

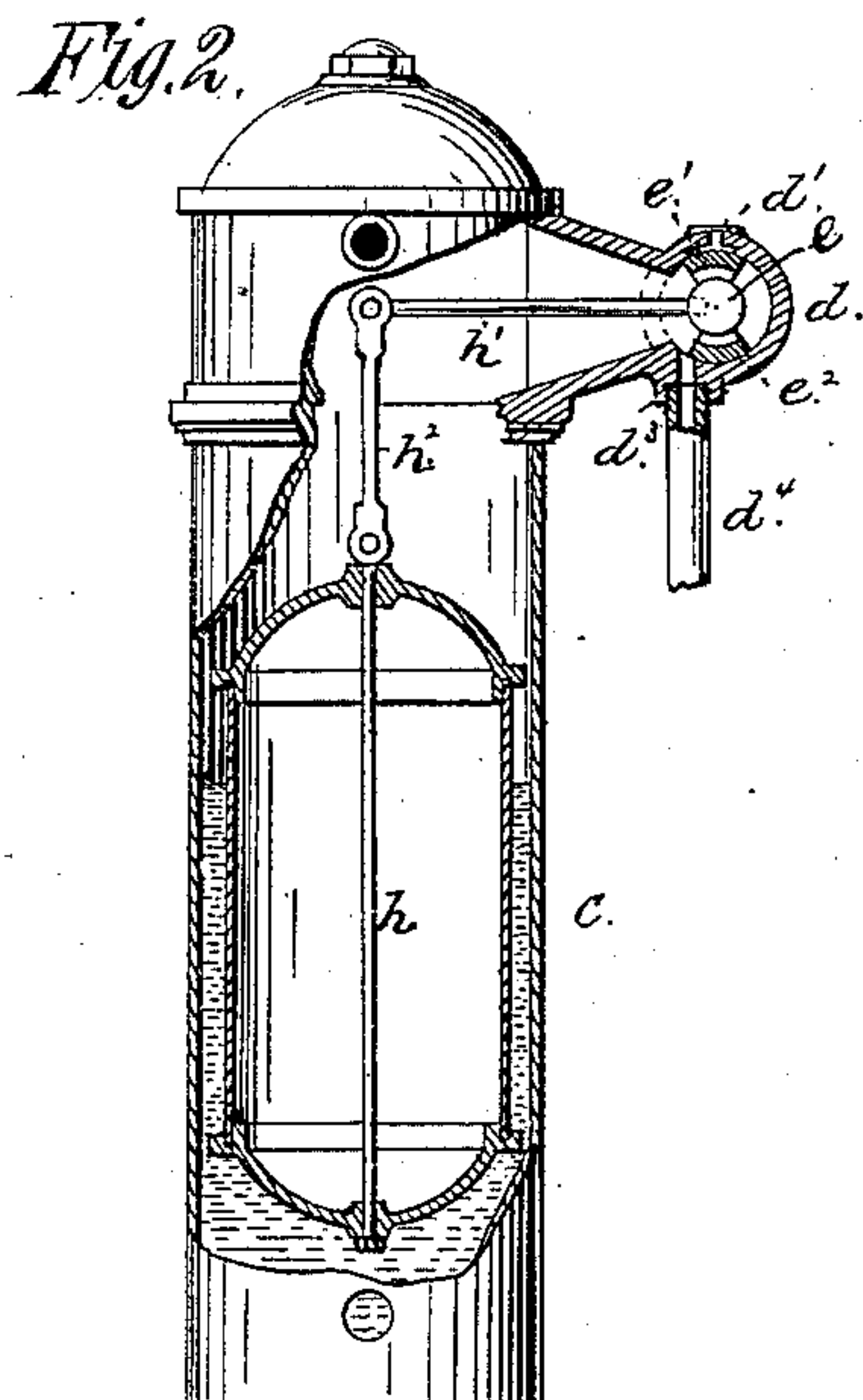
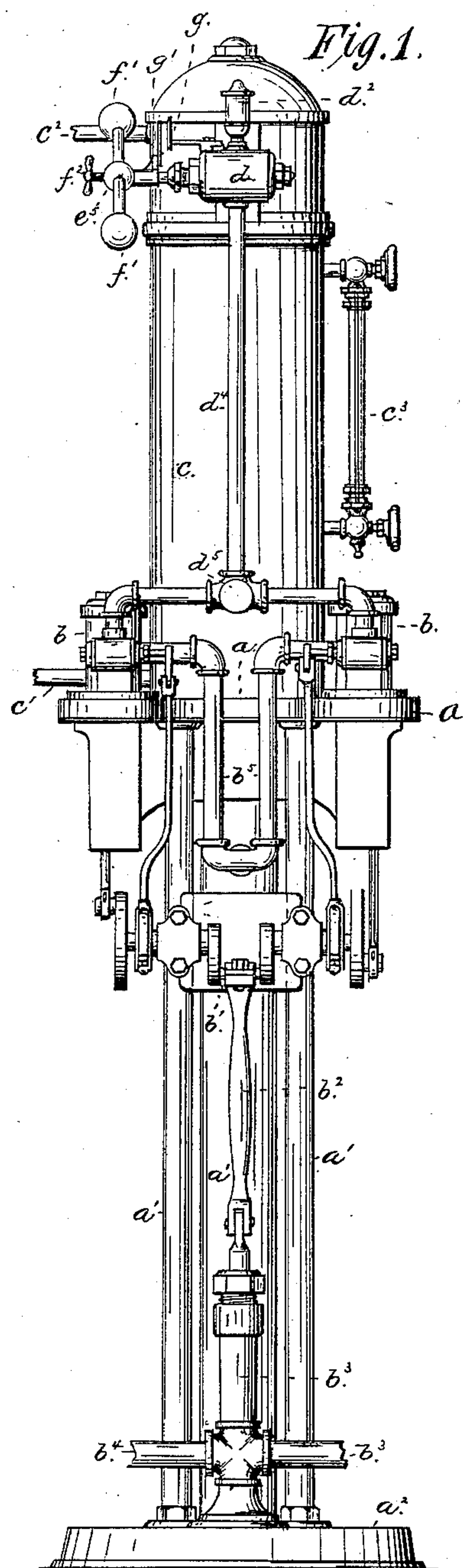
(No Model.)

