

(No Model.)

J. AUSTIN.
BOILER FEEDER.

No. 446,411.

Patented Feb. 17, 1891.

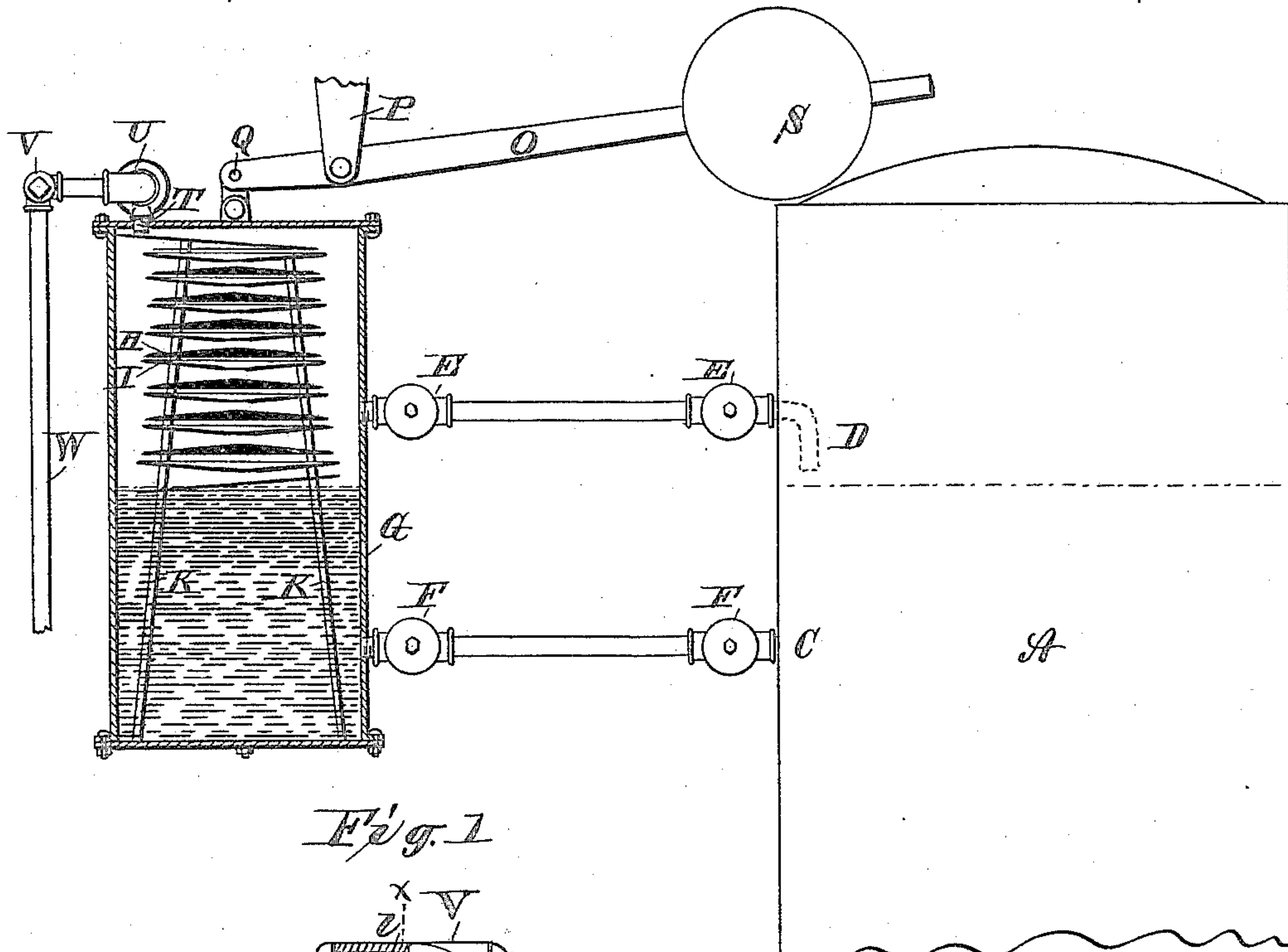


Fig. 1

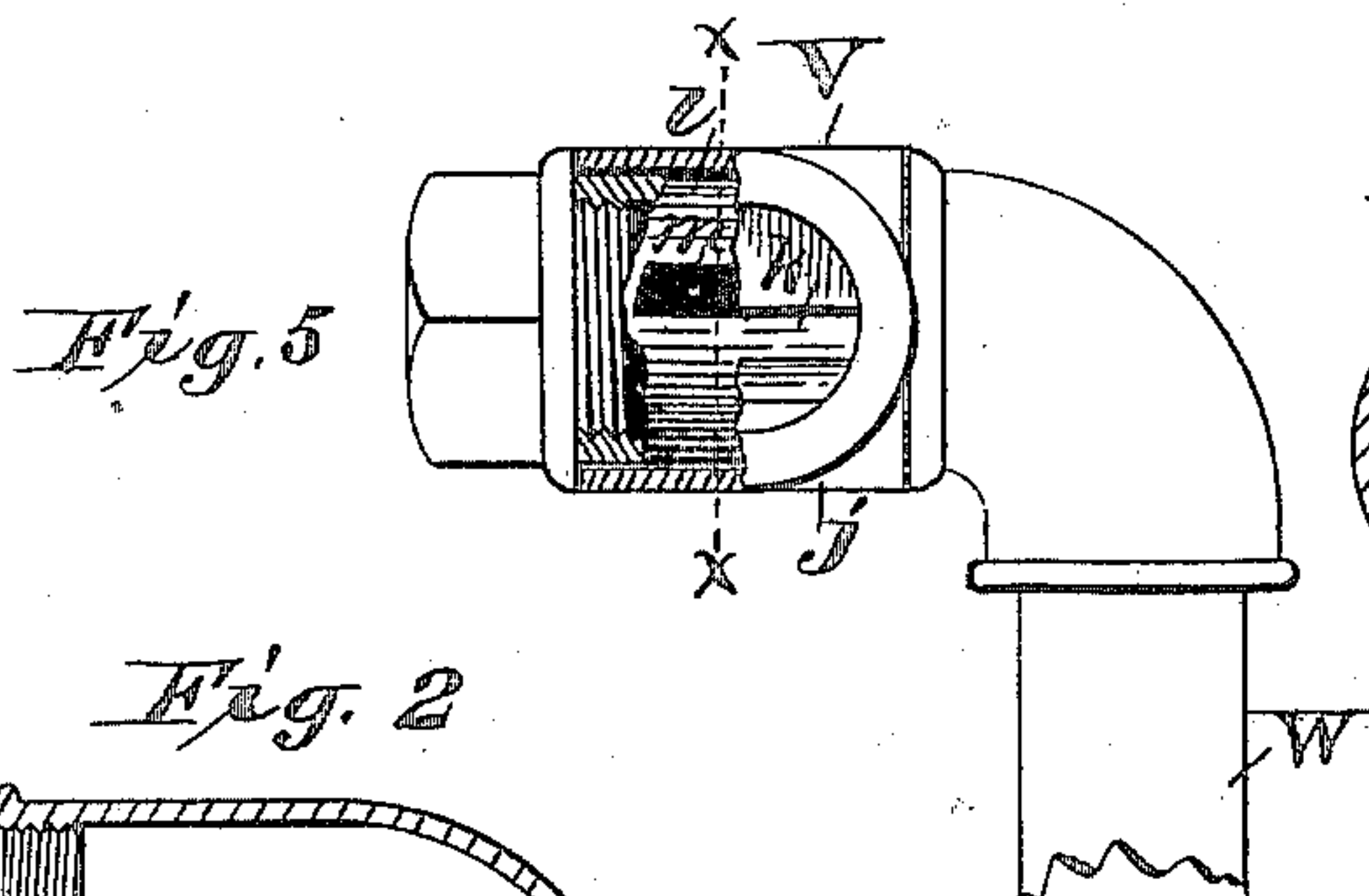


Fig. 5

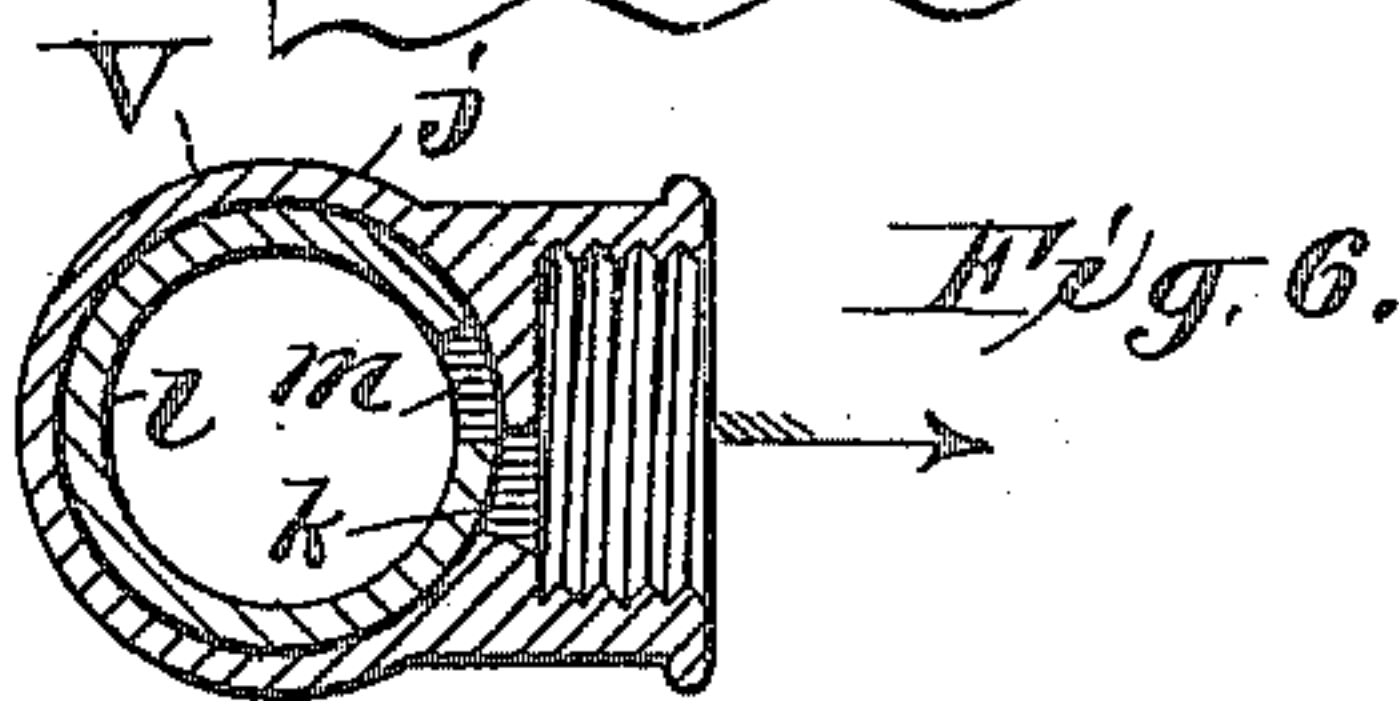


Fig. 6

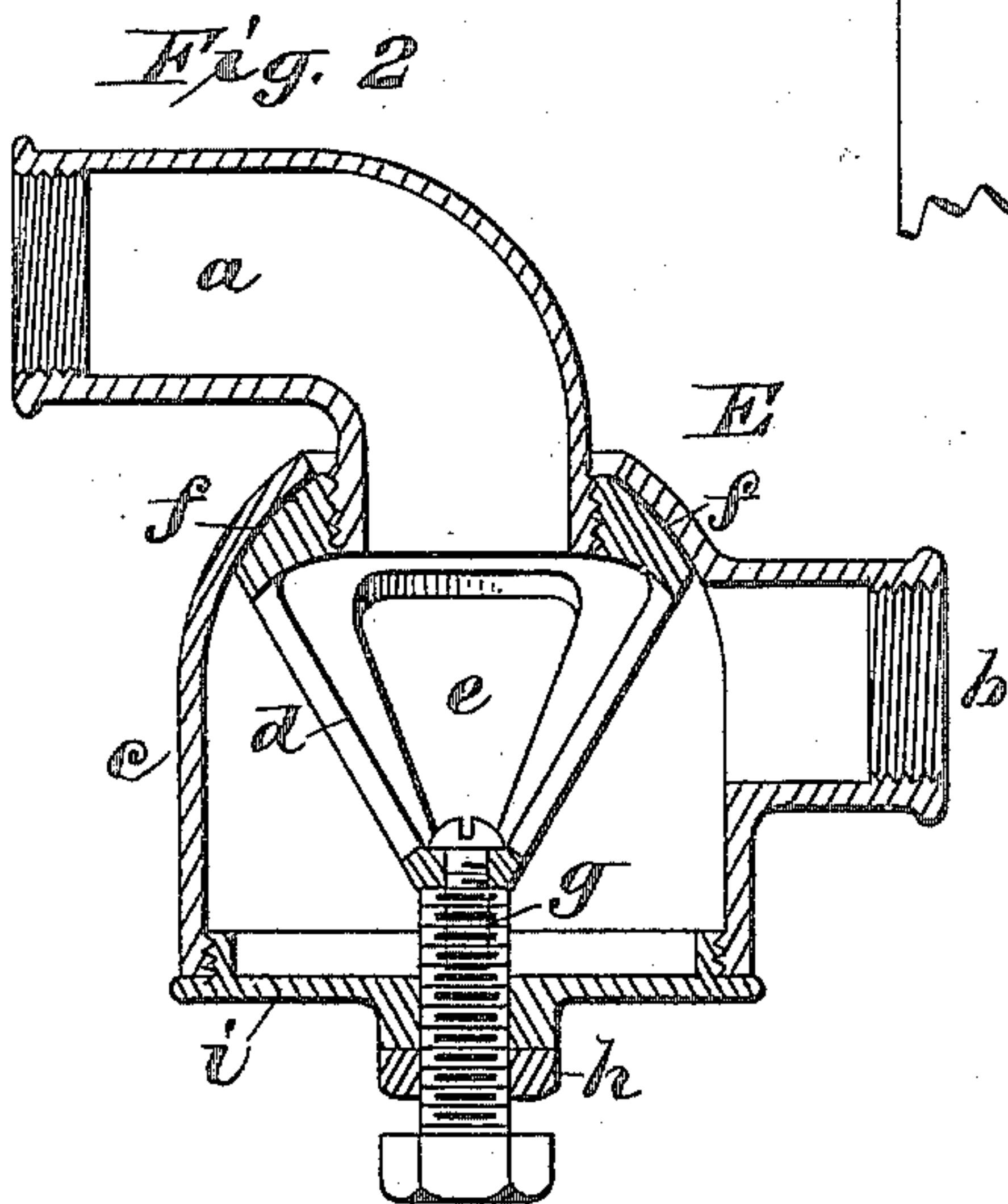


Fig. 2

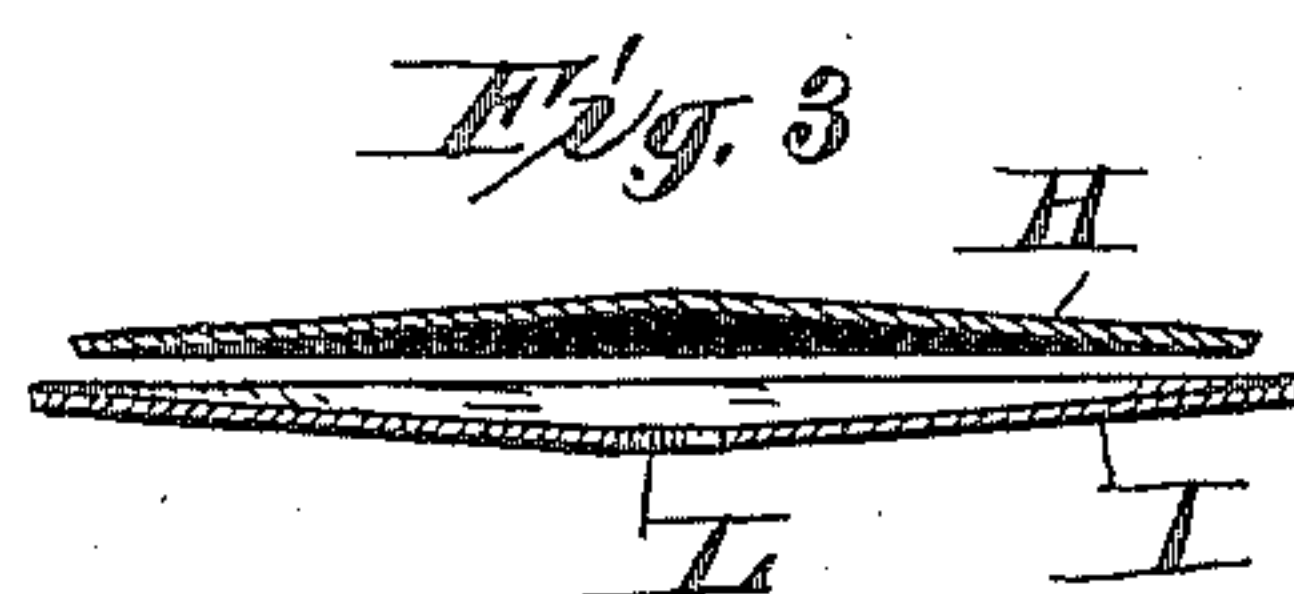


Fig. 3

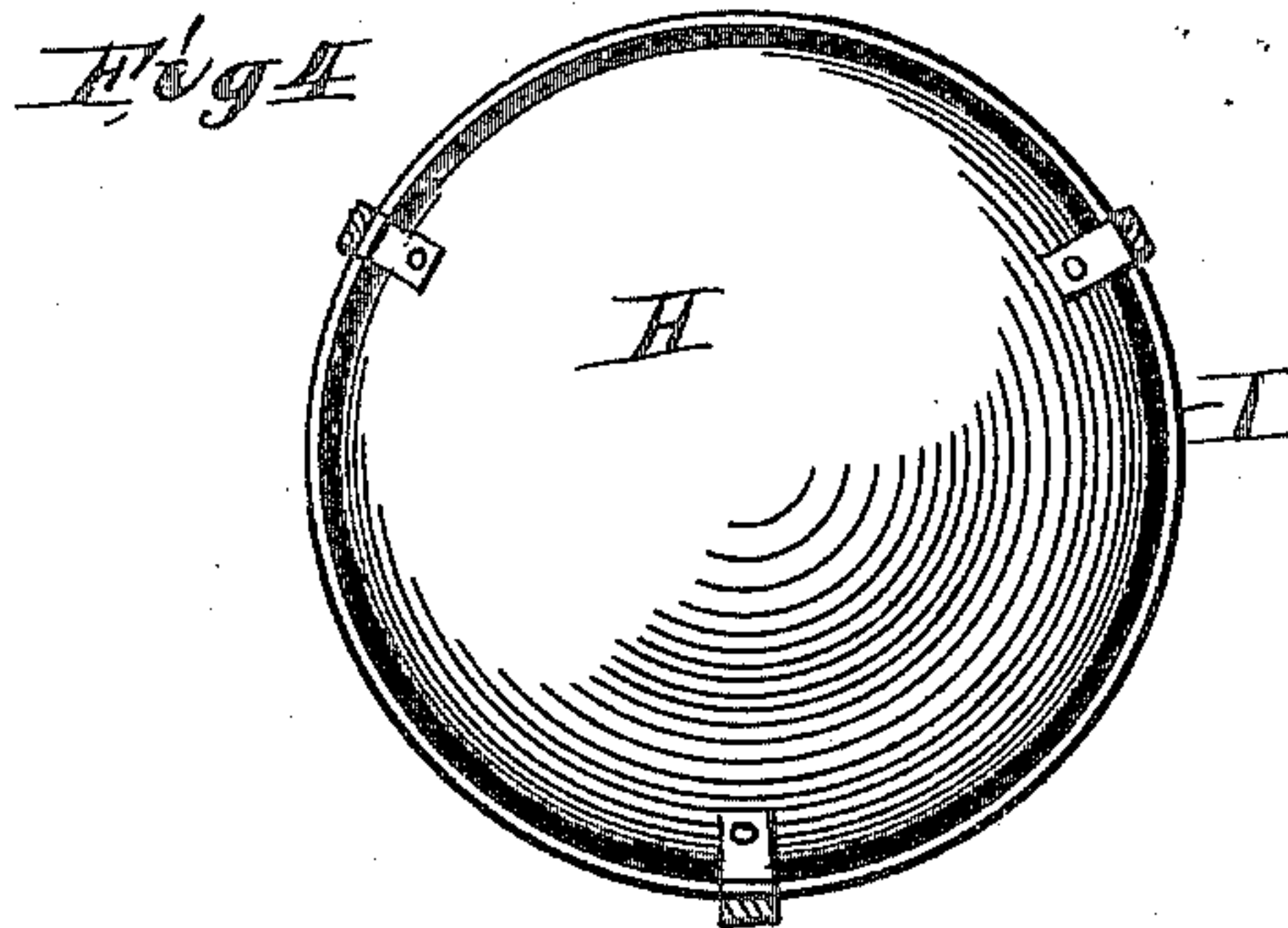


Fig. 4

