

No. 659,645.

Patented Oct. 16, 1900.

C. D. CASAD.  
PIPE BOILER.

(Application filed Oct. 31, 1899.)

(No Model.)

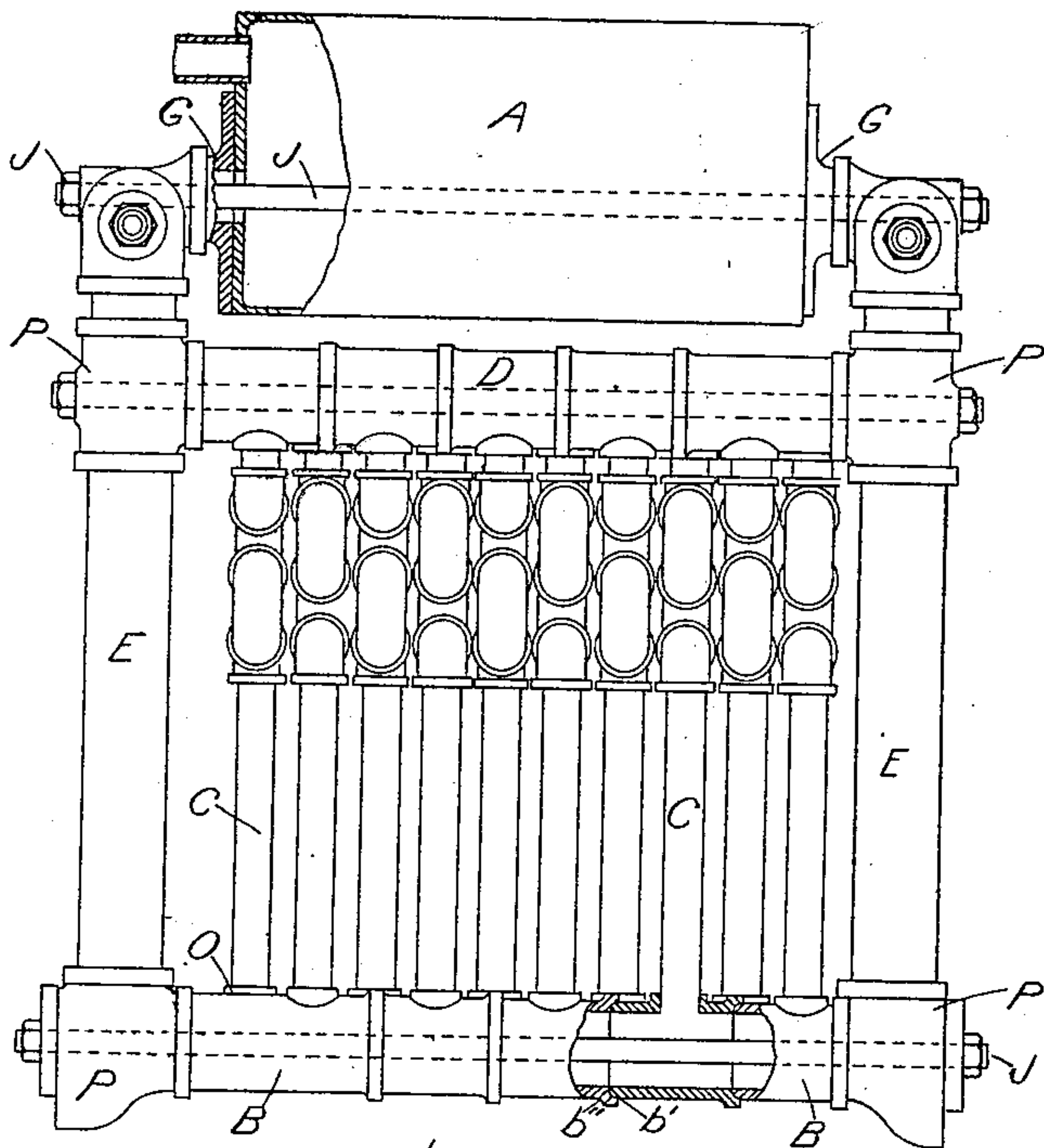


FIG. 1.

