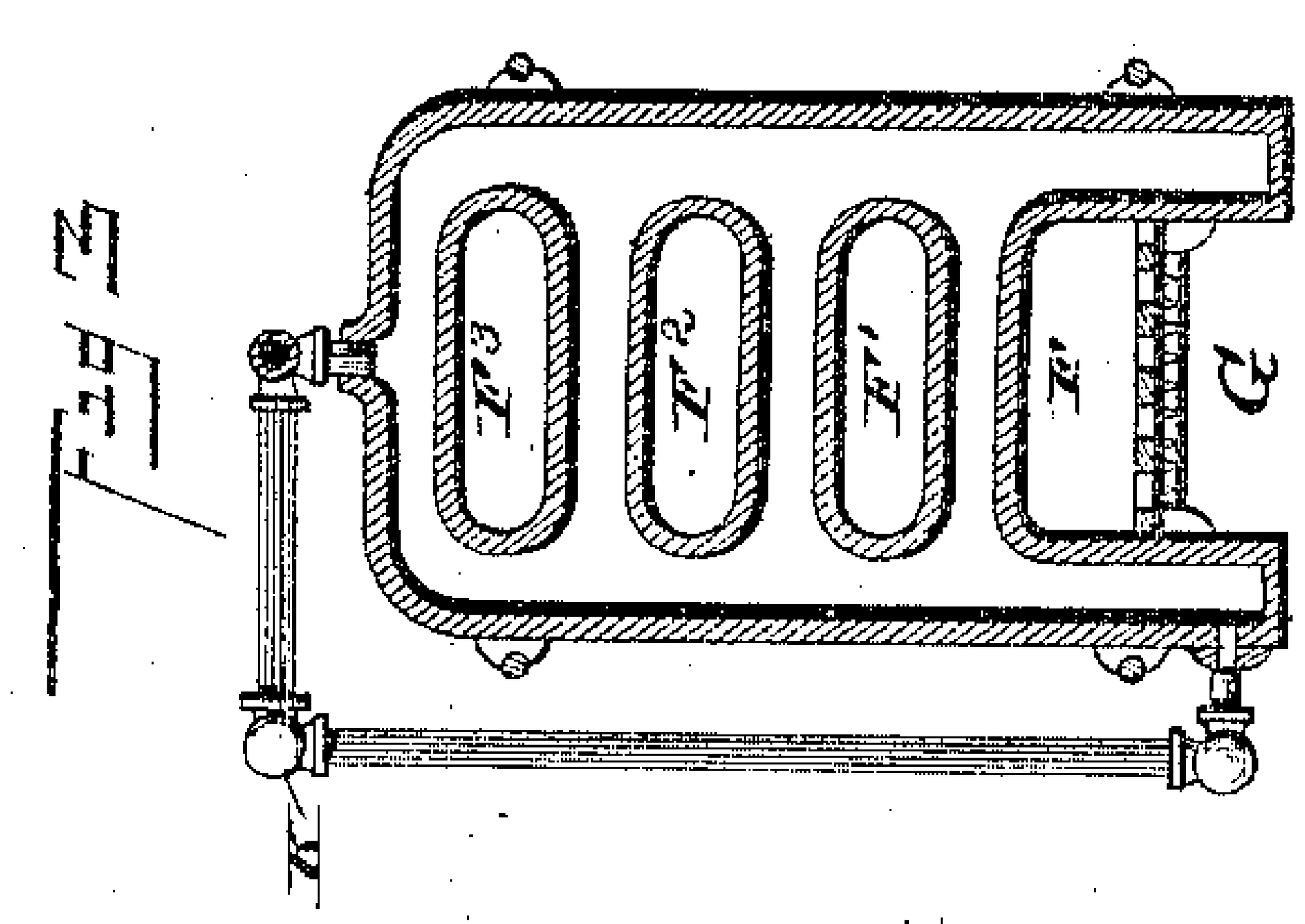
