

(No Model.)

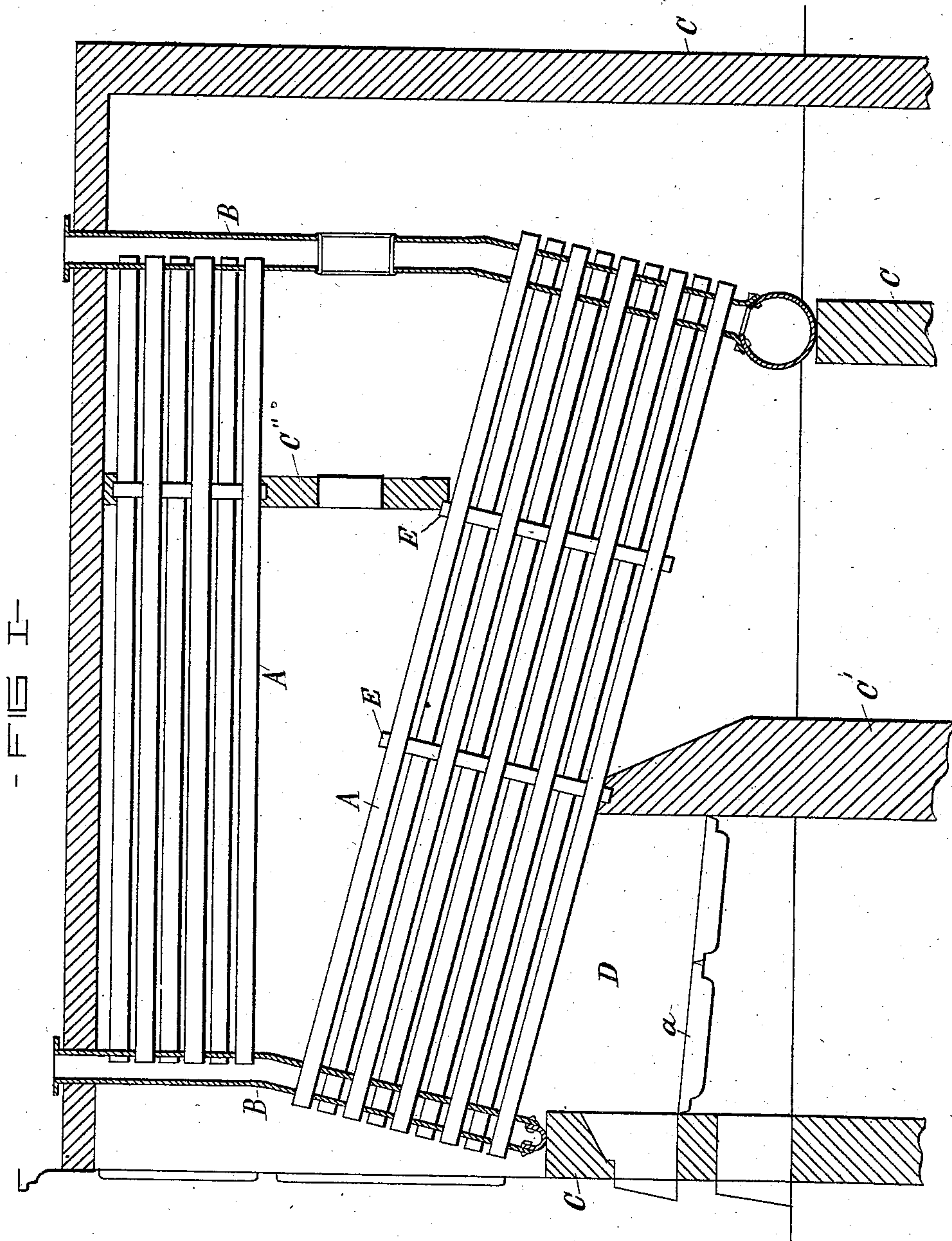
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E. J. MOORE.

SECTIONAL SAFETY BOILER.

No. 289,850.

Patented Dec. 11, 1883.