Witnesses
G. M. Girdley
Ned Campbell.

Inventor
Josiah Austin,
C. D. Campbell Attorney.

UNITED STATES PATENT OFFICE.

JOSIAH AUSTIN, OF NEAR EAST LIBERTY, OHIO.

BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 446,411, dated February 17, 1891.

Application filed August 15, 1887. Serial No. 247,034. (No 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 Boiler-Feeder and Sediment-Collector, of which the following is a specification.

My invention relates to improvements in feeders and lime or sediment extractors for steam-boilers, and is an improvement on my feeder allowed March 7, 1887.

Figure 1 is a side sectional view through my device; Figs. 2 and 3, detached views of my shelves or plates forming the lime-extractor; Fig. 4, a sectional view of my ball-joint; Fig. 5, a detached view of the stop-cock between the hydrant and feeder; and Fig. 6 is a section of the same.

A is an upright boiler; B, a water-line; C, the entrance of feed-pipe; D, a steam-pipe leading from the upper part of boiler into the water-feeder; E E F F, the ball-joints in the water and steam pipes; G, the water-feeder; H I, a series of concave and convex plates over which the water runs; K K K, the legs on which the plates are mounted; L, a hole in center of concave plates; M, the head of the cylinder or feeder G; N, the bolts securing the head fast to the cylinder; O, a pivoted beam having weight S attached to it on one end and the cylinder G attached to the other end by link Q; T, a pipe leading from the stop-cock V to the feeder; U, a swing-joint in the pipe; V, a stop-cock in the pipe W, leading to the hydrant; W, a pipe leading to the hydrant; X, a stand on which the feeder rests when feeding water to the boiler; Y, an inclined plate conducting the water from pipe T to the first of the series of convex plates; a, the outer shell of my ball-joint; b, the ball therein; c, ports in the sides of the ball; d, the screw for taking up the wear.

