

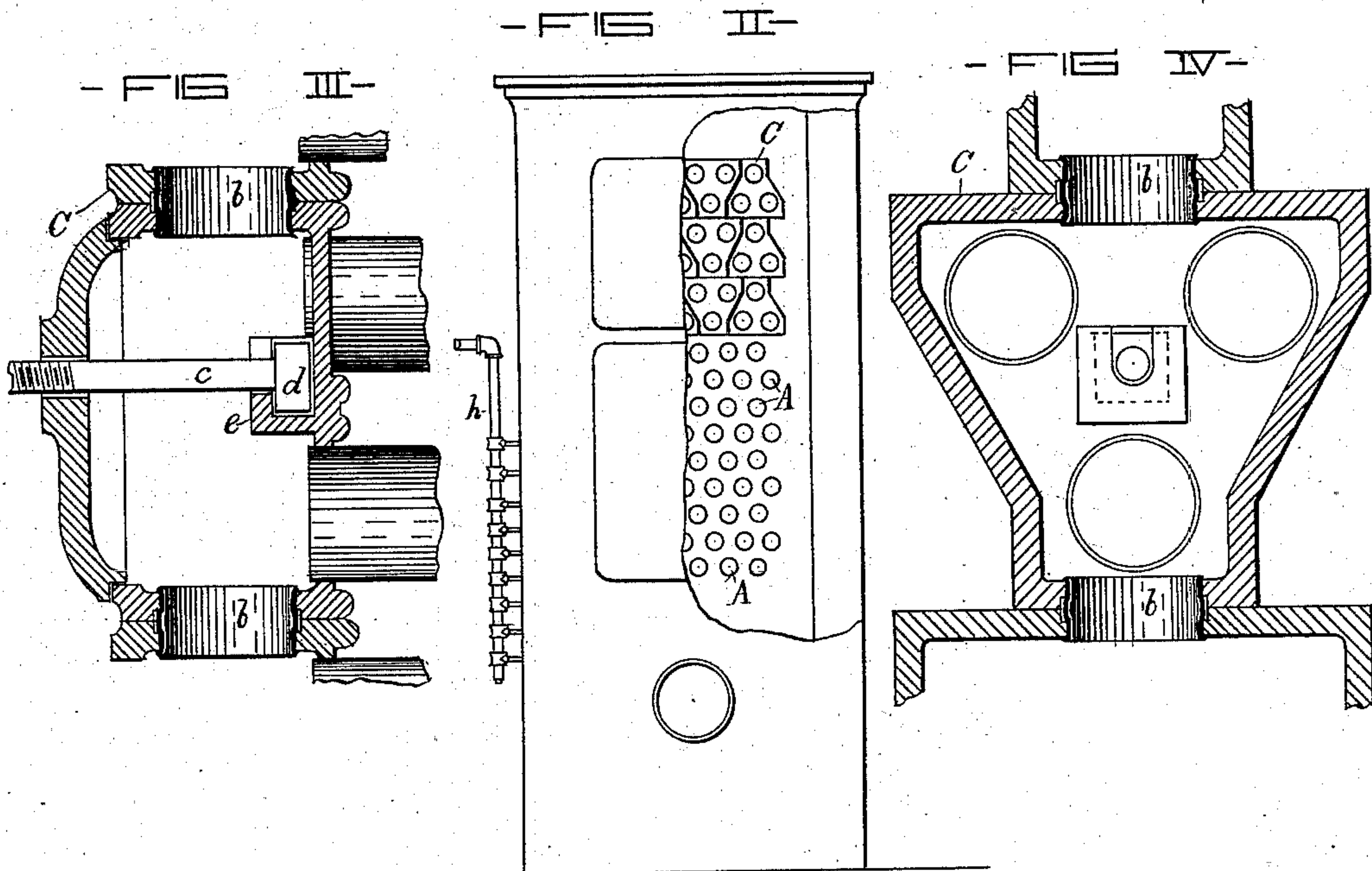