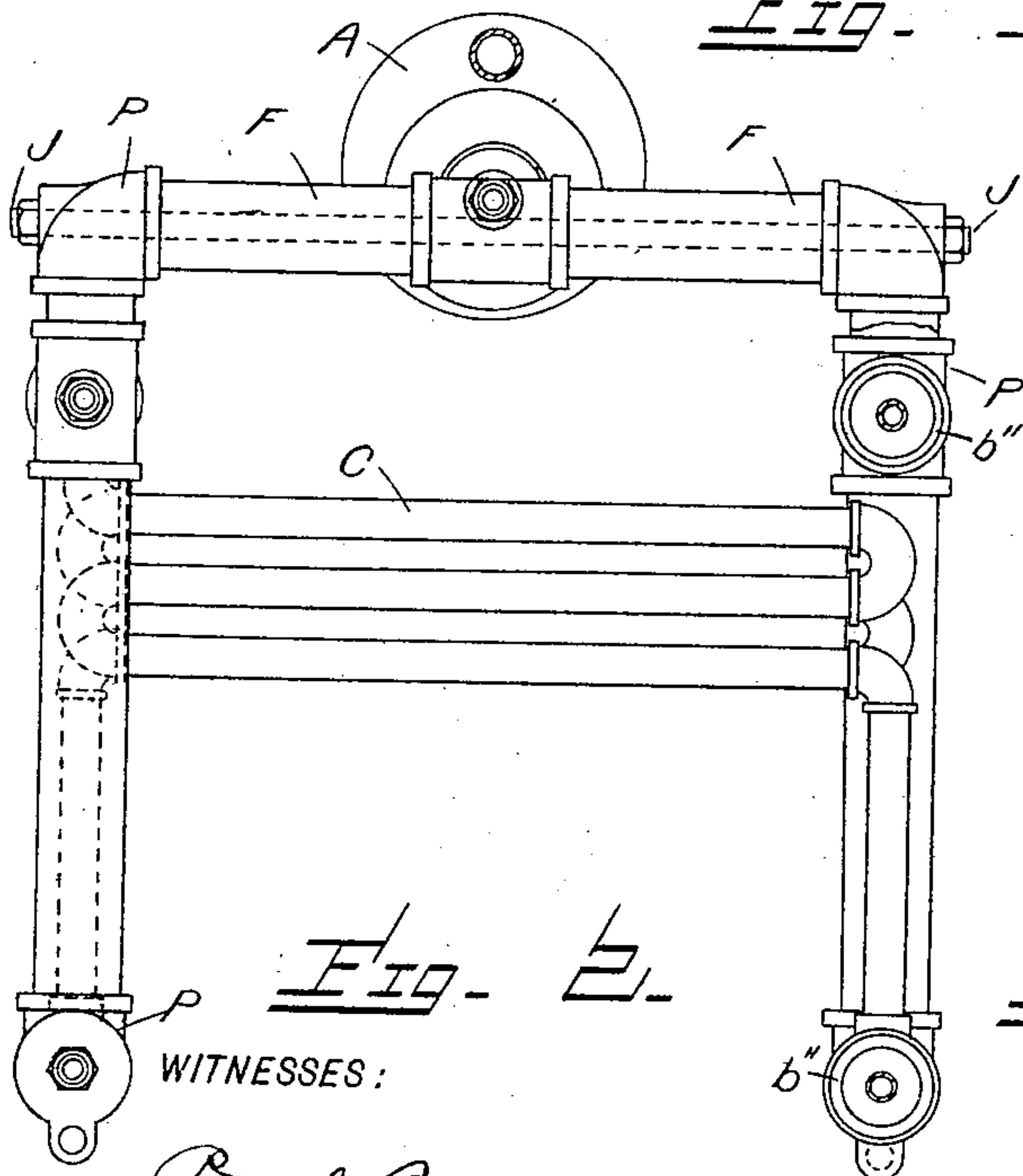


FIG. 2.

WITNESSES:

