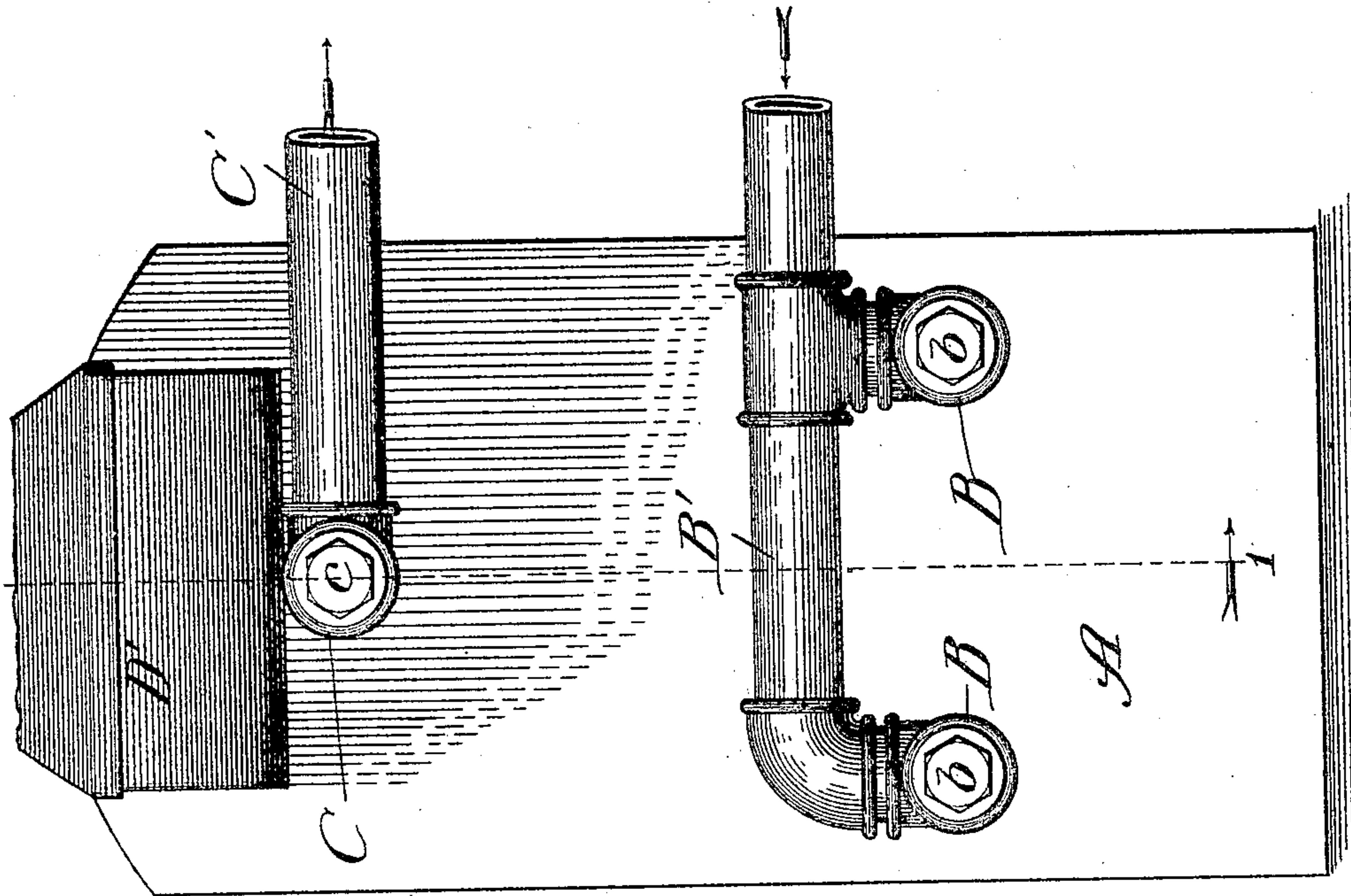
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2 SHEETS—SHEET 2.



Witnesses:  
Edw. C. Gaylord,  
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Fig. 2.

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# UNITED STATES PATENT OFFICE

JOHN J. O'SHEA, OF CHICAGO, ILLINOIS.

## FURNACE.

No. 816,248.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed December 16, 1905. Serial No. 292,110.

*To all whom it may concern:*

Be it known that I, JOHN J. O'SHEA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Furnaces, of which the following is a specification.

This invention relates particularly to improvements upon the garbage-crematory for domestic use shown in the application of John J. and Jeremiah O'Shea, Serial No. 185,611, filed December 18, 1903.

The primary object of the invention is to provide for increased heating capacity in a furnace of a given size and of the general construction shown in said application.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical longitudinal section of the improved furnace; Fig. 2, a transverse section taken as indicated at line 2 of Fig. 1, and Fig. 3 a rear end elevational view.