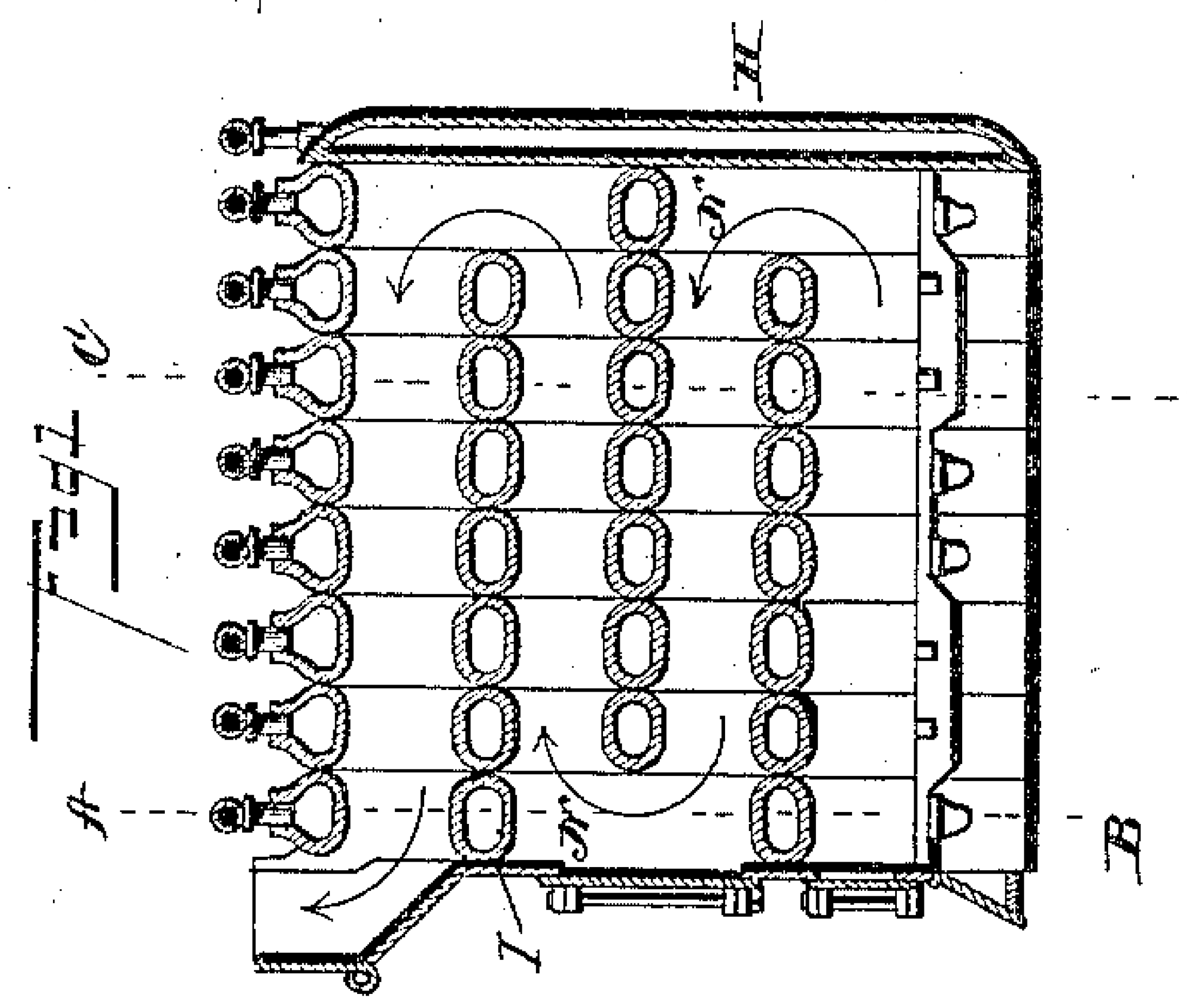