— WITNESSES —

*Dani Fisher*  
*Edw. J. Riggs*

— INVENTOR —

*Edward J. Moore*  
*by G. H. Howard*  
*Atty.*

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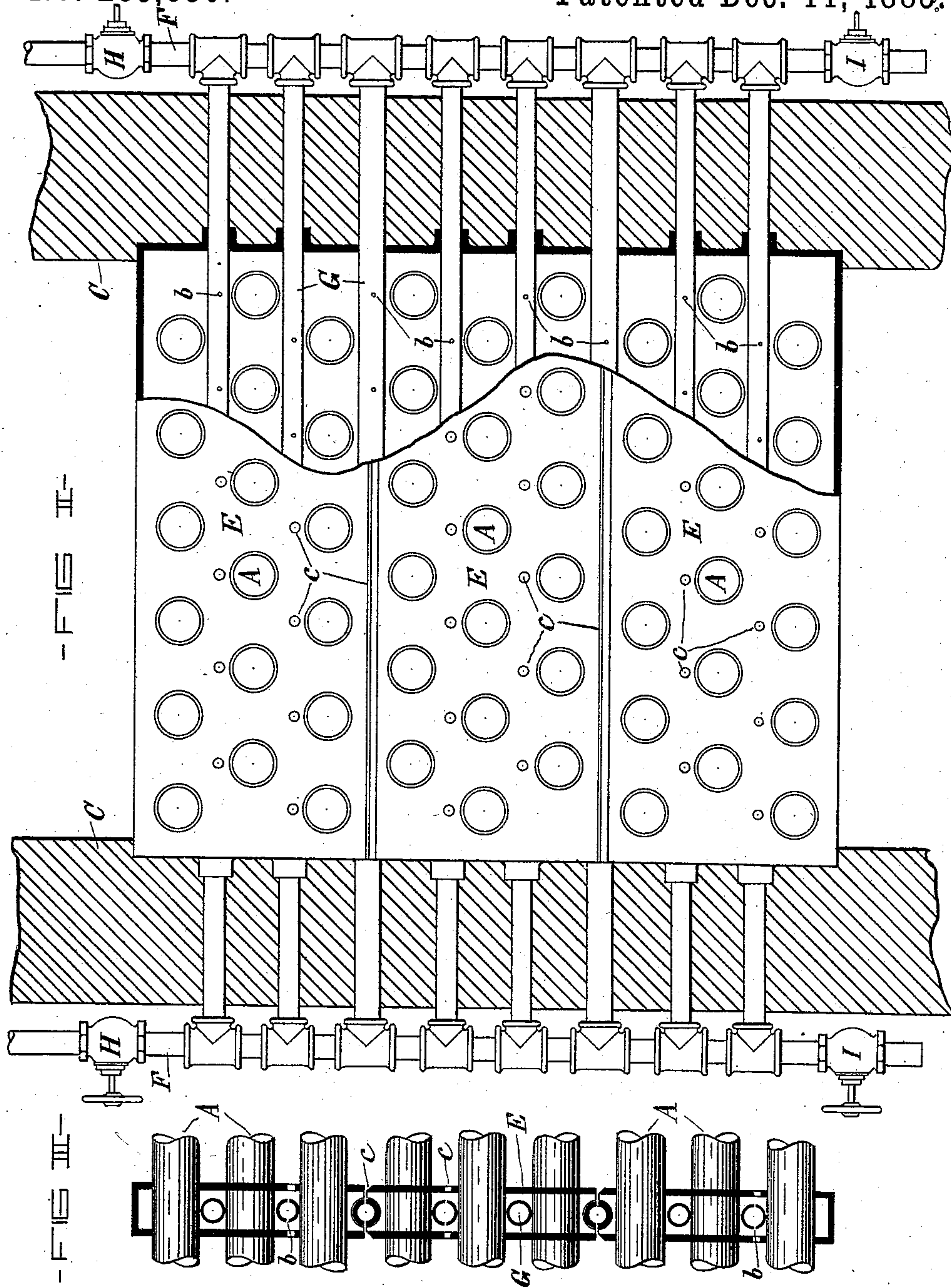
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— INVENTOR —

