(No Model.)

3 Sheets—Sheet 1.

J. MATTSON.

RANGE.

No. 548,004. Patented Oct. 15, 1895.

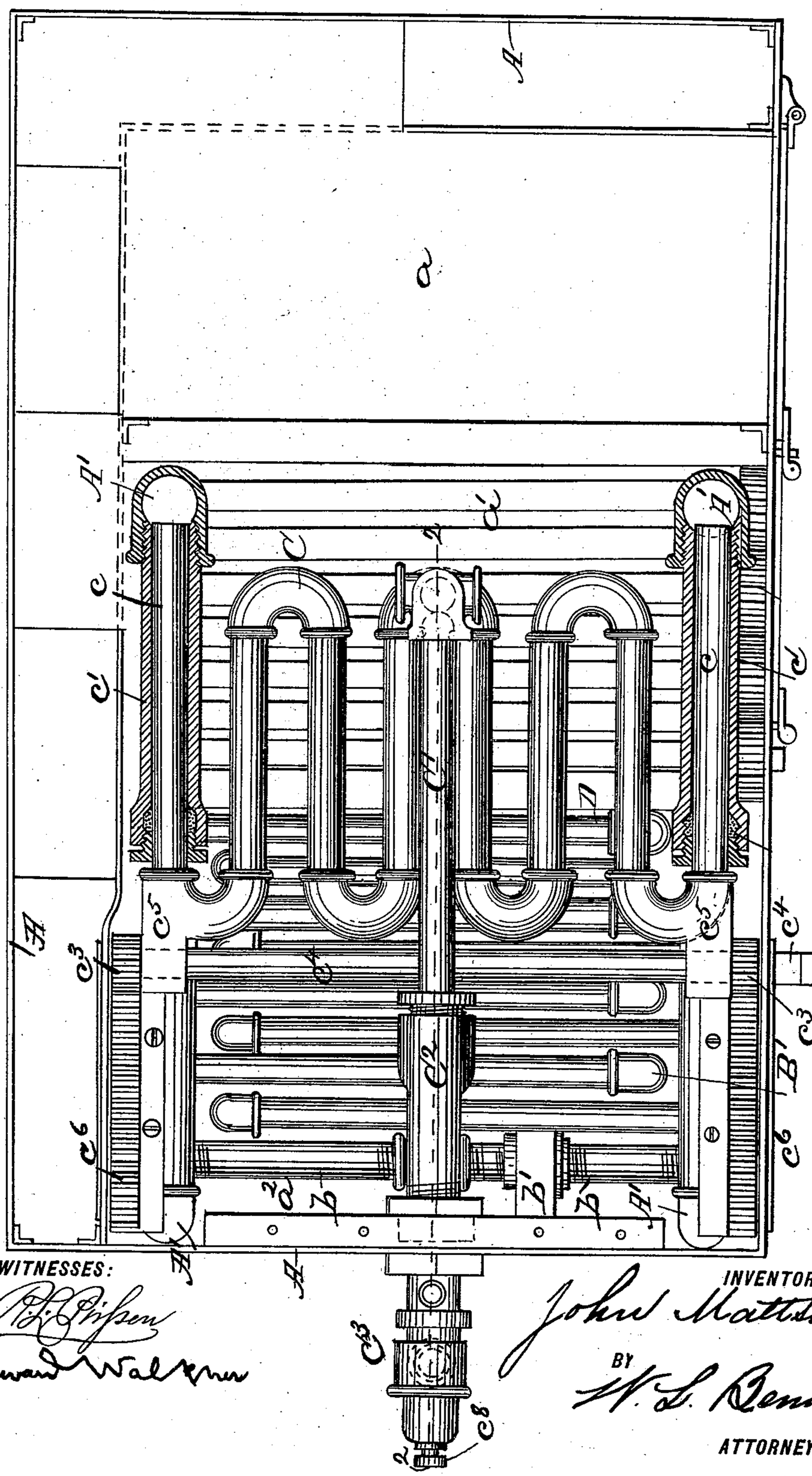

Fig. 1.

WITNESSES:

P. L. Prisbey

Edward Walker

INVENTOR

John Mattson

BY

W. S. Bennett,

ATTORNEY

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J. MATTSON.

RANGE.