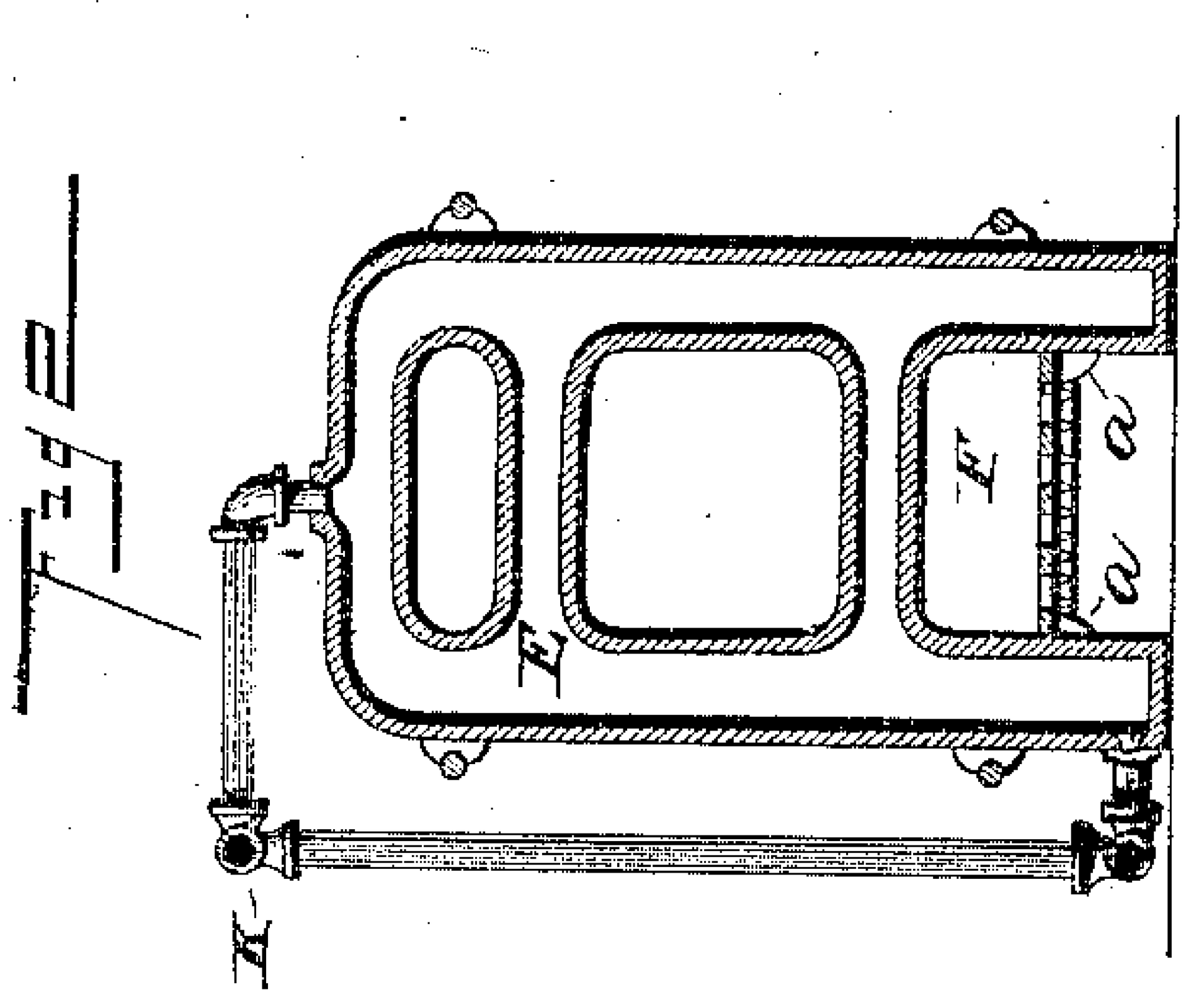
(No Model.)

