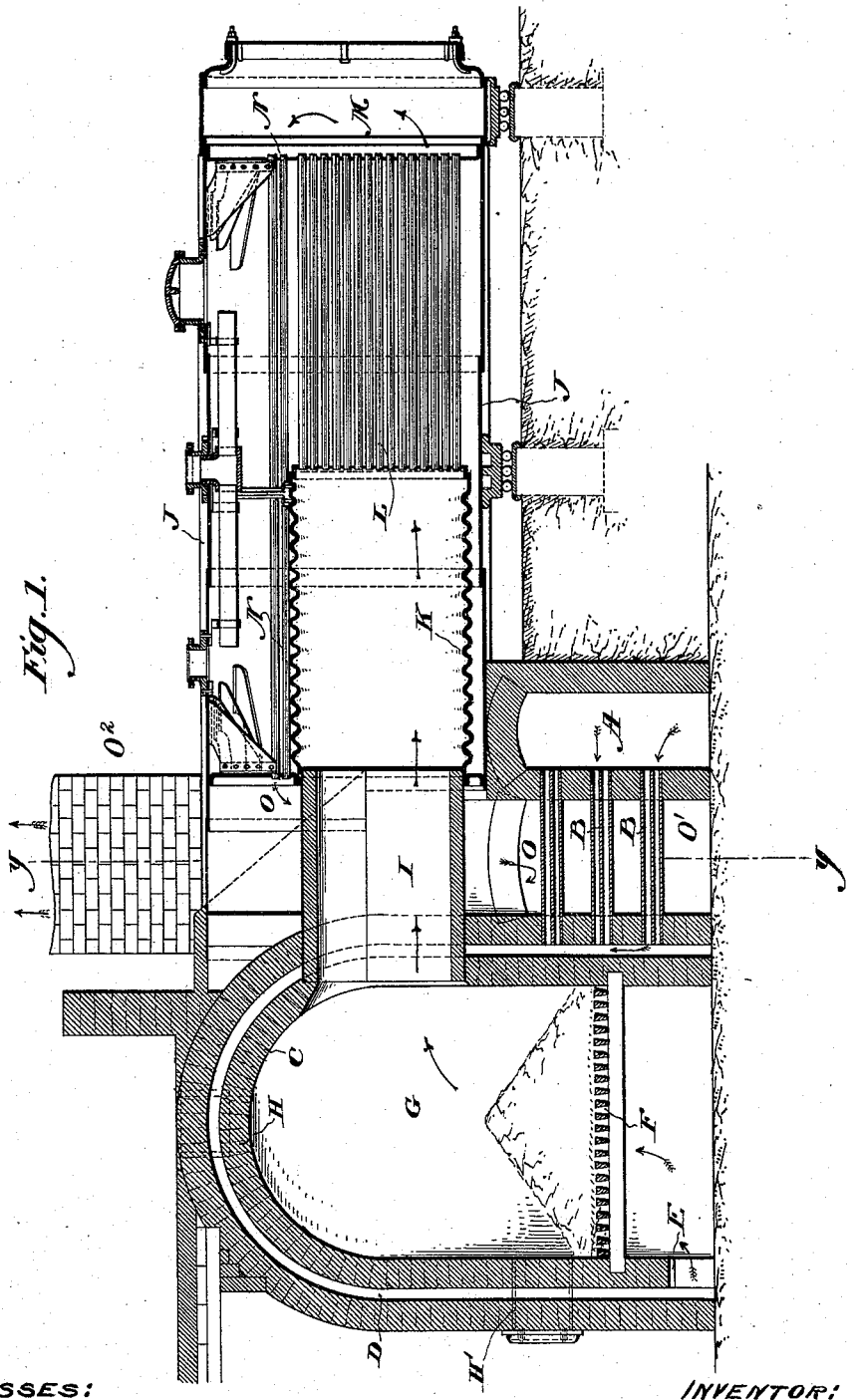
(No Model.) 2 Sheets—Sheet 1.

G. S. STRONG.

REGENERATIVE BOILER SETTING.

No. 522,331. Patented July 3, 1894.

Fig. 1.



