

(No Model.)

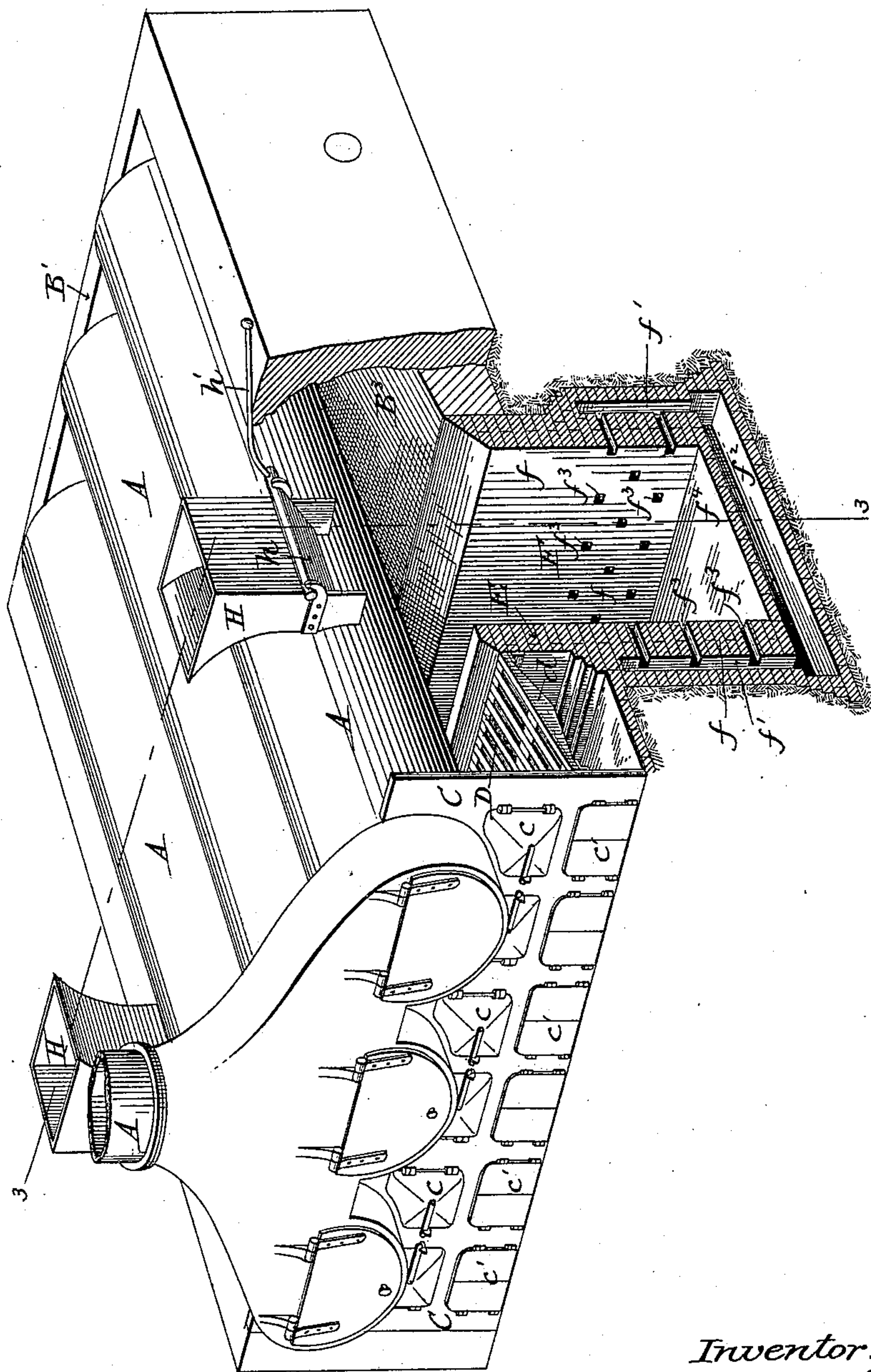
2 Sheets—Sheet 1.

W. S. WALKER.  
STEAM BOILER FURNACE.

No. 426,694.

Patented Apr. 29, 1890.

