

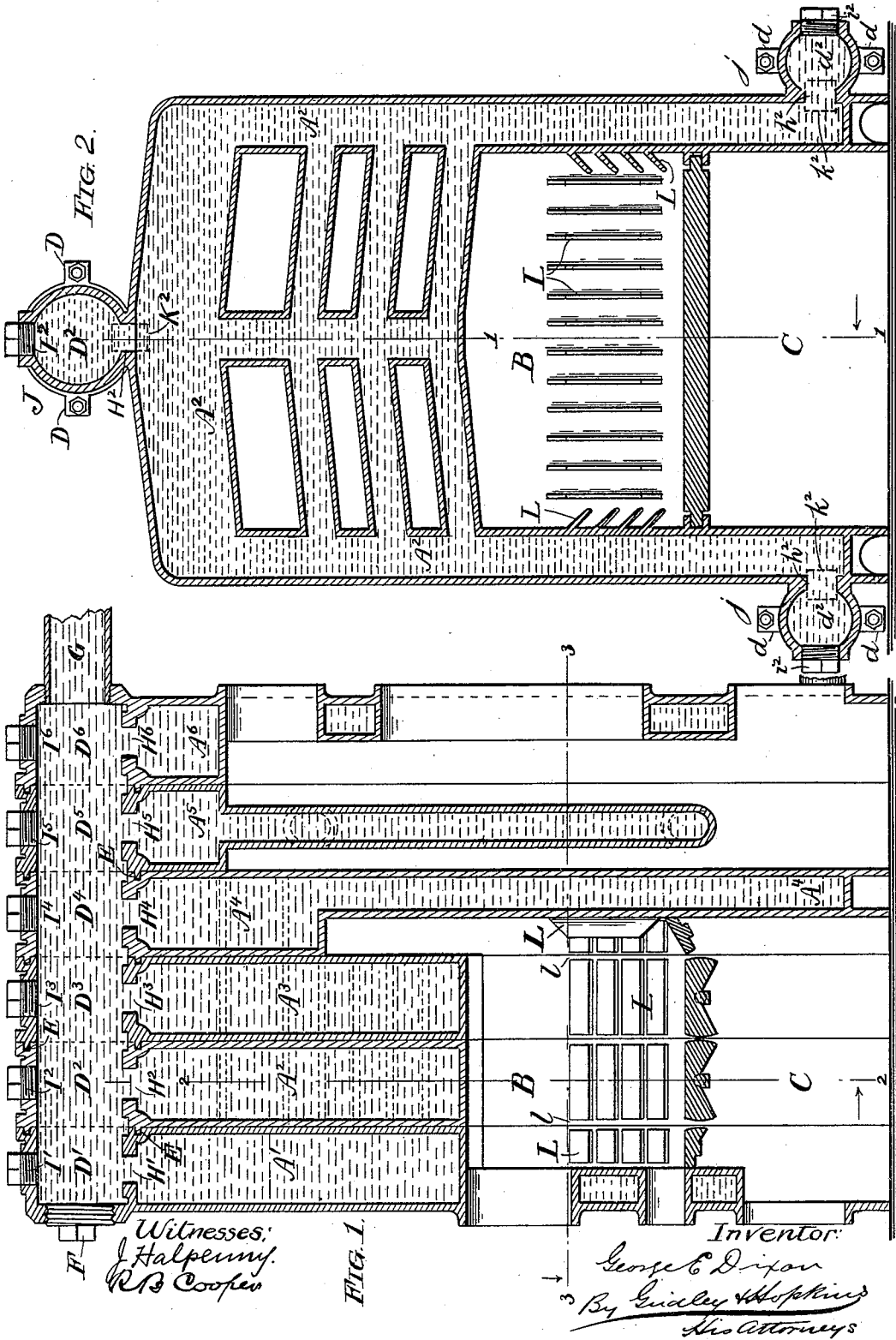
(No Model.)

2 Sheets—Sheet 1.

G. E. DIXON.
BOILER.

No. 481,898.

Patented Aug. 30, 1892.