WITNESSES:
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(No Model.) 2 Sheets—Sheet 2.

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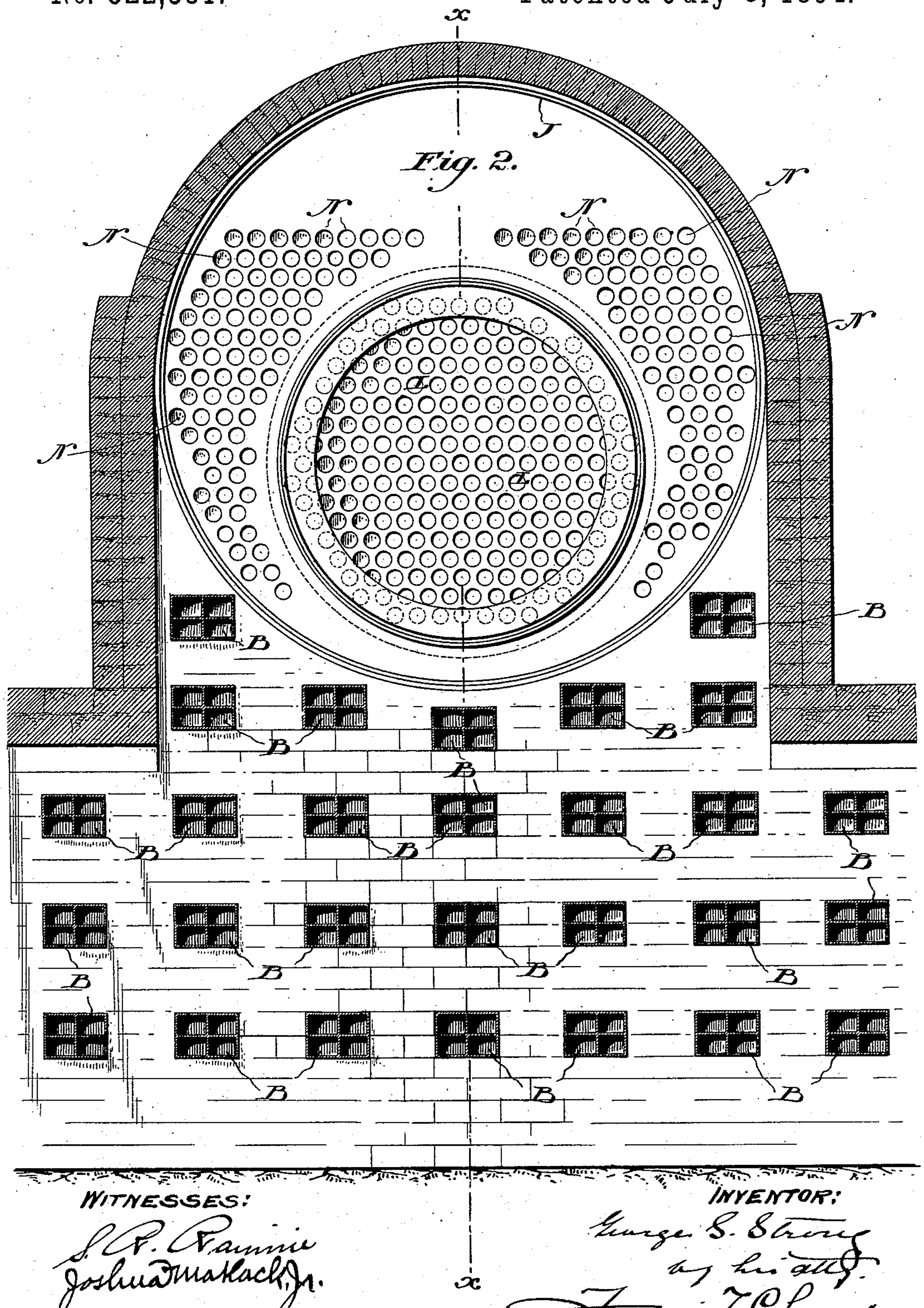

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE S. STRONG, OF NEW YORK, N. Y., ASSIGNOR TO JAMES N. GAMBLE, OF CINCINNATI, OHIO.