A represents a furnace having the usual grate  $A^1$ , ash-pit  $A^2$ , ash-pit door  $A^3$ , coal-combustion chamber  $A^4$ , charging-door  $A^5$  therefor, a garbage-combustion chamber  $A^6$ , and charging-door  $A^7$  therefor. As indicated, the grate preferably extends the full length of the furnace. The side walls of the furnace are preferably recessed interiorly at  $a$  to receive the water-tube construction without undue obstruction to the combustion-chambers. In this manner there are provided longitudinal ledges  $a'$ , extending the length of the interior of the furnace, upon which ledges are supported the members of a pair of longitudinal pipes B, whose ends project through the end walls of the furnace and are provided with removable plugs  $b$ . The pipes B communicate at one end with a transverse pipe  $B'$ , which constitutes a supply or return pipe of the water-tube system of the furnace. Extending longitudinally of the furnace at a longitudinal central plane of the same and above the cremating-chamber  $A^6$  is a pipe C, which is parallel with the pipes B and whose ends project through the end walls of the furnace and are equipped with removable plugs  $c$ . The pipe C is in communication at one end with a transverse pipe  $C'$ , located outside the furnace and constituting the outgoing or hot-water pipe of the system. Rising from the pipes B are a plurality of short tubes  $d$ , the tubes at one side of the furnace being staggered with relation to those of the other

side of the furnace. Connected with the upper end of each tube  $d$  is a horizontal tube  $d'$ , which extends across the furnace. Rising from the free end of each transverse tube  $d'$  is a vertical tube  $d^2$ , and connecting the upper ends of each tube  $d^2$  with the pipe C is a relatively short transverse horizontal tube  $d^3$ . The tube-sections are joined together at their meeting ends by elbows, as shown. The vertical tube-sections lie closely adjacent to the recessed portions of the side walls of the furnace, and the horizontal tube-sections  $b'$  form a tubular grate for the cremating-chamber. Above the pipe C is a chamber D, through which the products of combustion pass to the smoke-stack  $D'$ , which is connected with the rear end of the furnace.

The construction and arrangement are such that the flame from the combustion-chamber  $A^5$  must practically all pass through the chamber  $A^6$  and through any garbage which may be spread upon the tubular grate of said chamber. The pipe C should be of ample dimensions to carry the water passing through the tube which connects said pipe with the pipes D. It will be understood that the pipes B and the pipe C commonly connect with a tank of desired storage capacity, so that a supply of hot water is always on hand when the furnace is in operation. The storage-tank (not shown) may be supported at the side of the furnace in the usual manner.

As is well understood, in a furnace of this character much sediment is deposited in the pipes in the operation of the furnace, and the object of providing removable plugs at the ends of the furnace is to provide for the ready removal of the sediment from the system. In case a water-tube is burned out a new one may be readily substituted in its place by removing a few bricks from the wall at the elbows.

The construction is a very durable one and provides against sagging of the tubes under ordinary conditions.

Changes in minor details of construction within the spirit of my invention may be made. Hence no undue limitation should be understood from the foregoing detailed description.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a furnace of the character described, the combination of a combustion-chamber provided with a grate, substantially horizon-



tal pipes arranged along opposite sides of the lower portion of said combustion-chamber, series of tubes rising from said pipes within said combustion-chamber, the tubes at one side being staggered with relation to the tubes of the other side, horizontal tubes connected with the free ends of said first-named tubes and extending across the furnace, a cremating-chamber above said horizontal tubes, a longitudinal pipe at the upper portion of said cremating-chamber, and tubes connecting the free ends of said horizontal tubes with said last-named pipe, for the purpose set forth.

2. In a furnace of the character described, the combination of a combustion-chamber provided with a grate and adjacent to said grate with ledges, substantially horizontal water-pipes located above said ledges, a superposed combustion-chamber, a longitudinal pipe located above the central portion of said second-named combustion-chamber, and tubes connecting said lower pipes with said upper pipe, each tube comprising a relatively short vertical section, a horizontal section extending from the upper end thereof transversely across the furnace between said combustion-chambers, a vertical section rising from the free end of said last-named section, and a relatively short horizontal section connecting the free end of said last-named vertical section with said upper pipe, the first-named horizontal sections constituting a grate for the cremating-chamber, substantially as and for the purpose set forth.

3. In a furnace of the character described, the combination of a combustion-chamber provided with a suitable grate and with the charging-door, substantially horizontal water-pipes arranged along opposite sides of the lower portion of said combustion-chamber, tube-sections rising from said pipes, the tube-sections at one side of the furnace being staggered with relation to those at the other side thereof, horizontal tube-sections, elbows connecting one end of each of said horizontal tube-sections with the adjacent end of a vertical tube-section, a superposed combustion-chamber, vertical tube-sections at the sides of said second-named combustion-chamber, elbows connecting the lower ends of said last-named tube-sections with the free ends of said horizontal tube-sections, elbows connected with the upper ends of said last-named vertical tube-sections, a longitudinal pipe above the central portion of said second-named combustion-chamber, relatively short horizontal tube-sections connecting said last-named elbows with said last-named pipe, a charging-door for said second-named combustion-chamber at one end of the furnace and a smoke-stack connected with the opposite end of said furnace above said last-named pipe, substantially as and for the purpose set forth.

JOHN J. O'SHEA.

In presence of—  
L. HEISLAR,  
J. H. LANDES.