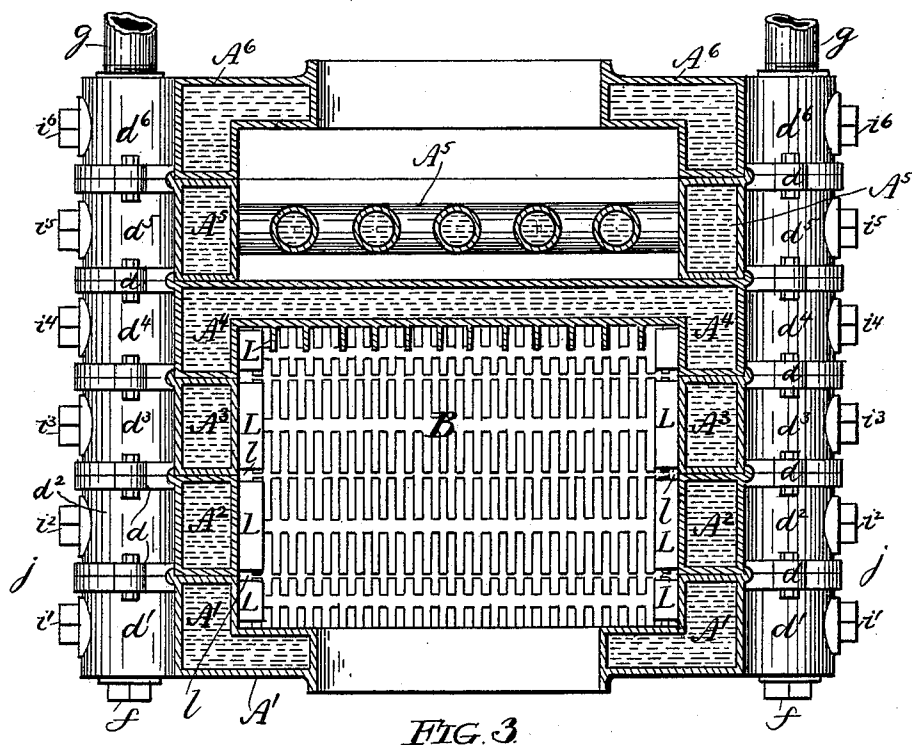
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BOILER.

No. 481,898.

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Witnesses:
J. Halpenny
A. D. Cooper.

Inventor
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UNITED STATES PATENT OFFICE.

GEORGE E. DIXON, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
ROBERT WEBSTER CALDWELL, SR., OF SAME PLACE.

BOILER.

SPECIFICATION forming part of Letters Patent No. 481,898, dated August 30, 1892.

Application filed November 3, 1891. Serial No. 410,760. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. DIXON, a citizen of Great Britain, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Boilers, of which the following is a specification.

The present invention relates more especially to sectional boilers; but one of its features is applicable to boilers of other descriptions. Sectional boilers as customarily constructed are open to the objection that if one section becomes cracked or broken the boiler cannot be used until such section has been removed and a perfect section put in its place. To avoid this total disabling of the boiler by a defect in one of its sections and enable its use with no more serious inconvenience than a slight diminution in its capacity until a time when it can best be dispensed with for repairs, it has heretofore been proposed to place valves in the induction and eduction pipes of each section; but this arrangement is not practicable and has not gone into use, so far as I am aware, because the sole purpose of the valves is to meet a contingency that may never happen, and their cost is out of all proportion to the benefit that will probably be derived from them when, if ever, the contingency does happen.

One of the objects of my present invention is to provide a simple, cheap, and otherwise practical means whereby when any section of the boiler becomes disabled it can be closed up, so as to prevent circulation through it, while the remaining sections are left in operative condition.

The present invention consists in certain features of novelty that are particularly pointed out in the claims hereinafter, and in order that it may be fully understood I will describe it with reference to the accompanying drawings, which are made a part of this specification, and in which—

Figure 1 is a vertical longitudinal section of one of the improved boilers on the line 1 1, Fig. 2. Fig. 2 is a vertical transverse section thereof on the line 2 2, Fig. 1. Fig. 3 is a horizontal section thereof on the line 3 3.