2 Sheets—Sheet 1.

D. C. WALTER.
BOILER FEEDER.

No. 264,209.

Patented Sept. 12, 1882.



Witnesses:
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J. C. Clark

Inventor.
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Fig. 3.

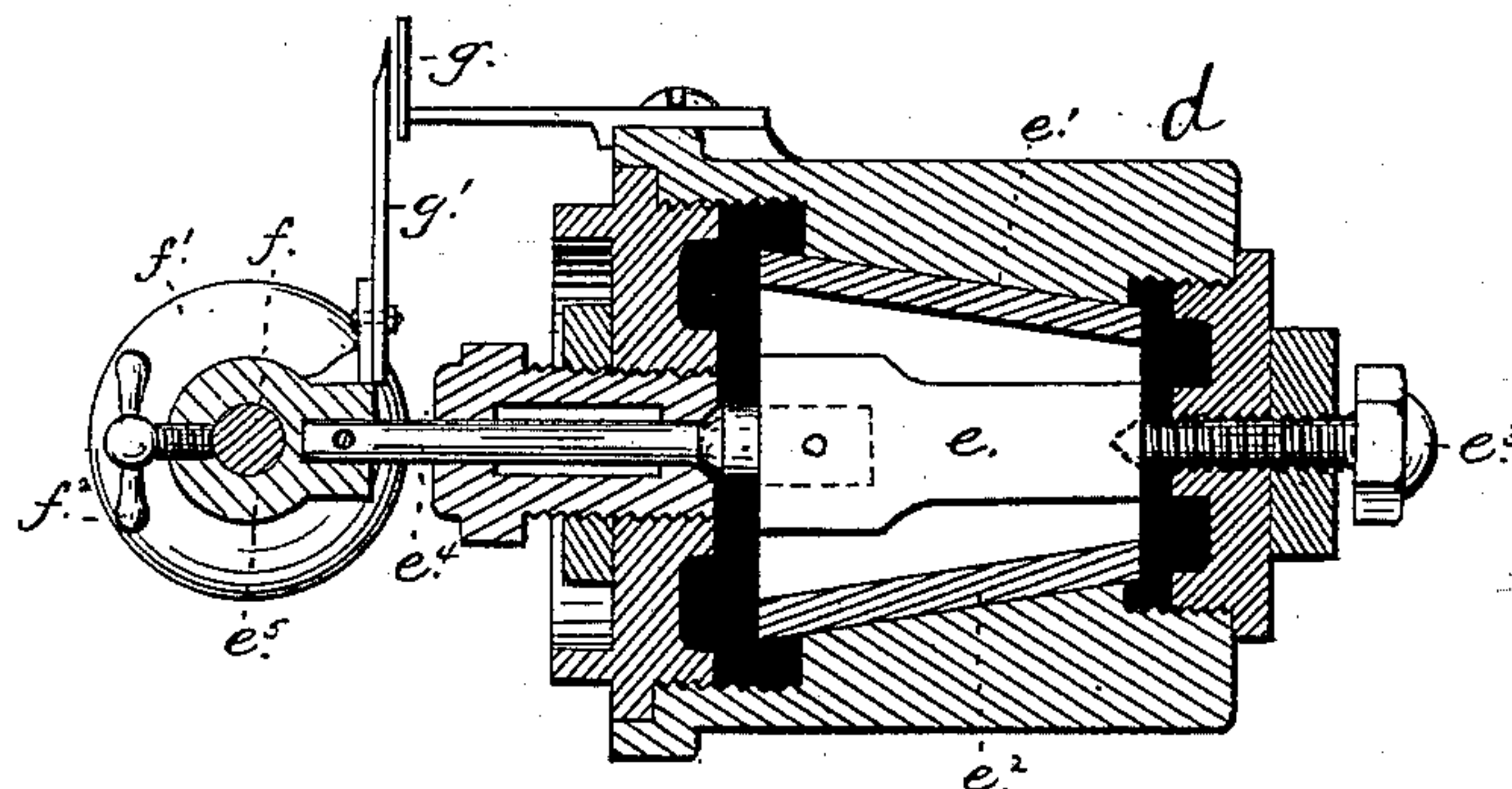
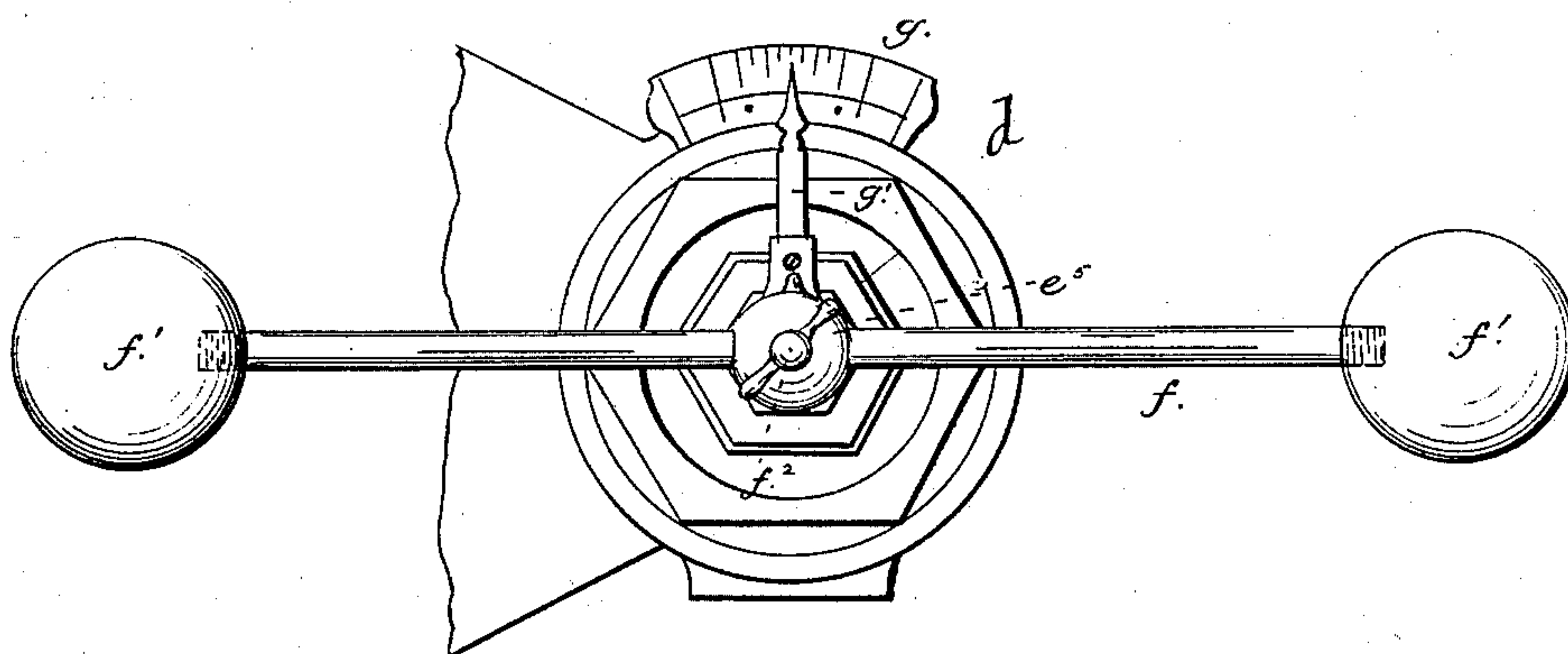