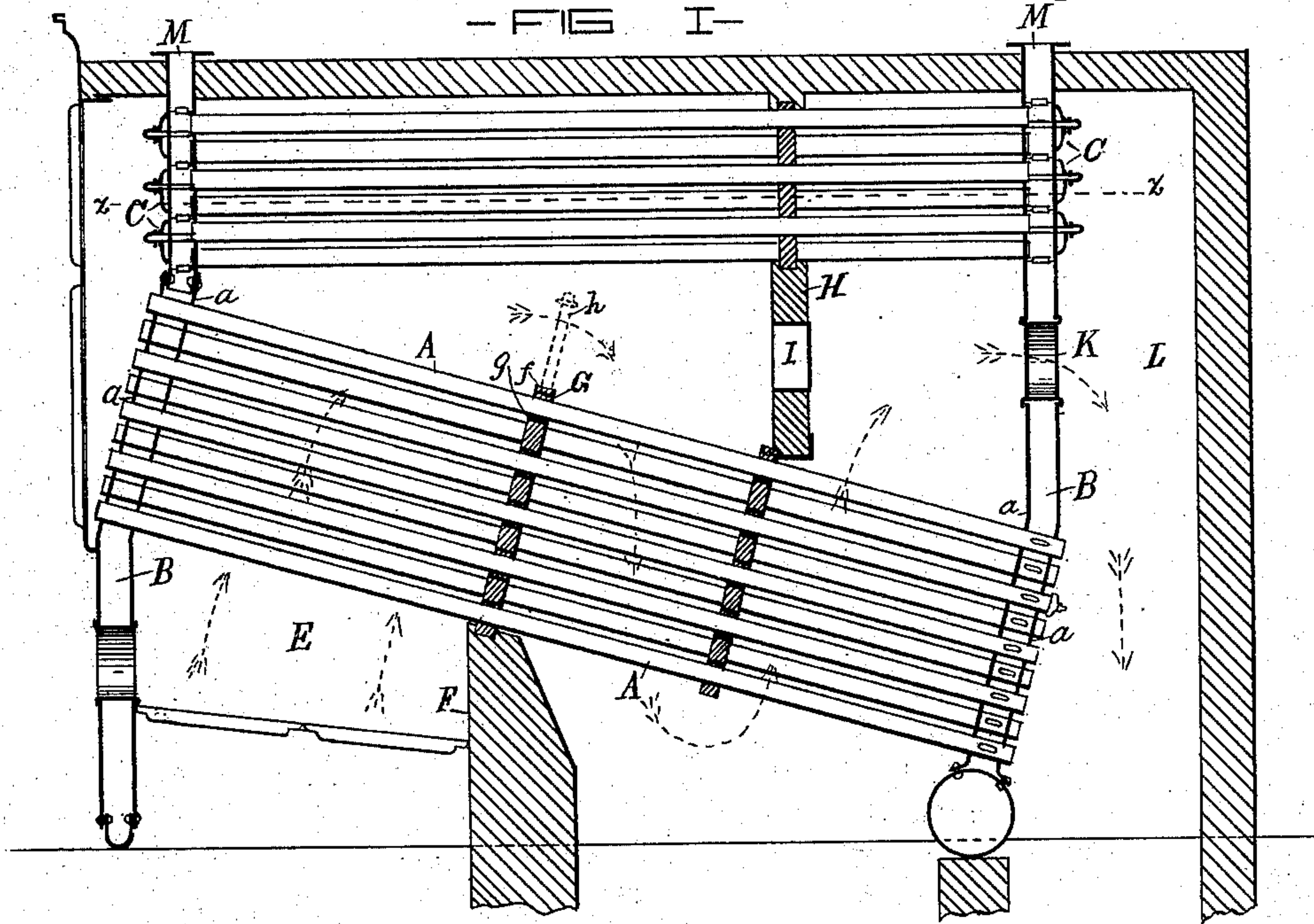
(No Model.)