Fig. 1



Attest:

Baltus D. Long  
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Inventor:

Warren Stone Walker

by his Attorneys

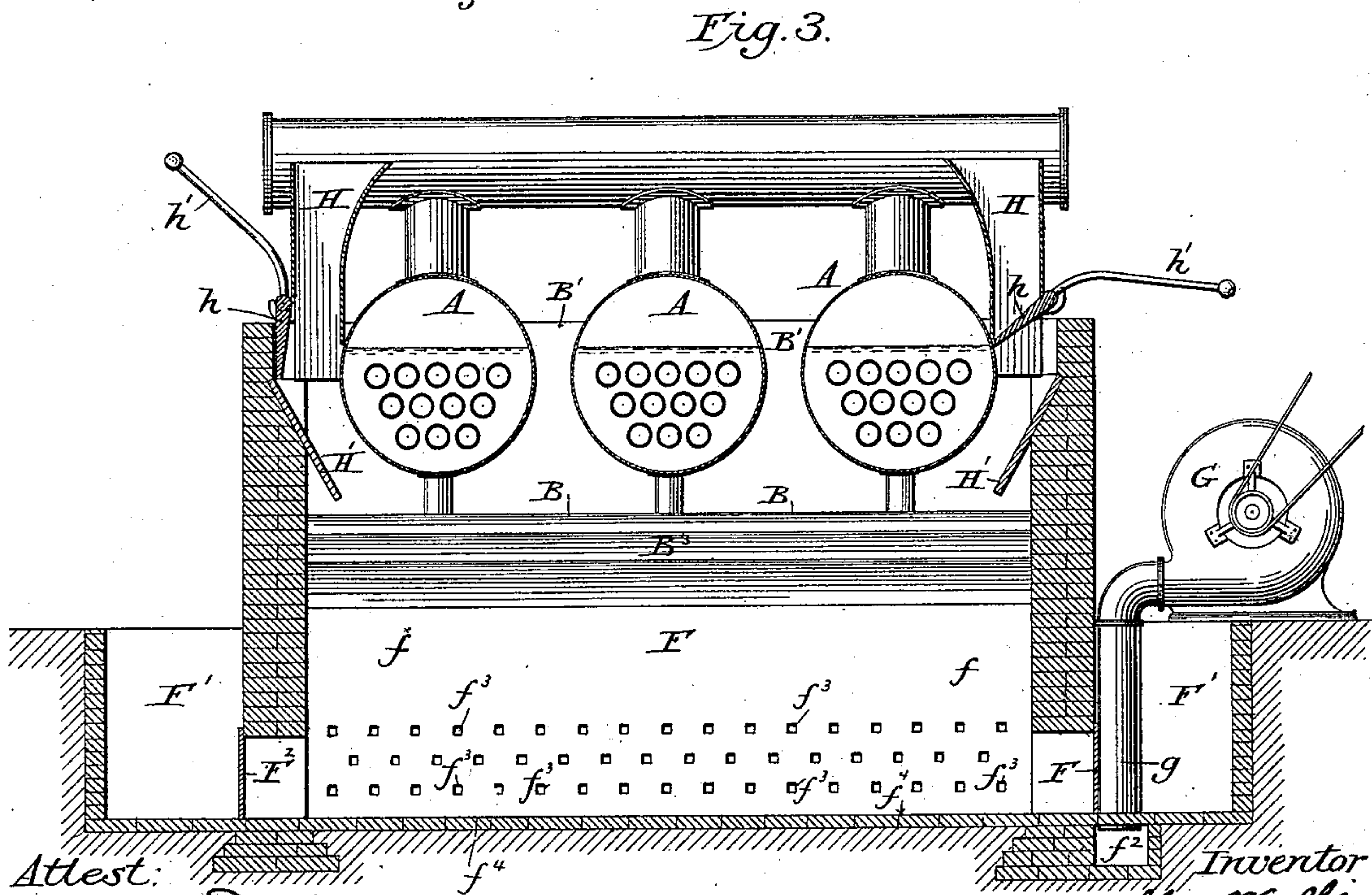
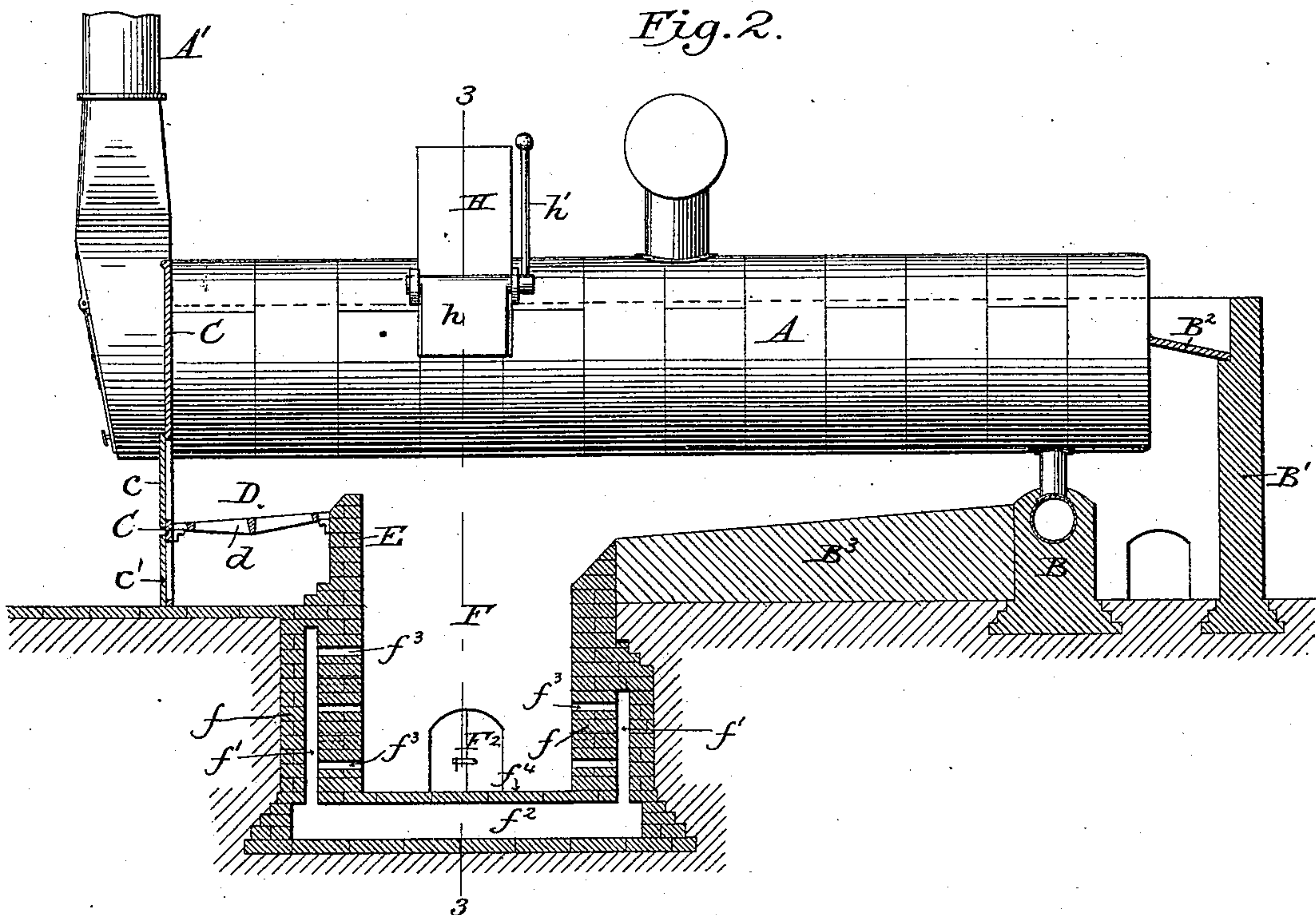
Baldwin Dandeen & Wright