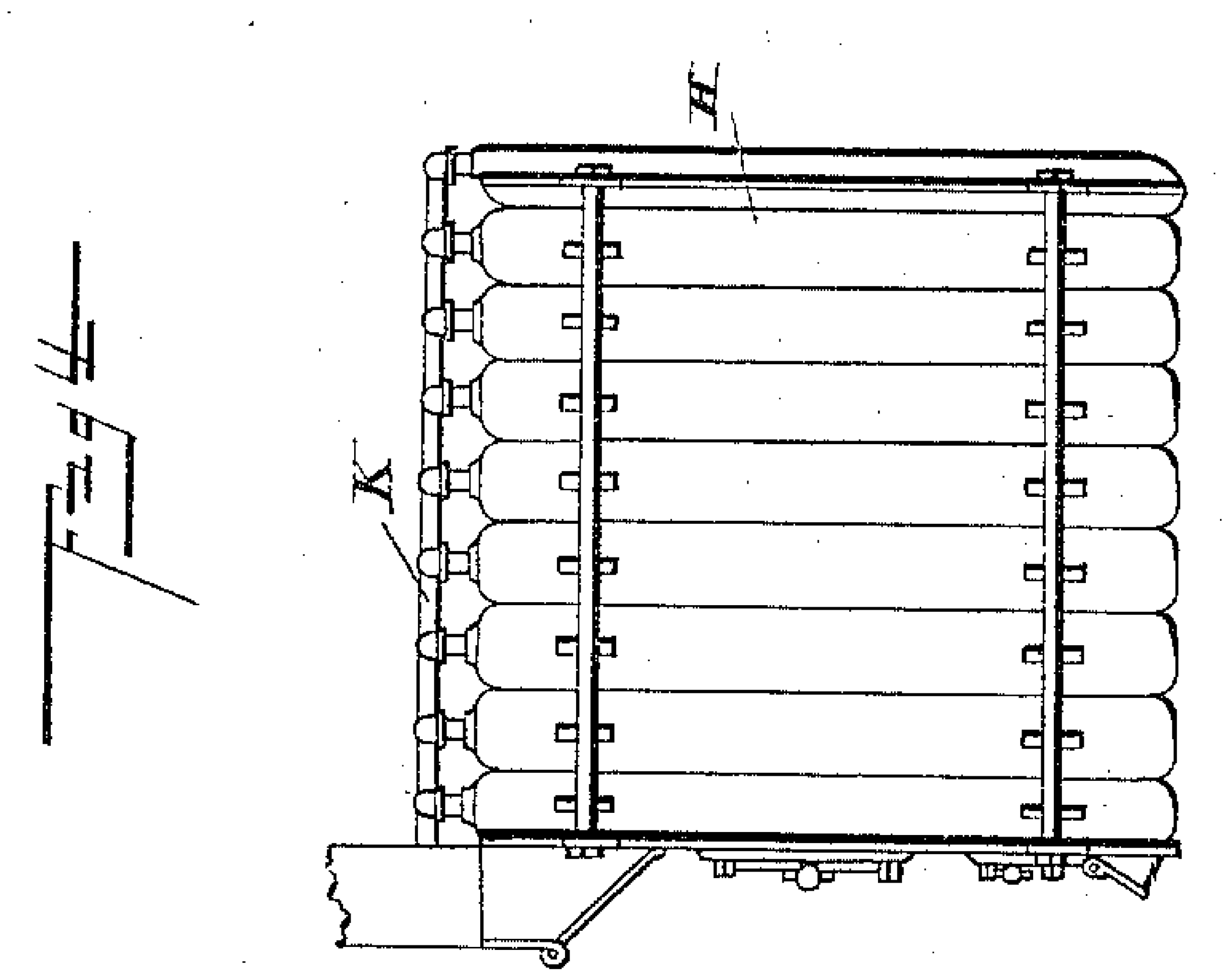
R. WALLACE.
SECTIONAL BOILER.