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*by C. H. Howard,*  
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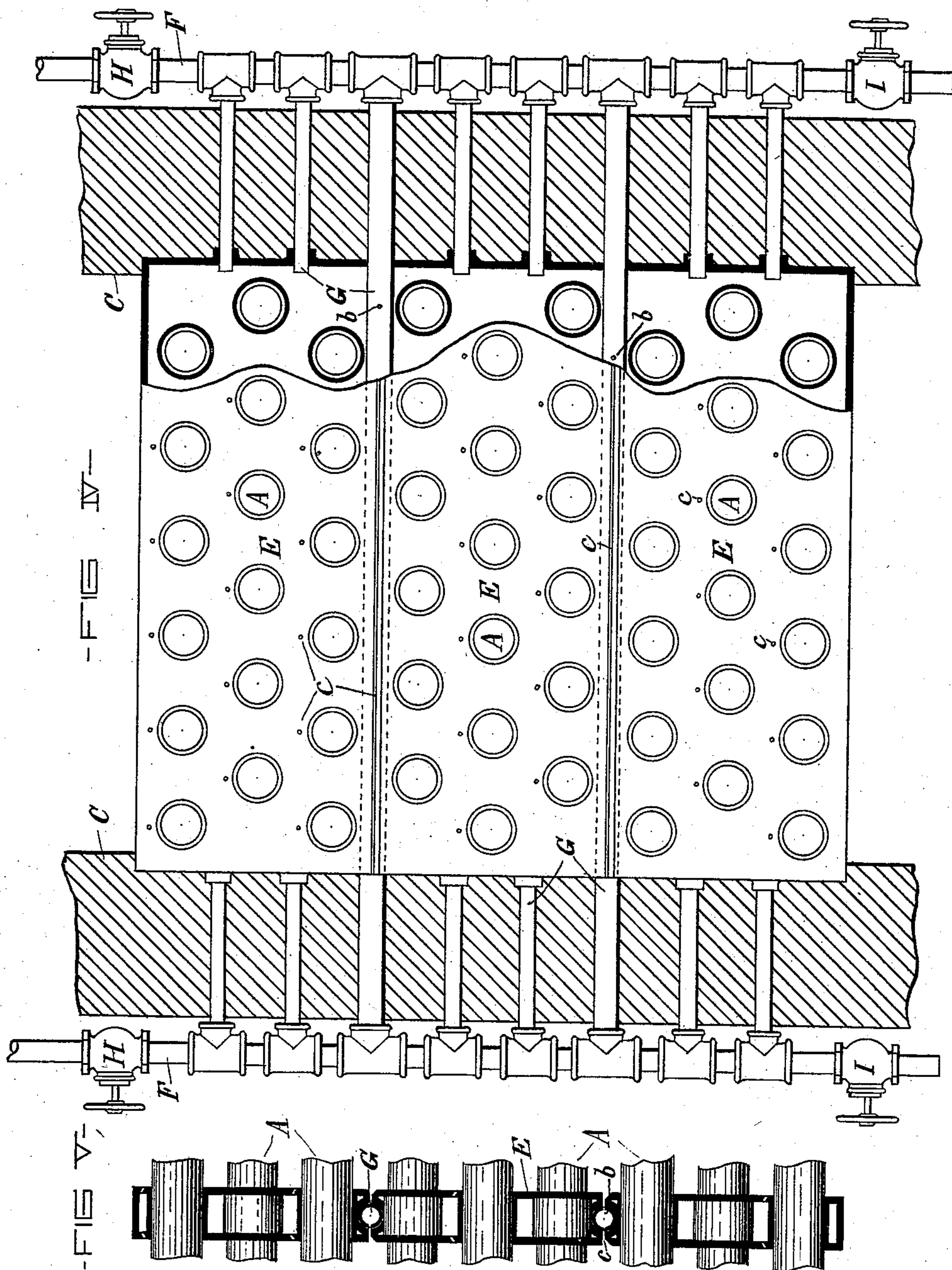
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*Danl. Fisher*  
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# UNITED STATES PATENT OFFICE.