E. J. MOORE.

SECTIONAL SAFETY BOILER.

No. 284,468.

Patented Sept. 4, 1883.



- WITNESSES -

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UNITED STATES PATENT OFFICE.

EDWARD J. MOORE, OF BALTIMORE, MARYLAND.

SECTIONAL SAFETY-BOILER.

SPECIFICATION forming part of Letters Patent No. 284,468, dated September 4, 1883.

Application filed January 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. MOORE, of the city of Baltimore, and State of Maryland, have made certain Improvements in Sectional Safety-Boilers, of which the following is a specification.

In the boiler embodying my improvements the ends of the tubes which constitute the main portion of the boiler proper are secured within suitable water-legs by expansion—that is to say, each tube passes entirely through the said leg and is expanded within the two plates forming the walls thereof to effect tight joints. The outer end of the tube is stopped or closed by means of a cap. The portion of the boiler which is generally termed the “steam-drum,” but which also contains water, is constructed of a series of tubes similar to those above alluded to, and they are united in groups of three by boxes of such shape as will allow of their being interlocked to form an imperforate wall. These boxes are united by means of tubes and the whole connected to the upper end of the water-legs before described. The lower or main tubes have partition-plates, which, together with the walls, effect a serpentine movement of the products of combustion in their passage from the furnace to the back connection. The rear water-leg terminates at its lower end in a mud-drum, from which all sediment may be blown.

In the further description of my said invention which follows reference is made to the accompanying drawings, forming a part hereof, and in which—

Figure I is a longitudinal section of the improved boiler. Fig. II is a partly-sectional front view of the same. Figs. III and IV are details of the invention on an enlarged scale. Similar letters of reference indicate similar parts in all the views.

A A are the main tubes, and B B the water-legs, to which the said tubes are secured. The tubes A are expanded in the plates *a*, which form the water-legs, and the said plates, if of wrought-iron, are connected at the sides and at the bottom by means of rivets. The upper ends of the water-legs B are connected

to a series of boxes, C, to which the upper tubes are fastened.

By referring specially to Figs. II and IV it will be seen that all the boxes C receive the ends of three tubes, which are placed in the form of an equilateral triangle, and the outline of the box is somewhat of that shape, it having a wide and a narrow end. By this means the boxes, when placed as shown in Fig. II, form a continuous wall, and all the tubes have the same relative position—that is to say, the tubes are equidistant without being in vertical rows. Each of the boxes C is connected to those immediately above and below it by means of tubes *b*, expanded in suitable openings and made water-tight. The boxes C have removable plates which cover the three tubes, and are held in place through the medium of bolts *c*, with their heads *d* seated removably in pockets *e*, located centrally between the tubes.

E is the furnace, having the usual grate-bars; and F, the bridge-wall, upon which the first of the partition-plates, before alluded to, and denoted by G, comes in contact.

H is a wall suspended over the tubes A and in contact with the upper edge of the second partition-plate. The wall H has an opening, I, provided with a door, through which access may be had to the space around the forward end of the tubes A. The back leg has also an opening, K, which is at all times open, and a series of smaller openings, which together give the proper area of calorimeter and admit the products of combustion to the back connection, L. The course of the products of combustion is indicated by dotted arrows.

The upper boxes, C, are provided with nozzles M, to which the steam-pipe leading to the engine is attached.

The construction and arrangement of the boxes C admit of an increase of steam room or space above the water-line, which is indicated by the dotted lines *z z*, by merely increasing the number of sections.

The boiler, constructed as described, has great inherent strength, and the joints are such that expansion and contraction of the various

parts will not cause leakage, for the reason that expanded tubes have a tendency to expand slightly if released from the apertures in which they are confined,

5 I claim as my invention—

In a sectional boiler, a portion of the legs thereof formed of a series of practically triangular boxes united by pipes, into the back or

inside wall of which boxes three tubes are inserted and fastened, and the said boxes closed 10 in front by means of removable plates, substantially as and for the purpose specified.

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