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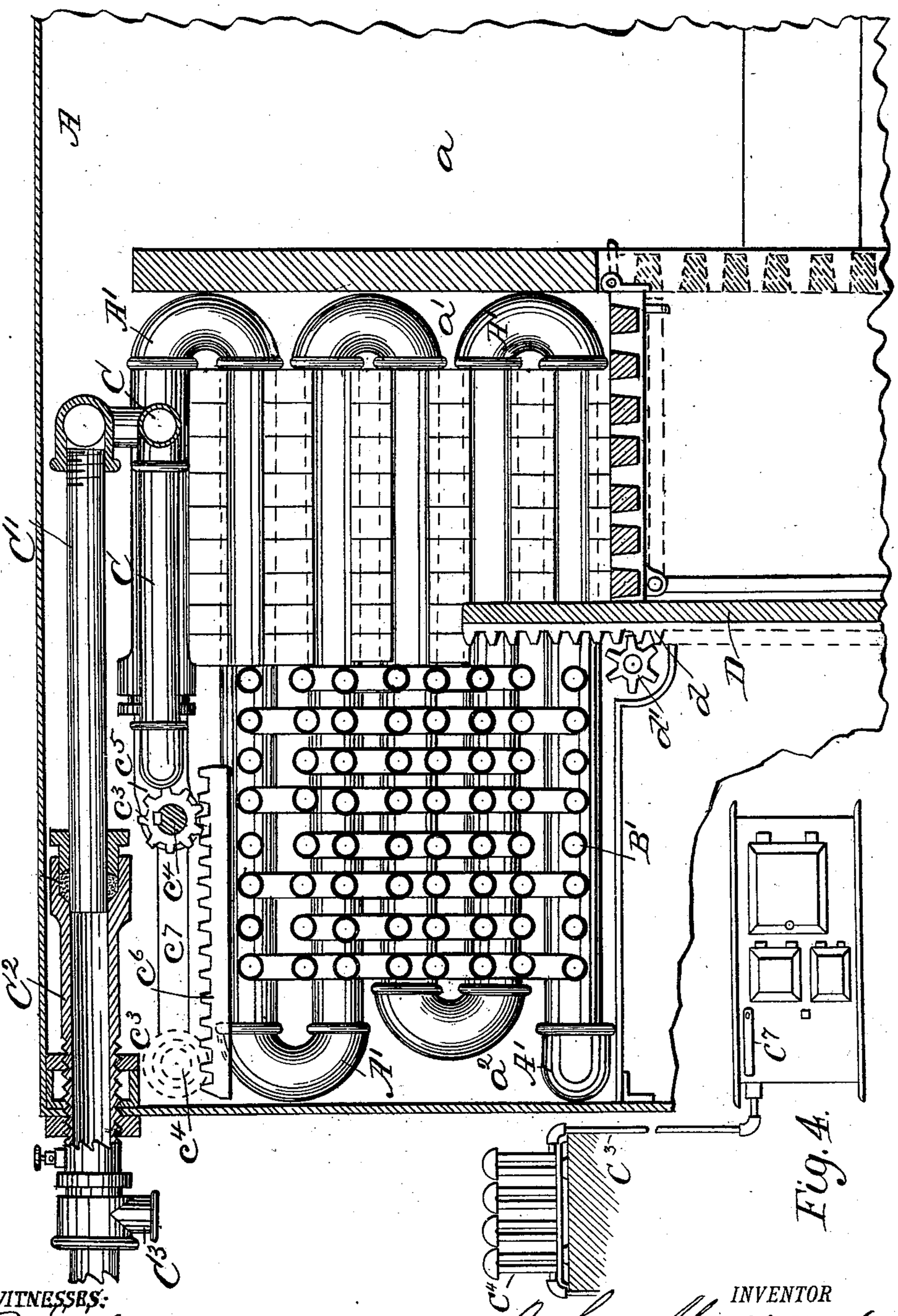


Fig. 2.

Fig. 4.

WITNESSES:

R. F. Gaffney

Edward Walker

INVENTOR

John Mattson

BY

W. L. Bennett

ATTORNEY.