Fig. 4.



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UNITED STATES PATENT OFFICE.

DAVID C. WALTER, OF TOLEDO, OHIO.

BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 264,209, dated September 12, 1882.

Application filed May 31, 1882. (No model.)

To all whom it may concern:

Be it known that I, DAVID C. WALTER, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Automatic Boiler-Feeders, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to improvements in automatic boiler-feeders; and it consists in the means whereby I automatically regulate the feed of water to the boiler, and in other improvements, as will be hereinafter fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my feeder. Fig. 2 is a detail view of the float-chamber. Fig. 3 is a detached section of the regulating-valve and chamber, and Fig. 4 is a detail view.

a represents a bed-plate, which is supported on standards *a'*, extended from base *a*².

b *b* represent steam-cylinders, which are supported in arms or brackets extended from bed-plate *a*. These steam-cylinders are properly connected by pistons, piston-rods, and eccentrics and cranks to give motion to the crank *b'*, which is connected by pitman *b*² to piston of pump *b*³, by which water is pumped into the boiler in the operation of the device, as will be described.

*b*³ represents a pipe leading to the water-supply, and *b*⁴ represents the boiler feed-pipe.

*b*⁵ represents the exhaust-pipes from steam-cylinders *b*.

c represents the float-cylinder chamber. It is seated on bed-plate *a*, alongside the boiler, with its upper end projected above the water-line of the boiler, and it is connected thereto by pipes, as will be described.

c' is a pipe connecting the lower part of cylinder *c* with the lower part of the boiler, which is arranged alongside.

*c*² represents a pipe connecting the upper part of float-chamber with the upper portion or steam-chamber of the boiler.

*c*³ represents a water-gage secured to float-chamber.

d represents a valve-casing extended from and opening into the upper end of the float-chamber.

d' is an exit-port through upper side of the valve-casing, to which is secured the whistle *d*².

*d*³ is an exit-port through lower side of valve-casing, to which is secured the pipe *d*⁴, which conveys steam to chambers *b* in the operation of the device, as will be described, and in which is provided the throttle-valve *d*⁵. The valve-seats in this casing *d* are inclined from front to rear, as shown in Fig. 3.

e represents the valve. It is composed of the two wings *e'* *e*², which are tapered, as shown, to correspond to the incline in the valve-seats. This construction is designed to permit the valves to be kept screwed up by screw *e*³ as they or the valve-seats are worn, thus keeping a tight fit.