EDWARD J. MOORE, OF BALTIMORE, MARYLAND.

## SECTIONAL SAFETY-BOILER.

SPECIFICATION forming part of Letters Patent No. 289,850, dated December 11, 1883.

Application filed April 12, 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 invented certain Improvements in Sectional Safety-Boilers, of which the following is a specification.

This invention relates to means for effecting a serpentine movement of the products of combustion in their passage from the furnace to the back end of the boiler, which is in communication with a stack or chimney, and for cleansing the outer surface of the tubes of dust or soot.

The said invention consists in the peculiar construction of certain flame-deflecting plates, through which the tubes of the boiler pass, whereby steam admitted to the interior of the said plates is discharged therefrom in jets, which serve to remove dust and soot from the exterior of the said tubes or air admitted to the furnace to combine with the products of imperfect combustion, as will hereinafter fully appear.

In the accompanying drawings, forming a part hereof, Figure I is a longitudinal section of a water tubular boiler embodying my improvements. Figs. II and III are details of the invention on an enlarged scale, and Figs. IV and V illustrate a modification in the invention.

Similar letters of reference indicate similar parts in all the views.

A A are the tubes of the boiler, and B B the legs thereof.

C, C', and C'' are the walls which constitute the boiler-setting.

D is the furnace, having the grate-bars *a*, as is usual.

E E are flame-deflecting plates, through which the tubes A pass. The boiler is shown with two of these plates; but any number may be used.

By reference to Fig. I of the drawings it will be seen that the first of the plates E rests on the bridge-wall C', and the second one is in contact with a suspended or arched wall, C''. By this means the gases and other products of combustion take the course indicated by the dotted arrows, and are more ef-

fective in heating than if their direction should be in a line with the tubes.

By reference to Figs. II and III it will be seen that the flame-plate E is made in sections, and that the ends of the plate or sections of the plate are embedded in or connected with the side walls, C. Consequently the gases have to pass over or under the plate, as the case may be.

F F are steam-pipes leading from the steam-room of the boiler, and G G branch pipes extending between the pipes F F and through the flame-plate E, which is hollow. These branch pipes are perforated at *b*, and opposite each perforation the said plate has an aperture, *c*, considerably larger than the perforations at *b*.

H H are stop or globe valves to control the passage of steam to the branch pipes G. Other globe-valves, I, are situated at the lower end of the pipes F, and are used for a purpose hereinafter described. When the stop-valves I are closed and the ones H open, steam from the boiler is discharged through the apertures at *b* and the larger openings, *c*, longitudinally of the tubes A, and removes any accumulation of soot or dust thereon. This cleaning operation is only occasionally practiced, and when the tubes are free from dust or soot the valves H are kept closed and the ones I opened. Air now enters through the valves I to the pipes F and G, and escapes through the perforations at *b* to the space around the tubes A and combines with the gases, thereby assisting in their complete combustion.

In Figs. IV and V the branch pipes G, except those which secure the sections of the flame-plate together, connect with the interior of the flame-plate, which is hollow, and the steam or air is thus discharged into the interior of the flame-plate and escapes through small holes therein.

With this arrangement the flame-plate is a closed box and remains under internal pressure.

I claim as my invention—

In a sectional water tubular boiler, a flame-deflecting or partition plate surrounding the

tubes, having openings therein, which form the means of communication between the exterior of the boiler and the space surrounding the said tubes, and arranged to conduct air or  
5 steam to the said space and form jets which extend longitudinally of the tubes, combined with certain of the walls of the setting, whereby the products of combustion are forced to

take a serpentine direction in the passage from the furnace to the back connections, substantially as specified. 10

ED. J. MOORE.

Witnesses:

EDWARD J. DIGGS,  
WM. T. HOWARD.