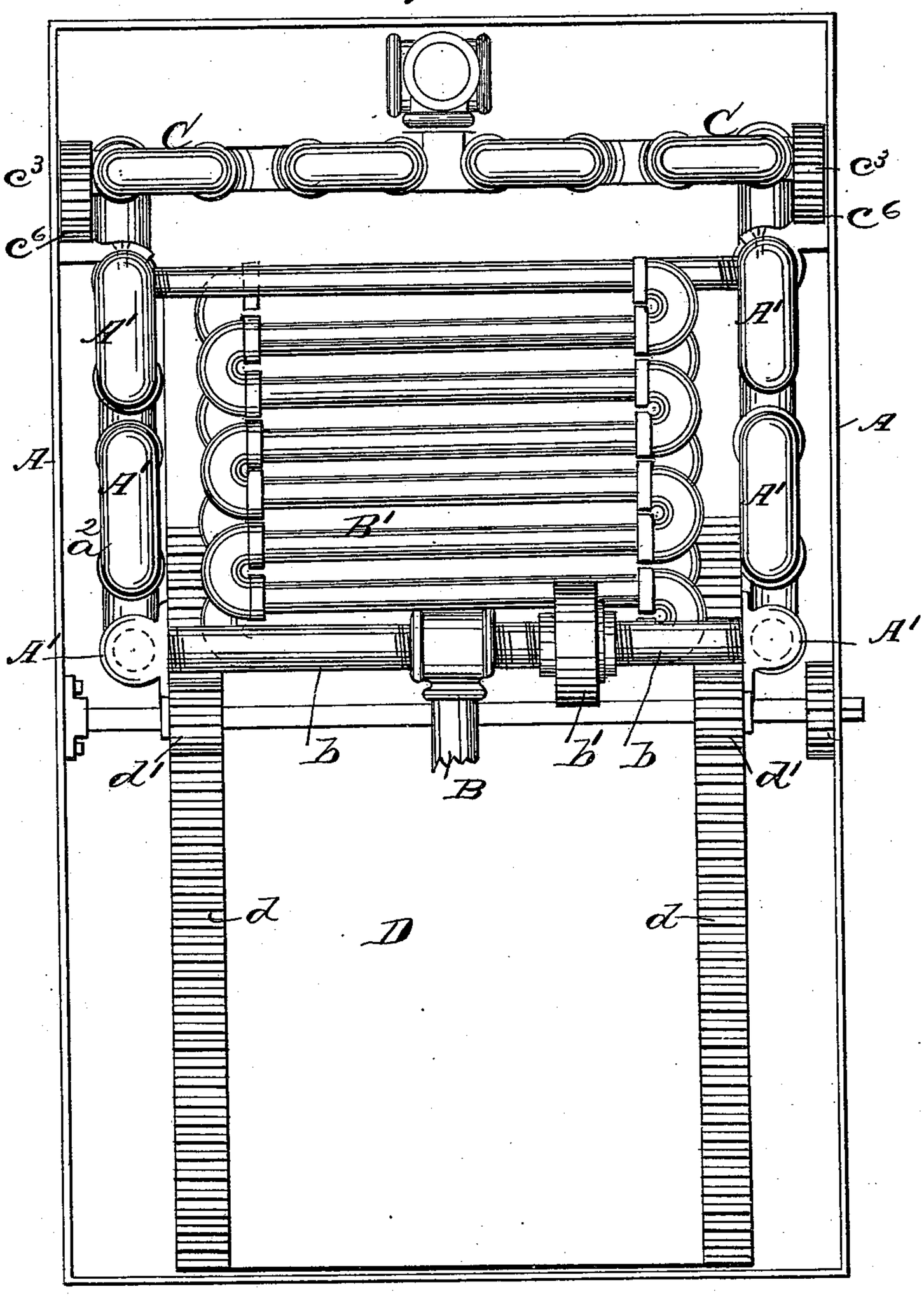
(No Model.) 3 Sheets—Sheet 3.

J. MATTSON.

RANGE.

No. 548,004. Patented Oct. 15, 1895.

Fig. 3.



WITNESSES:

P. L. Gipson

Edward Walxner

INVENTOR

John Mattson

BY

W. L. Denman

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN MATTSON, OF BROOKLYN, NEW YORK.

RANGE.

SPECIFICATION forming part of Letters Patent No. 548,004, dated October 15, 1895.

Application filed November 9, 1894. Serial No. 528,345. (No model.)

To all whom it may concern:

Be it known that I, JOHN MATTSON, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Ranges, of which the following is a specification.

This invention relates to ranges or furnaces for cooking and other direct heating by the fire, but which are fitted with means of supplying a current of hot water which may be used for heating buildings or other purposes; and it comprises a system of communicating water tubes or pipes located within the range or heater, certain of said tubes or pipes being stationary and others being movable; and the invention further consists in the construction and novel arrangement of parts as hereinafter specified, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a plan view, with certain parts in section, of a range or heater embodying my invention. Fig. 2 is a vertical section on the line 2 2 of Fig. 1. Fig. 3 is an end elevation, and Fig. 4 shows a range connected with a radiator.

Referring by letter to the drawings, A designates the walls of a range, stove, or heater having the oven a, the fire-chamber a', and a chamber a^2, through which the products of combustion discharge.

