

(No Model.)

2 Sheets—Sheet 1.

G. BOLTON.
BOILER.

No. 368,645.

Patented Aug. 23, 1887.

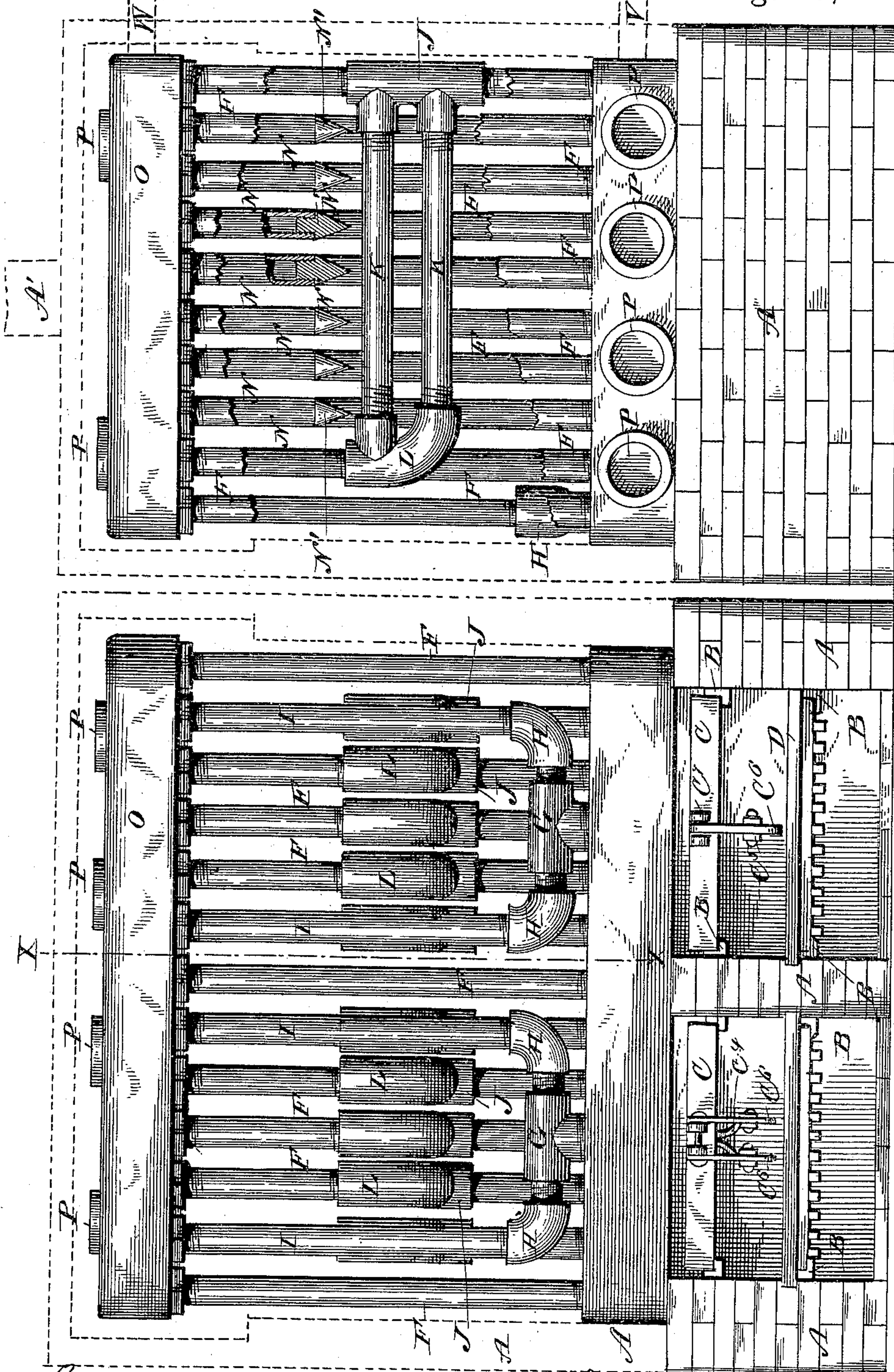


Fig. 2.

Fig. 1.