My device is intended to regulate the supply of water fed to the boiler from a hydrant or other source with pressure, and also to retard and collect the lime and other sediment in the water before it reaches the boiler. For this purpose I mount the cylinder G on one end of the pivoted beam O, and on the other end the weight S, the weight being heavy enough to overbalance the cylinder until quite a quantity of water shall accumulate in it.

A pipe T, having the joint U in it, connects with the supply-pipe W, having the water-cock V therein, and enters the top of the cylinder. Near the bottom of the cylinder a pipe C connects the cylinder with the boiler A. Nearer the top a steam-pipe connects the cylinder with the boiler above the water-line, and has the end entering the boiler bent down to the water-line. These pipes have swing-joints E F, that allow the feeder to rise and fall.

The operation is substantially as follows: As the water from the hydrant enters the feeder through the pipes W and T, it passes down the inclined plate Y, whence it drops onto the center of the first of the series of inclined plates H. From there it runs to the center of the plate and drops through the hole L onto the apex of the convex plate below, whence it flows to the outer edge and drops onto the edge of the concave plate below. The plates are a short distance apart at their edges, and the concave ones extend sufficiently far beyond the edge of the convex ones to catch the water as it drops off. As the water spreads over these plates the lime and sediment deposits on the plates, clearing the water and freeing it from sediment, rendering it fit to enter the boiler. When a sufficient quantity of water has accumulated in the feeder to overcome the weight S and the friction of the parts, the feeder descends until it rests upon the post or stand X, when the water flows into the boiler through the pipe C. When the feeder descends it turns the stop-cock V and shuts off the water from the hydrant-pipe. As the water passes through the pipe C into the boiler the steam passes through pipe D into the feeder, equalizing the pressure in the feeder and boiler. When the water reaches the water-line in the boiler, it closes the dependent end of the pipe D, and the pressure being taken off the water in the feeder, the water stops flowing into the boiler until the water in the boiler falls below the water-line again. When the steam enters the feeder through pipe D, pressure is resumed again. When the water is exhausted from the feeder, or enough for the weight to overcome it and the friction, the feeder rises again, the stop-cock V is automatically turned on again, and the water flows into the feeder

again. When it is desired to remove the accumulated lime and sediment from the feeder, the post X is removed, the bottom M unbolted, the legs K and plates H I removed, and the sediment taken off, when they are again replaced. A space is also left at the bottom of the feeder, below the water-exit, for settlements.

In practice I place my feeder largely or entirely above the boiler, so that the water-line, when the feeder is filled to its highest supply-point, is considerably above the water-line in the boiler, and I balance the feeder so that it will rise while there still remains enough water in it to feed the boiler while the tank is filling, if the water in the boiler should fall below the water-line and expose the steam-pipe D. The steam that is admitted to the feeder through the pipe D when it is open heats the water in the feeder, so that the cold water is never fed into the hot boiler. The feeder is also so balanced that when it rises enough water rushes into it in a few moments

to cause it to fall again; so there is no possibility of the water varying to any noticeable degree in the boiler. In fact I find that the greatest variation is only about one-fourth of an inch.

What I claim is—

1. In a water-feeder, the balanced cylinder G, having the series of removable concave and convex plates mounted on legs K, as and for the purpose set forth.

2. The combination, with the balanced feeder G, stop-cock V, boiler A, and water-pipe C, of the steam-pipe D, opening into the boiler just above the water-line, as and for the purpose set forth.

3. The combination, with the boiler A and cock V on the hydrant-pipe, of the balanced feeder G, located between the hydrant-pipe and boiler, as and for the purpose set forth.

JOSIAH AUSTIN.

Witnesses:

J. Q. A. CAMPBELL,
W. L. JOHNSTON.