A′ shows stationary circulating-pipes arranged sinuously within the range or heater adjacent the side walls. These pipes A′ extend from the rear portion of the heater through the combustion-chamber and into the fire-chamber. An inlet or feed pipe B communicates through branches b with the side pipes A′. One or both of the branches b may have a connecting-joint b', so that said pipes may be easily inserted or adjusted. A nest or series of sinuous tubes B′ is arranged within the combustion-chamber a^2. These tubes B′ afford a larger extent of circulation for the water than is given by the side pipes A′. I have here shown them as communicating with the top and bottom portions of the side pipes. By referring to Fig. 2 it will be seen that the tubes alternate in this arrangement. The tubes B′ and the pipes A′ are, of course, stationary and afford a large area of heating-surface for water. To provide a still greater extent of circulating-area and heating-surface, I employ a sinuous pipe C, which may be extended into the fire-chamber of the heater. This pipe C is arranged horizontally and communicates at its ends with the side pipes A′.

For the purpose of regulating the heat of the circulating water to a greater or less degree and also of enabling the fire to be used to a greater or less extent for the direct heating of vessels set over it, the circulating-pipe C is made adjustable or movable into and out of the fire-chamber. With this end in view and to maintain communication with the pipes A′ the end portions c of the adjustable circulating-pipe C have telescopic connection with the upper end portions c' of the pipes A′. The portions c' of the pipes A′ are preferably made of a length substantially equal to the width of the fire-chamber, and the portions c of the pipe C may be of substantially the same length as the portions c'. Stuffing-boxes C^2 are connected to the ends of the portions C′. As a means for moving the adjustable circulating-pipe C, I prefer to employ gear-wheels C^3, mounted on a shaft c^4, having bearings in arms c^5, extended from the said pipe C. The gears c^3 engage with racks c^6, arranged adjacent to the inner side walls of the heater within the combustion-chambers. One end of the shaft c^4 is preferably projected outward through two horizontal slots or openings c^7 in the side wall of the heater, and this end is adapted to be engaged by a crank or other suitable instrument. Obviously by rotating the shaft by means of a crank or otherwise the adjustable circulating-pipe C may be moved to any desired position. A pipe C′ leads from the adjustable circulating-pipe C (here shown as from its central portion) and has telescopic communication with a discharge-pipe C^2, which is extended through the rear wall of the range or heater, and a circulating-pipe C^3 leads from the pipe C^2 to connect with a radiator or number of radiators C^4. A regulating-valve c^8 may be attached to the discharge-pipe.

D designates a vertically-adjustable rear wall for the fire-chamber. The wall D may be made of fire-brick or other suitable material to resist heat. It may be moved or adjusted to any desired position to regulate the amount of heat discharged into the combus-

tion-chamber, and, in fact, it may be moved to a position with its upper edge above the plane of the adjustable circulating-pipe C when said pipe C shall have been wholly moved into the combustion-chamber, which may be desirable at times—for instance, in hot weather, when water for heating purposes is not wanted. As a means for moving the back wall D, I provide it with racks *d*, which engage with gear-wheels *d'*, mounted on a shaft having suitable journal-bearings in the heater and having one end extended through a wall of the heater, so that it may be engaged by a suitable instrument to rotate the gears.

It will be seen that by my construction all the pipes form in effect a continuous sinuous circulating-pipe, one portion of which is a fixture, while another portion of it is adjustable, so that a greater or less extent of the whole may be utilized for heating water, as circumstances render expedient.

Having described my invention, what I claim is—

1. The water heating system consisting of sinuous side pipes, a horizontally adjustable pipe having telescopic connection with the side pipes, and mechanism for adjusting the latter, substantially as specified.

2. The water heating system consisting of stationary side pipes, a horizontally adjustable pipe having telescopic connection with the side pipes, and a discharge pipe having telescopic connection with the said adjustable pipe, substantially as specified.

3. The range or heater having the fire chamber and the chamber through which the products of combustion discharge, the side pipes extended into each of said chambers, the series of pipes located in the last named chamber and having communication with the side pipes, and the adjustable pipe movable into each of said chambers, substantially as specified.

4. The combination with water circulating and heating pipes in ranges, of the vertically adjustable wall D, having racks *d* thereon, the gear wheels *d'* engaging with the racks and mounted on a shaft having suitable journal bearings in the heater A; for regulating the exposure of said pipes to the fire substantially as specified.

Signed at New York city, in the county of New York and State of New York, this 1st day of November, A. D. 1894.

JOHN MATTSON.

Witnesses:
P. L. PRISSON,
EDWARD WALTHER.