REGENERATIVE-BOILER SETTING.

SPECIFICATION forming part of Letters Patent No. 522,331, dated July 3, 1894.

Application filed May 4, 1891. Serial No. 391,472. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. STRONG, of the city and county of New York, State of New York, have invented a certain new and useful Regenerative-Boiler Setting, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a regenerative boiler-setting or furnace especially designed for burning waste products, as garbage, &c., for which purpose a high temperature of the furnace is essential.

My invention will be best understood as described in connection with the drawings in which it is illustrated and in which—

Figure 1 is a central longitudinal section taken on the line *x x* of Fig. 2; and Fig. 2 a cross-section on an enlarged scale taken on the line *y y* of Fig. 1.

A is an air tunnel into which air is forced by a blower; from the tunnel A iron air boxes B B, &c., lead through a smoke passage O into a flue D which flue extends up one side over the top and down the other side of a large arched fire-brick chamber G which is the furnace chamber of the boiler-setting. The passage D leads into the lower part or ash-pit of the chamber G at E and near the bottom of the chamber grate-bars F extend across forming a platform upon which the fuel or refuse matter is supported; this refuse matter is introduced into the chamber G through passages H formed through the top of the arch and is piled up on the grate platform F in a pyramid as indicated in the drawings. Fuel may also be introduced through side openings H' though I provide such openings principally for the introduction of fire-irons when desirable and not for the introduction of fuel.

I is a take-off passage leading from the chamber G as shown and passing through the smoke passage O.

J is the boiler which is provided with a corrugated combustion chamber K communicating with the passage I and from a tube sheet from the end of which tubes L lead through the boiler to a smoke box M from which other tubes N lead back through the boiler to the smoke passage O, said smoke passage, as already explained, being traversed by the passage I and the iron air boxes B B, &c. From the passage O the smoke passes out through the outlet passage O' into a suitable stack O^2.

The large fire-brick chamber G with its arched top is maintained at a very high temperature the fusion of the bricks being prevented by the passage of air through the inclosing flue C and the heat thus abstracted from the walls and roof of the chamber being returned to the chamber by the air-blast entering it through passage E. The material fed through the openings H takes naturally the pyramidical form shown which is best adapted to receive heat from the walls and top of the chamber G, this reflected heat greatly aiding the heated air-blast in maintaining a high degree of combustion. Besides the heat which the air-blast derives from the walls of the chamber G it is also heated by passing through the boxes B in the smoke passage the burning gases driven off from the fuel in chamber G passing through the flue in the combustion chamber K of the boiler and thence through the boiler flues to the smoke passage O; and it will be seen that by the construction illustrated abundant provision is made for heating the water of the boiler while at the same time the fire chamber G is maintained at the highest possible temperature.

The construction of the boiler shown in connection with my regenerative boiler setting is, I believe, best adapted for the use; but except where specifically limited in the claims it will be understood that I do not mean to confine myself to the use of any particular construction or kind of boiler in connection with my boiler-setting.

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

1. A boiler setting consisting of a furnace chamber G having a grate near the bottom and formed by suitable fire-brick walls, said walls having charging openings H therein, opening into the chamber G, and an air heating flue D formed in its side and top, a flue I leading from the chamber G to a boiler, an outlet passage O for the smoke, and flues B extending across the smoke passage O and opening into

the air flue D whereby air may first be heated by the smoke and hot gases escaping through the passage O and then by the heated products of combustion in the smoke chamber G before escaping into the said chamber G.

2. A boiler setting consisting of a furnace chamber G having a grate near the bottom and formed by suitable fire-brick walls, said walls having charging openings H therein opening into the chamber G, and an air heating flue D formed in its side and top and opening at E into the chamber G below the grate in said chamber, a flue I leading from the chamber G to a boiler, flues B opening into the air flue D and adapted to conduct air thereto and an outlet passage for smoke consisting of a chamber O surrounding both the flue I and the inlet air flues B all substantially as described and so that the air is first heated by the outgoing smoke and finally by the heated products of combustion in the chamber G.

GEORGE S. STRONG.

Witnesses:
LEWIS R. DICK,
JOSHUA MATLACK, Jr.