*e*⁴ is the valve-shaft. It is passed through a metallic stuffing-box in front of the valve-casing, as shown.

*e*⁵ is a knob secured to outer end of shaft *e*⁴.

f is a balance-rod passed through opening in knob *e*⁵ and resting at right angles to shaft *e*⁴.

f' *f'* are weights secured to the ends of rod *f*.

*f*² is a hand-screw passed through front of knob *e*⁵, and arranged to bear against rod *f* and secure it at any point desired.

g is a graduated arc secured to a rod extended out from top of valve-casing.

g' is a hand or pointer secured to knob *e*⁵ and extended up adjacent to and in front of arc *g*. By shifting this rod from one side to another the valves may be regulated without reference to the float hereinafter described.

h represents the cylindrical float, constructed to move easily up and down in the chamber or cylinder *c*, and so that it will float in the water, as shown in Fig. 2.

h' represents a rod extended from the shaft of valve *e*, at right angles to the said shaft, over the center of cylinder *c*.

*h*² is a connecting-rod swiveled to rod *h'*, and extended to and connected by swivel-joint to float *h*. Thus the float and valve are connected and act together, as shown.

I provide the steam-pipe *c*² and water-pipe *c'* with stop-cocks for cutting off all connection with the boiler in case of repairs.

The pipes *c'* *c*² and throttle *d*⁵ all being open and the water in the boiler at its proper height, the device is ready to operate. As the water is evaporated and descends in the boiler the

water in the chamber *c* will descend also, turning the valve till the wing or cut-off *e*² moves past port *d*³. Steam being received from boiler through pipe *c*², now passes through port *d*³ and pipe *d*⁴ to the engine below, and the pump begins to work, forcing the water into the boiler through pipe *b*⁴. This continues until the water in the boiler and chamber *c* rises, carrying the float up and turning the valve till wing *e*² closes the port *d*³ and stops the engine at high-water line. There being a steam-port, *e'*, at upper side of chamber *d*, in case the water rises too high the wing or cut-off *d'* would pass the port *e'* and admit the steam to the whistle *d*², causing an alarm for high water; and, on the other hand, as the water descends, should it not stop at its proper point the cut-off *d'* would pass the port *e'* and give alarm for low water. I use the two cylinders *b* in order to overcome the dead-center and give a positive motion to the pump.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

25 1. The combination, with the float-cylinder *c* and the float *h*, of the valve-box *d*, placed near the upper end of and opening into the float-cylinder, and having the exit-ports *d'* *d*³, arranged opposite to each other, the valve *e*,
30 having the opposite wings, *e'* *e*², opening or closing the ports *d'* *d*³, the valve-arm *h'*, extended from the valve into the float-chamber,

and connecting-rod *h*², substantially as and for the purposes set forth.

2. The combination, substantially as herein- 35
before set forth, of the float-cylinder, the valve-casing placed near and laterally to the upper end of and opening into the float-cylinder, and having port *d'* opening upward and the port *d*³ opening downward, whistle *d*², valve *e*, hav- 40
ing wings *e'* *e*², placed in the casing *d* and opening or closing the ports *d'* *d*³, the valve-arm *h'*, extended into the float-cylinder, float *h*, coupling *h*², pipe *d*⁴, and steam-cylinders *b* *b*,
substantially as set forth. 45

3. The combination, with the float-cylinder *c*, lateral valve-case *d*, float *h*, valve *e*, and suitable rods and arms connecting the valve with the float, of the steam-pipe *d*⁴, cylinders *b* *b*, the piston-rods operating the pistons in cylin- 50
ders *b* *b*, crank *b'*, and the pump mechanism, substantially as set forth.

4. The combination, substantially as described, of the casing *d*, the valve *e*, placed within and having its shaft *e*⁴ extended through 55
the end of said casing, knob *e*⁵, and rod *f*, having weights on its opposite ends, and clamping-screws *f*², as described.

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

DAVID C. WALTER.

Witnesses:

C. S. CURTIS,
B. F. RITCHIE.