It is understood that in building sectional boilers the number of sections used is deter-

mined by the size that it is desired to have the boiler when completed. The boilers shown by Figs. 1, 2, and 3 is made up of six sections, A' A², &c.; but I desire to have it understood that my invention is not limited to the number of sections used, nor is it limited to their details of construction, except as pointed out in the claims hereinafter. The several sections differ somewhat from each other, as each must have the features that are necessary to meet the requirements of the particular part of the furnace in which it is located. For example, the front section must have openings forming the doorways for affording access to the fire-box B and ash-pit C, the rear section must have openings communicating with the flues, an intermediate section must have the bridge-wall, and so on; but as these features form no part of my present invention, and are fully understood by those skilled in the art, they need not be particularly described here.

Upon the top of each of the boiler-sections A', &c., is a short cylinder D' D², &c., that is of the same length as the section itself, so that when the several sections are placed together the several cylinders unite end to end and form a continuous pipe or "header" J, extending the whole length of the boiler, the several sections being held together by bolts passing through lugs D, cast on the ends of the cylinders. Each of these cylinders has in one of its ends an annular groove and on the other end a corresponding annular tongue E, so that when they are secured together the tongue of one section enters the groove of the adjacent section and forms a tight joint, soft packing being used or not, as desired. The outer ends of the end cylinders D' and D⁶ are not provided with either tongues or grooves, but are provided with screw-threads for receiving either a plug, as shown at F, or a pipe, as shown at G. The header-sections D', &c., communicate with the interior of the respective boiler-sections through openings H' H², &c., and opposite these openings they are provided with somewhat larger openings or hand-holes that afford access to the interior of the header and are kept normally closed by plugs I' I², &c.

j j are headers constructed precisely like

the one just described and located at the sides of the boiler near the bottom thereof. Corresponding parts in all of these headers are indicated by similar reference-letters, capital letters being used for the top header and small letters for the side headers for the sake of distinction.

It will be understood that the circulation is from the return-pipes *g g* into the side headers *j j*, thence through the openings *h' h'*, &c., into the bottoms of the several boiler-sections *A' A'*, &c., thence upward through said sections and through openings *H' H'*, &c., into the top header *J*, and then into the outlet-pipe *G*. Should one of the boiler-sections (*A'*, for example) become damaged, the plugs *I'* *i'* are removed and the opening *H' h' h'* are closed, so as to completely cut out the section *A'* of the boiler. The plugs may then be replaced and the boiler used as before, the only difference being that the section *A'* is closed to circulation and the capacity of the boiler proportionately diminished. I do not limit myself to any particular means for closing these openings; but I prefer to use plugs, as indicated by dotted lines at *K' k' k'* in Fig. 2, and these plugs may be either screwed in or driven in, as desired. In order to afford ample access to the header, the openings for this purpose are made somewhat larger than the openings *H'*, &c.

The drawings show the headers as being cylindrical, made in sections, and integral with the boiler-sections; but I desire to have it understood that my invention is not limited to these features, nor to the particular means shown and already described for closing communication between the header and boiler sections.

In order to keep the fuel out of contact with the water-jacket, I arrange within the fire-box an open grating formed of a number of flanges *L*, which project inward and downward from the wall of the fire-box and extend

horizontally. These flanges are made in sections corresponding with the boiler-sections, and vertical air-spaces *l* are left between their meeting ends in order to permit the upward passage of air.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a sectional boiler, the combination, with the several sections thereof, of a header having a number of openings through which it communicates with the several sections of the boiler and a second set of openings or hand-holes affording access to the openings aforesaid, a plug for closing at will any of the openings through which the header and any of the boiler-sections communicate, and removable plugs closing said hand-holes, substantially as set forth.

2. In a sectional boiler, the combination of a number of sections, a header formed in sections corresponding with the boiler-sections, openings through which the several sections of the boiler and header communicate, openings affording access to the interior of the several sections of the header, removable plugs closing the latter openings, and means for closing the former openings, substantially as set forth.

3. In a sectional boiler, the combination of a number of sections *A'*, &c., a header formed in sections *D'*, &c., corresponding with the boiler-sections, opening *H'*, &c., through which the boiler-sections and header-sections communicate, a second series of openings larger than the openings *H'*, &c., for affording access to the interior of the header, removable plugs *I'*, &c., closing said openings, and plugs for closing at will any of the openings *H'*, &c., substantially as set forth.

GEORGE E. DIXON.

Witnesses:

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