

(Model.)

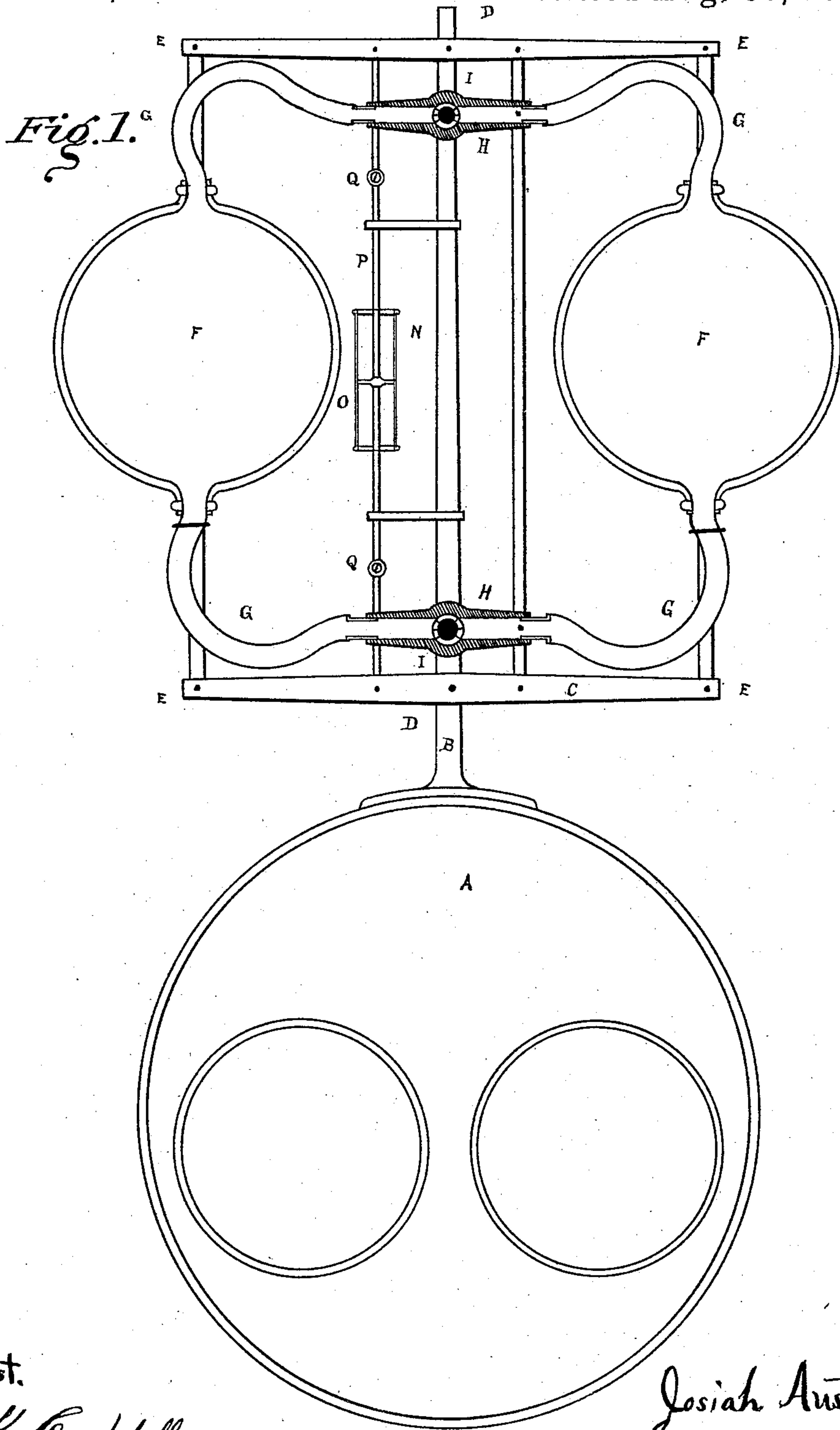
2 Sheets—Sheet 1.

J. AUSTIN.

WATER FEEDER FOR BOILERS.

No. 368,990.

Patented Aug. 30, 1887.



