(No Model.) 2 Sheets—Sheet 1.

J. FEREDAY.

SMOKE CONSUMER.

No. 491,879. Patented Feb. 14, 1893.

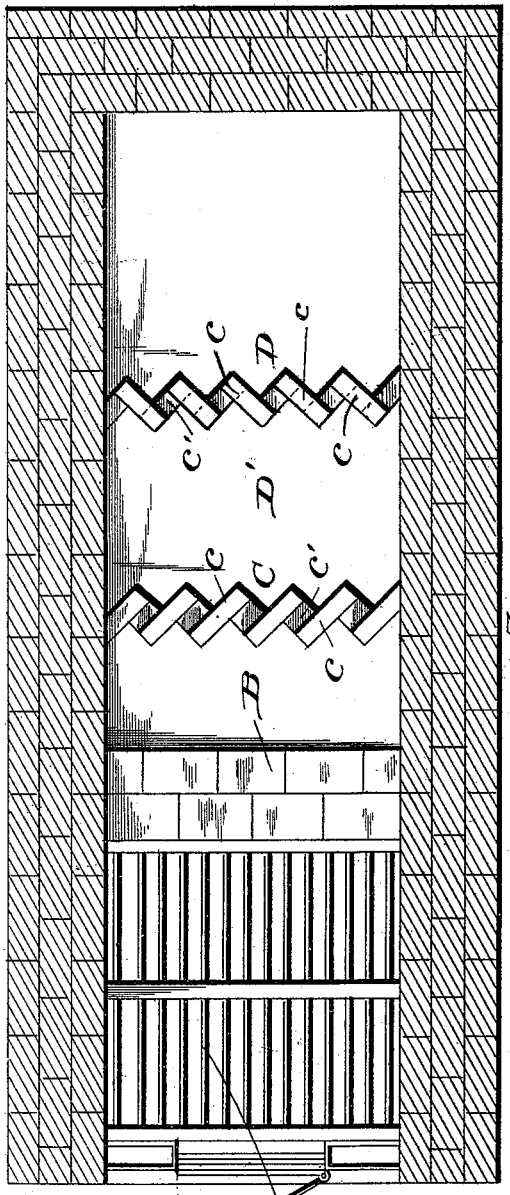

Fig. 1.

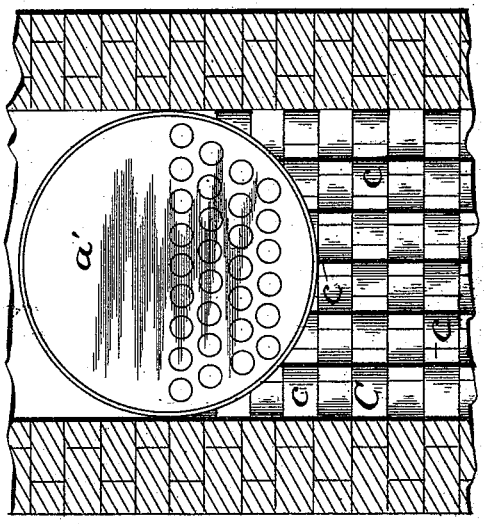

Fig. 2.

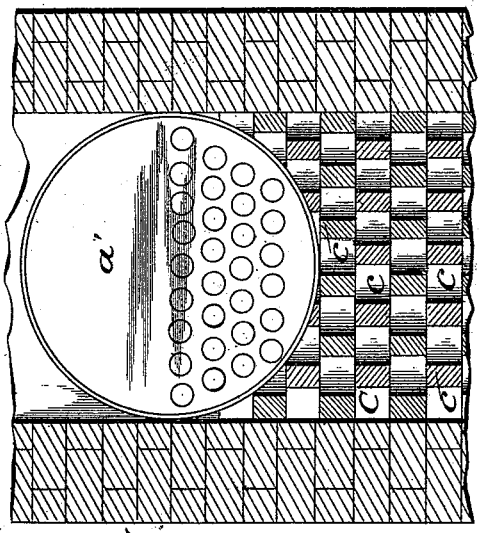

Fig. 3.

A

Witnesses:
William O. Belt.

Inventor:
John Fereday.
By Edson Bros,
Atty's.

(No Model.) 2 Sheets—Sheet 2.