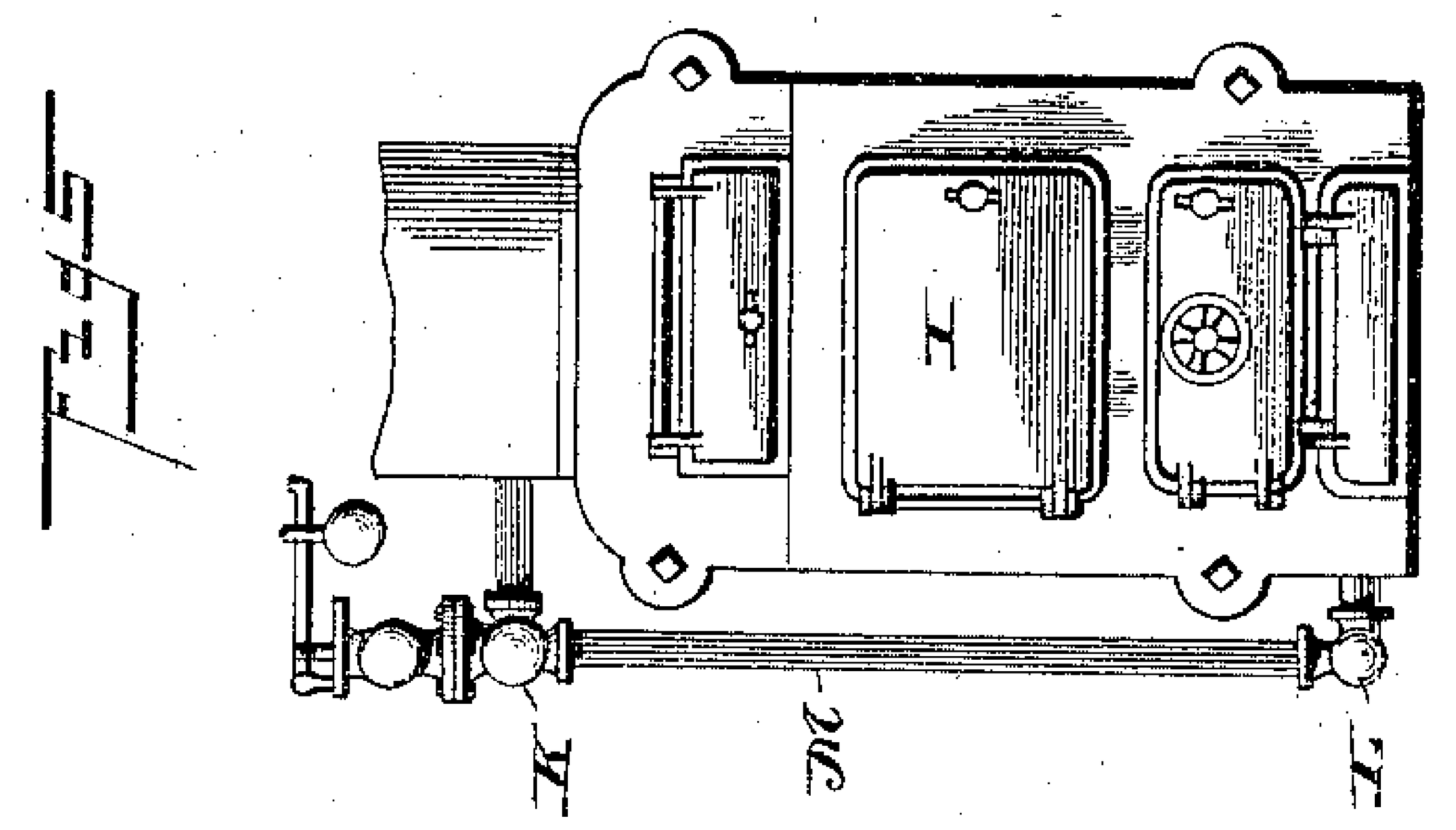
No. 436,680. Patented Sept. 16, 1890.