Attest.

*E. K. Campbell*  
*J. A. Campbell*

*Josiah Austin,*  
*C. D. Campbell, atty*

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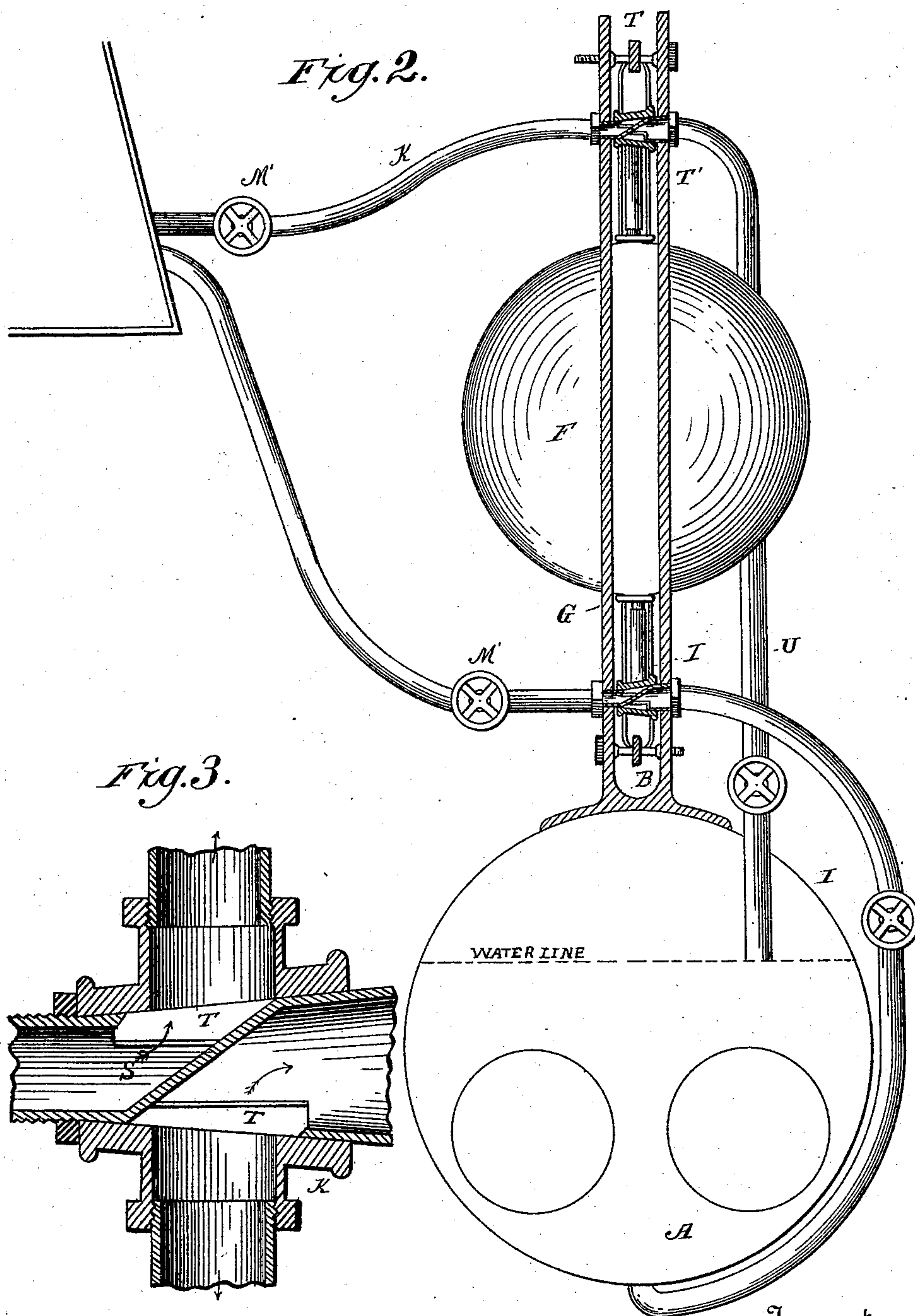
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Witnesses

W. E. Bowen  
W. H. Cooke.

Inventor

Josiah Austin

By his Attorney

C. D. Campbell



# UNITED STATES PATENT OFFICE.

JOSIAH AUSTIN, OF NEAR EAST LIBERTY, OHIO.