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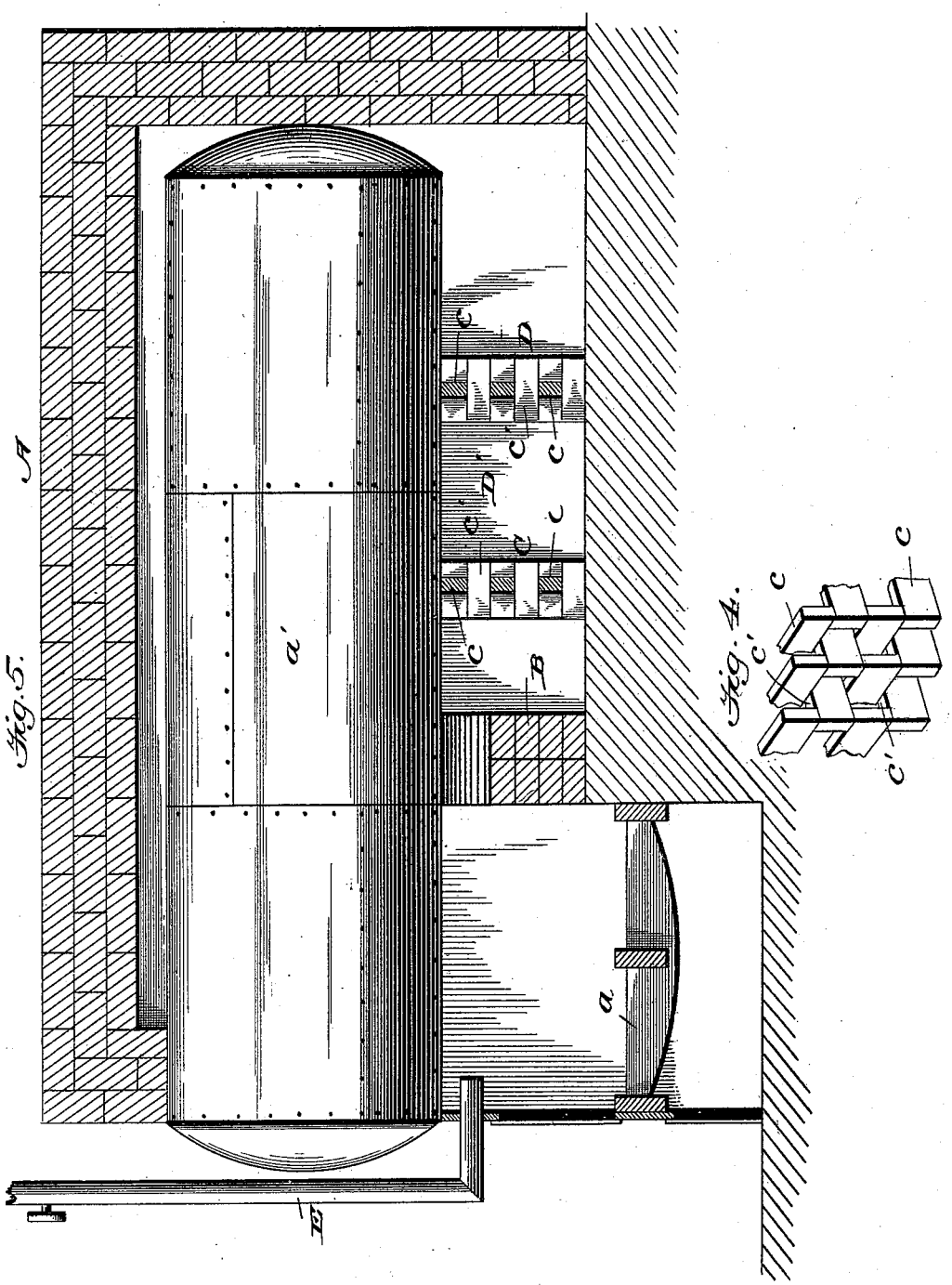

Fig. 5.

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN FEREDAY, OF LOGAN CITY, UTAH TERRITORY.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 491,879, dated February 14, 1893.

Application filed July 5, 1892. Serial No. 438,993. (No model.)

To all whom it may concern:

Be it known that I, JOHN FEREDAY, a citizen of the United States, and a resident of Logan city, in the county of Cache, Utah Territory, have invented certain new and useful Improvements in Smoke-Consumers; 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.

My invention relates to improvements in smoke consuming furnaces and its object is to provide a simple and effective means for consuming the smoke of furnaces.