Witnesses
John Imrie
E. M. Johnson

Richard Wallace.
Inventor
by [signature]
Attorney

UNITED STATES PATENT OFFICE.

RICHARD WALLACE, OF FORT SCOTT, KANSAS.

SECTIONAL BOILER.

SPECIFICATION forming part of Letters Patent No. 436,680, dated September 16, 1890.

Application filed July 23, 1888. Serial No. 280,844. (No model.)

To all whom it may concern:

Be it known that I, RICHARD WALLACE, a citizen of the United States, and a resident of the city of Fort Scott, county of Bourbon, State of Kansas, have invented certain new and useful Improvements in Sectional Boilers, of which the following is a specification.

This invention relates to sectional steam-boilers; and it consists in the improved construction hereinafter described, whereby a simple and efficient structure is provided that will answer all the requirements.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal sectional view of a boiler embodying my improvements. Figs. 2 and 3 are transverse sections on the dotted lines A B and C D, Fig. 1. Fig. 4 is a side view, and Fig. 5 is a front view, of my improved boiler.

The main portion of the boiler consists of a series of independent sections, each of which is cast complete in itself and comprises vertical water and steam spaces, transverse spaces E E, space for ash-pit G and fire-box F, and spaces F′ F^2 F^3, intermediate of the transverse water and steam spaces, serving as part of the smoke-flue N. The number of these sections employed are of course proportionate with the size of the boiler, and it will be noted that each section is provided at its outer side with upper and lower integral ears, which are notched for the reception of two rods adapted to rigidly clamp the sections together. A vertical water-back H is located at the rear, and also has perforated ears, so that the threaded ends of the rods will also engage and secure the same.

It will be observed that the transverse spaces E of the several sections vary so as to form a circuitous or return smoke-flue N, and thereby subject all the water-spaces to the thorough action of the products of combustion. The front I is clamped in position the same as the other parts, and is provided at its top with an uptake, which registers with the upper front end of the smoke-flue N.

Centrally at its top each section is provided with a threaded opening, in which is seated the end of a pipe-section, which is provided with suitable joints and connections for attachment to a longitudinal pipe K, vertical riser M, and lower longitudinal pipe L, the latter being connected with the base of each of the sections by means of a short pipe.

By the arrangement of pipes and risers above described the pressure is not only equalized in all the sections, but circulation is established and a common steam communication provided for connection with the distributing-pipe.

Two or more of the sections of the series are provided on their inner sides and within the space serving as part of the ash and fire boxes with lugs *a a*, cast integral therewith and serving to support the sections of the grate-bar.

The wide flat flues provide a good unobstructed surface for contact of hot currents, which naturally pass along their upper segments, and also give abundant room on their inverts for deposit of soot and ashes. They are also more easily cleaned than those of smaller size and irregular form.

These boiler-sections, being connected in the manner indicated and fitted in the usual manner with safety-valves, blow-offs, feed-water valves, and gages, are used and treated in a similar manner to other boilers of sectional principle.

It will be understood that water and steam connections will be made on either or both sides of the boiler, and that the form of those fittings will allow for expansion and contraction.

As arranged the rupture of any one structure will not seriously interfere with the general utility of the entire structure, but will only require the plugging up of the connections of the particular section and, if desirable, the substitution of another.

I claim—

1. The combination, in a sectional steam-boiler, of a series of sections, each cast in a single piece to present the vertical side and transverse water and steam spaces, together with intermediate smoke-flues and lower ash-pit and fire-box, each end section having a smaller number of transverse water and steam spaces to provide end communications for the continuous smoke-flue doubling horizontally upon itself, as described, longitudinal and vertical side pipes and upper and lower connections therewith, and vertical water-back having its inner wall vertically straight and

a vertically-straight front, substantially as set forth.

2. The combination, in a sectional steam-boiler, of a series of sections, each cast in a single piece to present the vertical side and transverse water and steam spaces, lower ash-pit and fire-box and intermediate smoke-flues, each end section having a smaller number of transverse water and steam spaces to provide end communications for the continuous smoke-flue doubling horizontally upon itself, as described, longitudinal and vertical side pipes and upper and lower connections, a water-back having its inner wall vertically straight and a vertically-straight front, integral side lugs on all the sections and a front and water-back and connecting-rods, the inner sides of the section forming the sides of the ash-pit and fire-box being provided with integral lugs, and grate-sections resting on said lugs, substantially as set forth.

Fort Scott, Kansas, May 1, 1888.

RICHARD WALLACE.

Witnesses:

JAMES L. MITCHELL,

D. KAVANAGH.