## WATER-FEEDER FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 368,990, dated August 30, 1887.

Application filed April 20, 1886. Serial No. 199,500. (Model.)

*To all whom it may concern:*

Be it known that I, JOSIAH AUSTIN, a citizen of the United States, and a resident of near East Liberty, in the county of Logan and State of Ohio, have invented a new and useful Improvement in Water-Feeders for Boilers, of which the following is a specification.

My invention is an improvement on my application No. 168,544, "feed-water for steam-boilers."

Figure 1 is an end view. Fig. 2 is a side view showing parts of the cross-heads in section, with the connections between the chambers, tank, and boiler cut away, so as to show the diaphragm in the cross-head that directs the water to the chamber when it is raised above the diaphragm, and thence to the pipe leading to the boiler under the diaphragm when the chamber is lowered to its emptying position. Fig. 3 is a detached enlarged sectional view of pipe I, showing diaphragm and ports therein.

A is the boiler; B, standard thereon; C, rectangular frame (pivoted at D D' to the standard) for supporting my chambers F F'; E, pivots in the corner of my frame; F F', globular chambers, which alternately receive the water from the tank and feed it to the boiler; G G', flexible pipes that connect the chambers F F' with the rotating T-heads H H'; I I', stationary transverse pipes in the T-heads, through which the water passes to the chambers and to the boiler; K, hose or pipe leading from the tank to the upper T-head, H'; M M', valves to prevent reflux of water and steam; N, air-cylinder having diaphragm O playing therein to break the shock as the chambers rise and fall; P, piston carrying the diaphragm O; Q Q', joints in piston to allow it to play perpendicularly in the air-cylinder; S S', diaphragms in the transverse pipes I; T T', ports through which the water is admitted; U, pipes conveying steam from the boiler into the chambers, where it is condensed, forming a vacuum.

The operation of my improvement is as follows: In the drawings the chambers F F' are shown as balanced and all ports closed. By pulling either chamber, F or F', (let us say F,) down, port T is opened in the pipe connecting with the highest chamber, F', and communication opened to it from the tank, when the water rapidly fills it. It is then let go of, when it descends, establishing a connection

through port T' with the pipe leading to the boiler, and opening connection between the tank and the other chamber, F', which fills with water as the chamber F' is emptying into the boiler through pipe I. When a sufficient quantity has entered the chamber F to overbalance the weight in the lower chamber and the friction of the parts and that of the air-chamber, the chamber F descends, is connected with port T', and is emptied into the boiler through pipe I, while chamber F' ascends again, is connected with port T, and is filled again.

U is a steam-pipe leading from the water-line in the boiler into the upper T-head, and connecting with the chambers F F' alternately through ports T T'. Through this pipe and ports T T' the steam is admitted to the chamber being emptied, equalizing the pressure between the chamber and the boiler, heating the water, and condensing the steam, the condensing steam forming a vacuum and assisting the flow of water into the chamber when the influx-port is opened again into it. Any excess of steam is carried into the tank through pipes K. The steam is admitted alternately to the chambers T T', which are opened and closed alternately by the rocking of the pipe H around pipe I'. When the water rises above the desired water-line, it fills the lower end of the pipe U, preventing steam entering the chambers and stopping the operation until steam is admitted again into the outflowing chamber and pressure equalized.

What I claim as new is—

1. In a boiler-feeder, the combination, with standard B and pivoted frame C, of the chambers F F', pipes H H' I I', ports T T', and the diaphragms S, placed obliquely across the pipes and so arranged that the water shall be admitted to and emptied from the chambers at the bottom, while steam is alternately admitted to the chambers through the top, as and for the purpose set forth.

2. The combination, with pipes H H' I I', ports T T', and diaphragm S, placed obliquely across the pipe, of the flexible tubes G G' and chambers F F', as and for the purpose set forth.

JOSIAH AUSTIN.

Attest:

E. K. CAMPBELL,  
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