WITNESSES
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INVENTOR:
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By. E. B. Stocking Attorney.

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2 Sheets—Sheet 2.

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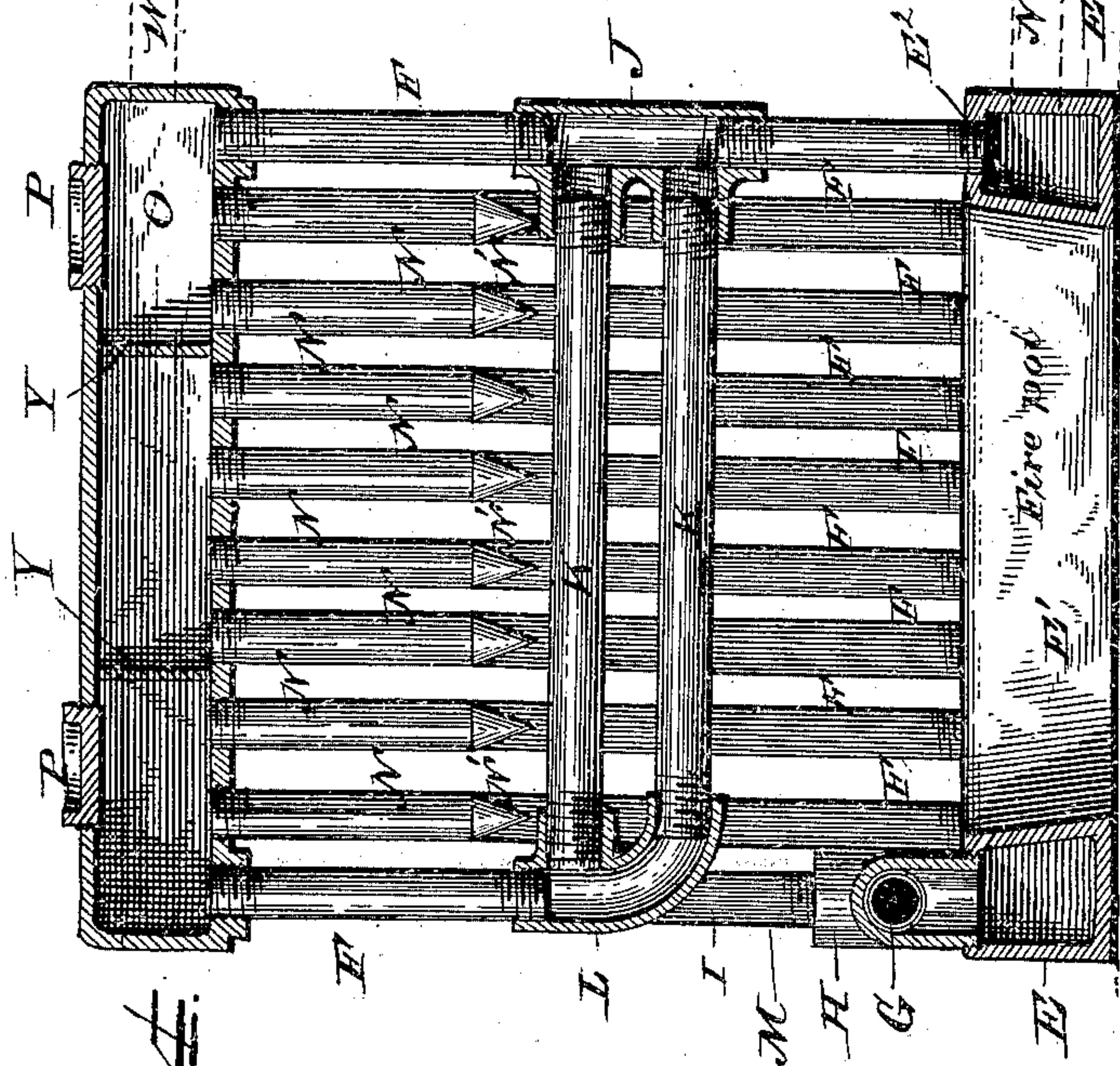


Fig. 4.

Fig. 6.