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Inventor  
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# UNITED STATES PATENT OFFICE.

WARREN STONE WALKER, OF MANCHAC, LOUISIANA.

## STEAM-BOILER FURNACE.

SPECIFICATION forming part of Letters Patent No. 426,694, dated April 29, 1890.

Application filed February 4, 1890. Serial No. 339,153. (No model.)

*To all whom it may concern:*

Be it known that I, WARREN STONE WALKER, a citizen of the United States, residing at Manchac, in the parish of East Baton Rouge and State of Louisiana, have invented certain new and useful Improvements in Steam-Boiler Furnaces, of which the following is a specification.

My invention relates particularly to that class of steam-boiler furnaces known as "bagasse-furnaces," in which cane or other wet fuel is burned for heating boilers to generate steam.

The primary object of my invention is to combine a furnace burning bagasse with a furnace burning ordinary fuel, such as wood and coal.

In carrying out my invention I provide a furnace with grate-bars at the front end of the boilers, and immediately in rear thereof provide a bagasse-furnace, which is preferably constructed mainly underground, so that a bagasse-burner may be added to a furnace of ordinary construction without materially altering the boiler-setting. Such an organization possesses material advantages. Greater heating-surface is afforded, the fires may be regulated with greater facility, and should the supply of bagasse fail or be stopped for any reason the boilers may be kept heated by the fire in the front or ordinary grate-bar furnace.

Other advantages will be apparent from the description which follows.

The details of construction and the subject-matter claimed are hereinafter designated.

In the accompanying drawings, Figure 1 is a perspective view, partly in section, of my improved furnace. Fig. 2 is a vertical central longitudinal section of the same, and Fig. 3 is a transverse section on the line 3 3 of Figs. 1 and 2.