Paul Barnes,  
W. E. Van Allen

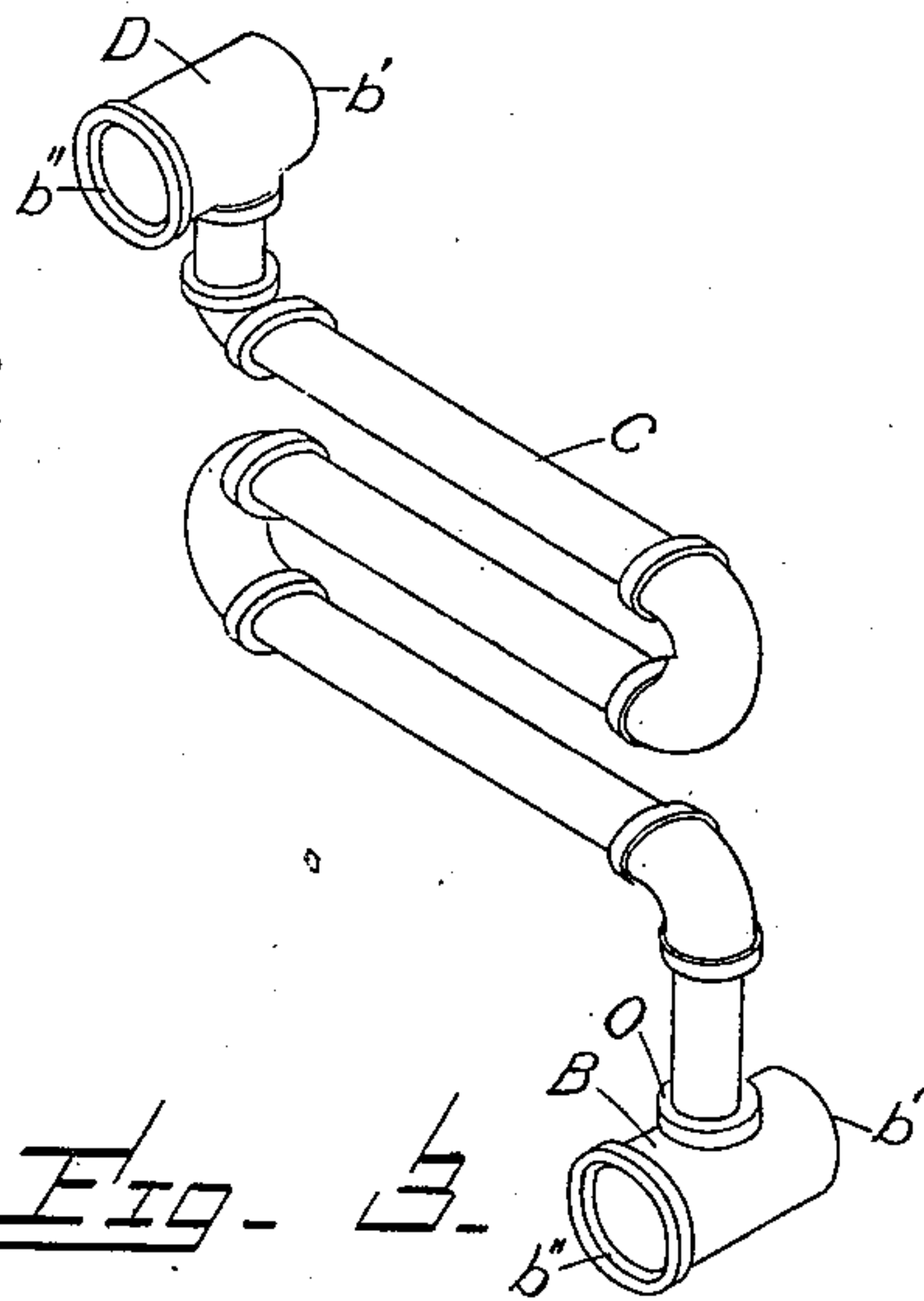


FIG. 3.

INVENTOR

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BY  
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# UNITED STATES PATENT OFFICE.

CHARLES D. CASAD, OF SEATTLE, WASHINGTON.

## PIPE-BOILER.

SPECIFICATION forming part of Letters Patent No. 659,645, dated October 16, 1900.

Application filed October 31, 1899. Serial No. 735,412. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES D. CASAD, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Pipe-Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in pipe-boilers; and it consists in the novel manner of combining the parts hereinafter described and pointed out in the claims.

The objects of my improvements are, first, to provide means of uniting the several principal members of a pipe-boiler without the necessity of using either pipe-unions or the said pipes having oppositely-cut threads thereon; second, to permit the boiler being enlarged or decreased in size to suit varying requirements, and, third, to furnish a means of constructing a boiler that may be readily taken apart to be packed for shipment in a small space and again assembled by any person of ordinary intelligence.

Referring to the accompanying drawings, forming a part of this specification, in which similar letters refer to corresponding parts in all the views, Figure 1 is a side elevation of a pipe-boiler, parts of which are in section to show my invention. Fig. 2 is a front elevation of the boiler with my invention applied thereto, and Fig. 3 is a perspective view of a steam-generating coil and connections.

In the drawings, A is a steam-drum.

B B are short lengths of pipes or interfitting pipe-sections arranged in series to form the water-drums, and the several pieces are connected by steam-generating coils C C to a similar series D D, forming the steam-separating drums, these coil-pipes C C connecting the pipe-sections in pairs, so that when the stay-bolts J J are removed the pairs of sections, with their connecting-pipes, are independently removable.

E E are down-flow pipes, and F F are transverse pipes making connection between the aforesaid separating-drums and the steam-drum A.

The several pieces B B and D D are of peculiar shape, their ends being ground to make steam-tight joints by rounding one end *b'* to fit into hub-shaped or bell-mouthed end *b''* of the adjoining piece and into the fittings P, said pieces B and D having side outlets O, screw-threaded for the reception of the steam-generating coils C. The transverse connecting-pipes F and the flanged pipes G, secured to steam-drum heads, are likewise ground to fit into corresponding seats in the fittings H H. All of these detachably-seated connections are held together by through stay-bolts J J, preferably hollow and drawn up to make steam-tight joints by nuts screwed upon their ends.

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

1. In a pipe-boiler, the combination with supporting down-flow pipes, of water-drums and steam-separating drums, connected to and supported by the said down-flow pipes, and each comprising a series of pipe-sections having interfitting ends, means for securing the pipe-sections of each drum together, and coil-pipes connecting such pipe-sections in pairs, so that each pair of pipe-sections with the connecting coil-pipe is independently removable.

2. In a pipe-boiler, the combination with supporting down-flow pipes, of water-drums and steam-separating drums, connected to and supported by the said down-flow tubes, and each comprising a series of pipe-sections having interfitting ends, stay-bolts for securing the pipe-sections of each drum together, coil-pipes connected to the respective pipe-sections, a steam-drum, pipes connected to the steam-separating drums and to the steam-drum by detachably-seated connections, and stay-bolts for holding such detachably-seated connections together, so as to enable separation of the parts.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES D. CASAD.

Witnesses:

PIERRE BARNES,  
ERNEST E. GILMER.