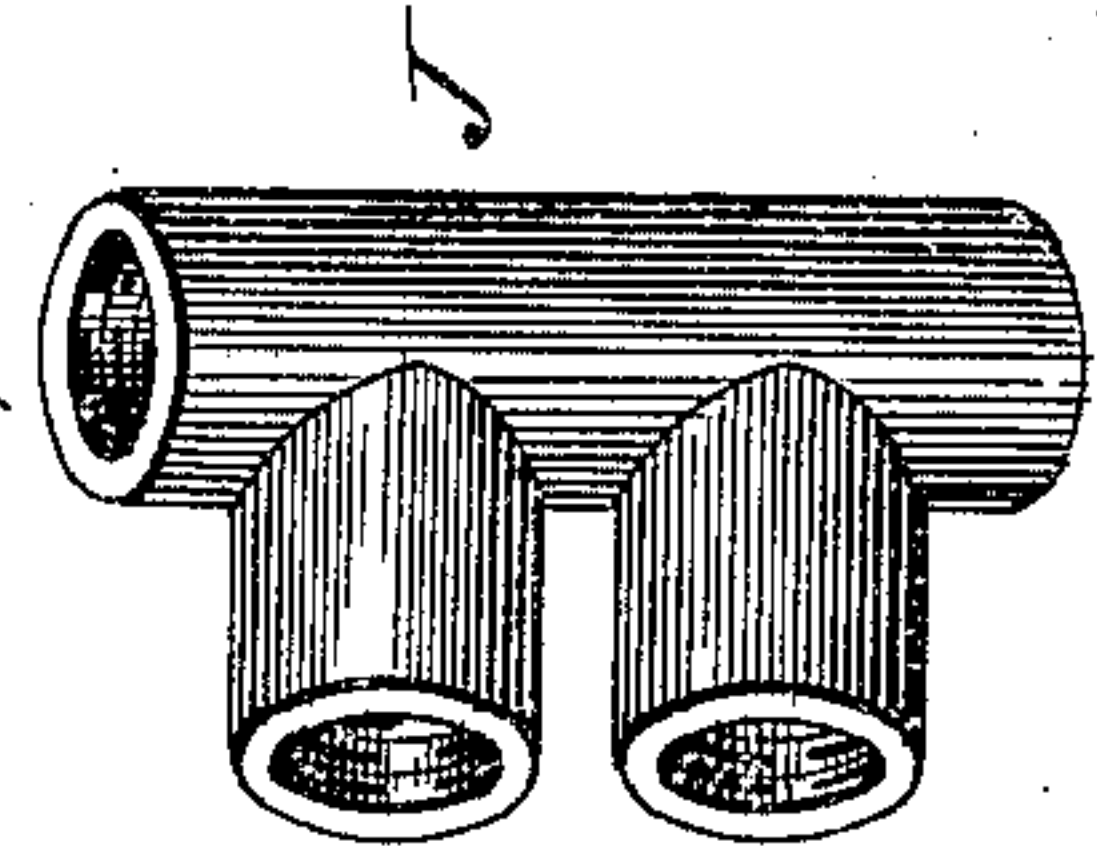


Fig. 5.