The boilers A may be of ordinary construction, arranged horizontally, mounted at their rear ends in masonry B, as usual, and at their front ends rest on an ordinary metallic furnace-front C, provided with fire-doors *c* and ash-doors *c'*. A wall B' is erected in rear of the boilers, and a top plate B<sup>2</sup> extends from this wall to the boilers to direct the products of combustion through the boiler-tubes to the

smoke-stack A'. The grate-bars *d* of the front or grate-bar furnace D are supported above the ground-level at their front ends by the fire-front C and at their rear ends on a bridge-wall E. The bagasse-burner F is arranged immediately in rear of the front furnace D, and is principally below ground, being formed in a pit F', and constructed of fire-brick or tiles and provided with blast apparatus to support combustion.

As shown, the furnace extends transversely beneath the boilers from one side to the other, and is provided with walls on each side at both ends to confine the products of combustion and cause them to traverse the under sides of the boilers, pass through the boiler-tubes, and out through the smoke-stack. The opposite side walls *f* are each formed with a vertical chamber *f'*, which communicates with an air-duct *f*<sup>2</sup> at the bottom, which is in turn connected to a blast-pipe *g*, leading from a blower G. Blast-openings or tuyeres *f*<sup>3</sup> extend from the chambers *f'* to the interior of the furnace F, and air from the blower G may be forced through the pipe *g*, the air-duct *f*<sup>2</sup>, chambers *f'*, and tuyeres *f*<sup>3</sup> into the furnace to support combustion.

At each end the furnace F is provided with ash-doors F<sup>2</sup> on a level with the bottom *f*<sup>4</sup>, and these doors open into the pit F'.

The walls of the furnace and the tuyeres are preferably constructed of fire-brick or tiles, as I find that they are more durable, less liable to get out of order, and less expensive.

The space between the rear wall of the furnace and the wall B is filled with masonry B<sup>3</sup>, as usual.

Bagasse is fed into the furnace F through hoppers H, located above and between the outside boilers and the walls of the furnace.

The hoppers are provided at their lower ends with gates *h*, having handles *h'*, and they deliver the bagasse to inwardly-inclined plates or tiles H', which project the fuel toward the middle of the furnace, thus leaving the blast-openings free and enabling the blast to act more effectively on the burning fuel. Where a larger number of boilers is employed hoppers may be provided to deliver bagasse between some of the boilers.

In starting, the furnace-fire may be first



built in the front grate-bar furnace D, and then some of the burning fuel pushed over into the furnace F. Bagasse may then be fed through the hoppers H and will be immediately ignited, and the water in the boilers will quickly be raised to the boiling-point. Should the supply of bagasse fail or be discontinued at any time, (as at meal-time,) the boilers may be kept heated by the fire in the front furnace.

10 When it becomes necessary to clean out the bagasse-furnace F, the supply of bagasse may be stopped and the ashes drawn out through the ash-doors. While this is going on the boilers may still be kept heated by the front grate-bar furnace, and the fire in this furnace may be regulated at will by the front doors and the usual dampers and draft appliances. As the bagasse is fed into the furnace F it is intercepted by the products of combustion from the furnace D, and is partially dried and heated before falling into the furnace F.

I claim as of my own invention—

1. The combination, substantially as here-  
inbefore set forth, of the steam-boilers, the  
25 fire-front arranged immediately below the front ends of the boilers, the grate-bar furnace immediately in rear of the fire-front, the bridge-wall, the bagasse-furnace immediately in rear of the bridge-wall, and the boiler  
30 setting and walls.

2. The combination, substantially as here-  
inbefore set forth, of the steam-boilers, the  
fire-front arranged immediately below the

front ends of the boilers, the grate-bar furnace immediately in rear of the fire-front and  
35 above the ground-level, the bridge-wall, the bagasse-furnace immediately in rear of the bridge-wall and below the ground-level, and the ash-doors opening into a pit at each end of the furnace.

3. The combination, substantially as here-  
inbefore set forth, of the steam-boilers, the  
front grate-bar furnace above the ground-  
level and beneath the front ends of the boilers,  
the bagasse-furnace in rear of the grate-bar  
45 furnace and below the ground-level, the blower, the air-duct connected therewith, the air-chambers in the walls of the furnace, and blast-openings extending from the air-chambers into the furnace through walls formed  
50 of fire-tiles.

4. The combination, substantially as here-  
inbefore set forth, of the boiler-setting, steam-  
boilers mounted therein, the bagasse-furnace  
below the boilers, the hoppers above them,  
55 and the plates or tiles secured to the boiler-setting below the hoppers, inclined inwardly toward the middle of the furnace, and having their lower ends terminating below the boilers.

In testimony whereof I have hereunto sub-  
60 scribed my name.

WARREN STONE WALKER.

Witnesses:

T. J. KEMAN,  
GEO. HENDERSON.