With these ends in view my invention consists primarily of two sets of checker-work of bricks laid parallel in a slanting direction, at an angle to the boiler walls, and spaced at suitable intervals apart, the bricks of each successive layer being inclined in a reverse direction to those of the next preceding layer so that the bricks of each alternate layer will be inclined in the same direction.

My invention consists further of certain constructions and arrangement of parts which will be hereinafter fully described and claimed.

To enable others to more readily understand my invention I have illustrated the same in the accompanying drawings, in which,

Figure 1 is a horizontal sectional view of a furnace with the boiler removed and showing the construction of my improved smoke consumer. Fig. 2 is a front elevation of one of the sets of checker work. Fig. 3 is a vertical sectional view through said checker work. Fig. 4 is an enlarged detail view of the checker-work, and Fig. 5 is a longitudinal sectional view through the furnace and showing the exhaust steam pipe.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the walls of the furnace having the usual grate *a* and the boiler *a'*.

It will be understood that I can adapt the consumer to old as well as new furnaces with equal efficiency.

The imperforate bridge wall B is located in rear of the fire-box and receives and supports the rear end of the grate, as is usual.

The smoke consumer in rear of the bridge wall consists of two sets of checker work C, D, constructed substantially alike with the exception that the bricks of one set are reversed with reference to the corresponding bricks in the other set, that is, that the bricks of each set of checker work in the same horizontal line will be inclined in a reverse direction.

Referring now more particularly to the construction of the checker-work, it consists of bricks *c* laid in layers from the bottom of the furnace up to and around the boiler. The bricks in each layer are parallel and inclined at an angle to the side walls A; and they are spaced at a suitable distance apart to form flame and smoke passages *c'* through which the smoke and flames from the fire box may pass into the intermediate smoke consuming chamber D' between the two sets of checker work. The bricks in each alternate layer are inclined in the same direction and the passages *c'* in each layer will be inclined in a reverse direction to those in the next adjacent layer. By this construction of the checker-work the narrow passages *c'* will be inclined in a parallel direction throughout each layer, and the passages of each adjacent layer will be inclined in a reverse direction. When the smoke and flame pass through these inclined passages, they will not go through in a straight line, but will impinge against the walls of said passages and be reflected within the same until their impetus is broken and the tendency will be to collect in the smoke consuming chamber D' where the intense heat and flame will thoroughly consume all the carbon of the smoke.

The peculiar arrangement of the bricks and smoke passages breaks the force of the draft from the fire box and when the smoke has entered the chamber D' it will remain there until consumed by the flame.

E designates a pipe which has one end connected with the exhaust of the engine and its other end projects into the fire box, above the fire bed therein. This pipe conducts the waste or exhaust steam into the fire box where it is discharged into the smoke and assists in consuming the same. The discharge of the steam in the fire-box also assists in creating a draft and causes the unconsumed smoke to pass

rapidly back into the smoke consuming chamber D′.

In the above description and accompanying drawings, I have described and illustrated my preferred construction, but I am aware that changes in the form and proportion of parts and details of construction of the devices herein shown and described as an embodiment of my invention, may be made without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of the same.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a smoke consuming furnace, the combination with a boiler, a grate chamber, and a bridge-wall, of two sets of checker-work situated in rear of the bridge-wall and spaced relatively to each other, thereby forming an intermediate chamber between said checker-work, the bricks of each set of checker-work being set in inclined positions to a right line drawn longitudinally through the furnace and the bricks of one set of checker-work being arranged in reverse positions to the corresponding horizontal layer of bricks in the other checker-work.

2. A smoke consuming furnace, as described, comprising the two sets of checker work arranged beneath the boiler and at a suitable distance apart to form the consuming chamber D′, said checker-work consisting of bricks laid parallel in layers inclined at an angle to the boiler walls and spaced apart to form passages c', the bricks in each adjacent layer being inclined reversely with relation to each other, and the bricks of both sets of checker-work in the same horizontal plane being inclined reversely with relation to each other, substantially as described.

3. In a smoke consuming furnace, the combination with the grate and bridge wall, of the two vertical walls in rear of the bridge wall and spaced to form the intermediate chamber D′, each of said vertical walls having transverse inclined smoke and flame passages c' which lie in reverse positions to the corresponding flame passages in the same horizontal line in the adjacent wall, and a steam pipe which discharges into the combustion chamber above the fire bed therein, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN FEREDAY.

Witnesses:
R. C. EASTON,
J. E. PRICE.