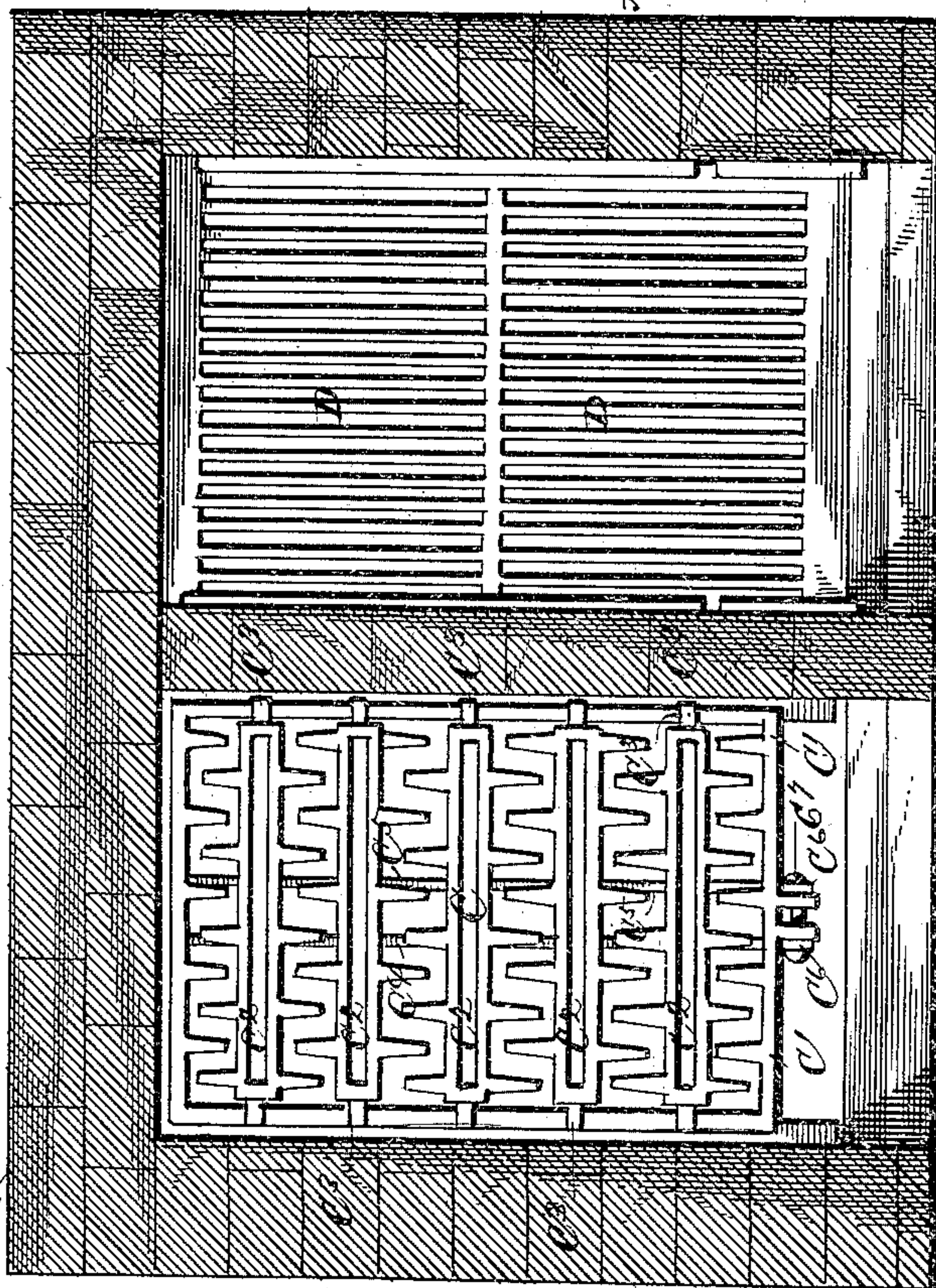
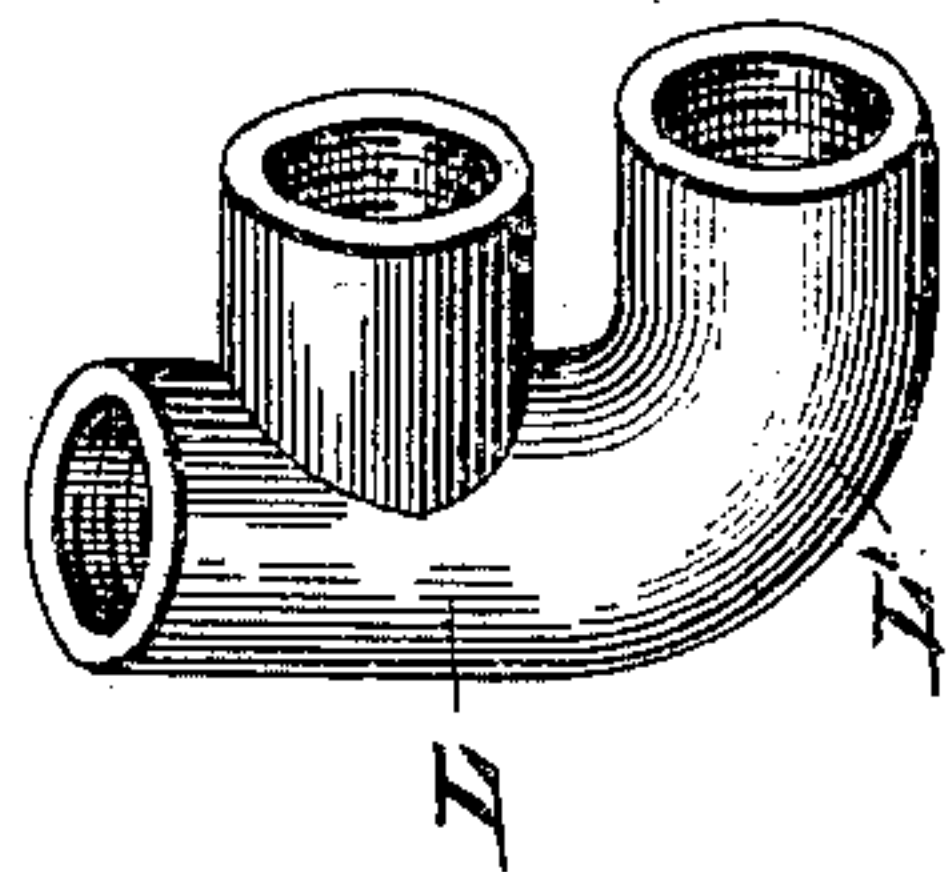


Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE BOLTON, OF PETERBOROUGH, ONTARIO, CANADA.

BOILER.

SPECIFICATION forming part of Letters Patent No. 368,645, dated August 23, 1887.

Application filed October 15, 1886. Serial No. 216,339. (No model.) Patented in Canada April 20, 1885, No. 21,463.

To all whom it may concern:

Be it known that I, GEORGE BOLTON, a subject of the Queen of Great Britain, residing at Peterborough, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to boilers to be used in heating buildings by means of steam or hot water distributed throughout the same by a system of piping communicating with the boiler; and among the objects of the invention are to reduce the cost of manufacture, the number of differently-shaped parts, the difficulty of keeping the boiler clean and in order and of repairing certain parts thereof, and to increase the facility of operating the boiler, its capacity for heating water passing there-through, and its capability of forcing the circulation of the water therethrough.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a front elevation, and Fig. 2 an end elevation, of a boiler embodying the novel features of my invention. Fig. 3 is a horizontal section above the grates, and Fig. 4 a central vertical section of the boiler proper. Figs. 5 and 6 are perspectives of double couplings employed.

Like letters indicate like parts in all the figures of the drawings.

The boiler proper, whether single or double, is intended to be set in brick-work, A, forming the ash-pit, and, as shown by dotted lines in Figs. 1 and 2, an inclosing-jacket, having any suitable uptake, A', Fig. 2, for the products of combustion.

As before indicated, the boiler is constructed so that by changing the cap and base it may be enlarged from a boiler having a single fire-pot and grate to a boiler having two or any other desired number of fire-pots and grates. There is secured within the ash-pit suitable cleats, B, for the support of any ordinary grate-bars.

The base of the boiler consists of a single hollow casting, E, which is substantially rectangular in cross-section, having a similar interior conformation, except that the walls of

the base are inclined, as at E', to form a fire-pot with slanting walls, which act to concentrate the fuel upon the grate below.

In the single boiler the base is one-half the length of that shown in Fig. 1, so that when used in connection with the circulating-pipes hereinafter described, and with a cap of like dimensions, a complete apparatus is produced, and one which, by the substitution of bases and caps of increased dimensions and of duplicate sets of circulating-pipes and couplings, is readily increased to meet the demands of heating buildings of varied sizes. In other words, using a cap and a base extending from the left of Fig. 1 to the dotted line X, a double boiler is converted into a single one. The base is provided at its top with a series of openings, E', into which are screw-threaded vertical circulating-pipes F, extending completely around the same, except at the front, where a single T-pipe, G, is screw-threaded into an opening formed in the base. At each end of the T there is a quarter-turn coupling, H, which is connected with vertical pipes I. All of the vertical pipes F, which are arranged at the back of the base, are provided with double T-couplings, J, with which horizontal pipes K communicate. The front end of the pipes K communicate with a T-coupling, L, which is also a quarter-turn coupling—that is to say, the end of the branch of the T is curved, as at L', (see Fig. 5,) to form a quarter-turn. A series of horizontal pipes, K, and turn couplings L are arranged above the fire-box and also above the single T-coupling and quarter-bends G and H, respectively, so as to form a fuel-supply or stoke hole, M, (see Fig. 4,) for each boiler. Above the horizontal pipes and in line therewith are a series of depending pipes, N, secured within apertures formed in the cap O of the boiler. Each of the depending pipes is closed by a conical plug, N', as shown.

The cap O consists of a single casting having in its lower surface a series of screw-threaded apertures for all the vertical pipes of the boiler, and said cap is hollow, like the base, and it may be provided with strengthening-posts, ribs, or spacing-blocks, as shown at Y, Fig. 4. Screw-plugs or other well-known devices, as shown at P, may be provided to close core-holes or to give access to the interior of the

cap or base for purposes of cleaning or repair.

A supply and delivery pipe may be provided at the base and cap, as indicated by the dotted lines V and W, respectively.

5 This being the construction, the operation is as follows: The pipes V and W being connected with any well-known system of piping for heating a building, the water employed
10 fills all the hollow parts of the boiler, and, entering at the base, is first subjected to the heat of the fuel in the fire-pot as the water circulates or passes thereabout. The water in the horizontal pipes K is then subjected to the heat
15 of the products of combustion and at the hottest portion thereof, and there being two horizontal pipes to each one of the rear vertical pipes there is double the capacity of said vertical pipes in the horizontal, so that double
20 the quantity of water is subjected to the more intense heat, and therefore a circulation is forced upwardly through the front vertical pipes, F, which communicate with the T and turn L. The water in the cap fills the depending pointed pipes N, where said water is
25 subjected to the heat of the products of combustion as they pass upwardly above the horizontal pipes K. These latter pipes act as baffle-plates to retain and give a circuitous route to the products of combustion, so that
30 they naturally cling to or circulate around between the said vertical pipes. If desired, separate baffle-plates may be arranged in the series of vertical pipes or upon the cap to further retard or direct the products of combustion.
35 tion.

Certain novel features herein shown and not claimed are shown and claimed in another pending application.

40 Having described my invention and its operation, what I claim is—

45 1. In a boiler of the class described, a hollow base formed as a single casting, a hollow cap formed as a single casting, a series of vertical tubes connecting the base with the cap, a series of double T-couplings communicating with the rear vertical tubes, a series of horizontal tubes communicating with the double T-couplings, and a series of T and turn couplings communicating with vertical pipes connected with the cap, substantially as specified.

2. In a boiler of the class described, a hollow cap and a hollow base connected by vertical tubes extending on three sides thereof, a T-coupling mounted upon the base at a fourth side thereof and connected by quarter-turns with vertical pipes communicating with the cap, and a series of horizontal pipes arranged above the fire-pot and communicating with the cap and base by means of double T and T and turn couplings, substantially as specified.

3. In a boiler of the class described, the combination of a hollow cap, a hollow base, vertical pipes connecting the same, a T projecting from the base at one side thereof and communicating by quarter-turns with vertical pipes connected with the cap, thereby forming a stoke-hole, a fire-pot opening in the base, and a rocking grate arranged below the base, together with a series of horizontal pipes arranged above the fire-pot and communicating with the vertical pipes of the boiler, substantially as specified.

4. In a boiler of the class described, a T and turn coupling, in combination with a vertical and horizontal pipes connected to the cap and base, as shown, substantially as specified.

5. In a boiler of the class described, the combination of vertical pipes, a double T-coupling communicating therewith, horizontal pipes connected with the double T and with a T and turn coupling, and a vertical pipe extending from the latter, substantially as specified.

6. The combination, with the base E, having the inclined walls E', of the coupling G, the vertical pipes I, the quarter-turns H, the pipes F, the double T's J, the T and turns L, the depending pipes N, and the cap O, substantially as specified.

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

GEO. BOLTON.

Witnesses:

W. H. MOORE,
W. KELSEY HALL.